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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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MR. BRADLEY says, on a piece of land where the sandstone contained an acid the honey did not candy; on another piece of shale and clay, without acid, the honey candied.—*Australian Bee Bulletin.*

W. C. GATHRIGHT is surprised that I got bees to start queen-cells by putting jelly in worker-cells. Nothing surprising when you remember that bees often start queen-cells of their own accord when young brood is put over an excluder with a laying queen below. Later in the season I tried putting jelly in worker-cells over an excluder again, and it was an utter failure.

I'M SURPRISED that you get votes in favor of shorter spelling and none against. I beg the great public's pardon for thinking it more prejudiced than it was. If that proof-reader ever gets started on the reform track, he'll spel wers than York. [Votes are still coming in in favor of the shorter spelling; and up to the present writing only one dissenter has reported, and that is Mr. Harry Lathrop, of Browntown, Wis.—ED.]

J. F. MUNDAY says in *Australasian Bee-keeper*, he prefers a record on a hive to one in his pocket, for the book might be lost. But I wouldn't have a book so small it would go in my pocket, so it isn't easily lost. Sometimes I've decided whether I needed to go to an out-apiary by consulting my book. In that case, if my only record was on the hives I'd have to go five miles to learn whether I needed to go that five miles.

ON PAGE 799 is figured "20 or 25 lbs. of stores for outdoor colonies, and 12 lbs. for those wintered in the cellar." Isn't that a bit risky—at least for this locality? [You mean that the 12 lbs. for indoor wintering is a rather scant supply, I suppose. Well, perhaps it is for your locality; but a set of tables that Dr. Mason prepared a few years ago made it appear that between 6 and 7 lbs. was a fair average of what his bees actually consumed dur-

ing winter; possibly for your locality, 15 lbs. would be a safer figure for indoor wintering. But it is a fact that indoor bees require less than those out.—ED.]

W. H. PRIDGEN says (797) that I'm mistaken if I think because a larva is accepted in a Doolittle cup it is always fed from the start as a queen should be. I don't know that I ever said that; but I certainly did think that, if bees accepted a larva less than three days old in a cell-cup, it was all right for a queen, because scientists tell us the food of all larvæ is alike for the first three days. If practical men have enough proof to show that the scientists are wrong, I'm ready to desert the scientists.

"APPLE-TREES ideal shade for an apiary," says a heading, p. 805. So they are in Ohio. But in this region a man musn't live too long if he wants to continue believing in apple-trees as ideal shade. The young apple-trees I began putting my bees under have mostly died from old age. [I thought the apple-trees at your home apiary afforded very good shade for your home bees, doctor. *Of course*, your apple-trees are not to be compared with those in the grand old State of Ohio.—ED.]

"THERE WILL BE a slight change in the construction of the cover" for 1900 says an editorial, p. 806. I wish there might be a big change, giving us a cover with a dead-air space and a tin top. [We have sold for years a double cover; and where such cover is preferred the purchaser can have his preference gratified; but a double cover with tin, while it might be absolutely proof against leaking, would be very expensive. The present price of tin plate would almost rule it out for hive-covers.—ED.]

LOTS OF THINGS seem to be coming to light about queen-rearing lately, and I suspect there are lots of things we don't know about it yet—at least that I don't know. I thought it was the jelly and not the kind of cell that made the bees rear a queen. But I accept the word of friend Gathright, p. 804, that the cells will do without the jelly. Editor Pender is even more emphatic in *Australasian Bee-keeper*. He gave on the same frame cells with and without jelly, and the bees accepted the larger number without jelly. [As I have already

stated, I believe it made but little difference whether we used larval food or royal jelly. Assuming that they are the same up to the fourth day, of course it could make no difference; but we have used it in cells when it was older than that.—ED.]

"THIS WAY of making honey a main part of the meal, and not a mere relish, a tickler, and spur for the sated appetite, is a very important point" (Anton Leister, 794). I read that to my wife, and she said, "I should think it would sicken them." I said, "He doesn't mean to fill up mainly on honey, but to eat it during the main part of the meal." "But it ought to come at the last part of the meal as a sort of dessert. At least I've been always used to thinking of it in that way," said she. This in spite of the fact that her mother, a blessed old Scotch saint who has been for some time a member of my family, takes it during the main part of every meal as regularly as she takes her "parritch" every morning. It takes a lot of hammering to get out of people's heads the idea that honey is not a food but a fancy dainty. [A good many dainties and foods, harmless and generally easily assimilated, taken together after a full meal, when the appetite is fully satisfied, will do a great deal more harm than good, and consequently get a reputation of not being healthful. I can sit down and eat some kinds of puddings without distress if I make that the main part of the meal; but let me put that pudding on top of a full meal of roast beef, bread and butter and potato, and I feel decidedly full and dull afterward. Honey is generally eaten as a relish after a full meal, when it *should* be used about like butter, along with bread or whatever it is eaten with. Mr. Leister has the right idea.—ED.]

AN OBJECTION to the whole scheme of having any kind of color-samples is that "the colors of the various honeys vary according to the different localities," says ye editor, p. 802. Exactly and precisely on that account, my dear friend, we need something for a standard. If a man tells me burdock honey is just the same shade as this or that honey, I don't know what he means for I don't know the shades of honey in his locality. But if he says it just matches the shade of card No. 6, then I understand it, for the card is the same in Maine as in Mexico. [Agreed! Now if we can get the transparent color-cards properly numbered, well and good; but I do not know where to write to get such cards, and much less how to make them. They should be made of celluloid or gelatin. But, look here, doctor. A certain tint $\frac{3}{8}$ inch thick will be much darker when made 2 inches, as, for example, looking through a bottle of honey. Now, then, if I had a color-card that to my notion represented white clover in this vicinity, and should send it to my friend Coggs, in the heart of the buckwheat country, and ask him if he had any white clover of the color of my color-card sent, how would he judge the tint—by what he could see in little vials or by what he could see in a Muth or Mason jar much larger? After all, I suspect

that the surest and most reliable method of apprising the purchaser of the color of the honey is to send him a bottle of the honey itself. The prospective purchaser makes an offer; the offer is accepted; the honey is received; and if another sample in the *same kind* of a vial is equal to the sample sent in the first place, then the seller gets the price offered.—ED.]

STENOG says (p. 791) that some time ago he read in a foreign journal that Dzierzon was revising his own theory, and that he might some time abandon it. I think that foreign journal must have been twisting facts. I've watched the matter pretty closely, and I've never seen a word from him receding in the slightest degree. On the contrary he has expressed himself in the strongest terms against any change of view. B. Hamlyn-Harris was present at the late big German convention, and says in *British Bee Journal*:

On the second day Dr. Dzierzon again lectured; this time on "The Groundlessness and 'Insecurity' of the New Theory." In his opening remarks the venerable lecturer made mention of having, during his lifetime, written no less than 300 articles to the *German Bee Journal*, now edited by Mr. Dickel, and spoke of his feelings suffering somewhat keenly at the idea of the theory of parthenogenesis in bees lasting for only a lifetime, and that on the eve of his departure all the errors so long since abandoned should now be dug up again.

Does that look like abandoning the Dzierzon theory? [In a private note referring to this same matter, Dr. Miller sends the following, which, as a matter of general interest, I have taken the liberty of appending right here as another Straw:—ED.]

Page upon page has been wasted upon the Dickel theory in the German journals, and it will be time enough to let it get into GLEANINGS when the leading Germans have accepted it. I think the majority of them look upon it as the wildest nonsense, some keeping quiet for fear there may be something in it, a few swallowing it entire. I suspect there's just as much truth in it as there was in the Kirby theory which occupied some space in the *American Bee Journal* in 1861, holding that workers rode on the drones' backs, gathering the semen there while the drones were on the wing, and bringing the semen to the hive.

SOME SWEET DAY.

BY EUGENE SECOR.

Though clouds obscure the stars to-night,
The shadows shall not long remain;
Though life be not unmix'd with pain,
The star of Hope is ever bright.

The dead, cold earth in winter time
Forbodes no harvest and no flowers;
But Hope, remembering vernal showers,
Hears, far away, the bluebirds' chime.

Ill fortune may reverse thy plan,
And tardy Justice long delay;
But Hope expects that, some sweet day,
Shall see removed the fateful ban.

O blissful dreams of hope and youth!
Your fancies weave a web of gold;
The heart that *hopes* shall ne'er grow old,
And *some sweet day* is thine in truth.



Say the bees, "Shut the door! that horrible roar
Of storm-winds now rises and frightens us more;
How pleasant these combs to make glad our homes!—
An antidote, surely, for pains that we bore."

AMERICAN BEE JOURNAL.

C. P. Dadant sums up the wintering question in a few words: "Good healthy food, an even temperature, quietness, and a fair amount of ventilation."

On the first page of the issue for Oct. 26 is a picture of an apiary located in the great city of Chicago. It is owned by Mr. W. H. Horstmann, a letter-carrier. He now has 15 strong colonies. The picture shows several little cottages close enough together to touch elbows; and instead of the earth swallowing up the city, the city has swallowed up the ground. Why do human beings like to huddle together in cities, like bees in a hive, especially when there are so many railroads to leave town on? But Chicago is not all brick; and the thousands of flower-beds within its limits may furnish more bee forage than any county in Illinois outside of Cook.

BEE-KEEPERS' REVIEW.

The October issue is fully up to any thing Mr. Hutchinson has ever printed. Two fine views of the apiary of O. J. Hetherington, of Michigan, form the distinctive feature. By the way, a correspondent tells Mr. Hutchinson if he would stay at home and not gad all over the country his *Review* would appear more regularly. But Mr. H. defends his gadding propensity by asking if his journal would have the same freshness and vim if he were to shut himself up at home and see nothing of the world. It is to be hoped that Mr. H. will continue to "gad" so long as he gives us the benefit. The regularity of a daily paper is not at all necessary for a monthly journal. If the *Review* appears twelve times a year, that fills the bill. The pictures referred to show the clamps in which Mr. Hetherington keeps his hives, presenting quite a novelty in this respect. The editor says this is the only apiary he ever saw in which the hives are kept in clamps the year round.

In speaking of queen-traps, Mr. W. E. Flower, the magic-lantern man at the Philadelphia convention, says he has used the Alley trap for ten years, and has never lost a swarm nor a queen, and these traps are good for ten years more. He adds: "What a pleasure to know that, when you come home, even if the bees have swarmed, you will find the queen in the trap, and know to a certainty just where she belongs!"

Mr. Herbert Clute, of Wisconsin, says bee-hunters in his locality attract bees by burning

bits of wax on birch bark. The odor is very attractive to the bees, and by means of it they are soon led to betray their location. Hunters there use bee-hunting glasses with colored lenses that so change the color of the timber and sky as to give a better background for watching the bees.

CANADIAN BEE JOURNAL.

The difficulty of having the outside frames, either comb or extracting, as well filled as those in the center of the super, has been overcome by Mr. Pettit "by allowing the entrance to extend clear across the hive, and by raising the front $1\frac{1}{4}$ inches above the bottom or floor, by a wedge on either side of the entrance. This allows the bees to enter the hive the full width, and compels them to walk up the sides or back of the hive, so that they always fill the outside frames first instead of last, as is the case with the narrow entrance." Mr. Pettit's system in detail is given in an article credited to the *Farmer's Advocate*. Mr. P. is about to move from Belmont to Aylmer, Ont. His son Morley will remain on the farm and manage the apiary. An article from the latter appears in next issue. For years the elder Pettit has been one of the most successful bee-keepers in America, and it is to be hoped he will not be entirely lost to view in his new home.

BRITISH BEE JOURNAL.

Mr. L. Quayle, on the Isle of Man, near the English coast, reports one colony this year that has broken his previous record of 334 lbs. of comb honey. This was "heather" honey, which cuts so large a figure in English and Scotch apiculture. His season has been very good. That is a remarkable yield for any source, to say nothing of a place situated six degrees, or about 400 miles, north of the northern boundary of the United States.

A correspondent says his journal would be more valuable to him if it had directions what to do every week or month in the year. The editor says this is out of the question, as the circulation of the *B. B. J.* is from the extreme north of Scotland to the southern end of England. Each must make his own record according to his seasons; for what would fit one man would not another.

THE AUSTRALASIAN BEE-KEEPER.

Mr. G. Kelly, of Dungog, took 700 60-lb. tins of honey from 70 colonies—an average of 600 lbs. per colony. The editor says this is almost incredible, but he says he knows personally enough of the locality and of the way ironbark secretes honey to warrant him in saying that even a greater return is possible. I do not remember any other instance that would even approach this wonderful yield. What a field for Coggshall to try his hand at extracting honey!

Mr. J. Hopkins claims the following advantages in raising extracted honey instead of comb: 1. Much larger proportions can be har-

vested with less labor and expense; 2. Better prices in proportion to those obtained for comb honey; 3. Not so liable to deteriorate; 4. Can be handled better, and shipped to foreign markets without risk of damage; 5. Less expense for market packages; 6. The market is not so easily glutted with extracted honey.

To keep sections of honey nice and clean, Binni adopted the following plan: He purchased at the printer's some common white news paper. He had it cut into pieces $12\frac{1}{2} \times 8$ inches. In these papers he had his sections wrapped. As fast as one assistant took a section out of the super and scraped the propolis off it carefully, another would wrap it in one of those papers and place it in a box made to hold a certain number *exactly*. He had these cases made to hold 1 dozen, 2 dozen, 6 dozen, and a gross. When the lids were *screwed* down the sections were safe, he thought, till doomsday.



FOUL AND OTHER FORMS OF DISEASED BROOD IN THE STATE OF NEW YORK.

BY N. D. WEST.

Mr. Root.—I believe you are taking the right view of the matter pertaining to our diseased brood which has caused us so much trouble. We have, I think, more than one kind of disease on the ground, and yet there seems to be a tracing from what I have called pickled brood, all the way along from bad to worse, and in different stages, until at last it so closely resembles foul brood that it is difficult to draw the line between this and the genuine foul brood, although some of the dead brood will be found, at times, to be flattened down into the cell, and will be about the color of white glue, and will, when a toothpick is placed in it, draw out from its cell from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch. But you have to hold the toothpick with an object in view, and try to get it to string out or it will not follow the toothpick at all. Some of this becomes coffee-colored, and is rotten in the cell, and will string out some, but it will not break and spring back like rubber; neither do the combs, when held close to the nose, give off that offensive and sickening odor that I get from what I call the old-time foul brood. The hive, when opened, or a comb held close to one's nose, will give a kind of sour smell, or odor; but one of these coffee-colored, rotten brood, when removed from the cell and held close to the nose, will have a sort of rotten smell *only*. But take a hive full of brood, three-fourths of it good brood and one-fourth of it bad brood, as described above, and place it on top of a pretty good swarm to hatch; place a queen-excluding zinc between the hives, and keep the queen below, and in due

time the brood above the excluder will all be hatched out, and all of the bad brood will be cleaned out of the combs, and no more trace of the bad brood is seen in these hives that season. This has been my own experience in my own apiaries this season, and these colonies in the lower hives were slightly affected, as well as the brood placed on top of the colonies.

Take notice that these colonies are all made very strong, and now have a good lot of young bees as well as old ones; and remember that the hatching of so many of these young bees seems to encourage and give more energy to the bees. They go right to work and clean house. I remember that, after this, we had some honey in the field, and somehow these colonies have kept their combs clear from diseased brood, and were the first ones to clean up of themselves.

Again, I have noticed that, in apiaries where large hives are used, and plenty of honey was in the hives at all times, the bees suffer less than those in smaller hives, and which are rather short of honey.

Again, not until about the middle of our fruit-bloom did the bees show so very much of the diseased brood; and at this time, and after this up to the time that the red raspberry was ripe, it seemed as if whole apiaries in some places were struck with this disease almost like a potato-blight, and yet I could generally trace some reason why it might occur by being carried by bees in robbing colonies, and in mixing up in the same yard, etc. All yards were not affected alike, while some were slightly or badly affected in each hive in the yard. In other yards, only a few swarms would be affected, all sitting in one row, or at one end or corner of the yard only. So far as I have observed, where I have reason to believe apiaries have not been affected until the past season, they did not show very much dead, rotten, coffee-colored brood until the first of July, and more of it later in the same month.

In half of the cases where bees have been shaken by the McEvoy plan, which seems to be the most reliable method I know of, the disease has started up again; but where the colonies have been strong, and the work done when there was a fresh supply of honey coming in from the field, the results have been very good. Colonies that have passed a certain medium in the early season, and nothing done to help them, went from bad to worse; but I did notice that, when we had a three-days' basswood flow of honey, although but very little was gathered, the bees commenced to clean the dead brood from their combs, and I believe that this new honey is what helped the bees to hatch more good brood again. But after this there appeared to be a scarcity of honey in the field again, and diseased brood again became more prevalent.

But, again, when buckwheat began to blossom, the bees again commenced to clean up their combs, and the stronger colonies gave more good brood again; and from that time until now there is but very little if any of the diseased brood that can be found only in

weak colonies good for nothing. The diseased brood has been cleaned out by the bees; in general, some have dried down, and I presume they are covered with honey. It seems that, when brood grows scarce, or a colony becomes queenless, all strong colonies will get the dead brood out of sight. I do have some fears that this malady may clean us all out of bees; but I have faith, and hope that, if we reach a good honey season, this dreaded disease may practically disappear.

However, I do not wish to be understood that all bees have been cured, or cured themselves, for many have destroyed their bees by the hundred swarms this fall. But where more favorable conditions have prevailed it has been otherwise. I have never been in the habit of feeding bees very much; but I am not sure but it will pay to feed, in time of a honey-dearth, those colonies that are affected. The use of drugs may help—I don't know. I have seen some good results where drugs have been used; but the bees were fed sugar syrup at the right time, in my opinion.

I am the bee-keepers' servant, doing the best I know to help them. I am trying to inform myself, and hope to be able to know much more about how to handle diseased brood, etc., than I do now. I invite my brother bee-keepers to write their experiences along the line of bee-diseases, and especially diseased brood, such as foul brood, pickled brood, and something about half way between—or is it all one? What do you think about the trinity? Thus far in my work I have been careful to burn only such colonies as have been really bad, or those on a clean territory, or very nearly so. I find that some have sold bees from a foul-brood locality in the early spring, to parties on what I call clean territory. It should be clearly understood that the law forbids the sale of bees from foul-broody apiaries. Be careful.

This has been the poorest honey season I ever knew, especially so in buckwheat localities.

N. D. WEST,
Bee Inspector.

Middleburgh, N. Y., Oct. 23.

[See editorials.—ED.]

MRS. SWEETHEART.

A \$200 Queen found at Last. Her Bees Gentle, and Good Workers; a Valuable Article.

BY A. J. WRIGHT.

Doctor Miller rightly says, p. 603, "You're on the right track in offering a premium for good working stock." It is the queen that gets the honey, and no mistake. Now, I am not rearing queens for sale, but I have one queen that nothing short of \$200 in clean cash would buy; and if I knew that I should never have another as good, I should hesitate to part with her at that price. Why? Well, I don't mind telling you. Last season, which was the poorest but one that I ever knew, and that one the present, this queen gave me 167 pounds of beautiful marketable honey in sections, while

my other colonies were doing all the way from 20 to 50 pounds. This season at this date (Aug. 19) this queen (or, more properly, her bees) has filled and capped four crates of 24 pounds each, and has gone into the fifth one, which I have just given them with a double hustle, and which I think they will fill. My other colonies are doing from nothing to 50 pounds. The bees from this queen pay but little attention to buckwheat, but at this time are getting their supplies from the second crop of red clover. The honey is capped very white.

I handle the bees from this queen at any time and under any circumstances, rain or shine, full honey-flow or none, without gloves, smoke, or veil, removing the cover with a snapping of propolis, taking off or putting on sections, diving into the frames, etc., and I have never yet been stung by them; but, on the contrary, they appear pleased to see me, making a buzzing sound of contentment when the hive is opened.

This queen is very prolific, and the bees winter substantially without loss. Last season this queen threw off a swarm in May—I can't tell the date. This season a swarm was thrown off May 15. No disposition is shown to throw off a second swarm. The bees from this queen are uniformly marked with three distinct bands of light amber, and are of large size.

This is the second season that I have had this queen, and I am requeening my apiary with her daughters as rapidly as possible.

"Sweetheart," the name of this queen, is just my ideal of what a queen should be. In my bee-keeping experience of nearly twenty years I have never known her equal.

PREVENTING AFTER-SWARMS.

On p. 397 several methods are given—all of them probably good. The following plan is the one I use, and always with good results:

My parent colonies all have clipped queens. When a swarm issues I place the new hive on the old stand, and hive the swarm and old queen, removing the old hive to a new location. It is from this old hive, of course, that after-swarms may be expected to issue. About the time the cells are to hatch I place an entrance-guard of perforated zinc on, and leave it a few days, when several dead queens will be found at the entrance. I now remove the zinc, and have the best queen of the lot on the plan of the survival of the fittest.

MAKING INCREASE.

On pages 140, 226, and elsewhere, methods are given for making increase. These methods all make increase at the expense of honey-production. Suppose the bee-keeper has several strong colonies in movable-frame hives, which in a good season should give a surplus worth five to ten dollars each; should he attempt to increase by the method given, he would get no surplus, thus making the methods too expensive.

The following plan will not disturb your original colonies, and will also utilize the box-hive man:

In the early spring, say in March, in this latitude, purchase of the box-hive man or

farmer bee-keeper a strong colony in a box hive for one dollar. Transfer this by the Heddon short method in April, as soon as dandelion bloom is on, into your movable-frame hive, driving out about two-thirds of the bees. Place an entrance-guard over the entrance of the new hive; catch the queen; clip her wings, and return her to the old hive. Set the new hive in place of the old one, giving some larvae of proper age for queen-rearing. Repeat the operation, except clipping, every four weeks, into the months of September or October, if the weather is warm. The colonies transferred in April, May, and June will give you some surplus in July and August; in a good season will keep themselves; September also, in some localities; October will need help.

A STRAY STRAW.

Dr. Miller says, p. 601, that I am "away off" when I attribute the dark color to the habits of us bee-keepers. The doctor puts the following questions: "Isn't every thing just as black in a nest in a bee-tree where no bee-keeper has interfered? If you should clean the bottom-board every day would you prevent the darkening of the brood-combs?"

I give it up, doctor. I've never tried cleaning the bottom-board of a bee-tree. The article, p. 574, had reference to the cappings of section honey—not brood-combs. The latter owe their dark color mainly to other causes—I think such as cocoons, excrement, dead bees, etc. The dirt and litter of the bottom-board I believe to be mainly responsible for the discoloration of the cappings of section honey.

HOW TO START BEES IN SECTIONS.

The Barber method, p. 309, and referred to elsewhere in GLEANINGS, is all right for those who are working for both comb and extracted honey; but as some may not wish to go into the extracting business I give a method which succeeds well with me.

When you are ready for section work, cage the queen, giving enough "Good" candy to last two or three days. Put on your super of sections with bait, if convenient. On top of this super place an empty one, in which put the caged queen. The bees will begin work in the sections *at once*, and will keep at it as long as there is nectar coming in. The empty super and cage should, of course, be removed as soon as the queen is liberated.

Bradford, N. Y.

[Your queen will well be worth \$200 providing she was either pure Italian or pure Carniolan or something. If she is a cross between Italian and black, her daughters will be likely to sport to either one or the other ancestors. Take my advice, and do not subject her to the arduous duties devolving on the mother of a large and populous colony. Prolong her life by restricting her egg-laying, and convert as many of her eggs as possible into queens, and then sell them for five or ten dollars—the best of them. If you can get any daughters that come anywhere near duplicating their mother, reserve them out and let The A. I. Root Co. make a bid on them. It is just such queens as these that we want.

Be sure that her colony winters well, and if she comes through we should like to know what offer will tempt you to part with her next spring. You have given our readers a number of valuable hints, and I hope they will give your whole article a careful reading.—ED.]

BEST HIVE FOR EXTRACTING.

Ten-frame L. Hive for California and the Ten-frame Draper Barn for Illinois; Why Locality should Decide the Size of Hive.

BY HON. J. M. HAMBAUGH.

I am not sure but the ground relative to the most desirable hive for extracting has been pretty well thrashed over; but with your consent I desire to answer some of the paragraphs in Mr. Draper's interesting article on page 610, Aug. 15. I do not for a moment dispute Mr. Draper's experience relative to the combs becoming more or less pollenized, and his confining the queen exclusively to the lower combs will not obviate this difficulty. I will also state that, when combs become thoroughly filled with pollen accumulations, they are unfit to use as brood-combs; and the best use to make of them is to consign them to the solar wax-extractor.

Mr. Draper says that, when "the honey-yielding plants fail to secrete much nectar during the hot weather, so that the whole force of the colony is turned to bringing in pollen, and as the brood is scattered through the hive, so is the empty room for pollen, and it is not long until every available cell is filled with it." To be sure, Mr. Draper; and the more the pollen is concentrated in the brood-chamber the sooner you will have the queen hampered for laying room, and the sooner old pollenized brood-combs will have to be replaced with new ones, or frames filled with full sheets of foundation.

I will admit that pollen in the surplus apartment is not desirable, and yet we can tolerate some without any apparent detriment to the quality of the honey. I have been extracting honey for 15 years, and in all my experience I could never see that brood and pollen in the combs, when carefully extracted and strained, made a particle of difference in the grade and quality. Of course, it is in the way of the extracting-knife, and requires caution and some extra work; but the advantages of but one size of frame throughout the yard, it has always seemed to me, offset these difficulties.

Under many conditions the ten-frame Simplicity hive is sufficiently large for a brood-chamber, and her majesty will not seek pastures new. This I believe to be especially true here in California, where we have such long drouths, and no wintering problem to solve. We are also confronted with quite a difference in the cost of the material entering into the two different styles of hives, to say nothing of the extra amount it will take. The broad boards necessary to cut the bodies of the Draper hive will cost from three to six

dollars per thousand more than the lumber for the Langstroth. This, of course, is an item to be considered.

I want it distinctly understood that I am not fighting the large-sized hive. Were I in Illinois, and had to start anew, I'd adopt the Dadant-Quinby or one equally commodious. Here and Illinois is another proposition. I am open to conviction when I can see my error, and I may do some experimenting in the line of a new design the coming season, the result of which I shall report, Providence permitting.

In your footnote to Mr. O. O. Poppleton's valuable article, entitled "The Long-Idea Hive," you say, "After all, the proposition simmers itself down to this: 'Can we make more dollars in our locality with a large hive than with a small one?'" That fits the case to a dot, and every one must study the conditions and surroundings; and let me drop a little prophecy right here. The coming hive for extracting purposes will not be any less in cubic dimensions than the ten-frame Langstroth; and where wintering is a factor to be considered, a hive of larger dimensions will be necessary for the average locality.

HOW TO MOVE BEES IN HOT WEATHER.

Moving bees during hot weather, and when the colonies are very populous, is considered out of the question by many of our best beekeepers; but, as will be attested by many, I successfully moved my bees in Illinois from the high lands to the low lands for several seasons, thus securing a fall flow from Spanish needle and heartsease on the low lands after the clover and basswood harvests were over. The perfect success of this venture was more attributable to the ventilator Mr. Draper mentions than any other one point in their preparation; and I must claim the honor of its invention. It was simply a rim three inches deep, cut exactly as an upper body, to fit directly under the lid. A groove was cut one inch wide clear through on all four sides, within three inches of the corners. This is done by setting the saw wabbling. The groove is, of course, covered on the inside with wire cloth. All heavy combs must be previously extracted, and all combs securely spaced and tacked at the top with strips to prevent their sliding. The Dadant wire spacers always did the work safely at the bottom for me. All my combs were wired horizontally with three strands of wire. I would leave an upper story on, and in the event of an extraordinarily populous colony I would put two ventilators under the lid. All lids and platforms were secured to the bodies of the hives.

The work of preparing the bees for moving was, of course, done during the day; but the loading and moving were performed between two suns and when we had a full moon. We used ordinary farm wagons, with racks made for the purpose, which would accommodate from 16 to 24 at a load, and, of course, we would drive very slowly and cautiously. We have moved as many as 150 colonies without the loss of a quart of bees. As Mr. Draper ex-

presses it, as soon as the bees are jolted a few times they emigrate to the highest point, and there they cluster.

The entrance is secured with wire cloth; and as soon as the body of the bees leaves the combs the excess of animal heat passes out through the ventilators, and the combs become sufficiently cool to prevent breakage.

With care and judgment, bees can be successfully moved any time in the year. I believe the ventilators would make a necessary adjunct in your catalog.

Escondido, Cal.

[When we move bees we use a rim 2 inches deep covered with wire cloth. This is put on in place of the cover. While this is good, experience of a kind that nearly resulted in the smothering of several strong colonies one hot summer night, when we were hauling a load of bees, leads me to believe that your arrangement is far better. I've a notion to try it next summer. At the approach of a honey-flow it is very expensive to let even 25 per cent of the bees smother in moving.—E.D.]

RAMBLE 178.

Gold-mining vs. Bee-keeping.

BY RAMBLER.

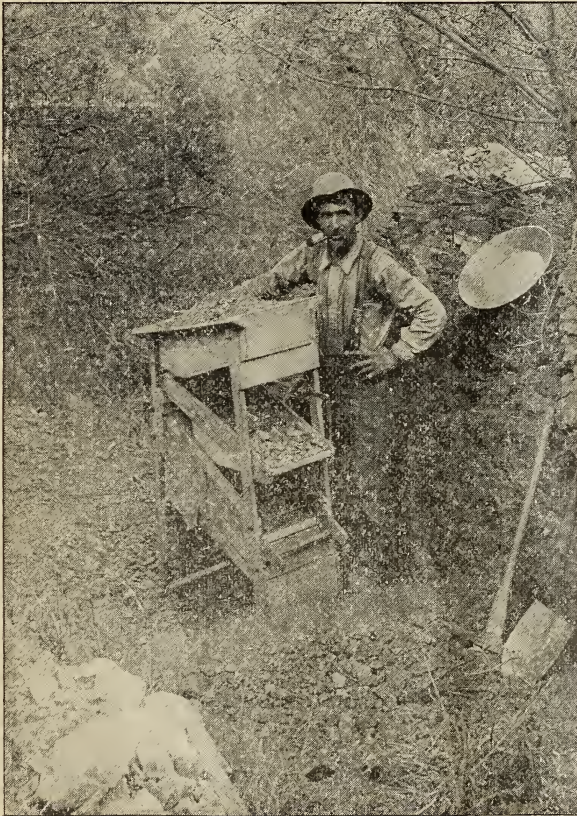
We passed another apiary having a goodly number of hives, but Mr. Brodbeck and I were so busy in our respective spheres that we did not halt to examine them. That 17 miles up the canyon was a delightful journey to me; but Mr. Brodbeck looked real tired when we reached our camping-place in a cosy nook under the willows with a purling stream on one side and the steep mountain upon the other.

Several miners were camping near, and in the evening we had quite a circle of these men, who live rough and lonely lives, around our campfire. Mining and gold nuggets were the chief topic under discussion; and, though they could talk familiarly about nuggets, they had none to show. Occasionally one of the men would become quite fluent in the use of oaths and otherwise scandalous language. Now, I have always noticed that, when a man begins to interlard his conversation with such words, if the listener laughs or even smiles it will be looked upon as an approval, and the oaths will increase; but on this occasion Mr. Brodbeck and I looked solemnly into the fire, and were pleased to note a diminishing of the objectionable language.

There has been a great amount of gold taken out of this canyon, and the evidences of work in years past are visible upon almost every foot of ground — tunnels into the mountains, in every direction, some of them dug by the Indians under the direction of the Spanish padres early in the century. At present the State will not allow hydraulic mining, and the so-called dry washer is used instead. One of our miners was using one of these machines just above our camp, and I present a photo of the same. Fill the hopper with dirt; turn the crank; the screens are shaken; a bellows un-

derneath blows the dirt off, and the gold, if any, is found upon the riffles on the lower screen. If by chance there are any nuggets they are caught in the nugget-catcher in the upper screen. It is no light work to handle pick and shovel all day; and when the machine is worked it shakes up a lively dust, and the man is soon covered with it. The man in the photo, after a hard day's work, showed us about forty cents' worth as the result of the day's labor. For several days previously he had received less than that.

"Well, Brodbeck," said I, "I believe I prefer bee-keeping to working a gold-mine—too much hard labor and too little pay. My idea of a gold-mine is where we can rattle out at least ten dollars a day; that would give a fellow some encouragement."



GOLD-MINING WITH A DRY WASHER.

"But, Rambler, you do not get ten dollars a day out of your apiary; then you know in a gold-mine a man may happen to strike a vein that will produce millions. There is no such fascinating thing ahead in the bee business."

"Yes, gold-mining is very fascinating to some; but when the chances are one in a million of striking a bonanza I will stick to the bees. I am quite sure of a living from the bees if I give them the attention and enter-

prise I should. Now, here is this miner—been in the business several years; and still, from what he says, he is living from hand to mouth. I have seen many just like him in the mining-camps of this State. With the same amount of work with bees, intelligently directed, he might have been as well off, or even better off, than you or I."

"But, Rambler, look at the bee-keepers of to day in California. How many, aside from you or me, are wealthy? They have been in the business for years, and are still poor; and it is not only so in California, but all over the country. Then we have our dry seasons and failures."

"Well, I am always disposed to take a bright view of the business. Many a man, if he is not getting wealthy, is getting healthy,

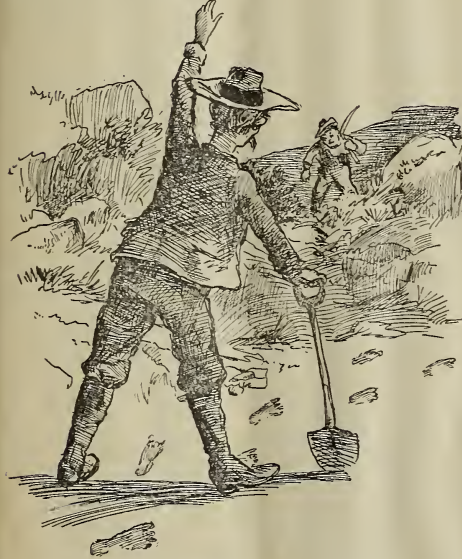
like you and me; then there are hundreds of men in California who owe their start to success in other lines of business to the bees. Here is Mr. Moffatt, for instance, of our Angel City. He started in the bee business a few years ago, made a few thousand dollars, invested it successfully, married a lady who can sing like a nightingale, and now has given \$40,000 to the cause which the evangelist Crittenden promotes, and himself and wife are giving their time and voices to the work. There is not an industry that can show a better result. Still, Mr. Moffatt owns an apiary and not a gold-mine!"

"There are exceptions to all trades, Mr. Rambler, and Mr. Moffatt is one of them; and on the whole the bee business is not considered much of a business. I know, and you know, a gentleman came here from the East not many years ago and fraternized quite heartily with the beemen; and, though he is still interested in the industry, he is not so much interested in the bee-keepers. The fruit-growers are more in accordance with his tastes, for in their ranks are found lawyers, judges, ministers, doctors, and governors—the talent and wealth of our glorious land—and representing the highest social circles; and doesn't it make you smile to apply social circle to the bee-keepers? But, as you say, it is a healthful employment, and I never enjoy

myself better than when out on the ranch."

"I am pleased that we are in accord in at least one point—that of the healthfulness of the business. Much might be said pro and con about the merits of bee-keeping as compared with other industries. Meanwhile the business is developing, and the only way for us to do is to go into it largely and make it pay us at least ten dollars a day. That is not as good as a paying gold-mine, but it is better

than one miner in a thousand is doing. Now that you are so very much interested in gold-mining, suppose we meander down the canyon and prospect a little. I'll take the shovel and you take the pick; and, by the way, Brodbeck, have you noticed how liberally this country is sprinkled with honey-dew?"



"COME HERE! QUICK!"

"Yes, I noticed it yesterday, when driving through the dense growth of alders; and, see here! the stones are wet with it, and there are but few bees at work here, which shows that there are but few wild bees here."

"Now, Brodbeck, this is a good chance for us to make an observation as to the origin of this honey-dew. You know there is quite a little controversy in the journals about the matter."

"Well, Rambler, here is a leaf. The upper surface is glossy and sticky with it, and here on the under side are a few of the veritable aphides. They are little fellows, but there are enough to show the origin of the dew. You see they bite the leaf, and the dew exudes."

"That is where I do not see as you do, and it is where you are mistaken. The aphid does not eat the leaf to any extent; and if it does, the exudation comes from the aphid."

"Pshaw, Rambler! just see here; that leaf has been roughened up, and anybody with half an eye can see that's where the dew comes from."

"He can, hey? Well, now, you see here too; anybody with the least gumption can see that it comes from the bug, else why is it called bug-juice?"

"Why, Rambler, a goose would know better than that. A little bug like—hold, there don't you dare kick my dog; and don't you hit me with that shovel."

"Brodbeck, put down your pick; although I ought to swipe you I will desist. I have listened to a voice that came to me from the distant past. When I was a boy I learned from a Sunday-school book to count one hundred before swiping a person. I have counted, and will not swipe; but if you dare say goose to me again I will not be responsible for what will happen. Now, don't you think you had better go down on the other side of the wash while I take this? It will be for our health, probably, to continue our mineral studies."

Of course, the readers of GLEANINGS know that bug-juice all comes from the bug; but there was no use for me to convince my contrary partner.

For some little time we kept to our respective sides of the wash; but man is a sociable animal; and if he sees any thing new or novel he desires to talk it over and compare notes with his fellow-man; and it so happened that, when I came into the highway, which was quite sandy in this place, I saw several tracks along the road. "Now," thought I, "here is a chance for me to get even with that fellow."

"Hello, Brodbeck! hello! see here! come quick!"

"Hello!" came from the other side of the wash; "what you found?"

"Why, here are fresh bare tracks, and right in the direction of our camp."

"Bear tracks? goodness! didn't think we were in a bear county."

"Well, here they are sure—see? What about the horse?"



"DO YOU TAKE LODGERS?"

"Why, Prince will tear himself"—but when my partner saw the tracks his demeanor instantly changed. "Humph! you're—might have known—here, Juno, s-s-see—"

"Stop, Brodbeck! call off your dog! put down your pick! count a hundred! then you

will feel better; but after all, you can see just as well as I can that it is a bare track. I didn't think it necessary to say a barefooted person's track."

Somehow our prospecting did not amount to much that day — not a color to show after all our picking; and the fact is, my faith that we should was as small as a mustard seed. Bro. Brodbeck's faith, which was fairly large at first, gradually diminished. The ground has been worked over and over, and the paying days are passed.

After another visit that evening with the miners we sought our respective tents, and sought the wooings of Morpheus. But what a time we had of it! and, dear reader, you would smile to have seen the sort of Morpheus that came about midnight, seeking for lodgings. The miners in rough country avoid jolting their grub and other traps over the rocky road in wagons by packing them in on donkeys; and half a dozen of these animals trust their big heads and larger ears into our camp; and, though the donkey is not a very lively animal, they can make a great stir when looking for lodgings or for eatables. Not relishing their company we chased them out of camp. Bro. Brodbeck was a little timid on the chase, fearing he might catch a nightmare. Not enjoying first-rate health there was some danger of it; but I am never troubled with such superstitions, and the donkeys had to go.

LARVÆ FOR QUEEN-REARING.

For what Age do the Bees Show a Preference?
Valuable Testimony from the Bees on a Mooted Question; an Interesting Series of Experiments.

BY DR. C. C. MILLER.

On page 725 of GLEANINGS for 1898 I expressed the belief that the common notion that, when a queen was suddenly removed from a colony, the bees were in such haste to rear a successor that they would select larvæ too old, was a mistaken notion. Earnest protests came from those whose opinions were entitled to respect, and some views were attributed to me that I did not hold. On page 427 of GLEANINGS for this year I defined my position more explicitly, and on page 494 said: "Please watch what bees do when the queen is taken away, and see if they make the mistake of choosing larvæ more than three days old, for queen-rearing." I made the same request publicly and privately elsewhere. I don't know that any one paid any attention to it, and I don't know that I blame such; for, so far as I know, I stood alone in opposing a view in which all the rest were agreed.

Upon one point in dispute, however, I did not stand entirely alone. I said queenless bees start queen-cells when first made queenless, and continue to start queen-cells for several days. Mr. Hutchinson said his bees started all their cells at nearly the same time, and so nearly of an age that the young queens emerged not more than two days apart. Henry Al-

ley said his experience agreed with mine upon this point.

Having asked others to make fresh observations, it was only fair that I should do so myself. It might be I had not been careful enough in previous observations. So I took the matter in dispute to the bees, and took careful notes of their testimony. The important thing was to know somewhat positively the age of the eggs or larvæ used, and the time at which the queen-cells were started.

To No. 84 I gave successively frames of empty comb, noting the time at which a comb was given as well as the time it was taken away. I was not as successful as I should have liked in getting the queen to lay promptly in the combs given. In one case no eggs were laid in the prescribed comb after 24 hours' waiting. The probability is, that in all cases the eggs were laid in the last rather than the first part of the time in which the queen had the comb. That is, if I gave the comb on one day at noon and took it away the next day at noon, very likely most or all the eggs were laid during the latter half of the 24 hours. The crowd of other work upon me will account for the irregular hours at which the work was done.

Allow me to name the different combs by the first five letters of the alphabet. They were given to and taken from No. 84 as follows:

Comb *a*, given June 28, 10 A. M.; taken June 29, 12 M.

Comb *b*, given June 29, 12 M.; taken June 30, 2 P. M.

Comb *c*, given July 1, 4 P. M.; taken July 3, 10 A. M.

Comb *d*, given July 3, 10 A. M.; taken July 4, 10 A. M.

Comb *e*, given July 3, 10 A. M.; taken July 5, 10 A. M.

Each of these combs, when it was taken from No. 84, was put in an upper story of No. 54 over an excluder. No. 54 was a tolerably strong colony with a laying queen. The combs were merely put in this upper story for safe keeping, the bees taking good care of the eggs and larvæ.

July 5, at 4 P. M., I took from No. 54 its queen and all its combs of brood except the five combs for experiment.

July 6, at 10.30 A. M., I examined to see if any progress had been made. The colony had now been queenless 18 hours 30 minutes, and I found queen-cells started, but not entirely where I expected.

Comb *a* had no queen-cell, neither were any started on it later. Counting that the egg hatches 3 days after it is laid, the youngest larva in comb *a* must have been at this time about 3 days 22½ hours old, or 22½ hours too old for a good queen, if the scientists are right in telling us that the worker larvæ are weaned at 3 days old.

Comb *b* had two queen-cells started on it. The oldest larva in this comb must have been not more than 3 days 22½ hours old, and the youngest not less than 2 days 20½ hours old.

Comb *c* had 8 queen-cells. Two of them had hoods built over them, the rest only show-

ed the cells enlarged and an extra amount of pap. No larva in this comb could have been more than one day 18½ hours old. The youngest were probably not more than 24½ hours old.

On the other combs I found no queen-cells.

I very much regret that nothing more precise can be said about the cells on comb *b*. I can not prove positively that the two cells started on it may not have contained larvæ 3 days 22½ hours old. To make this possible, however, the queen must have commenced laying in this comb the minute it was put in hive 84, while the probability is that she did not begin laying there for some hours afterward. Moreover, the cells were started at least some little time *before* the observation was made, so something must be deducted from their age at starting, on that score. Besides, the fact that four times as many cells were started on comb *c* as on comb *b*, the larvæ in *c* being less than two days old, hardly looks as if they would *prefer* the oldest larvæ in *b* while at the same time they preferred any thing so much younger as the larvæ in *c*. But I must leave others to form their own judgment.

If the bees had asked my advice in the matter they probably would have done somewhat differently. I should have said to them, "So long as a larva is only three days old, it's all right for a queen; and as you're in a hurry for another queen you'd better start all your cells on comb *b*." But they didn't ask my advice.

July 7, 4 P. M. Three more queen-cells on comb *b*. These were started from larvæ 2 days 20½ hours old or older. No cells were started on comb *b* at any later time.

Comb *c* has 16 cells, two of them being emptied of their contents. No larva in this comb could have been more than three days old at the time of this observation.

No queen-cells on combs *d* and *e*.

July 8, 4 P. M. Comb *c* has another cell, making 15 on it (not counting the two that were emptied).

Comb *b* has its first cell, started over a larva that was less than 2 days 6 hours old.

July 10, 11.30 A. M. No additional cells on comb *c*.

Comb *d* has 3 additional cells, these having been started over larvæ less than 4 days 1½ hours old, and they might have been not more than 30 hours old.

July 11, 8 A. M. Comb *c* has 17 cells. If there is no mistake in previous observations, the two additional cells on this comb must have been built over larvæ at least 4 days 1½ hours old. That would surely be taking too old larvæ when younger were present. There is a bare possibility that these two cells were overlooked before, and were now more easily seen when sealed. But I give it just as I find it in the notes taken more than two months ago.

Comb *d* has 6 cells, the last two started over larvæ less than 4 days 22 hours old, and possibly not more than 3 days 1½ hours old.

July 12, 9 A. M. Comb *b* has 8 cells, the last two started over larvæ less than 5 days 23

hours old, and possibly not more than 3 days 22 hours old.

Comb *e* has 3 cells, the first it has had. These cells were started over larvæ less than 4 days 23 hours old, and possibly not more than 2 days 22 hours old.

July 13, 6 A. M. No additional cells on any but comb *e*, which has now 6 cells, the last three being started over larvæ less than 5 days 20 hours old, and possibly not more than 3 days 23 hours old.

This closes the testimony of the bees, no cells being started later. In some respects it is not exactly what I desired and intended the bees should give, but they are to blame for that and not I. I know very well that this is only a single case, and that the next case might be different, for "bees never do any thing invariably;" but let us see what conclusions may be reached from the testimony given.

In the first place, it certainly is *not* proven by the testimony given that bees made queenless are in such haste to rear a queen that they at once select larvæ too old for the purpose. Moreover, I have had the matter in mind throughout the season, and in every case the cells first started were over larvæ that were very small. If any one has accepted the challenge thrown out by me to prove that bees at once selected too old larvæ, I hope he will report at once.

It is certainly very clear that in this case, at least, the bees did not start all their cells within about 48 hours' time, as Bro. Hutchinson says his do. The first cells were started *before* July 6, 10.30 A. M. The last cells were started *after* July 12, 9 A. M. From that it is easily seen that the time from the first to the last cells started was 6 days lacking 1½ hours. It was that much at least, and it may have been more. Henry Alley's experience agrees in this.

While the bees at first select larvæ sufficiently young for good queens, they afterward use some that are too old, continuing to start cells when larvæ of proper age are no longer present. Editor Hutchinson says his bees build cells that he calls fool-cells, because they are so insignificant and poor, and he does not know how to account for them. If he will observe with sufficient care, I think he will find that they are nothing more nor less than cells started over too old larvæ, probably after larvæ of proper age were no longer present.

I must not evade the observation that, something more than 5½ days after the removal of the queen, the bees started cells over too old larvæ when younger larvæ were present. I might say that sometimes bees hold eggs without hatching for more than three days (Dzierzon says two weeks), but I will not press that.

Until some one brings forward some proof to the contrary, I feel safe in saying that when bees are made queenless they are *not* in such haste to rear a new queen that they select too old larvæ, and that there is no error in selection during the first five days of queenlessness. If the combs with the cells be taken within the first five days, and put in the upper story of a colony having a laying queen, there will be no too old larvæ in the case. If left with

the queenless bees till larvæ of proper age are no longer present, they will build cells over too old larvæ — what Bro. Hutchinson calls "fool-cells."

Marengo, Ill., Sept. 29.

[This discussion started originally from my saying, or from some one else saying, that Doolittle-reared queens were to be preferred, because, if the bees were left to themselves, they would take larvæ too old; and hence queens reared by nature's method would not average as well as those reared by the Doolittle plan. While I still believe the statement is correct, yet the main prop to support it has been knocked out.

I am always open to conviction; and when any one produces evidence of this kind right from the hive I can not see it is any weakness or lowering of dignity to acknowledge my error. It appears, then, that, if bees have a choice between old and young larvæ, they will select, not those which are three days old, as is generally supposed, but those which are just hatched out, or somewhere about 24 hours old. By the Doolittle method it has been our custom generally to select just-hatched larvæ; and in so doing we have been in exact accord with nature; for the bees seem to say, if their preference is any gauge, that the one-day lim- it is the best.

I have read over the experiments very carefully, and if the doctor conducted them exactly as he says (and we have no reason for doubting his statement), then he has a pretty strong clincher on his opponents. Until I received this communication I was inclined to believe he was worsted in the argument; but, thanks to his persistency (a quality that seems to be very marked in his make-up), he has not only proved himself right, but has given queen-breeders a valuable pointer as to the proper age of larvæ to be preferred for queen-rearing.

But I said that I still believe that the bees left to themselves would not rear for the queen-breeder as good queens as when reared by the Doolittle method. By the latter a decided preference is given by Doolittle and his followers for the rearing of cells under the swarming or supersedure impulse. Under such circumstances the cells are more lavishly supplied with the royal food than queens reared from the cells made by the bees.

Referring to Mr. Hutchinson's statement that bees build most of their cells within 48 hours' time, my experience says there is a great difference in bees. Holy Lands and Syrians will start 25 to 30 cells within a few hours; and after once being started they seem disinclined to start other cells on succeeding days. Black bees will do most of their cell-starting within 48 hours, and Italians and hybrids, especially the former, will extend the period almost up to the limit of available larvæ that can be *possibly* used for the rearing of queens.

There will be very marked exceptions to the statement above; but when I was doing all the queen-rearing myself I was impressed over and over with the general truth of it.—ED.]



DR. C. C. MILLER ANSWERED.

On page 710 I see that Dr. Miller is not satisfied with my answer to his yellow-band question, as I gave it on page 648 of GLEANINGS for Sept. 15. In his footnote, p. 710, the editor says, "Perhaps he (Doolittle) will be magnanimous enough to drop the matter where it is." This was what I intended to do; but on p. 745 the doctor still insists that I answer, so I will try to do so as briefly as possible.

The doctor accuses me, p. 710, of entirely leaving the original subject. Just say to him that he did that thing himself. The original question was the purity and color of worker bees from *imported queens*—those imported from Italy, not Italians. But I *did* answer the original question, and the good doctor or any one else can find that answer on page 684, second column, beginning with the seventh line from the top, in these words: "And so it went on, I always standing out against a purity which could not be told without such a minute scrutiny, and a *color* that could not be told as yellow, only as a full sac of honey and the golden sunshine from beyond the window must turn the *maroon* into gold." I have put two of the words in this quotation in italics so that Dr. M. need not overlook them in reading this time, as he evidently did in his former readings. I think this should satisfy him without his giving me a "walloping" if he ever catches me "out alone." I wish *all* might be satisfied with a good working bee, regardless of color; but in looking over my order-book for queens during the past three years I find that three out of every five have specified "*golden bands*" in their order. This and other things tell me that the color "rage" is a "fever" which is not so easily cured as some seem to think.

EXTRACTED AND COMB HONEY AT THE SAME TIME FROM ONE HIVE.

Question.—My bees do not seem to work in the sections as well as it seems they should, and I am thinking of buying an extractor for next season so that I can extract the honey out of the brood-combs when I put on the sections, as I am led to believe that the trouble comes from too much honey in the brood-combs. What would you advise?

Answer.—Well, I would advise every beekeeper having five or more colonies to procure an extractor, for I can hardly conceive of a fully equipped apiary without an extractor; but I would not advise buying an extractor for the purpose proposed, for I believe such a fallacy. Many seem to suppose that something must be done in times of section honey to clear the brood-combs of honey to give the queen room to lay, so as to keep up the population of the colony, apparently reasoning thus: "When bees are working in sections, as a necessity, the brood-combs must be crowd-

ed with honey;" while the truth is that, when the bees are at work nicely in the sections, with a proper hive, there is scarcely a pound of honey in the brood-combs. I say with a "proper hive," or brood-chamber of a proper size. In this there is a great secret of success. Quinby said, in his "Mysteries of Bee-keeping Explained," that 2000 cubic inches was the right size for the brood-chamber, and told us that there is an advantage in feeding inferior honey in the spring so as to have the space in the brood-chamber, not occupied by the queen, filled with this poor honey, thus necessitating the putting of the nice white-clover honey in the boxes. This is one way of arriving at the same object that we do with a brood-chamber of about three-fourths the size of that recommended by Mr. Quinby. By thus feeding he gave the bees no place to put their honey except in the boxes, thereby losing the use of this inferior honey for half a year, besides having the boxes separated from the brood by some distance of sealed stores for the bees to pass over, which was, of course, a detriment; yet he secured much more honey in his boxes than he would otherwise. My plan to accomplish this object has been to have the hive or brood-chamber of a size that an average queen will keep filled with brood to the exclusion of honey, thus keeping the section boxes close to the brood; and if any feeding is to be done, do it in the fall. This is not all talk, as many of our most advanced apiarists can testify. If any one will try it he will find that the queen will keep the combs in a hive of 1500 cubic inches filled with brood; and if any honey is to be had from the fields, the bees will put it in the sections, as there is nowhere else to store it. This is one of the secrets of securing a good yield of comb honey each year, whenever the flowers secrete nectar.

Now, suppose Quinby had, instead of feeding, extracted the honey from the brood-combs every week or so, as some have thought might be necessary if we would be successful, how much honey would he have obtained in his boxes? Probably not a pound. Bees will not enter the surplus apartment to work so long as there are plenty of empty combs close by the brood to store in. Again, you may take a hive of 1500 cubic inches, and fill it with frames of sealed honey and put on the sections. Next have a strong swarm with a good prolific queen in it, and in two weeks' time you will have nearly all of said honey in your sections.

Once more, if you allow a first swarm to issue from any hive and keep back all after-swarms, by the time the young queen becomes fertile every available cell in the brood-chamber will be filled with honey, when a good yield is on, and still no start be made in the sections; but just as soon as she commences to lay, the bees will go to work in the sections; and in twenty days, if we examine them, we shall find scarcely a cell of honey in the brood-combs, and as nice a lot of brood as was ever seen.

Now, we will suppose that, just as this queen was fertilized, we had extracted all the honey; we probably should not have obtained a single

section of honey unless from fall flowers, as the bees would have gone to storing in the empty cells before the queen had filled many with eggs; and, having plenty of room for the present, in the brood-combs, and not entering the sections when they should, they would have restricted the room of the queen, which would result in no honey in the sections, combs crowded with honey, and a weak colony for winter—at least this has been my experience. Therefore, if you want a large yield of section honey, keep prolific queens and let the brood-combs alone, so far as the honey in them is concerned, after the sections are placed on the hive.



[Our artist, R. V. Murray, of Cleveland, has been watching the discussion between Doo-

little and Dr. Miller on the question of the color of queen-bees. Murray, noticing one of Dr. M.'s Straws in which the doctor said of Doolittle, "Wait till I catch him out after dark," sees in his mind's eye the whole performance. It appears from the first act that Doolittle is to make the doctor a visit. The doctor, on receiving this information, well—the artist tells the rest of the story himself.—ED.]



POLLEN; HOW GATHERED.

While preparing a lecture on the honey-bee a short time ago I turned up your article in the A B C book on "pollen," and it occurred to me that the article might be somewhat improved by ascribing to the moisture oozing from the abdomen of the bee credit for the part it plays in preparing some kinds of pollen and especially substitutes for pollen, to adhere to the pollen-baskets. One might infer from your article (top of second column, page 214, 62d thousand), that the pollen is moistened only by the moisture applied with the tongue; but after close observation I am convinced that the moisture procured and applied to the pollen as the bee passes its legs over and under its abdomen plays a more important part than it gets credit for.

(REV.) H. A. DICKSON.

Ste. Anastasia Sta., P. Q.

[You may be right. The movement of the bee's legs, as it wipes the pollen into its basket, is so deft—so sleight-of-hand like—that it is very difficult to follow just what is done. Perhaps some of our readers may be able to throw some light on the matter.—ED.]

IDEAL SECTIONS; $4\frac{1}{4} \times 5 \times 1\frac{3}{8}$ PREFERRED.

I used a number of your Ideal supers with tall plain sections this summer. The fence separators please me, though I think there is more value in the cleats than in the free communication given by the slats of the fences.

I shall not use the $3\frac{3}{8} \times 5$ sections next year, as they run much too light, especially in a poor honey-flow. I expect to use a section $4\frac{1}{4} \times 5 \times 1\frac{3}{8}$, which, when placed beside a square section, is at no disadvantage because of its narrow width, as is the $3\frac{3}{8} \times 5$ section.

The super springs are the best things that I ever used to hold the sections tightly together. The tin supports on which the slats rest are much too thin. They sag, leaving too small a space between brood-frames and super-slats.

Your sections $3\frac{3}{8} \times 5 \times 1\frac{1}{2}$ are made too thin. The wood should be $\frac{1}{8}$ inch thick, then the sections will always come square against the end-cleats of the fences. I was much troubled with them, as they often slipped inside the end-cleats of the fence. I can not understand why some people report larger crops of

honey by using tall plain sections and fences. My experience this summer convinces me that I can secure just as large crops of honey by the use of the square sections and old-style separators.

I ordered a few pounds of your foundation, 18 feet to the pound, of your Chicago house. It is not torn down by the bees, except at the close of the honey-flow, when it seems to fall down more frequently than does the foundation 15 ft. to the lb., even though fastened by the Daisy fastener.

When making Doolittle cell-cups, stick them to a piece of separator about $\frac{1}{2}$ or $\frac{3}{4}$ of an inch square, then stick them to the slat. Then when your cells are ripe you can pry off this piece of separator and the queen-cell with it, with no chance to damage the cell. Then this wooden cell base can be forced into the midrib of the comb, where it will remain firmly attached.

E. F. ATWATER.

Yankton, S. Dak., Oct. 23.

[There is considerable difference of opinion. Some prefer short-weight sections, and others will not have them under any consideration. For the former class the Ideal does not quite fill the bill. On the other hand, the $4 \times 5 \times 1\frac{3}{8}$ or $4\frac{1}{4} \times 5 \times 1\frac{1}{4}$, running as they do nearer a pound, give better satisfaction. There has been quite a tendency toward the $4\frac{1}{4} \times 5$, because it can be used in the old-style supers by simply adding a rim to increase its depth.

With regard to the thickness of the section-blanks themselves, we are now making them a full $\frac{1}{8}$ inch thick. Indeed, our product for 1900 will all be of that kind.

We put out a few pounds of the 18-to-foot foundation, but we have been afraid to catalog it for fear it might not be satisfactory. We have received favorable and unfavorable reports, but as yet we do not feel like pushing it until we know that there is a certain and real demand for such light-weight goods. In the hands of expert and skillful bee-keepers the 18-foot article will give good satisfaction, and reduce the midrib to a point that will satisfy the most exacting of connoisseurs of good comb honey.—ED.]

DANZENBAKER'S PRIZE HONEY.

Mr. Root.—Mr. G. W. Bell, of Bell's Landing, Pa., brought the best 20 $4 \times 5 \times 1\frac{3}{8}$ plain sections of comb honey to the Philadelphia meeting, and was awarded the highest prize—50 cts. each—\$10 00. Mr. E. J. Haight received the second prize, 25 cts. each, for the next best 20 sections—\$5 00.

Committee: W. Z. Hutchinson, Flint, Mich.; Wm. A. Selser, 10 Vine St., Philadelphia.

F. DANZENBAKER.

Washington, D. C., Oct. 30.

IN FAVOR OF THE SHORTENED SPELLING.

With pleasure I note that GLEANINGS grows better and better. Kindly register me as favoring the reforms of spelling as mentioned in a recent issue. The commonwealth will eagerly assimilate the delicate morsel as mentioned, and profit thereby.

E. F. NALL.

Brownington, Mo.

THE A. I. ROOT CO.'S MANUFACTURING PLANT
AS SEEN THROUGH THE CAMERA.

BY E. R. ROOT.

Many of our readers have often expressed a wish to visit the Home of the Honey-bees; but owing to the great distances that pleasure has been denied them. Others who have called here have expressed surprise at the size of our plant. "Why," said one, the other day, "the Home of the Honey-bees is a good many times larger than I have been led to believe from the illustrations." And this opinion has been expressed by a great many who have come here. The fact of the matter is, the average picture on letter-headings, showing manufacturing plants, is usually so enormously exaggerated out of all proportion, that, when one does see a picture that tells the exact truth, he thinks it is a lie just the same.

To give our many friends a chance to see our place, without spending a good many dollars in railroad fare, we present here a series of *actual photographs* in half-tone, showing our plant from different points of view just as it is in reality. W. Z. Hutchinson has said that the Root Co.'s establishment is a good deal bigger *inside* than from what appears from the *outside*. However that may be, we can show the exterior appearance better than the interior.

The first one of the series is a bird's-eye view drawn by a local artist, Mr. T. D. Brown. This, from the point of view from which it is taken, is a very fair and accurate representation. It is the only one in the series that is not a photograph, for the reason that no camera could be elevated to a point that would take in this general view.

Now suppose we get off our imaginary perch where we are getting our birdseye, go around to the rear of the manufacturing plant, and finally clamber on to the top of the dwelling of A. I. Root. Having arrived here we get a view overlooking the apiary, as is shown in plate 2. This is not the work of any artist, but is simply a good fair photo showing the buildings just as they are, from the west side. The other buildings—warehouse, lumber-sheds, lumber, etc., stand at the right, and are out of view; but turning the leaves we find them in their proper position. Photo No. 3, looking from the southeast, showing the wood-working shop in the left foreground, is taken from a planing-mill just opposite. The new brick-work on the left shows the addition that was put on last fall, and is 20×55, three story and a basement. On top of the roof of the wood-working building as a whole, are shown the dust-separators by which the fine dust in making sections is separated from the excess of air, and then blown over to the large separator shown on the top of the boiler-house, just the other side of the Big 4 freight-car loaded with lumber for the Root Co.

The first floor of the annex contains our \$1000 double-surface planer, the same directly connected to a 60-horse power electric motor, for it requires from 25 to 50 horse power to run the big machine.

Plate No. 4 shows a view taken from the large warehouse, and represents the southern aspect of the main buildings—all except the one on which the photographer stands. The lumber-shed shown in the foreground will hold a million feet of basswood lumber—enough, in fact, to make up an aggregate of 20 million sections, providing all the lumber was good enough to make sections. This lumber-shed is covered over, sheeted on its sides with corrugated iron, and is designed to keep the lumber, when cured, just right and in fit condition to work nice and dry.

Just beyond this structure is the annex, the main wood-working-shop, and beyond that is the boiler-room, brick stack, and the other buildings.

We will now get off the warehouse alongside of the Northern Ohio Railroad, running east and west, grab up the camera and belongings, and clamber up on top of the new annex just off from the main wood-working buildings. We poise the camera, and finally have the view shown in plate 5, taking in the roof of the lumber-shed and the warehouse, as well as a part of the lumber-yards and switch-tracks. In this yard, not all of which is shown here, there is represented something like \$40,000 worth of lumber that was bought six months or a year ahead.

Having taken a general view of the plant as shown from the outside, we will now take a peep at the electric-power plant as shown in plate 6. At the left is the dynamo, 100 horse power, that carries the power by means of the subtle fluid, over the large cables shown at the left of the picture, over to the annex. The small wires above the switch-board run the small motors scattered over various portions of the plant. The little dynamo at the right furnishes electric light as well as power when the big machine is shut down.

The last plate shows a peep into the machine-shop where all our machines are built for section-making. On the erecting floors of this shop may now be seen three or four automatic machines that are in process of building—one for sanding sections, another for dovetailing, V-grooving, and scoring out the bee-ways of sections. There are two more machines for automatic gang-sawing, and planing the edges of the sections up into strips. Besides the new process for making comb foundation we have also a new process for making section honey-boxes, or shall have very soon.

This whole manufacturing plant represents an investment of something like \$200,000, and is capable of turning out any thing the bee-keeper may require, from a queen-cage up to a 24-frame steam-power honey-extractor. In this one plant there are made annually anywhere from 50,000 to 75,000 hives, and from 14 to 16 million sections, besides vast quantities of other stuff that go to make up the requisites for the ordinary apiary.

A good many of our requirements in machinery are of such a character that it is impossible to buy them in the market, and, as a consequence, we have to build machines for our special work.

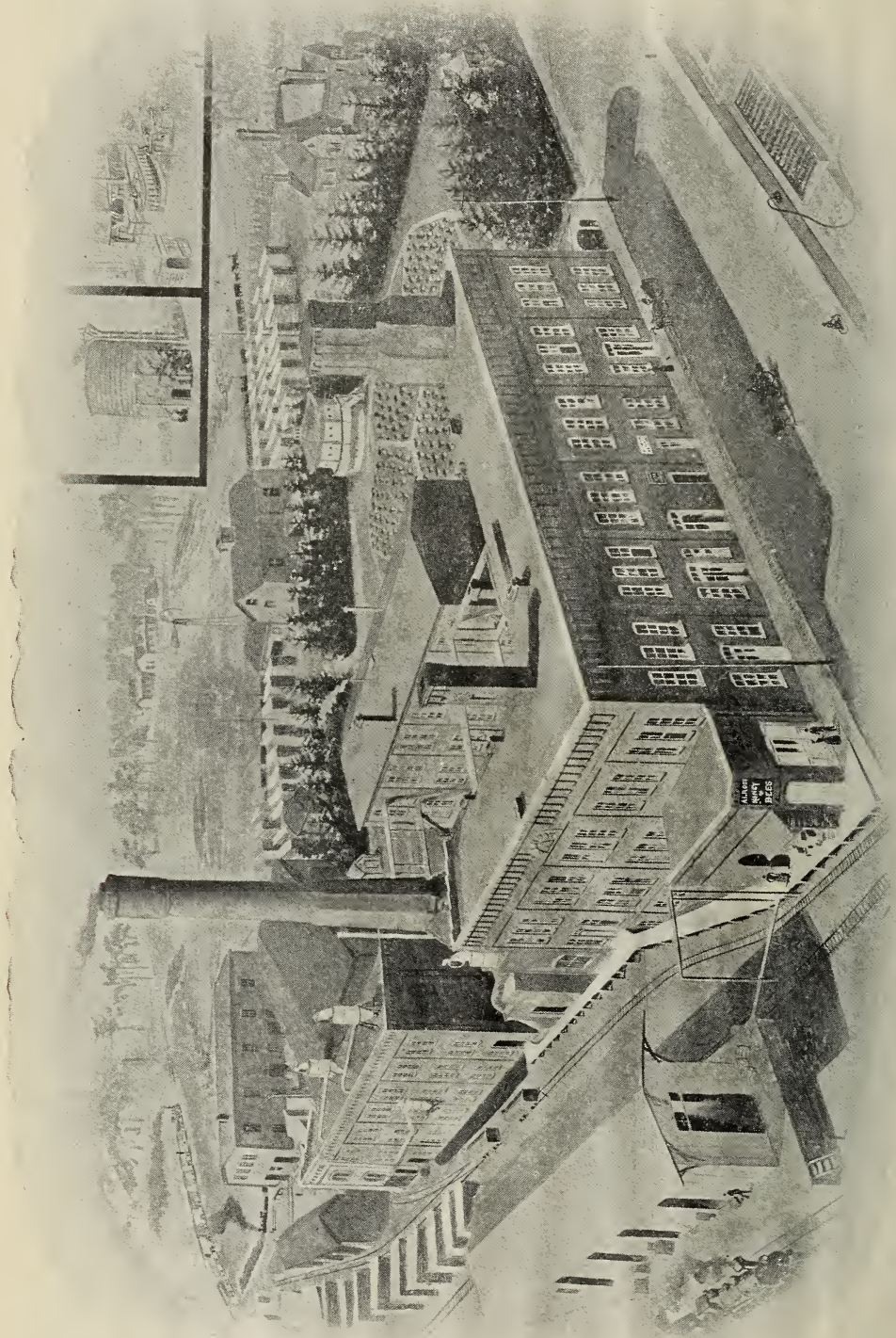


PLATE 1.—THE HOME OF THE HONEY-BEES IN 1899.

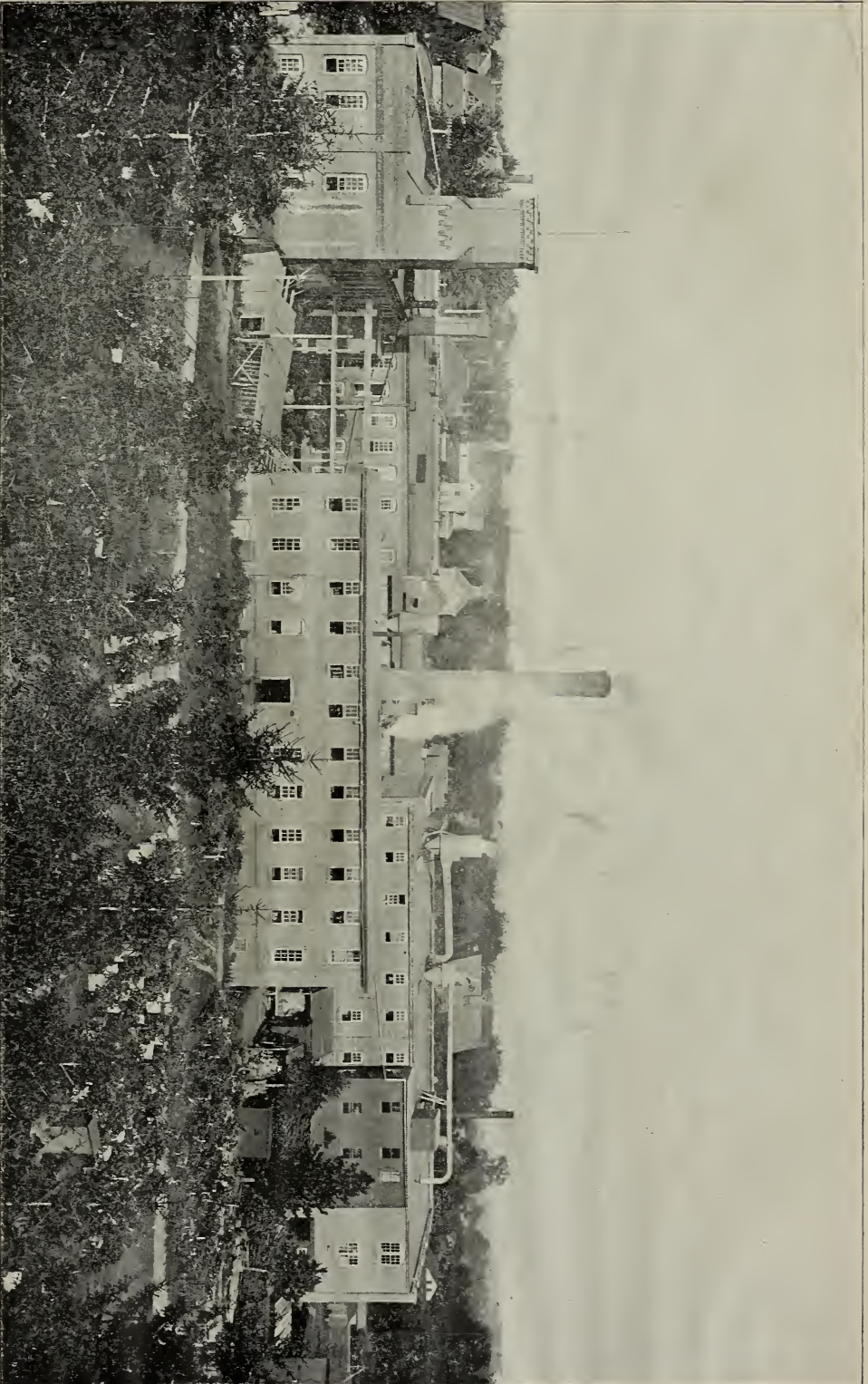


PLATE 2.—GENERAL VIEW OF THE HOME OF THE HONEY-BEES, 1899, LOOKING FROM THE WEST, AND OVERLOOKING THE APIARY.

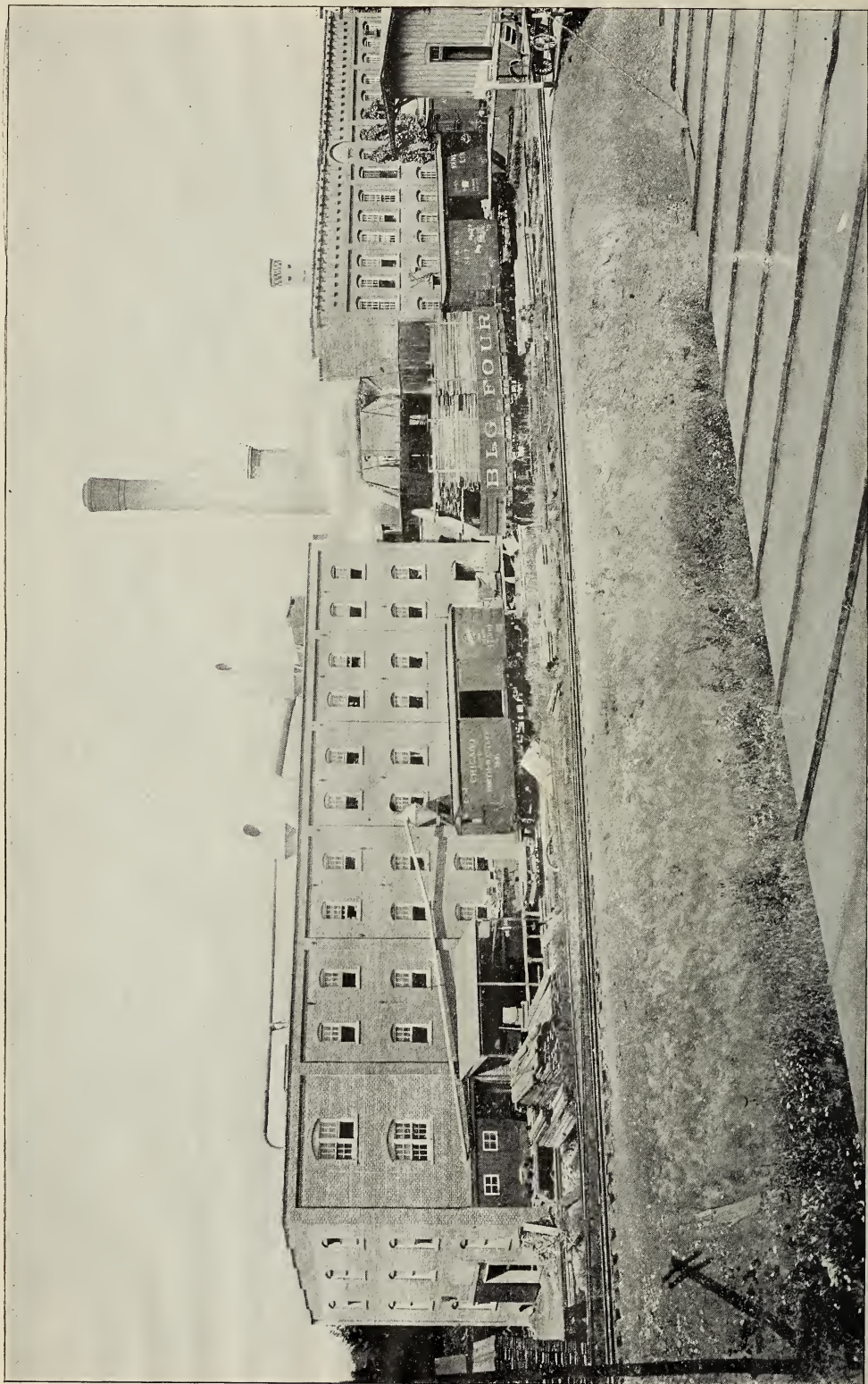


PLATE 3.—HOME OF THE HONEY-BEES IN 1899—VIEW FROM SOUTHEAST, SHOWING WOOD-WORKING SHOP IN LEFT FOREGROUND.

ALCOHOL MADE FROM SUGAR BEETS IN NEW YORK STATE. ALSO BLENDED WITH OTHER BRANDS.

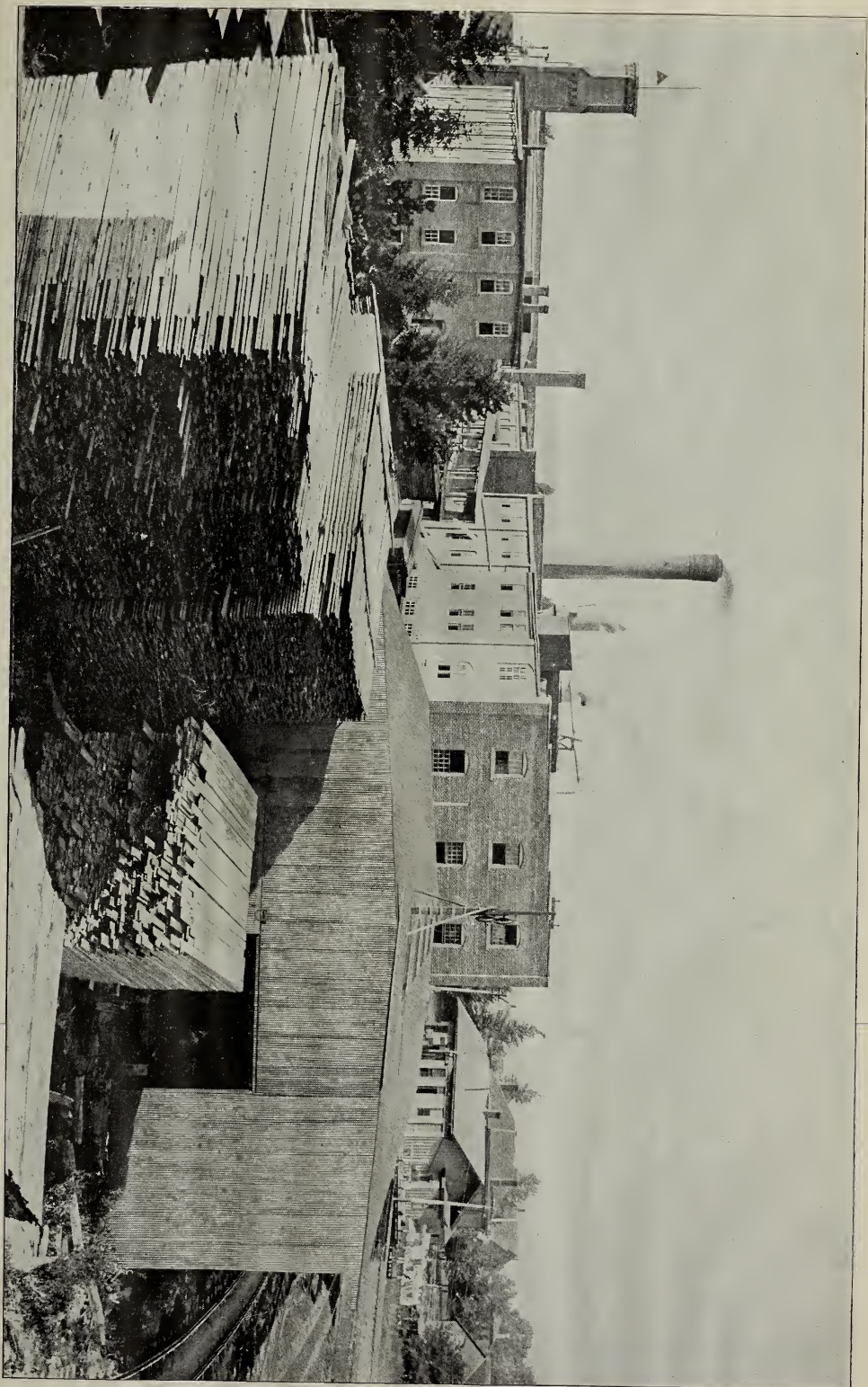


PLATE 4.—PART OF THE HOME OF THE HONEY-BEES IN 1899, LOOKING FROM THE SOUTH.

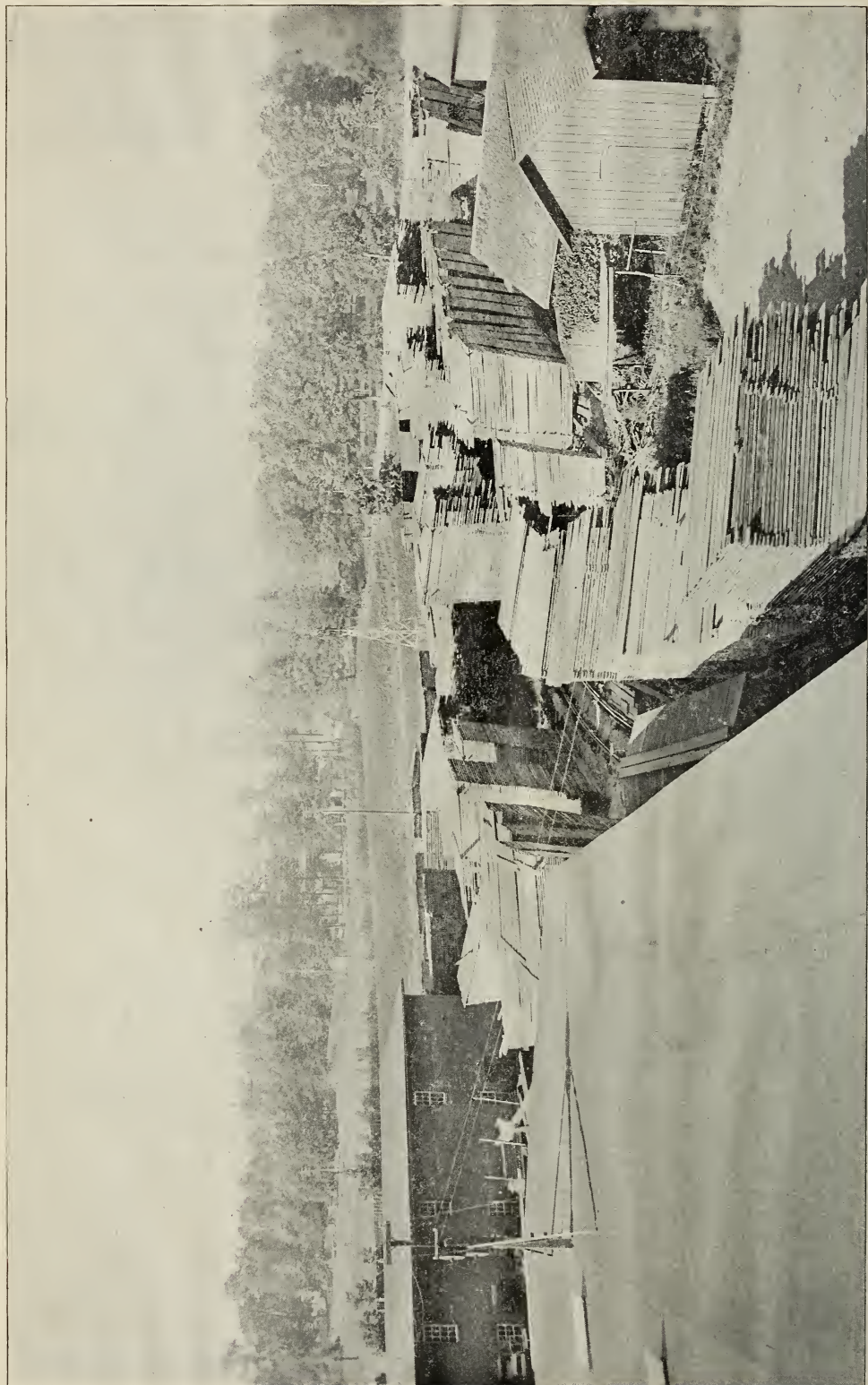


PLATE 5.—PART OF LUMBER-YARDS OF THE HOME OF THE HONEY-BEE, 1899, LOOKING FROM THE TOP OF THE LUMBER-SHED.

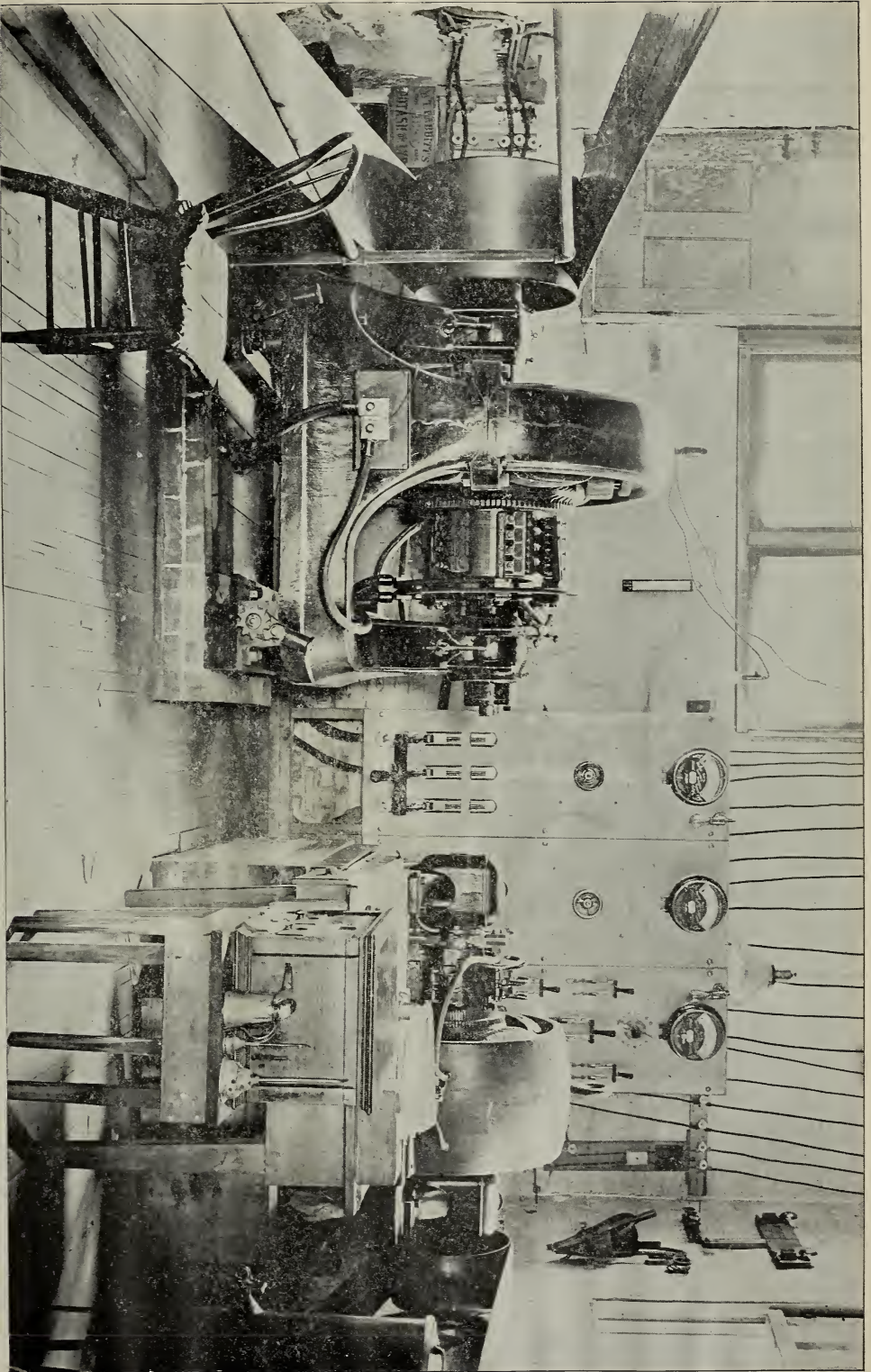


PLATE 6.—ELECTRICAL GENERATING PLANT OF THE HOME OF THE HONEY-BEES, 1899.

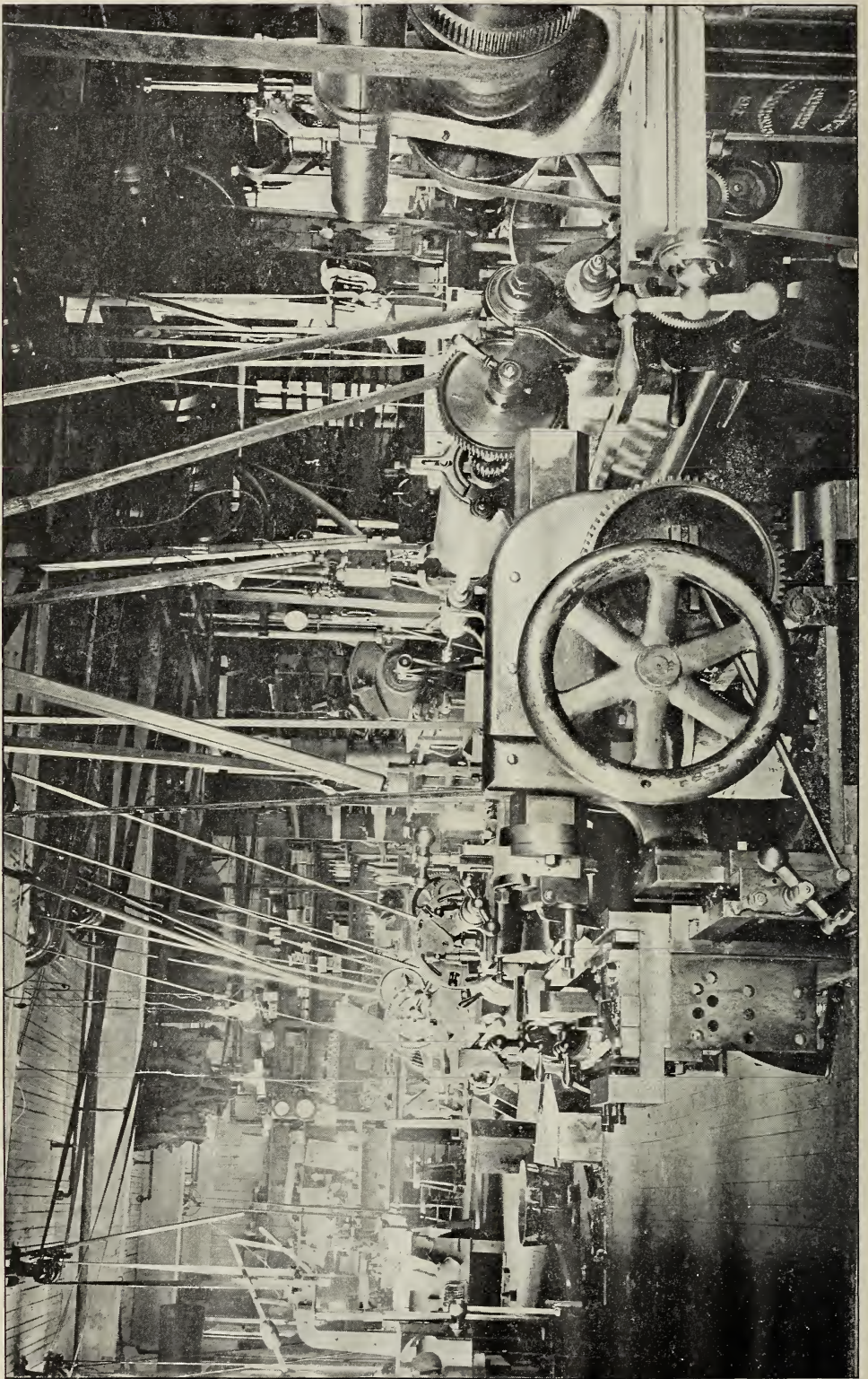


PLATE 7.—VIEW FROM ONE CORNER OF THE MACHINE-SHOP OF THE HOME OF THE HONEY-BEES.

BEE-SUPPLIES FOR 1900.

BY E. R. ROOT.

There will be very few changes made in supplies for the coming year. The styles and models put out last season and the one before gave such universal satisfaction that but very few changes seem to be required. But what

climates the latter would, under the influence of hot dry winds and sun, shrink enough to let in the water; so, accordingly, we have de-

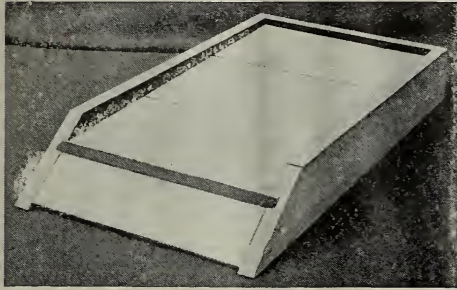


FIG. 1. COMBINED BOTTOM-BOARD AND HIVE-STAND.



FIG. 2.—DOVETAILED HIVE ON THE COMBINED BOTTOM-BOARD AND HIVE-STAND.

there are, are of such a character that they will not affect the combination of supplies already in use or those the dealer has on hand. Perhaps the most important change will be the substitution of what we call the Excelsior cover for the regular Danzenbaker. In some

vised a new cover so constructed that if there is any shrinking it will have a tendency to

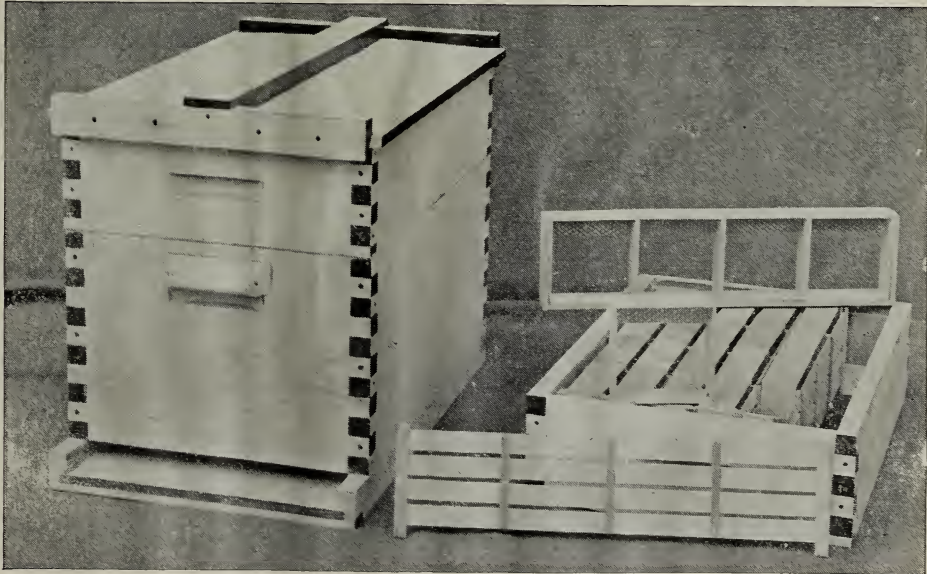
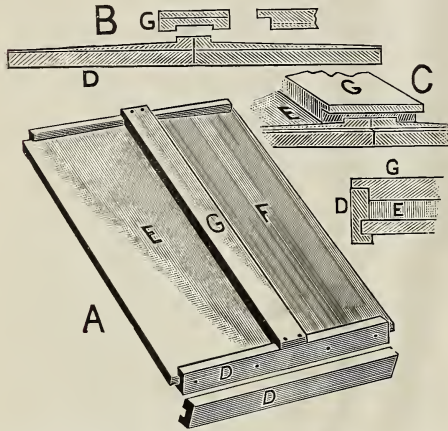


FIG. 3.—The above shows the AE64P | 8 Dovetailed hive—a 1½-story hive for comb honey, with 4¼-inch plain sections. The super at the right is opened up, showing the 4¼-inch plain sections used in plain section-holders with P fences. When both supers are included it becomes a two-story hive for comb honey, and is styled AE64P | 8. If neither super is included it is then a one-story hive, and styled AE6 | 8. When the sections and foundation starters are not included the figures are changed so that the 1½-story hive without sections and starters is styled AE52P | 8; the two-story, AE522 | 8, and the one-story, AE5 | 8. These different styles are also furnished in ten-frame size, and these are indicated by changing the last figures from 8 to 10, as AE64P | 10, etc. A stands for the Danz. bottom; E for the Excelsior cover; 6 for the brood-chamber with frames division-board, and foundation starters; 4P for the super with 4¼-inch plain sections, starters, section-holders, and fences.

close up the gaps and make the cover tighter. The cut herewith shows what we call the Excelsior. It consists of three pieces as before, and two end cleats; but the center or gable piece is channeled out on the under side to correspond with the projections on the edges of the two side pieces that come together.



The principle of this is a good deal like the old Higginville, with this addition—that the two side or gable pieces have perpendicular shoulders, and the ridge-piece is channeled so as to straddle over these two shoulders, leaving *perpendicular* edges of contact, rendering

it impossible for the water to work its way up hill and finally into the cracks between the two boards. By referring to the engraving it will be seen that the three pieces are held together by the end cleats in the usual manner.

The Danzenbaker cover answered in most portions of the United States, especially in the north. Since our trade opened up in Jamaica and Cuba it has been found necessary to construct a cover that will stand not only in the northern part of the United States but in the Southern States and in the islands of the sea.

The Danzenbaker bottom-board remains without change; but owing to the fact that there has been a demand for a combined hive-stand and bottom-board, we have found it necessary to have something like that shown in Fig. 1. This bottom-board consists of side pieces $\frac{7}{8}$ inch thick, having grooves on the inner sides to receive boards $\frac{3}{8}$ inch, said grooves being set in at an angle so that the bee-space at the extreme rear increases from $\frac{3}{8}$ to $1\frac{1}{4}$ in front. Mr. S. T. Pettit, of Belmont, Canada; Vernon Burt, our neighbor, a disciple of Pettit's, and many others, have shown the advantage of a bottom-board having a slanting floor, and here we have it; not only that, but for a slight additional cost we have a hive-stand as well. A complete hive on this stand is shown in Fig. 2.

As I have already stated, the hives—that is, the supers and internal fixtures and bodies—will be the same as those put out last year;

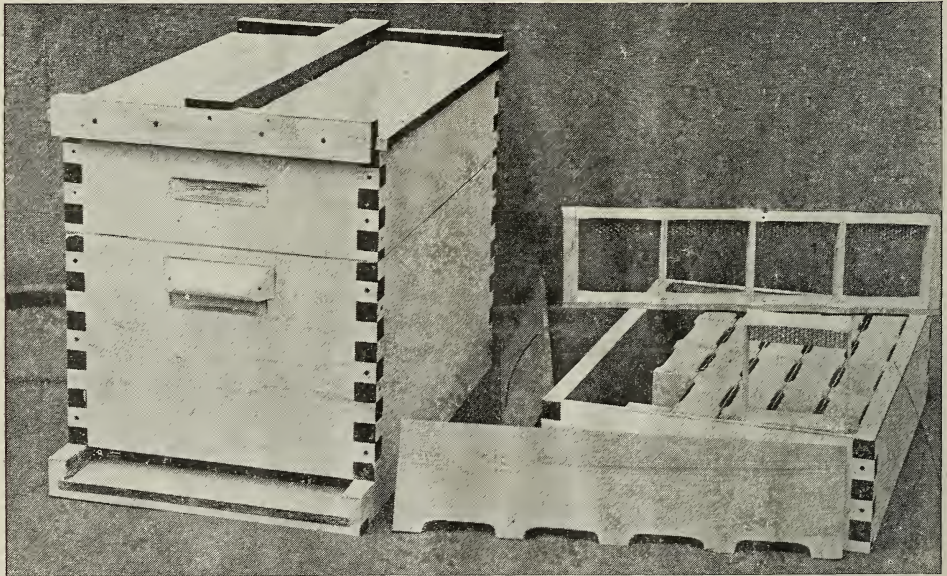


FIG. 4.—The above shows the AE64S | 8 Dovetailed hive—a 1½-story hive for comb honey, with 4¼-inch slotted sections. The super at the right is opened up, showing the 4¼-inch slotted sections used in slotted-section holders with slotted separators. You will observe that the only difference between this hive and the foregoing is in the inside fixtures of the super. This hive has the slotted 4¼-inch sections, section-holders, and separators, while the first has the plain 4¼ sections, section-holders, and fences. This difference is indicated by the change of the letter P to S in the number. This hive is also furnished in all the different combinations and sizes. With this hive will be included this year the wire spring instead of the wooden wedge back of the follower. You will see the spring attached to the follower in the above illustration. This is a decided improvement. You can also have the option of the slat separator in the S supers if preferred.

and in a majority of cases the Danzenbaker bottom board that gave such good satisfaction last season will probably be used in the various combinations, so that the only distinctive difference between the hive of 1900 and the previous year is in the cover itself.

The next three illustrations show the hive for 1900 fitted for plain sections $4\frac{1}{4}$ square for ideal sections $3\frac{7}{8} \times 5$, and for $4\frac{1}{4}$ sections with beeways. A description of each combination is under each picture.

Incidentally I may remark in passing that we have formerly used wood engravings; but from the fact that it has been almost impossible to get accurate pictorial illustrations in wood we decided this year to try half-tones, pure and simple; and the results so far have been so gratifying that we shall use them exclusively in the future, probably.

HONEY-EXTRACTORS FOR 1900.

During the last three or four years we have been making constant improvements in our honey-extractors. The reversible machines we put out four or five years ago, as nice as we then thought they were, are crude in comparison with the fine machines that are gotten

out now. All the internal work has been redesigned with a view of securing lightness as well as neat and workmanlike construction. The castings have been reduced in weight, and

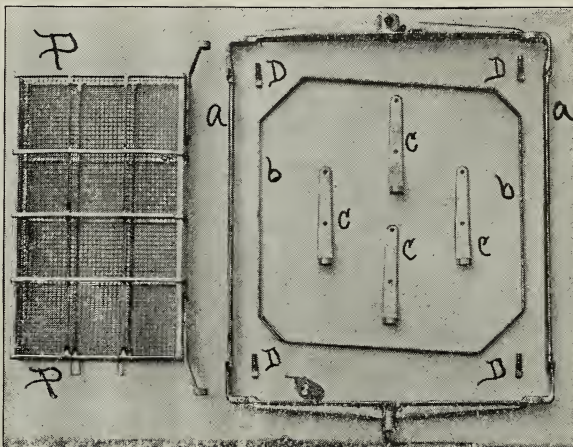


FIG. 6.—TWO-FRAME COWAN REEL FRAME.

yet, owing to the superior pattern, they are much stronger than the reels we formerly put out. Then the whole is neatly galvanized so that the internal work of the extractor will be

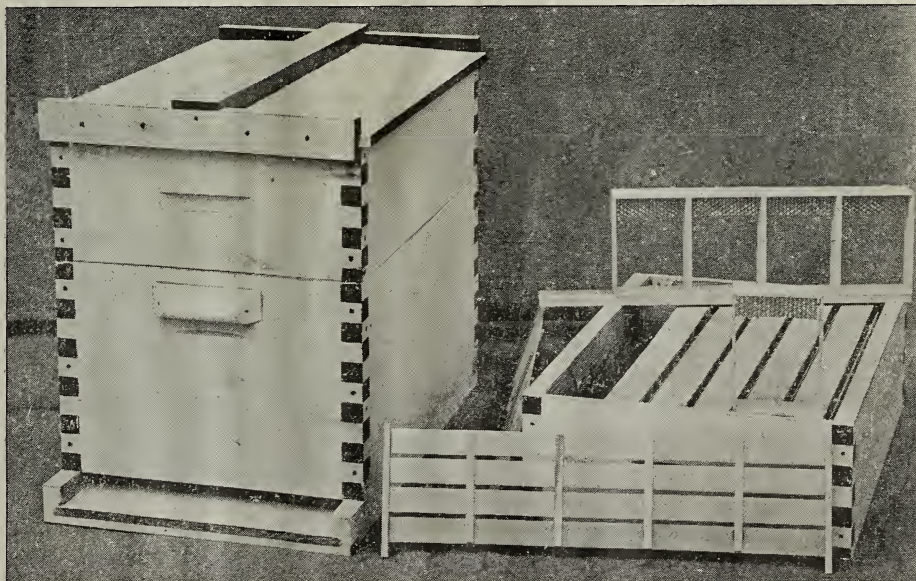


FIG. 5.—The above shows the AE64I | 8 Dovetailed hive, a $1\frac{1}{2}$ -story hive for comb honey with $3\frac{7}{8} \times 5$ plain sections (Ideal). The super at the right is opened up, showing the Ideal sections, five in a row, supported on a plain slat $\frac{3}{8}$ inch thick, in a deep super, with I fences. This super takes 30 sections in the eight-frame size, where only 24 of the $4\frac{1}{4}$ -inch sections can be placed in the regular shallow super. These sections hold the same as the $4\frac{1}{4}$ of the same width, and satisfy the demand for a tall section. In some markets, which are educated to a full-weight section, these are not as desirable as the $4 \times 5 \times 1\frac{1}{8}$ plain, which hold more nearly a pound. This size can not be used to advantage in the 8-frame super unless they are placed on slats crosswise the deep super, and short fences are used. A super so equipped is designated by the letter I, in place of I, and holds 30 $4 \times 5 \times 1\frac{1}{8}$ plain sections on I, plain slats with 11 I, fences.

entirely free from any tendency toward rust of any kind. The reels of the two-frame Cowan instead of being made of several pieces riveted together are now made *in one piece*, shown at A A, in Fig. 6. We at first thought it would be impossible to make them in one complete casting; but after we had some constructed we found they were really stronger

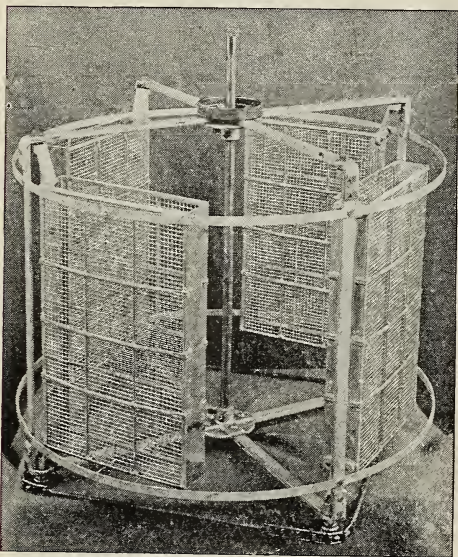


FIG. 7. REEL AND BASKET-WORK OF THE NEW FOUR-FRAME COWAN EXTRACTOR.

than the heavier made on the old plan. The comb-pockets, as at P P, in Fig. 6, have been very greatly improved in the matter of bracing, and have been subjected to the severest test. The cross-arm is also now made of one piece instead of several pieces bolted together, with the result that we secure greater strength as well as beauty of design. The cans, made of galvanized iron, are covered with a transparent blue enamel that will stand almost any amount of hard usage without tarnishing, scaling, or scratching.

The four-frame machine is constructed on the same general lines, with the exception that reversing one pocket reverses the others simultaneously. A feature of this machine, as well as of the two-frame Cowan, is, that it may be reversed while in motion. The reel-frame is constructed of channel iron and light malleable castings, and the whole is galvanized* except the steel shaft and the sprocket-wheels and chain, which are of steel and black iron. Another feature of the new machine is the use of a street-car band brake on the shaft itself—a brake that is powerful, and yet requires only a slight pressure on the end of the hand lever.

Still another feature is the use of a ball-bearing main journal. These balls are $\frac{1}{8}$ inch in

* It is only the two and four frame L. size that have galvanized fittings inside.

diameter, and can be plainly seen just below the small pinion-wheel. Being located on top of the cross-arm, there will be no danger of honey getting into and gumming them up.

The general plan of the four and six frame Cowan is the same as that of the two frame, and the little Novice extractors are constructed on the same general lines, only the basket-work is not reversible.

SUPERS.

The hive supers themselves are just the same as last year. As constructed for 1899, they were as perfect as it was possible to make them, and we do not know how they could be improved. Our 1900 catalog will offer supers for plain sections as well as for slotted sections as before. "You pay your money and take your choice."

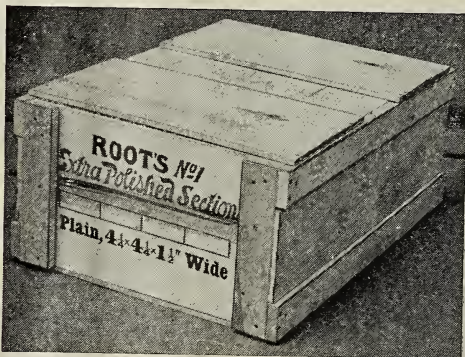


FIG. 8.—CRATE OF 500 SECTIONS.

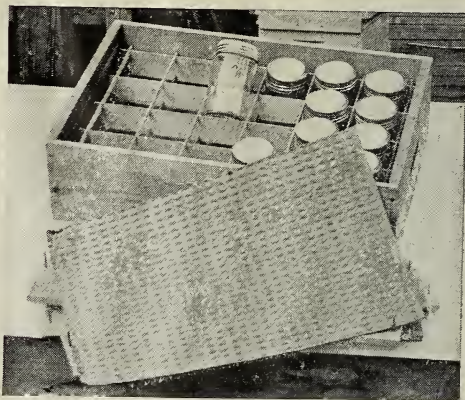


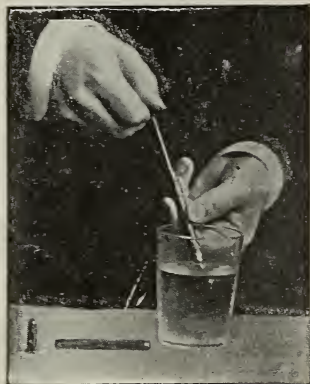
FIG. 9.—THE NO. 25 JAR.

Fig. 8 is our package for 500 sections; and instead of putting them up in lots of 1000 they will be boxed in 500's. Fig. 9 shows our box containing 24 No. 25 self-sealing jars. This is one of the most popular self-sealing packages that was ever sold, and has given universal satisfaction to the trade generally. Each jar is partitioned off by itself, and then the whole 24 are covered with a piece of heavy corrugated paper.

The "Post" Fountain Pen.

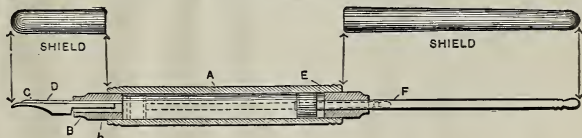
The very best in the market; regular price \$3, and not obtainable under this price anywhere.

The Six Cardinal Points Peculiar to the "Post":



Self-filling,
Self-cleaning,
Simplicity,
Durability,
Reliability,
No Leaking.

GIVEN
~~~~~  
**ABSOLUTELY**  
~~~~~  
FREE
~~~~~

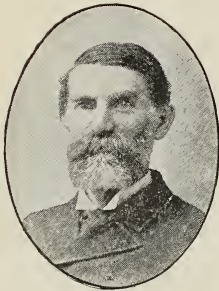
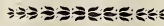


For two new subscriptions to Gleanings and your own renewal with \$3.00 ;  
or for one new subscription and your own renewal, with \$2.50 ;  
or your own subscription will be advanced 2 years, and the pen furnished for \$2.50.

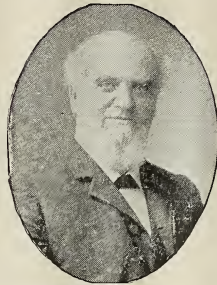
In each case all arrears, if any, must be paid in addition, the above offers being for subscriptions fully in advance only. I believe we can say truthfully, without fear of contradiction, that no fountain pen ever put upon the market ever received in so short a time so many unsolicited testimonials from such distinguished men as the POST. The above drawing shows its construction. To fill the POST, all you have to do is to dip the nib into the ink-bottle, draw out the plunger, and the pen is ready for use. Compare this with unscrewing the ordinary style, and refilling with a glass filler that you can not always find when wanted. The self-cleaning feature of the POST, as illustrated, will also commend itself. With most pens, specially prepared ink must be used or they are soon of no use, because they become so gummed up, and it is well nigh impossible to clean them. With the POST you simply dip the nib in water, draw the plunger back and forth like a syringe or squirt-gun, and in less than five seconds it is clean and free for a perfect flow of any ink that may be handy. We give only a few of the many testimonials from noted men in various callings who have written merited words of praise for this most valuable invention. We can not offer the pen for sale for less than \$3.00; but by special arrangement we are able to offer it free as a premium with GLEANINGS in any of the following combinations: All arrears, if any, must first be paid at \$1.00 a year. Then for \$3.00 we will send GLEANINGS for one year, or till Jan. 1, 1901, to two new names; for one year to yourself, and send you the pen free. For \$2.50 we will send you the pen and GLEANINGS for one year, and to one new subscriber a year; for \$2.50 we will send the pen and GLEANINGS for two years. If you have ever been disappointed with a fountain pen we assure you that you will not be with this one. See what other people say of it on the opposite page.

**THE A. I. ROOT CO., : : MEDINA, OHIO.**

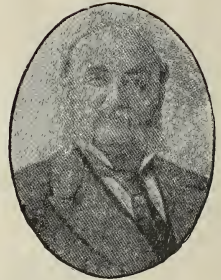
# TESTIMONIALS.



JOSIAH STRONG, D. D.



LATE HON. LEWIS MILLER.



IRA D. SANKEY.

Few men are better known in America than Dr. Strong. He has always been to the front in religious and social movements, and is the author of the well-known work "Our Country." In his own handwriting he says of the Post:

"A perfect fountain pen at last! I have been hunting for it upwards of twenty years. I have tried many, and I can assure you they have *tried* me. I have had little satisfaction even from the best, but the Post leaves nothing to be desired. I am delighted with it."

Bishop Vincent, author of "The Church at Home," etc., carries a number of fountain pens. Note what he says of the Post in comparison with the best:

"The pen is all you promised. I carry four fountain pens, and now the Post makes the fifth, and the fifth is by far the best I have—and all are good."

We thank the Governor of Colorado, the Hon. Alva Adams, for his fitting testimonial, which he sends in his own handwriting as follows:

"The Post pen is almost an ideal fountain pen. I can suggest but one improvement—enlarge the barrel so as to carry a larger supply of ink—though when exhausted it requires little more trouble to replenish than to dip an ordinary pen in an inkstand. To the traveler it is a constant joy. May you sell many; the buyer will get a good pen; the money will go to a noble cause."

The world's greatest singing evangelist, who has thrilled thousands and tens of thousands, now raises his voice in praise of the Post Fountain Pen.

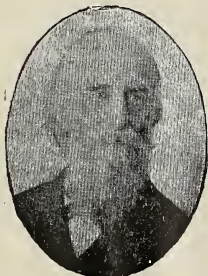
Mr. Sankey sends the following characteristic letter:

"I have used the Post pen for some time and have had great satisfaction with its use. It never fails or gets cranky. One can at least have clean hands by using the Post, whatever the heart may be."

Dr. Lyman Abbott, the editor of the "Outlook," and former pastor of the Plymouth Church, needs no introduction. We know the full value of the beautiful testimonial which he has just forwarded and which is as follows:

"A number of years ago I had a Prince fountain pen, which went out of existence, and I was sorry, for I preferred it to all others for the reason that it had no filler. Your "Post" self filling fountain pen has the advantage of the Prince, and one which it did not possess, namely, greater simplicity. To me it is a great advantage to have a fountain pen which requires no filler and can be filled at any time, and at any inkstand, without the possibility of inky fingers or blotted paper or desk.

"Enclosed please find my check for \$3.00 for the pen received, which I cordially recommend. It will be found especially convenient for travelers."



LYMAN ABBOTT, D. D.



BISHOP VINCENT.



HON. ALVA ADAMS.

# SEE THESE SPECIAL OFFERS

**15 cts.** In order to introduce GLEANINGS IN BEE CULTURE to new readers we will send it for 3 months for 15 cts. This is a special offer made for new subscribers only. Subscriptions may begin any date. **15 cts.**

## How This Offer May Benefit Present Subscribers.

so many clubs during the past few weeks, and we intend to hold these as regular subscribers by giving them such an excellent paper that they will stay with us. Any subscriber sending us clubs for NEW trial subscriptions three months for 15 cts. may receive, postage paid, premiums as follows: 1A. For one new trial subscriber for three months, with 15 cts., we will send any ONE of our 10-cent books described below. For two trial subscriptions, 2 books, and so on, one book for each subscriber.

The continued increase in circulation of GLEANINGS is due largely to present subscribers sending us as regular subscribers by giving them such an excellent paper that they will stay with us. Any subscriber sending us clubs for NEW trial subscriptions three months for 15 cts. may receive, postage paid, premiums as follows: 1A. For one new trial subscriber for three months, with 15 cts., we will send any ONE of our 10-cent books described below. For two trial subscriptions, 2 books, and so on, one book for each subscriber.

## Our List of Ten-cent Books.

### Peabody's Webster's Dictionary.

25,000 words and phrases, and illustrated with 250 engravings; cloth bound. This is the one we sold for years at 15 cts. We thought we had done something wonderful when we offered so large a dictionary for 15 cts., but we are now able to sell them for a dime. Just think of it. Postage extra 5 cts.

### Poultry for Pleasure and Profit.

Forty-eight pages and 20 illustrations. A complete little book of instructions. It treats of the best varieties for pleasure and profit; how to house and yard; how to manage; how to feed; diseases; incubation, etc. It is a 25-cent book, but by getting 1000 of them we can sell them for 10 cts. Postage 1 cent.

### The Horse and His Diseases.

By Dr. B. J. Kendall; 100 pages and many illustrations. Over 500,000 of these books have already been sold, because they are so popular and complete, for a small hand-book. It gives the symptoms of most diseases, and treatment for the same. This is another 25 cent book that we got down to a dime by taking 1000 of them. Postage 3 cts.

### Silk and the Silkworm.

This is a complete work of instruction on silk culture, by Nellie Lincoln Rossier, a practical silk-culturist; 32 pages. Silk culture is the favorite pursuit of many ladies in our land; and all who are interested will find this little work very instructive. The price printed on it is 25 cts., but we sell them for 10 cts. Postage 1 cent.

### New Testament, New Version.

434 pages, printed in nonpareil type. This should be in possession of every student of the New Testament. Even if it does not come into common use, it is helpful to know what changes in translation the New Version gives. Postage 3 cts.

### John Ploughman's Talks and Pictures.

By Charles Spurgeon; 125 pages, and a picture on almost every page. John Ploughman talks plainly, and makes a good point in every talk. It is by no means dry reading either. Postage 3 cts.

### Practical Turkey-raising.

By Fanny Field. The most experienced turkey-raiser in America. This is a regular 25-cent pamphlet of 32 pages, giving the best information on this subject. Our price is only 10 cts. By mail, 2 cts extra.

### Injurious Insects of Michigan.

By Prof. A. J. Cook. This was a most valuable work in its time, but is now rather old. It sold for 25 cts. We will close out the few we have on hand at 10 cts. each, postage 2 cts. extra, and it is a bargain at this price; contains 48 pages the size of this, and 50 illustrations of insect pests.

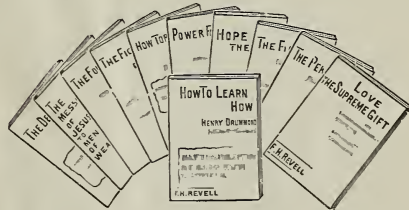
### Silo and Silage.

By A. J. Cook. This is another valuable little book which sold for 25 cts., and which we offer, to close out, at 10 cts. Postage 2 cts. extra.

## Guide to Horse-owners,

and complete Horse Doctor. By M. Young. A valuable pamphlet of 100 pages. Regular price 25 cts. Will close out at 10 cts each. By mail 2 cts. extra.

## Dozen Attractive Pamphlets.



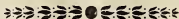
They are not only attractive, but so valuable and helpful that they should be read by every one who desires to improve his life, and live happier; and who does not have such desire? Doubtless many have read "The Greatest Thing in the World, or Love the Supreme Gift," by Drummond; and others have heard of it. "Love is the fulfilling of the law;" and the more of it we can get into our lives, the better for the world and for us.

These little books are 16mo, 32 pages, with handsome light blue parchment cover, and nice, clear print. Price 10 cts. each, or 90 cts. per dozen, any one or assorted books postpaid or with other goods. Publisher's price 20 cts. each.

1. Love, the Supreme Gift; the Greatest Thing in the World. By Prof. Henry Drummond.
2. The Perfected Life; the Greatest Need of the World. By Prof. Henry Drummond.
3. How to Learn How. Addresses by Prof. Henry Drummond. I. Dealing with Doubt. II. Preparation for Learning.
4. Power from on High; Do We Need it? What is it? Can we Get it? By Rev. B. Fay Mills.
5. The Message of Jesus to Men of Wealth. A Tract for the Times. By Rev. George Herron. Introduction by Rev. Josiah Strong, D. D.
6. The first Thing in the World; or, the Primacy of Faith. By Rev. A. J. Gordon, D. D.
7. Hope: The Last Thing in the World. By Rev. A. T. Pierson, D. D.
8. The Fight of Faith and Cost of Character. Talks to Young Men. By Rev. Theodore L. Cuyler, D. D.
9. The Four Men. The Aspect of Man from Four Standpoints. By Rev. James Stalker, D. D.
10. How to Become a Christian. Five Simple Talks. By Rev. Lyman Abbott, D. D.
11. The Dew of Thy Youth. A Message to "En-deavourers." By Rev. J. R. Miller, D. D.
12. Temptation. An Address to Young Men. By Rev. James Stalker, D. D.

# MORE SPECIAL OFFERS!

SEE CONDITIONS ON PRECEDING PAGE.



**OFFER 2A.**—For two trial subscribers for three months, and 30 cts., we will send postpaid a copy of "Merrybanks and His Neighbor."

This is the title of a little book of 210 pages and 68 illustrations, by A. I. Root. It narrates the alternate failure and success of a beginner who ultimately, through much tribulation, becomes a successful bee-man, and a power for good in Onionville. Appropriate original cuts, many of them humorous, are interspersed here and there, representing some of the droll experiences which a beginner with bees sometimes passes through. Besides bees, it talks of other rural pursuits, such as gardening, maple-sugar making, etc. Price 15 cts.

**OFFER 3A.**—For three trial subscriptions for three months, with 45 cts., we will send you postpaid one copy of any of the following:



### A B C of Carp Culture.

In paper covers, illustrated. This is a work of 70 pages, 7x10, written by Geo. Finley and A. I. Root, and the best authority on the subject of carp culture yet in print. The rearing of carp is a pleasant and profitable amusement. This book will tell you all about it. Price 25 cts.; by mail, 5 cts. extra.

### Maple Sugar and the Sugar-bush.

By A. J. Cook. Paper, 44 pages, 7x10, illustrated. This is most valuable to all who are interested in the product of our sugar maples. No one who makes maple sugar or syrup should be without it. If you don't make maple syrup you may want to know how it is made, and how to judge of a good article when you buy it. Price 30c postpaid.



### Winter Care of Horses and Cattle.

This is Terry's second book in regard to farm matters; but it is so intimately connected with his potato book that it reads almost like a sequel to it. If you have only a horse or a cow it will surely pay you to invest in the book. It has 44 pages and 4 cuts. Price 25 cts.; by mail 30 cts.

### Drummond's Addresses.

Besides the booklets on page 853 we have Prof. Drummond's addresses, six in number, with biographical sketch, making a 16mo book of 140 pages, bound in board covers, part cloth and part paper, in two shades of blue, neatly figured, making a very handsome book. Price only 30 cts. postpaid, or 25 cts. if sent with other goods.

**OFFER 4A.**—For four trial subscribers for three months, and 60 cts., we will send any one of the following books postpaid:

### Title Drainage.

By W. I. Chamberlain. This is a valuable companion to our other rural books. It embraces the experience of forty years of one of our foremost practical agriculturists, who has laid with his own hands over 15 miles of tile. Paper, 150 pages, illustrated. Price 40c, postpaid.



### Tomato Culture.

In three parts. By J. W. Dav, D. Cummins, and A. I. Root. Paper, 150 pages, illustrated. A most valuable treatise, embracing field culture, forcing under glass, and raising plants for market. Valuable to any one raising garden stuff of any kind, aside from tomatoes. Price 40c postpaid.



### The A B C of Potato Culture.



Paper, 4x5, illustrated. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been reprinted in foreign languages. The second edition was almost entirely rewritten. When we are thoroughly conversant with friend Terry's system of raising potatoes, we shall be ready to handle almost any farm crop successfully. Price 40c postpaid.

### The A B C of Strawberry Culture.

Paper, 150 pages, fully illustrated. This is Terry's latest small book, and has received some very high words of praise. Who among rural people does not have a little garden patch? If you would learn to raise in it that most luscious of all fruit, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be better for reading it.



**OFFER 5A.**—For 5 trial subscribers for three months and 75c, we will send either of the following books postpaid.

### What to Do, and How to be Happy While Doing It.

The above book, by A. I. Root, is a compilation of papers published in GLEANINGS IN BEE CULTURE in 1886, '7, and '8. It is intended to solve the problem of finding occupation for those scattered over our land out of employment. The suggestions are principally about finding employment around your own homes. The book is mainly upon market-gardening, fruit culture, poultry-raising, etc. Price in paper covers, 50c. Can furnish you a cloth-bound copy for 25c additional. If you want this be sure to specify it.

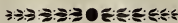
### Illustrated Pilgrim's Progress.

We have secured some of a very fine English edition of Pilgrim's Progress, illustrated with over a hundred very realistic pictures. The book is 16mo, printed on very fine paper, containing 384 pages, and the illustrations are the most striking, and true to the characters represented, that we have ever seen in the most expensive editions. The binding is cloth, richly illuminated in six colors, with title in rich gold leaf on back and side. There is no paper wasted in wide margins; in fact, there is so little trimming that some of the leaves have to be cut apart. It is a book of such quality and make-up as to bring easily \$1.50 at retail a few years ago. In this day of cheap books and low prices it is necessary to close out the last of the edition away below actual value. We offer these at 50c each postpaid.

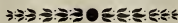
**OFFER 10A.** The Best of All. For ten trial subscribers for three months and \$1.50, we will send you postpaid a copy of our new edition A B C of Bee Culture. Already nearly one hundred of our readers have secured this book in this way. Remember you have to send us only 10 trial subscribers with \$1.50 to pay for these, and the A B C which we sell for \$1.20 will be sent you postpaid. If you fail to make up your full list of ten names you can send GLEANINGS as a present to some of your bee-keeping friends to complete your list, or you may count each name as one-tenth the price of the book and send cash for balance. If you prefer you may have GLEANINGS IN BEE CULTURE one year in place of the A B C of Bee Culture. See another page for particulars of the A B C.



# The A B C of Bee Culture.



1899 Edition. The Only Cyclopaedia on Bees. 2000 Copies sold in Eight Weeks.



This book is fully up to date, and should be in the hands of every bee-keeper, even if he has one of the older editions. In none of the previous editions have so many subjects been re-written, nor as many new subjects added, as in this edition. If you want the best and latest information on practical bee-keeping, order the A B C of Bee Culture.

After the twenty pages of introductory matter there are 340 pages devoted to a general treatment of the subject of apiculture. Following this, and continuing for eight pages, is a series of answers to as many knotty questions that are propounded by beginners. Next is a glossary of three pages, defining terms peculiar to bee-keeping. Then for eleven pages more there are reviews and comments by two eminent bee-keepers—G. M. Doolittle and Dr. C. C. Miller, on the general subject-matter contained in the body of the book. This is indeed an interesting and valuable feature. The remaining portion of the book is taken up with biographical sketches occupying 32 pages, and a picture-gallery containing pictures, with a short description, of some of the most important apiaries of the world. Last of all is the index, comprising nine pages.

The entire work contains 475 pages and nearly as many engravings, a very large part of which belong to the modern half-tone class, showing nature and art as they really are. Something like fifty new full-page half-tone engravings have been put into the new book, most of which are printed on what is known as enamel book paper—the finest there is sold.

Sixty-seven thousand copies have now been printed. About 2000 copies sold since Sept. 25. It is for sale in the United States by all dealers in bee-keepers' supplies, and the publishers of all bee-journals; also by most of the leading agricultural and horticultural papers, and large booksellers and seedsmen. Send your order where it is most convenient for you. Price \$1.20 postpaid, or by freight or express with other goods, at purchaser's expense, \$1.00. We also club it with GLEANINGS IN BEE CULTURE, one year, postpaid, for \$1.75.

The A B C of Bee Culture was received all right, and I am well satisfied with it. I should have been \$30.00 better off if I had got the book three years ago.—*John Frizzell, Harrison, Mich.*

We are glad to see what a large space you give to ideas expressed by us, and we thank you for this.—*C. P. Dadant, Hamilton, Ill., Oct. 14, 1899.*

The A B C book is received, and I am much pleased with it. This is certainly a fine book, and every bee-keeper should have a copy.—*Mrs. M. L. Williams, Nimrod, Minn.*

I have owned several editions of the A B C of Bee Culture, and must have this too. I prize also GLEANINGS for the wholesome moral influences in connection with the fascinating art of bee-keeping.—*John S. Adams, 1125 Bluff St., Waterloo, Ia.*

We have received a copy of the new edition of A B C of Bee Culture, by A. I. Root, and just revised by Ernest R. Root. It is indeed a fine work, and every bee-keeper should own one, and read thoroughly.—*Geo. W. York, Editor American Bee Journal, Oct. 5, 1899.*

We have just received a copy of the latest edition of the A B C of Bee Culture, published by The A. I. Root Co., Medina, Ohio. The book has been revised, having much new and useful information added. It is the most excellent encyclopedia on the subject of bees and the manufacture of bee-keepers' supplies we know of, and we heartily recommend it to any one keeping bees.—*R. B. Leahy, Editor Progressive Bee-keeper, Oct., 1899.*

We acknowledge receipt of a copy of the A B C of Bee Culture, and we would compliment you upon the handsome appearance of the book and its contents.—*Ralph W. Grout, Editor of Exporters' and Importers' Journal, New York, Oct. 18, 1899.*

We have just received a copy of the A B C of Bee Culture. This is an excellent work on the subject—clear, definite, and practical—a work that should be in the hands of every bee-keeper or intending bee-keeper. We recommend it to our readers.—*Editorial in The Canadian Bee Journal, Nov., 1899.*

This is a well-known cyclopaedia on bee culture, of which 60,000 copies have been sold in this country during the last twenty-two years. In the present issue many of the articles have been rewritten, and others so extensively revised that the book, as a whole, is practically a new work. In an appendix are presented biographies and portraits of noted bee-keepers, together with pictures of the most noted apiaries.—*The Review of Reviews, Nov., 1899.*

I must thank you for your kindness in sending me a copy of your new edition of the A B C of Bee Culture, which I have cursorily perused with great pleasure. I see there is a great deal of new matter introduced to the advantage of the book. I have sent a short notice of it for the review column in *British Bee Journal*. Your plan of revising every edition and eliminating obsolete practices and appliances is a very good one, and is the only way to keep up with the times, because a few years make such a change in bee-keeping, and those books written eight or ten years ago are quite obsolete. There are only three books that I know of that are issued on the same principle, and these are your A B C, Bertrand's *Conduite du Rucher*, and my *Guide Book*.

The foul-brood photo is an improvement on the last, as it shows a larger surface, and is more clear. In all respects this edition is an improvement on the last, and I must congratulate you.—*Thos. Wm. Cowan, Pacific Grove, Cal., Oct. 20.*

If there is any book on bee keeping of which bee-keepers have reason to be proud, it is Root's A B C of Bee Culture. I am reminded of this by the receipt of a copy of the latest edition, which is just out. There is probably no firm in the whole wide world possessing the facilities and advantages of The A. I. Root Co. for getting out a work of this kind. It has plenty of capital and a thoroughly equipped printing-office. More than this, there is an experience of more than a quarter of a century in actual, practical bee-keeping, and in publishing a thoroughly progressive, up-to-date bee-journal. More than any one else, an editor has an opportunity for being fully informed regarding the actual state of the industry which his journal represents. Thousands of letters from all parts of the country pass under his eyes each year. In order that the best possible advantage might be taken of the knowledge thus secured, The Root Co. has been to the expense of keeping the book standing in type. As often as new discoveries or changes are made, a corresponding change is made in the subject-matter of the A B C. By this method the last edition of the book is up to date. It can not be otherwise than that the edition just out is decidedly the superior of any previous editions. I might go into details, but the advertisement on the back cover of the Review has saved me that trouble. I can as thoroughly endorse that advertisement as though I had written it myself as an editorial notice. When a beginner writes and asks me what book he'd better buy, I unhesitatingly tell him, "Root's A B C of Bee Culture"—and I have a book of my own to sell.—*Editorial in Bee-keepers' Review, Oct., 1899.*



Just before going to press I have made up my mind to make an extra effort to attend the Colorado Bee-keepers' convention at Denver, Nov. 27, 28, 29.

SEND this number to your friends who may be interested in knowing about The A. I. Root Co., their manufacturing plant, and some of the things that they make.

DON'T fail to read over our very low clubbing offers on page 866. In many cases we can give you two papers for the price of one, and in others for a slight advance.

By the Honey Column in this issue it will be noticed that prices have been climbing up and that the demand is active. Don't hold your product too long, as prices may decline.

OUR new solar wax-extractors for 1900 will be modified so as to take in the Rauchfuss idea, as illustrated and described on page 769. By the way, we have recently heard that this same plan has been used in California for years.

W. J. CRAIG is the new editor of the *Canadian Bee Journal*. This paper has put on a new and tasty cover, and in other respects gives promise of more improvements. We extend to Bro. Craig our right hand of fellowship, and wish him every success.

REPORTS are coming in, showing that white clover promises well for next season, because it is found in vacant fields everywhere; and if it is not winter-killed we shall expect next summer plenty of clover; and then with the clover shall we have the honey? That remains to be seen.

WHILE our paid-up subscription-list is now running up toward the 11,000 mark, this particular issue will reach an edition of an even 30,000 copies. Those into whose hands this comes for the first time, or who are not now taking GLEANINGS, are referred to the very low liberal premium offers made on page 866.

WE expect to winter our colonies in the so-called barns out on summer stands. A chaff-hive division-board will be placed on each side, and on top another story filled with packing material. Those barn colonies are big rousing ones, and appear to me as if they ought to winter, even though they are given only a single-walled hive.

THE Chromotype Engraving Co., whose advertisement appears elsewhere, made all the half-tones for this issue. In fact, they have

done all our work in this line for the last two years. They are pioneers in this business, and seem to know how to make a good first-class printing-plate.

THE executive officers of the United States Bee-keepers' Association are already at work on the program for next meeting, to take place at Chicago. The stereopticon feature took so well at the Philadelphia meeting that there will probably be something along the same line at Chicago.

OWING to the difficulty of getting photographs and a new engraving in time we are not able to present the Danzenbaker hive for 1900 along with the other hives in this issue. This hive remains practically the same as last year, with the exception of the cover, which embodies some new features. The new Danzenbaker cover will be quite different from the one that bore his name last year.

WHILE we have taken some space in this issue to show the manufacturing plant of The A. I. Root Co., we would cheerfully show the works of any of our competitors if they will furnish us good clear photos. GLEANINGS believes in treating its competitors as fairly as it would treat its own people, and we hereby extend the courtesies of our columns to our brethren in the craft.

#### EXPERT AT LABELING HONEY.

AN interesting biographical sketch of Mr. Selser, the honey-man, appears on the front page of the *American Bee Journal*. Among other things the editor says:

The honey for the season's trade is all bottled in one month—August—it requiring 24 hands to do the work, but Mrs. Selser herself does all the labeling. Mr. S. says she can label as many bottles in a day as any three other girls, and do it better. There's a helpmeet that's worth her weight in—well, gold is too common to express it, so we'll let Mr. Selser fix her value.

It is a little risky to say something nice of another man's wife; but I will say this much: Those of us who had the honor and privilege of being entertained at Mr. Selser's home realized that his "better half" is not only a queen in a bee-keeper's home, but a royal entertainer.

#### AN OUTLET FOR FERMENTED HONEY.

CHALON FOWLS, the man who got up so many cooking-recipes, says that honey partly fermented is the very best for cooking purposes. Indeed, some bakers endeavor to get their honey into a ferment before they use it. Here is a hint for bee-keepers who may have honey on hand otherwise good but a little fermented. There is hardly a doubt that many a baking concern will take honey fermented, even in large lots.

#### THE NEW EDITION OF THE A B C OF BEE CULTURE.

FROM the fact that something like six months intervened between the new and the old, this book seems to have filled a long-felt

want. Some 2000 copies out of 5000 have already been sold. I understand that Prof. Cook is about to get out a new edition of his work. The progress of our industry is so rapid that there is an eager demand for all that is new and useful. If there is any class of people in this world who like to keep up with the times it is the bee-keepers. Box hives and straw skeps please them not. They must have the very latest.

#### PACKING FOR OUTDOOR WINTERING.

A GOOD many questions are asked by our subscribers as to what kind of packing is best for outdoor wintering. We formerly thought there was nothing equal to good dry wheat chaff. While this is perhaps the best, it is not always available. We have used with equally good results common shavings such as one can get at the planing-mill. Dry forest leaves, if enough of them are used, are also good. Sawdust and clover chaff make a packing material a little heavy, and is liable to become pretty damp in the spring, and too moist for the cluster. The best packing material is that which is loose enough so the air can pass through it, carrying with it the moisture.

#### A LIGHT YEAR FOR THE SUPPLY-DEALERS.

THE heavy losses last winter, and the almost entire failure of the honey crop in the majority of localities in the United States, will make a very light harvest for the supply manufacturers of the country next season. The winter losses on the one hand, and the inroads of foul brood, pickled brood, and other kinds of diseased brood in some localities, have discouraged many bee-keepers; and, as a consequence, they have either gone out of the business or expect to go out. Where the honey failed, of course the supplies of the previous season are still on hand. We are of the opinion here at the Home of the Honey-bees that the dealer will have to take things a little easy next season.

#### "THE PROPER PLACE FOR QUEEN-CELLS."

IN the Department of Criticism, in the *Bee-keepers' Review*, I find the following:

Dr. Miller suspects that having the cells (Doolittle cells) between two combs with young larvæ is an important point. The editor (GLEANINGS, 529) answers that it is quite important. I wish to ask why—that is, why, if the colony is strong enough to rear good queens?

If Mr. Taylor will turn back to page 510 of GLEANINGS he will see that I did not say the colonies in question were strong, but that one of them was a weak seven framer, and the cells were reared in April. Regarding the other, I did not state definitely whether the colony was strong or not; but in the fore part of the article I spoke of the fact that many of our colonies were weak from winter losses. For that reason cell-building needed a little coaxing by putting frames of unsealed larvæ on each side. The object of the larvæ is to draw on a large force of bees, and thus give the cells all the advantages of animal heat in abundance, and a plenty of nurses right on the spot to do the work. That good queens

may be reared without combs or larvæ on each side is true; but we have learned by experience (and our experience is quite extended) that we get better results from such coaxing, even with "a colony strong enough to rear good queens."

#### THE WIRE-CAGE PLAN OF INTRODUCING.

THE editor of the *Review*, referring to the method of introducing queens by caging against the side of the comb, and of Mr. Lapsley's failure to make the plan work, as reported in GLEANINGS, emphasizes particularly the point that "the comb selected should be old tough brood-comb, and filled with just-hatching brood instead of sealed honey. If a few of the cells contain unsealed honey, no harm is done—in fact, it seems to be better." There is a right and a wrong way in carrying out any good method; and I have not a doubt, in my own mind, but this, when properly carried out, is one of the most reliable known; although I think we use with equally good results the Benton cage with pasteboard tacked over the candy end, compelling the bees to eat away the pasteboard. This method is much more convenient of application, and is more likely to give better results in the hands of beginners.

#### HONEY COMMISSION MEN—HILDRETH & SEGELKEN.

AT the Philadelphia convention a good deal was said in regard to the policy of selling honey on commission. Some firms were "hailed over the coals," but I believe none of our late advertisers. One firm in particular was spoken of in the highest terms, and that was Hildreth & Segelken. Mr. Segelken, now the senior member and manager of the concern, has been connected with the honey business for the last eighteen years; and during all this time, so far as I know, he has left a good record—one of which he may well be proud. He commenced with the house of H. K. & F. B. Thurber & Co., then the largest grocery house in the country, taking the humble position of porter in their honey department. When the manager of the department left the house, the firm tendered the position to Mr. Segelken, which position he held for five or six years. He was then with F. G. Strohmeier & Co. for a year or so; and finally, thinking it was time for him to "hang out his own shingle," as he says, he became a partner in the firm of Hildreth Brothers & Segelken. Although the business was small at first, it continued to grow until the present firm of Hildreth & Segelken are among the largest handlers of honey in the world. Indeed, if I am correct they are the only commission house who make honey their principal business, and on their stationery may be seen the word "Honey" standing out in bold white letters. Mr. Segelken says he noticed in the *Review* and GLEANINGS that he is quoted as saying that the New York market finds no trouble in disposing of 60,000,000 lbs. of honey annually. While he admits that New York is the great honey market of the country, yet he says no such amount could be handled in any one

year — not by one firm nor by half a dozen. He says he may have said that 6,000,000 lbs. was the amount, and this would come nearer to the actual amount sold; but this would include only all domestic honey, not counting the large consignments of foreign honey that come through that port. All told he estimates that the New York market handles from 7,000,000 to 8,000,000 lbs. of honey annually.

It is a little risky to speak favorably of any one commission house or commission man, for, almost as sure as fate, some one, having had some unpleasant deal, will complain that he has not been treated fairly. This world of ours is a big one, and is filled with peculiar people, and I doubt if there is *any* business, to say nothing of commission men, who can please *every* one; and while I realize there are strong temptations in the commission business, yet I am proud to say we have among our honey merchants some clean honorable men, and some who probably purchase as often outright as they take honey on commission. And right here let me emphasize the fact that, when one sells for cash, he must usually expect to take a lower figure than if he lets the honey go on commission; for when the purchaser buys outright he must buy at the bottom of the market.

#### THE NEW MALADY IN NEW YORK PROBABLY NOT FOUL BROOD.

SEVERAL days ago I received samples of badly affected brood from Frank Boomhower, who has been inspector for Schoharie County. These were examined in the presence of A. I. Root, Mr. Vernon Burt, Mr. Calvert, and myself. We all agreed that this malady was not the same as the foul brood that we have had here in Ohio. The surface of the combs with the depressed and punctured cells did not have the same appearance, and the dead matter itself was only slightly ropy; in fact, it was difficult to get it to string out more than  $\frac{1}{8}$  or  $\frac{1}{4}$  of an inch, while the dead matter arising from *Bacillus alvei* (real foul brood) will draw out four or five inches. When the filament breaks, the two points will fly back to their attachments almost like the two ends of a broken rubber band. While the dead brood sent by Mr. Boomhower has somewhat the odor arising from real *Bacillus alvei*, yet there is a slight difference even in this respect, as I now remember.

It will be remembered that Dr. Howard has examined a specimen of brood that is said to have come from Mr. Boomhower's district; and he says, after microscopic examination, that it is not the same as ordinary foul brood.

Whether this new malady is more easily handled or is more serious in its nature, remains to be shown; but from all the evidence I can gather, it is not as virulent nor as destructive as real foul brood, by considerable. Some report that it disappears of itself. Mr. Boomhower, on the other hand, says it is about as bad as it can be, for colonies are dying of it all over his county, and he has found the same trouble within a radius of thirty miles of him. But Capt. J. E. Hetherington, P. H. Elwood, and Inspector West, have called it a

pickled brood, because this malady often goes away of itself.

An idea comes to me just now that may help to explain the great divergence of opinion or testimony regarding the different cures for real foul brood, and their value as specifics. For instance, C. F. Muth found that he could very readily handle the foul brood, or what he supposed to be that disease, in his locality, years ago, by spraying the combs with a solution of salicylic acid—a well-known germicide. A great many others reported that salicylic acid and phenol would not only stay the ravages but absolutely cure the disease, and wipe it out from the infected district. But we, on the other hand, with the foul brood that visited our vicinity, found that these various drugs were worse than useless, because, during the time that we were testing these various decoctions, the disease was spreading everywhere, while, if we had gone at it immediately by the starvation plan, we might have cured it at once.

Another fact is interesting to note—that the malady in York State does not yield, or at least has not in some cases yielded, to the McEvoy treatment—a plan that has come to be regarded as an entire success in handling the real foul brood. Practically the same treatment was practiced by us when we had the disease, and that, too, without a failure.

I am sure that we had the real foul brood in Medina, because Prof. Sargent, then of Cornell University, made some very careful microscopic examinations of the dead matter that we had, and he found it was the same thing that Cheshire called *Bacillus alvei*—that is, foul brood. Later on, Thos. W. Cowan, editor of the *British Bee Journal*, examined the matter of foul brood I selected from one of our combs, and he unhesitatingly pronounced it at the time to be real foul brood.

The *morale* of this thing seems to be that there are two kinds of foul brood, so called, in the United States, or at least there have been. The kind that has run through Wisconsin, Northern Ohio, and parts of Canada, is, evidently, not the same thing as that which is troubling the bee-keepers of Eastern New York. Real foul brood is about as bad as it can be; but we shall hope that the new malady, or an old one under a new name, will readily yield to the drug methods which have been said to be so effectual with what is supposed to be foul brood in some sections of our country. The very fact that the McEvoy treatment fails to effect a cure on the New York disease, in some cases, and that the affected brood has a different appearance, and is only slightly ropy, seems to indicate that it is not the foul brood so familiar to some of us.

The specimens of diseased brood that Mr. F. Boomhower sent us, above referred to, were sent by express to Frank Benton, of the Division of Entomology, Washington, D. C. I have also sent him full particulars, and hope to have a report that will show just what this malady is beyond a doubt. Dr. Howard, having already examined a specimen of the Schoharie brood, it seemed better to send these other specimens to Washington.



There is one God, and one mediator between God and men, the man Christ Jesus.—I. TIM. 2:5.

Our good pastor, Rev. Jesse Hill, recently gave us a touching little story which I wish to use with his permission, and I wish also to give some of my thoughts in connection with it. A father and his grown-up son had difficulty; and it seems to me one of the saddest sights this world can furnish is a quarrel between father and son. Just at the time when the son begins to arrive at the age of manhood, say when he is fifteen or sixteen years old, or just about the age of the boy I talked about in my last Home Paper, if both father and son are not a little careful there is likely to be trouble. It is very natural for the father to fail to take into consideration that a boy of this age is not exactly a boy, or rather, perhaps, he is not *the* boy he has been all along the past. The father will speak to a *small* boy with a tone of authority that he needs to modify a little when the boy gets to be a *large* boy. And the boy on his part is apt to feel a little annoyed if his father does not remember to pay a little respect to him because he is getting to be so nearly the father's equal. And it is quite possible that a boy of sixteen may have been out in the world, and read the books and papers, more than his father of three times his age. Perhaps the boy sees his father is not up to the times; or if the boy *imagines* the father is not up to the times, the state of affairs is still worse. When both father and son are professing Christians—when they are both reading their Bibles, and both day by day kneeling to the great Father of all, then there is little danger of trouble; because any father or son who lets God direct, will seldom have trouble, even in matters of this kind. It is true, many fathers err by being too easy with boys about sixteen years of age. You remember the old priest Eli was called to account because "his sons made themselves vile, and he restrained them not." We do not know how old these sons were, but we do know that the father was held responsible and *accountable* for their bad conduct.

Now, boys and their fathers do not always agree on what is right and what is wrong. Sometimes the father is at fault. Sometimes the son is at fault, and sometimes both are at fault. From my standpoint of view it looks to me that, although boys of sixteen many times have excellent judgment, and may also be better posted than their fathers, notwithstanding this, there are times when a boy of sixteen shows exceedingly *poor* judgment. As I look back at the time in my life when I was sixteen years old, I feel pained and surprised to think I ever had so little sense as to disagree with my father on matters where he was *entirely* right and I was *entirely* wrong. May God forgive me for not being more respectful to my father, even had it been true that I was right and he was wrong. Oh!

what would I give this minute, had I kept back just two or three little words that I uttered while angry? After I grew up I asked his forgiveness, and he freely granted it. But, even though this be true, how I *do* wish I had submitted pleasantly and good-naturedly to what my father thought was right and best!

Well, in the story the father and son had trouble. It grew from bad to worse until the father ordered the boy off from the premises; and I do not know but he told him never to show his face there again. Oh how it pains me to think of such a scene as this! The poor mother was somewhere near, I think, and, of course, she did all that a mother could do, and stood, probably, just about half way between the two angry men (or man and boy, if you choose). I can imagine that, for her sake, the boy promised to come back some time; but he said his father would have to send word or arrange for him to come before he did so. Now, why could not that poor father have had just a little grace so that he could keep still and not say any thing more to make this matter still worse; but the father foolishly, prompted by Satan, did add, "Well, sir, if you never come back till I send for you, you will never come at all—you may be sure of that." Things of this kind have happened before, and they may happen again; but if I could have my way about it there should be no such folly again while the earth stands. Let me give you some of my reasons for it. One of them was suggested by our good pastor in another one of his sermons. The thought is this:

When two men enter into a business partnership, they consider the matter and talk it over. They agree to it; and afterward, if they do not get along well, they can talk it over and dissolve. A business partnership is a man-made arrangement. When a boy and girl at the proper age decide to live together as man and wife, the arrangement is at least partly of their own making. Usually, at least, they both have something to say about the matter. This, too, is a man-made arrangement, or, if you choose, a man-and-woman-made partnership. Well, now, please consider, dear brother and sister, that the *children* born in a home stand on a different basis. God himself sent the boy into the home; and I am glad to know that the parents, as a rule, unite in thanking God for this great gift. God sends the boy to that father and mother. It is not a partnership, for the *boy*, at least, was never consulted in the matter. God placed him there. He has as much right in the home as the father or mother. That is *my* statement, however. Our pastor did not say so; and as I look at it neither the father nor mother has any more business to turn the child out of that home than the child has to turn them out. He is *part owner* of the home, and has the *best* right to it of any one, because *God* placed him there. When he grows up and becomes a man, and has a home of his own, of course he freely and voluntarily steps out; but he never steps out of his mother's love and affection. I wish I could say as much for the father. Now remember, dear parent, your old

friend A. I. Root (for whom you have much love, and in whose judgment you have much confidence), says that you have no right, legally or morally, to turn your children *out of doors*. I know there are trying circumstances. I have seen them; but, notwithstanding, your boy ought to be like your hand or your foot. No matter if it is faulty, and troubles you exceedingly, while there is life in it you do not very often think of dispensing with it; and you do not often *quarrel* with a hand or foot, no matter what happens to it. Well, this boy who sometimes tries you is a very part of yourself; and this arrangement of his being a part of yourself is a part of *God's* own making; therefore, if you two can not reconcile your differences, go to God in prayer (the God who sent the boy) and tell him your trouble, and let him guide you. This is *his* arrangement, and he certainly will pilot you safely.

Well, this boy went off. He took care of himself, and did fairly well. Of course, the mother begged and importuned the foolish father to take back his wicked, unfatherly declaration, and invite the boy to come home. But he was stubborn and dogged. Oh! why should a man add folly to folly in thinking it is manly or right in any sense of the word to keep on *year after year*, sticking to something he has said while angry? Years passed on, but the father would not relent, and the boy would not even come to see his mother without his father's invitation. But the mother fell sick. As long as she was able, she begged to see her boy once more. Finally some mutual friend wrote the boy how his mother kept begging for him to come, and suggested that, if he would see her again in this world, he had better come quickly. She was near to death. In fact, perhaps the only thing that kept her alive was the desire to see her boy, and I should not wonder if the poor mother *wish* that desire longed to bridge over the trouble that had all these long years existed between father and son. The boy came. Like the prodigal of old, somebody caught sight of him when he was afar off; but it was not the *father*, however. They told him to hasten to his mother's bedside. His father stood on one side of the dying woman while the son came up on the other. She could not speak, but she smiled on him and put out her hand. Then turning to the father, the other hand was extended toward him. Of course, he could not object, and the poor mother then, without a word, placed together the hands of both father and son, and the past was forgotten and—*forgiven*. Her mission on earth was ended. This thing that she had prayed over for years, and the thing that never was accomplished during her *life*, was brought about by her *death*. Perhaps nothing but her death could have softened the hearts of these two stubborn men. I do not know whether they were professing Christians or not; but after this they certainly *should* have been; and then it would be true to say that she gave *her life*—she *died* that they might *live*.

Now, dear friends, you have no doubt guessed already that this little story (and who shall say it is not a true story?) is a *wonderful* illus-

tration of what the dear Savior has done for a sinful world—nay, bring it home still closer—is it not exactly what he has done for you and me? When nothing but his death could soften our pride and stubborn hearts he *died* that we might live?

A very good friend of mine has, by some unaccountable means—at least unaccountable to me—got an idea in his mind that the New Testament is not to be accepted like the old one. He reads the Bible, and I have been told he has prayers in his family, and yet rejects Christ as the Son of God. I have been for a good while back planning to have a talk with him, and I think I will tell him this story. I wish to tell him that, away back in the foundation of the world, God so loved humanity that he gave his only begotten Son that whosoever believeth in him should not perish but have everlasting life. God's laws, although just and righteous, seem to be hard for sinful humanity to comprehend and live up to without help; therefore he graciously gave this Son—this only Son—to be the mediator, as in the language of our text, to *plead* with humanity; and may it not be, also, to plead with God? to stand *between* us, if you choose, and finally give his life as did that poor mother, that through *his* death *we* may have life?

And this story has suggested to me that the mothers are in one sense the mediators. If we heeded these mothers' tears and mothers' prayers as we should do, what a different world this might be!

And now, dear friends, if this little talk should lead to a better and kinder relation between any father and the young boys who are just getting to be men, it will gladden my heart to know it; and still more will it gladden my heart if this story may make plainer to any one this story of "Jesus and his love." And let me say to the boys, too, that, whenever any of them are tempted to take the name of Jesus in a careless way, and in vain, may the thoughts of that dear dying mother, and the idea that it suggests of the office and *mission* that Jesus made to this world of sin—may this thought have the effect of checking the tendency to foolish and careless profanity!



On page 550, July 15, I spoke about exploring a cave in the vicinity of Flat Rock, Seneca Co., Ohio; but my travels broke off right then and there, and I now wish to take them up again.

After my nice dinner and nap I hunted up the locality of the cave. Out in the middle of a field, or at least quite a little distance from the fence, there is a little building of rough boards. When the guide with the keys and two lanterns approached this building to unlock the door I said:

"Why, is it possible that this cave is right here on smooth, almost level, ground, without

any rocks or hills or anything to indicate any thing of the kind?"

While he was fitting the key to the lock he replied, "Well, we shall see," and we did see. Right in front of the door was an opening. It looked something like a well, and some stairs went down into this well. It was a very dry time in July, and the weather was exceedingly warm. The draft of cold air that came out of the well seemed quite refreshing. Around the edges the ground was muddy. The guide remarked there would not be any mud a little way down, and so it proved. Now, I knew just what made that wet muddy place around the entrance. In a large cavern in Missouri, during hot days the moisture from the air would be precipitated on the roof of the cavern until it trickled down and filled tubs that the women used for washing, so I was told. This water is soft, of course—in fact, it is *distilled* water. Air at, say, 70 to 80 degrees, contains a large quantity of moisture that it can not possibly hold when cooled down to about 50 or 60. Most caves are about 50—sometimes a little lower. Well, this cave at Flat Rock has only one opening, if I am correct; therefore to get ventilation a stream of warm air goes down along the highest part of the cave, and a stream of colder air runs out of the cave along the floor on the lower side. Now, as this hot air goes down it drops this moisture near the entrance along the rocks overhead. This moisture drips from the rock at the sides and overhead, so as to make it muddy. It is said this cave was discovered by a boy who went to dig out a rabbit out in the field. He chased the animal into a hole, and in digging down a little he found the rabbit away off under the rock. By digging the hole a little larger he found *he* could get in also. This was a good many years ago. Since then, curious people have at different times explored the cave further and further. I followed my guide down the stairway. Sure enough, as we got down further the ground became dryer as the air became cooler. The first stairway was, perhaps, 20 feet long. When we turned on a little landing and started to go down another stairway I uttered an exclamation of surprise. But we went down three such stairways before we came to the bottom; and then we twisted around here and there, down hill and up hill, until I lost all the points of the compass, and should have been lost in the labyrinths had I been without a guide.

At one point there is a large cavern with an arched or vaulted roof big enough to hold several hundred people; in fact, I was told that addresses have been made from the high rock, fragments of the smaller rock furnishing seats for the audience. Most of the way you can walk upright quite easily, and the path is very good; but there are some passages where none but a small person can possibly squeeze through; and I believe there is a considerable part of it that has never yet been explored. It is a limestone cavern, and remarkably dry everywhere. The guide said he had been told there was a place in one of the lowest chambers where a small boy could get down to where they found water; but as he was a rath-

er large man he had not seen it himself. This cave, like many others of this kind, was evidently produced by something giving way underneath; then the rocks tumbled down to fill this cavity. While in Missouri I noted several "drops" of this kind, where great holes were left; but in this case it seems the caving-in never extended clear to the surface of the ground, but so near to it, however, that the rabbit in its burrow "caught on" to the very highest part of the cavern.

"Why, you people around here must have to go down a tremendous way to get drinking-water. How deep is the well that I saw right beside your house as we came down?"

"My well is 180 feet deep. Some of the neighbors have had to go still deeper to get water. It is supposed that this cavern or series of caverns underdrains this whole region, for we have little or no trouble with surface water. There are no streams of any account near here. All surface water very soon gets down into these caverns and is gone."

Our older readers will remember my account of the wonderful springs at Castalia, O. Well, there is said to be an underground river in Seneca Co., and well-drillers have satisfied themselves that its course is toward the Castalia springs. In fact, I am told that a quantity of chaff, emptied into one of these caverns, in the course of a few days came up out of one of the largest of the Castalia springs, the ground being considerably higher here than at Castalia. All the sewage from round about Bellevue goes down into these caverns; and it occurs to me that in the course of time this way of doing may endanger the well water in that vicinity, and perhaps also spoil that beautiful spring away off in Castalia.

As I emerged from the cave and took my wheel again it was with a strange feeling that, when we travel over the surface of the earth, little do we know what is underneath us. At one point in clambering up and down the cave the guide said if I was not in a hurry we might hear some strange noises. So we sat down on a rock and waited awhile. Pretty soon we heard a low rumbling. It came nearer and nearer, and then began to diminish, and finally gave place to the intense silence that always seems to strike one in any of these underground caverns. He explained that this point in the cave was pretty near the top of the ground, and right under the roadway where there was considerable travel. In the middle of the day visitors may usually hear vehicles passing overhead, without waiting very long.

Toward night I brought up at Tiffin, the county-seat of Seneca Co., where, I was told, there was an electric line running to Fostoria, 12 miles. As I had ridden almost enough for one day I concluded to take the electric cars providing they would carry my wheel for me.

"Oh! yes," said my informant; "they will carry your wheel or any thing else you want carried. Why, they are so accommodating they will even carry a *hog-trough*. I know, because they carried one for me, without a bit of objection."

I found what the man said was true, and all of the employees of the road seemed glad to

get people to travel with them, and really seemed to enjoy doing any favor they could for any passenger. I wish that all electric carlines would take a hint.

There was just time enough before the car started, to get a lunch if I did so quick; but to get it I was obliged to go into a beer-saloon. There was not any other place (so people said), especially in the neighborhood of where the cars start. I wonder if there is a *providence* in obliging me to visit saloons so often. Perhaps so; for when anybody tells me I know nothing about the saloon business I can very readily prove he is mistaken. The food was well served, and money enough had been spent on the surroundings to make the place not only decent but *elegant*; but the foul talk of the customers and proprietor was—well, just about what you might expect when you go into any place where liquors are sold.

I received a very pleasant welcome from my nephew, Mr. George M. Gray, as well as from his prettily little flock of juveniles. Mr. Gray is an up-to-date fancy printer. He employs a lot of hands, both men and women; makes use of electricity, modern machinery, has his own engravers, and takes delight not only in keeping up with the times but in showing his patrons what has been accomplished in recent times in the way of ornamental printing.

At Fostoria Mr. Gray took me through an up-with-the-times flour-mill. It has the latest and most modern machinery throughout, and is large enough so they can, if necessary, make 2000 barrels of the best flour in the world in a single day. I can not take time here to describe it; but just imagine a flour-mill without dust—yes, and go still further and imagine a *mill* without dusty clothes and cap. In this new mill the machinery is all so perfectly inclosed that scarcely a particle of dust ever gets out into the room. In fact, most of the rooms look more like parlors than apartments in a grist-mill. All the various operations of cleaning the grain and making it into flour are in full sight of the miller, but it is all covered with large lights of glass. One miller or one attendant looks after a whole roomful of mills. Perhaps there are forty or fifty on one floor, all doing the same thing. Modern mill machinery is so perfect that the miller has almost nothing to do. He carried a duster in his hand, and occasionally wiped off the machinery and the large panes of glass; but the entire establishment was about as free from dust as the average parlor or sitting-room. All the handling of the grain and flour is accomplished so perfectly with automatic machinery that there does not seem to be any *hard* work about it. The wheat is cleaned from dust and impurities mostly before it goes into the mill at all. Immense elevators for storing grain are of steel so they can not get afire. A beautiful Corliss engine moves all the machinery. The *Fostoria Times* calls it "the greatest and finest winter-wheat milling-plant in the world." It is owned by The Isaac Harter Co.

We next visited a great factory built expressly for manufacturing electric or incandescent globes. I think toward one hundred men and women are employed in this institu-

tion. It is called the Fostoria Incandescent Lamp Co. We first saw the workmen (and women) making the coiled filament that gives the light. This is then attached to the wires that connect the current, which is a complicated operation. It passes on from one department to another until it is ready to be put inside of the glass globes. Then we see some fancy glasswork done, and pretty soon a large room shows us the air-pumps at work exhausting the air. This is done by means of columns of quicksilver, in a very ingenious way. Then comes a nice series of machinery for testing bulbs in order to determine the "volts" and a lot of other things I do not suppose I could *ever* understand, even if it is true that electricity has been more or less a hobby of mine all my life. There were dark-rooms and light-rooms. The bulbs are tested this way and that. There are dry batteries and storage batteries, and dynamos and motors, and tests that go into the science of optics deeper than I knew that any one had ever delved. In fact, there are so many processes and so much complicated and intricate machinery used in order to produce a really first-class electric-light bulb that it seemed to me a dollar apiece would hardly pay the cost of all these manipulations; and yet we are offered these bulbs now by the quantity at only 15 to 18 cts. apiece, and each one is warranted to burn 1000 hours. There are so many companies at work making them, that, after they have made a sale, they write to consumers, begging them to report any one that is faulty, or send back any that play out before the 1000 hours. Yes, and they also urge you to try samples of their product, free of charge. In fact, this establishment begged permission to send samples of their latest production, express charges paid. All they asked was that we would put them beside those we were then using, and see how they would compare with other makes. What an industry has grown up within a few years! And are we each and all remembering to give God the praise that our homes and our towns and cities are now so well lighted, that, even during the darkest night, we are almost forgetting there is such a thing as darkness to enable wicked men to do their deeds? And, O dear friends, let us see to it that *spiritual light* is shed abroad over our land to keep pace with the beautiful electric lights that do so much toward banishing the bad man who loves darkness rather than light because his deeds are evil.

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#### ROBBING BEE KEEPERS.

I WISH to mention a little circumstance that just occurred, omitting names for obvious reasons. A man sent a check to one of our queen-breeders for some queens. The check looked all right, and of course the queens were promptly forwarded; but when the check was presented it transpired that the sender had no money in the bank, and, in fact, was bankrupt, having made an assignment something like a year previous. After we had written the delinquent a couple of pretty sharp letters he went around among his relatives and got



the money and paid for the queens. The queen-breeder was so gratified that he promptly sent us half of the money for making the collection. I have just returned his check, however, telling him that collecting accounts for pay is not our business, and that we could not accept pay for any such work. We consider it our place, and it should be the province of every bee journal to prevent bee-keepers from being robbed; and if the party who has been helped feels grateful, let him speak a good word for the journal that helped him, and help extend its circulation. Another point: We wish to have it thoroughly understood that any person, say like Luptom or the party described above, will surely get taken in hand by the bee-journals, and thoroughly shown up, just as soon as he undertakes any such swindle. It is our business to protect bee-men, and to show up the swindling advertisements. The agricultural journals, in a like manner, should protect their readers, and so on.



NEW PRICES IN BEESWAX.

While there is not much change in the general market price of wax, yet there is a slightly upward tendency, and we offer, till further notice, 25 cts. cash, 27 cts. in trade, for average wax delivered here. We do not anticipate that prices will rule any higher than this till next spring, if at all. The upward tendency in prices of almost all commodities has not affected beeswax. The explanation for this is, no doubt, in the heavy winter losses last spring.

REVISED PRICES FOR 1900.

For the convenience of those interested in the value of bee keepers' supplies for 1900, we have brought together in the following list the new prices of all goods where it has been found necessary to change prices since the catalogs of 1899 were issued. Goods not mentioned in this list remain unchanged in price.

DOV'D-HIVE PARTS AND COMPLETE HIVES.—Page 8.

| See catalog for explanation of letters and figures. Add —8 to No., as noted below. | Nailed & painted. | EIGHT FRAME. KD in flat. |      |       |       | Weight of 10. |
|------------------------------------------------------------------------------------|-------------------|--------------------------|------|-------|-------|---------------|
|                                                                                    |                   | 1                        | 5    | 10    | 25    |               |
| AE5—8 hive.....                                                                    | 1 30              | 1 05                     | 4 50 | 8 50  | 20 00 | 190           |
| AE6—8 hive.....                                                                    | 1 40              | 1 15                     | 4 75 | 9 00  | 21 25 | 195           |
| AE52P, or S, or I—8 hive.....                                                      | 1 75              | 1 40                     | 6 25 | 11 50 | 26 25 | 260           |
| AE64P, or S, or I—8 hive.....                                                      | 2 10              | 1 65                     | 7 25 | 13 50 | 31 25 | 280           |
| AE522P, or S, or I—8 hive.....                                                     | 2 20              | 1 75                     | 8 00 | 14 50 | 32 50 | 320           |
| AE644P, or S, or I—8 hive.....                                                     | 2 80              | 2 15                     | 9 75 | 18 00 | 41 25 | 350           |
| AE55—8 hive.....                                                                   | 2 05              | 1 65                     | 7 25 | 13 50 | 31 25 | 320           |
| AE66—8 hive.....                                                                   | 2 25              | 1 85                     | 7 75 | 14 50 | 33 75 | 330           |
| AE58—8 hive.....                                                                   | 1 75              | 1 40                     | 6 25 | 11 50 | 26 25 | 270           |
| AE69—8 hive.....                                                                   | 1 95              | 1 60                     | 6 75 | 12 50 | 28 75 | 280           |
| A or B bottom or floor.....                                                        | 25                | 20                       | 80   | 1 50  | 3 50  | 40            |
| C, D, F, or G cover.....                                                           | 30                | 25                       | 1 10 | 2 00  | 4 50  | 40            |
| Empty body.....                                                                    | 45                | 35                       | 1 50 | 2 80  | 6 50  | 80            |
| 5 body.....                                                                        | 75                | 60                       | 2 75 | 5 00  | 12 00 | 130           |
| 6 body.....                                                                        | 85                | 70                       | 3 00 | 5 50  | 13 25 | 135           |
| Shallow super.....                                                                 | 25                | 17                       | 1 75 | 1 40  | 3 25  | 40            |
| 2P, or S, or I super.....                                                          | 45                | 35                       | 1 75 | 3 00  | 6 50  | 65            |
| 3P, or S, or I super.....                                                          | 60                | 45                       | 2 25 | 4 00  | 8 75  | 75            |
| 4P, or S, or I super.....                                                          | 70                | 50                       | 2 50 | 4 00  | 10 00 | 75            |
| Deep super.....                                                                    | 25                | 18                       | 80   | 1 50  | 3 50  | 50            |
| 8 super.....                                                                       | 45                | 35                       | 1 75 | 3 00  | 6 50  | 80            |
| 9 super.....                                                                       | 55                | 40                       | 2 00 | 3 50  | 7 75  | 85            |
| Hive stand.....                                                                    | 15                | 10                       | 50   | 1 00  | 2 25  | 40            |

|                                 | TEN FRAME. |      |       |       |       |     |
|---------------------------------|------------|------|-------|-------|-------|-----|
|                                 | 1          | 5    | 10    | 25    | 30    | 40  |
| AE5—10.....                     | 1 45       | 1 15 | 5 00  | 9 50  | 22 50 | 220 |
| AE6—10 hive.....                | 1 55       | 1 25 | 5 25  | 10 00 | 23 75 | 225 |
| AE52P, or S, or I—10 hive.....  | 1 95       | 1 55 | 7 00  | 13 00 | 30 00 | 300 |
| AE64P, or S, or I—10 hive.....  | 2 30       | 1 85 | 8 00  | 15 00 | 35 00 | 320 |
| AE522P, or S, or I—10 hive..... | 2 45       | 1 95 | 9 00  | 16 50 | 37 50 | 380 |
| AE644P, or S, or I—10 hive..... | 3 05       | 2 45 | 10 75 | 20 00 | 46 25 | 420 |
| AE55—10 hive.....               | 2 25       | 1 80 | 8 00  | 15 00 | 35 00 | 360 |
| AE66—10 hive.....               | 2 45       | 2 00 | 8 50  | 16 00 | 37 50 | 370 |
| AE58—10 hive.....               | 1 95       | 1 55 | 7 00  | 13 00 | 30 00 | 310 |
| AE69—10 hive.....               | 2 15       | 1 75 | 7 50  | 14 00 | 32 50 | 320 |
| A or B bottom.....              | 30         | 22   | 90    | 1 70  | 4 00  | 45  |
| C, D, F, or G cover.....        | 35         | 28   | 1 25  | 2 30  | 5 25  | 45  |
| Empty body.....                 | 50         | 40   | 1 70  | 3 00  | 7 00  | 90  |
| 5 body.....                     | 80         | 65   | 3 00  | 5 50  | 13 25 | 150 |
| 6 body.....                     | 90         | 75   | 3 25  | 6 00  | 14 50 | 155 |
| Shallow super.....              | 30         | 20   | 85    | 1 50  | 3 50  | 45  |
| 2P, or S, or I super.....       | 50         | 40   | 2 00  | 3 50  | 7 50  | 80  |
| 3P, or S, or I super.....       | 65         | 55   | 2 50  | 4 50  | 10 00 | 95  |
| 4P, or S, or I super.....       | 75         | 60   | 2 75  | 5 00  | 11 25 | 100 |
| Deep super.....                 | 30         | 21   | 90    | 1 60  | 3 75  | 50  |
| 8 super.....                    | 50         | 40   | 2 00  | 3 50  | 7 50  | 85  |
| 9 super.....                    | 60         | 50   | 2 25  | 4 00  | 8 75  | 90  |
| Hive stand.....                 | 15         | 10   | 50    | 1 00  | 2 25  | 40  |

DOVETAILED CHAFF HIVES AND PARTS.—Page 9.

| Designating letter or figure. For explanation, see catalog. | Nailed and painted. | Eight-frame. In flat. |       |       |       | Wt. lb. |
|-------------------------------------------------------------|---------------------|-----------------------|-------|-------|-------|---------|
|                                                             |                     | 1                     | 5     | 10    | 25    |         |
| YW5 hive.....                                               | 2 40                | 1 90                  | 8 75  | 16 50 | 38 25 | 360     |
| YW52P, or S, or I hive.....                                 | 2 85                | 2 25                  | 10 50 | 19 50 | 44 75 | 420     |
| YW64P, or S, or I hive.....                                 | 3 20                | 2 50                  | 11 50 | 21 50 | 49 50 | 440     |
| Y telescope cover, 7-inch.....                              | .50                 | .40                   | 1 80  | 3 40  | 7 50  | 90      |
| Y deep teles. cover, 11-inch.....                           | .80                 | .50                   | 2 30  | 4 40  | 10 00 | 110     |
| Chaff-tray.....                                             | .20                 | .15                   | .70   | 1.20  | 2.50  | 30      |
| Super-cover.....                                            | .10                 | .10                   | .50   | .90   | 2.00  | 10      |
| W chaff-hive body.....                                      | 1 30                | 1 00                  | 4 50  | 8 50  | 21 25 | 200     |
| W5 chaff-hive body with frs.....                            | 1 60                | 1 25                  | 5 75  | 11 00 | 26 25 | 330     |
| W6 same with frs. & start.....                              | 1 70                | 1 35                  | 6 00  | 11 50 | 27 50 | 335     |
| Z winter-case body.....                                     | .50                 | .35                   | 1 70  | 3 20  | 7 50  | 70      |
| YZ winter-case complete.....                                | 1 00                | .75                   | 3 50  | 6 60  | 15 00 | 160     |

| DANZENBAKER HIVES. NAME AND DESCRIPTION | Painted Nailed | KD in flat. |      |       |       | Wt. 10 |
|-----------------------------------------|----------------|-------------|------|-------|-------|--------|
|                                         |                | 1           | 5    | 10    | 25    |        |
| Danz. 5 hive.....                       | 1 40           | 1 10        | 4 75 | 9 00  | 21 25 | 200    |
| Danz. 5-2-M. hive.....                  | 2 10           | 1 70        | 7 50 | 14 00 | 32 50 | 300    |
| Danz. 6-4-M. hive.....                  | 2 50           | 2 00        | 8 50 | 16 00 | 37 50 | 330    |
| D. 5 body with frames.....              | 75             | 60          | 2 75 | 5 00  | 12 00 | 120    |
| D. 6 body, frames, starters.....        | 85             | 70          | 3 00 | 5 50  | 13 25 | 125    |
| D. 2-M. super, no sections.....         | 75             | 60          | 2 75 | 5 00  | 11 25 | 120    |
| D. 3-M. super and sections.....         | 85             | 75          | 3 25 | 6 00  | 13 75 | 130    |
| D. 4-M. sup., sect., & start.....       | 1 00           | 80          | 3 50 | 6 50  | 15 00 | 120    |
| Danz. sample hive.....                  |                | 5 00        | 9 00 | 22 50 | 210   |        |
| Danz. 3-M. sample super.....            |                | 4 25        | 8 00 | 18 50 | 150   |        |

| DANZENBAKER FRAMES.                 | In flat, per 100, per 500. |
|-------------------------------------|----------------------------|
| Danz. closed-end frames, 7½x17..... | \$2.00 \$9.00              |
| Danz. section-holders, 5½x17.....   | 1.80 8.00                  |

| BROOD-FRAMES.—Page 11. Name.      | Put up In flat. |    |      |      | Wt. of 100 |
|-----------------------------------|-----------------|----|------|------|------------|
|                                   | 100             | 10 | 100  | 500  |            |
| Hoffman frames, end-spaced.....   | 3 00            | 25 | 2 10 | 9 00 | 85 lbs.    |
| Thick-top staple-spaced frs.....  | 2 50            | 20 | 1 80 | 8 00 | 85 lbs.    |
| All-work frames.....              | 2 00            | 17 | 1 50 | 6 50 | 25 lbs.    |
| Shallow ext.-frames (5½-in.)..... | 2 00            | 17 | 1 50 | 6 50 | 22 lbs.    |

Pierced, and wire included, 10c per 100 extra.

| TINNED WIRE.—Page 11. Sizes furnished. | Price each doz. each. |       |
|----------------------------------------|-----------------------|-------|
|                                        | each doz.             | each. |
| ¾-oz. spools No. 30 tinned wire.....   | \$ 08                 | \$ 30 |
| ¼-lb. spools No. 30 tinned wire.....   | 12                    | 1 20  |
| ½-lb. spools No. 30 tinned wire.....   | 20                    | 2 10  |
| 1-lb. spools No. 30 tinned wire.....   | 30                    | 3 18  |
| 5-lb. coils No. 30 tinned wire.....    | 1 00                  |       |

| DIVISION-BOARDS.—Page 11. Chaff division-board, complete | Pr. of 1—10 |    | Wt. of 10 |
|----------------------------------------------------------|-------------|----|-----------|
|                                                          | \$          | ¢  |           |
| Chaff division-board, complete.....                      | 25          | 22 | 20 lbs.   |
| Chaff division-b'd. flat, no chaff.....                  | 13          | 10 | 13 lbs.   |
| Plain division-board, nailed.....                        | 10          | 90 | 10 lbs.   |
| Plain division-board, flat.....                          | 08          | 60 | 9 lbs.    |

| SECTIONS.—¼x4¼x1½ to 2 inches.—Page 12. | No. 1, No. 2 |           |           |           |
|-----------------------------------------|--------------|-----------|-----------|-----------|
|                                         | No. 1, \$    | No. 2, \$ | No. 1, \$ | No. 2, \$ |
| Per 100, \$ 50.....                     | \$ 40        | 1000      | \$3 50    | \$3 00    |
| Per 250, 1 00.....                      | 85           | 3000      | 9 75      | 8 25      |
| Per 500, 1 75.....                      | 1 50         | 5000      | 15 75     | 13 25     |

| DOVETAILED T SUPERS.<br>Name and Description.      | Nailed<br>each | In flat. |      |      | Wt.<br>of 10. |
|----------------------------------------------------|----------------|----------|------|------|---------------|
|                                                    |                | 1        | 5    | 10   |               |
| Dov. T supers with tins only                       | 30             | .25      | 1 25 | 2 00 | 40 lbs        |
| Dov. T super complete except sections and starters | 45             | .35      | 1 75 | 3 00 | 50 lbs        |
| Dov. T. super complete.....                        | 70             | .50      | 2 50 | 4 50 | 70 lbs        |

SECTION-HOLDERS, SEPARATORS, AND SLATS.—Page 13.

|                                                | Price of |     |        | Wt.<br>of 100 |        |
|------------------------------------------------|----------|-----|--------|---------------|--------|
|                                                | 100      | 500 | of 100 |               |        |
| Slotted section-holders, 1 1/2 x 1 1/2 outside | 5        | 6   | 00     | 35 lbs        |        |
| Slotted section-slats, 1/4 x 1 1/2 x 1 1/2     | 7        | 5   | 00     | 15 lbs        |        |
| Plain section-holders, 1 1/2 x 1 1/2 outside   | 1        | 2   | 05     | 20 lbs        |        |
| Ideal plain slats, 3/8 x 1 1/2 x 1 1/2         | 7        | 5   | 00     | 18 lbs        |        |
| L plain slats, 3/8 x 1 1/2 x 1 1/2             | 5        | 0   | 20     | 10 lbs        |        |
| Slotted sawed separators, 4 1/2 x 1 1/2        | 8        | 0   | 50     | 8 lbs         |        |
| Plain sawed separators 3 3/4 x 1 1/2 to 20     | 5        | 0   | 25     | 6 lbs         |        |
| Slat separators.....                           | 1        | 00  | 4      | 50            | 10 lbs |
| I, P, S, T, and L fences                       | 1        | 35  | 6      | 00            | 11 lbs |
| M fences.....                                  | 1        | 50  | 7      | 00            | 13 lbs |

PRICE LIST OF NOVICE EXTRACTORS.—Page 16.

In ordering odd-sized extractors, give outside dimensions of frame and length of top-bar.

- No. 4.—For all frames 13 inches or less in depth and 18 3/4 inches or less in width (wt. 50 lbs.).....\$8 00
- No. 5.—For L, or Simp. frame standing on end, or any other frame not over 9 1/2 in. deep, or 18 1/2 long, top-bar 20 in. (wt. 45 lbs.)..... 8 00
- No. 7.—For frames deeper than the L, but not over 11 3/4 in. deep (wt. 60 lbs.)..... 9 00
- No. 10.—For still deeper frames not over 13 3/4 in. deep, or 18 1/2 wide (wt. 60 lbs.)..... 9 00
- Any above numbers with milk-can handles, 25c extra.
- “ “ “ “ 60 lbs. space below, 50c
- “ “ “ “ 100 “ “ “ \$1.00 “

COWAN EXTRACTORS.—Page 17.

- No. 15.—2-frame Cowan for L. frames; compartments, 9 5/8 in.; diam. of can, 20 in. (wt. 70 lbs.) \$11 00
- No. 17.—2-frame Cowan, for frames not over 11 inches deep, 22 in. in diameter (wt. 90 lbs.)..... 12 00
- No. 18.—2-frame Cowan, for frames not over 12 in. deep, 24 in. in diameter (wt. 120 lbs.)..... 13 00
- No. 20.—2-frame Cowan, for frames requiring larger than 24-inch can..... 16 00
- No. 25.—4-frame Cowan for L. frames, 28 in. in diameter (wt. 150 lbs.)..... 20 00
- No. 30.—6-frame Cowan for L. frames, 31 inches in diameter (wt. 180 lbs.)..... 26 00

BEVEL GEARING.—Page 17.

Bevel gearing, including cross-arm and steel center shaft, complete, for 17-inch can (wt. 6 lbs.)...\$1 50  
Bevel gearing for 20-inch can (wt. 11 lbs.)..... 1 75

- Kitchen knife, 15c each; postage 5c.
- Dadant uncapping-can, \$8.00; weight 50 lbs.
- Doolittle wax-extractor, \$3.60; weight 30 lbs.
- Boardman “ with glass, \$7.50; wt., 110 lbs. without glass, \$5.00.
- Root zinc strips, 1 row holes, 3 x 18 to 19 1/2, per 100, \$1.10.
- Tinker zinc strips, 2 rows holes, 4 1/2 x 18 to 20, 100, \$1.50.
- Root zinc sheets, 28x96 inches, each \$1.60.
- Tinker zinc sheets, 24x96 inches, each 80c.
- Cut pieces of Root zinc, 12c a ft.; Tinker zinc, 15c a ft.
- Entrance-guards, Tinker zinc, \$1.00 for 10.
- Entrance-guards, Root zinc, 75c for 10.

| SHIPPING-CASES.<br>Page 23.<br>NAME AND SIZE<br>OF CASE. | Nailed,<br>each | Price complete including 3-inch glass 1 side, nails, & paper, in flat. |    |     | With 2-inch glass instead of 3, per 100. | Without the glass per 100. | Wt. per 100—<br>in lbs. |
|----------------------------------------------------------|-----------------|------------------------------------------------------------------------|----|-----|------------------------------------------|----------------------------|-------------------------|
|                                                          |                 | 1                                                                      | 10 | 100 |                                          |                            |                         |

|                               |    |    |      |         |         |         |     |
|-------------------------------|----|----|------|---------|---------|---------|-----|
| 12-in. 4-row for 4 1/4 s'n    | 20 | 18 | 1 70 | \$15 00 | \$13 50 | \$12 00 | 450 |
| 10-in. 4-row                  | 20 | 18 | 1 60 | 14 00   | 12 50   | 11 00   | 400 |
| 12-in. 2-row                  | 15 | 12 | 1 10 | 9 00    | 8 25    | 7 50    | 225 |
| 10-in. 2-row                  | 15 | 12 | 1 00 | 8 50    | 7 75    | 7 00    | 200 |
| 16-in. 2-row                  | 16 | 13 | 1 20 | 10 00   | 9 25    | 8 50    | 300 |
| 8-in. 3-row                   | 15 | 13 | 1 20 | 9 50    | 8 50    | 7 50    | 225 |
| 6 1/2-in. 3-row               | 15 | 12 | 1 10 | 9 00    | 8 00    | 7 00    | 200 |
| 7 3/8-in. 4-row for 4x5...    | 20 | 18 | 1 10 | 14 00   |         | 11 00   | 300 |
| 7 3/8-in. 3-row               | 16 | 13 | 1 20 | 10 25   |         | 8 50    | 250 |
| 9 1/2-in. 4-row for 3 5/8 x 5 | 20 | 17 | 1 60 | 13 10   |         | 11 00   | 350 |
| 6 3/8-in. 3-row               | 15 | 13 | 1 20 | 9 25    |         | 7 50    | 200 |

| GLASS FOR SHIPPING-CASES.<br>Page 23.        | Price. |        | Bx. of 50 ft.<br>No. | Price. |
|----------------------------------------------|--------|--------|----------------------|--------|
|                                              | 10     | 100    |                      |        |
| 3x17 3/4 or 18 for 4-row cases.....          | 35     | \$3 00 | 133                  | \$3 75 |
| 3x13 1/2 for 3-row cases.....                | 25     | 2 00   | 171                  | 3 25   |
| 3x9 for 2-row cases.....                     | 20     | 1 50   | 267                  | 3 25   |
| 2x17 3/4 or 18 for 3-row cases.....          | 20     | 1 50   | 200                  | 3 00   |
| 2x13 or 13 1/2 for 3-row cases.....          | 12     | 1 00   | 256                  | 2 50   |
| 2x9 for 2-row cases.....                     | 10     | 75     | 400                  | 2 50   |
| 3x16 1/2 or 17 for 4-row 4x5 cases...        | 35     | 3 00   | 140                  | 3 75   |
| 3x15 for 4-row 3 5/8 x 5 cases.....          | 25     | 2 10   | 160                  | 3 25   |
| 3x12 1/2 or 11 1/2 for 3-row 3 5/8 x 5 cases | 20     | 1 75   | 200                  | 3 25   |

HONEY-BOARDS.—Page 19.

| No. | Name and Size.                        | Price of 10. | Weight of 10. |
|-----|---------------------------------------|--------------|---------------|
|     |                                       |              |               |
| T 1 | 10-frame unbound zinc, 14x19 1/2..... | 2 20         | 9 lbs.        |
| R11 | 8-frame unbound zinc, 12x19 1/2.....  | 1 40         | 8 lbs.        |
| T11 | 8-frame unbound zinc, 12x19 1/2.....  | 2 00         | 8 lbs.        |
| T 9 | 8-frame wood-zinc, 13 7/8 x 20.....   | 2 20         | 13 lbs.       |
| T10 | 10-frame wood-zinc, 16x20.....        | 2 40         | 14 lbs.       |
| R12 | 10-frame wood-bound zinc, 16x20.....  | 2 00         | 11 lbs.       |
| T12 | 10-frame wood-bound zinc, 16x20.....  | 2 40         | 11 lbs.       |
| R13 | 8-frame wood-bound zinc, 13 7/8 x 20  | 1 80         | 10 lbs.       |
| T13 | 8-frame wood-bound zinc, 13 7/8 x 20  | 2 20         | 10 lbs.       |

Manum's swarm-catcher, with pole, \$1.25.  
without pole, 90c.

STURWOLD'S SHOW-CASE.—Page 24.

Price, plain .....\$5 00  
Same, with your name and address..... 5 50  
Same in flat, no glass or finish ..... 2 50

EASTERN SQUARE JARS.—Page 24.

5-oz., 2 gr. in a pkg., \$3.00 per gross, corks included.  
8-oz., “ “ 4.50 “ “ “ “  
1-lb., 1 gr. “ “ 5.70 “ “ “ “  
2-lb., 9 doz. “ “ 7.50 “ “ “ “

MUTH SQUARE JARS.

5-oz., 1 gr. in a pkg., \$3.25 per gross, corks included.  
8-oz., “ “ 4.40 “ “ “ “  
1-lb., 6 doz. “ “ 5.70 “ “ “ “  
2-lb., “ “ 7.50 “ “ “ “

POUDER SQUARE JARS.

5-oz., 100 in a pkg., \$2.25 per 100, corks included.  
8-oz., “ “ 3.00 “ “ “ “  
1-lb., “ “ 4.00 “ “ “ “

MASON FRUIT-JARS.

Pint Mason jars, 47c doz.; 6 doz., \$2.70; 12 doz., \$5.25.  
Quart “ 50c “ “ 2.85; “ “ 5.50.  
1/2-gal. “ 65c “ “ 3.60; “ “ 7.00.

NO. 25 JARS.

2 dozen in a box, \$1.25 per box; 6 boxes, \$7.00.  
12 dozen in a barrel, \$6.00 per barrel.

SQUARE CANS.—Page 25.

| No. in a box. | Capacity of each can in gallons, | in honey. | Price of |           | Wt. of 1 box. |
|---------------|----------------------------------|-----------|----------|-----------|---------------|
|               |                                  |           | 1 box.   | 10 boxes. |               |
| 1             | 5-gal. can boxed                 | 60 lbs.   | \$ 50    | \$ 4 60   | 10 lbs.       |
| 2             | 5-gal. “                         | 60        | 85       | 8 00      | 15 “          |
| 10            | 1-gal. “                         | 12 “      | 1 60     | 15 00     | 20 “          |
| 12            | 1/2-gal. “                       | 6 “       | 1 60     | 15 00     | 20 “          |
| 24            | 1/4-gal. “                       | 3 “       | 2 60     | 25 00     | 25 “          |
| 100           | 1-gal. “                         | 12 “      | 13 00    | 120 00    | 110 “         |
| 100           | 1/2-gal. “                       | 6 “       | 11 00    | 100 00    | 80 “          |
| 100           | 1/4-gal. “                       | 3 “       | 9 00     | 80 00     | 60 “          |

SCREW CAPS.

|                            | 1 | 10 | 100    | Wt. of 10. |
|----------------------------|---|----|--------|------------|
| 1 1/2-inch screw caps..... | 2 | 15 | \$1 25 | 5 oz.      |
| 3-inch screw caps.....     | 4 | 35 | 3 00   | 14 oz.     |
| 3 3/4-inch screw caps..... | 5 | 40 | 3 50   | 18 oz.     |

RAISED-COVER PAILS.

| Size in Quarts.           | lbs.  | Price of |       |         | Weight of 100. |         |
|---------------------------|-------|----------|-------|---------|----------------|---------|
|                           |       | 1        | 10    | 100     |                |         |
| 1/2-quart R. C. pail..... | 1 1/2 | 4        | \$38  | \$ 1 80 | \$ 3 40        | 55 lbs. |
| 1 “ “ “.....              | 2 1/2 | 5        | 48    | 2 25    | 4 20           | 75 “    |
| 2 “ “ “.....              | 6     | 7        | 65    | 3 00    | 5 50           | 120 “   |
| 3 “ “ “.....              | 9     | 10       | 90    | 4 00    | 7 50           | 130 “   |
| 4 “ “ “.....              | 12    | 13       | 1 20  | 5 00    | 9 50           | 150 “   |
| 1/2 and 1 qt. nested..... | 9     | 85       | 3 90  | 7 50    | 100 “          |         |
| 1/2, 1, and 2 qt. nested  | 15    | 1 40     | 6 50  | 12 50   | 170 “          |         |
| 1/2 to 4 qt. nested.....  | 35    | 3 00     | 14 00 | 28 00   | 320 “          |         |

TIGHT-SEAL COVER PAIL.—Page 25.

|                            |        | Capacity,<br>lard—honey. | Price |    |     | Wt. |    |     |
|----------------------------|--------|--------------------------|-------|----|-----|-----|----|-----|
|                            |        |                          | 1     | 10 | 100 |     |    |     |
| No. 1 seal-cover pail..... | 1 lb.  | 1½ lbs.                  | 8     | 75 | 7   | 00  | 45 |     |
| No. 2 " " " " " "          | 2 lbs. | 3 "                      | 9     | 85 | 8   | 00  | 60 |     |
| No. 3 " " " " " "          | 3 "    | 4½ "                     | 11    | 00 | 9   | 50  | 70 |     |
| No. 5 " " " " " "          | 5 "    | 7½ "                     | 13    | 1  | 20  | 11  | 00 | 90  |
| No. 10 " " " " " "         | 10 "   | 15 "                     | 18    | 1  | 60  | 15  | 50 | 140 |
| Improved Dadant pail..     | 5 "    | 7½ "                     | 10    | 90 | 8   | 50  |    |     |

FLAT-HEAD WIRE NAILS.—Page 27.  
Cement-coated, except first three.

| L'gth.  | Wire Gauge. | No. in 1 lb. | Wt. of 5c pkg. | Price of |         |          |
|---------|-------------|--------------|----------------|----------|---------|----------|
|         |             |              |                | 1 lb.    | 10 lbs. | 100 lbs. |
| ¼ in.   | No. 21      | 17,500       | 1 oz.          | .45      | \$4.00  | \$37.50  |
| 3/8 "   | " 20        | 10,000       | 2 oz.          | .30      | 2.80    | 25.00    |
| ½ "     | " 20        | 7,500        | 2 oz.          | .25      | 2.30    | 21.00    |
| 5/8 "   | " 19        | 4,200        | 2 oz.          | .20      | 1.80    | 16.00    |
| ¾ "     | " 18        | 2,700        | 4 oz.          | .16      | 1.40    | 12.50    |
| 7/8 "   | " 18        | 2,350        | 4 oz.          | .15      | 1.30    | 11.00    |
| 1 "     | " 18        | 2,000        | 4 oz.          | .14      | 1.20    | 10.50    |
| 1 1/4 " | " 17        | 1,200        | 4 oz.          | .13      | 1.10    | 9.50     |

STANDARD (D) WIRE NAILS.—Page 27.  
All cement-coated.

| Style.     | Length. | Wire Gauge. | No. Nails in 1 lb. | Price of— |    |        |
|------------|---------|-------------|--------------------|-----------|----|--------|
|            |         |             |                    | 1         | 10 | Keg.   |
| 2d fine.   | 1 in.   | No. 17      | 1440               | 10        | 85 | \$6 45 |
| 3d "       | 1 1/8 " | " 16        | 1000               | 9         | 80 | 6 15   |
| 4d box.    | 1 1/2 " | " 15 1/2 "  | 550                | 9         | 75 | 5 80   |
| 5d "       | 1 3/4 " | " 14 1/2 "  | 346                | 9         | 75 | 5 65   |
| 6d "       | 2 "     | " 13        | 250                | 8         | 70 | 5 45   |
| 7d "       | 2 1/4 " | " 13        | 236                | 8         | 70 | 5 45   |
| 8d "       | 2 1/2 " | " 12        | 157                | 8         | 70 | 5 30   |
| 9d "       | 2 3/4 " | " 12        | 130                | 8         | 70 | 5 30   |
| 10d "      | 3 "     | " 11        | 107                | 7         | 65 | 5 20   |
| 4d casing. | 1 1/2 " | " 15        | 550                | 9         | 75 | 5 80   |
| 6d "       | 2 "     | " 13        | 250                | 8         | 70 | 5 45   |
| 8d "       | 2 1/2 " | " 12        | 157                | 8         | 70 | 5 30   |
| 3d common. | 1 1/4 " | " 15        | 615                | 8         | 70 | 5 75   |
| 4d "       | 1 1/2 " | " 13        | 322                | 8         | 70 | 5 45   |
| 5d "       | 1 3/4 " | " 12 1/2 "  | 254                | 8         | 70 | 5 45   |
| 6d "       | 2 "     | " 12        | 200                | 7         | 65 | 5 30   |
| 7d "       | 2 1/4 " | " 11 1/2 "  | 154                | 7         | 65 | 5 30   |
| 8-9d "     | 2 1/2 " | " 10 1/2 "  | 106                | 7         | 65 | 5 15   |
| 10d "      | 3 "     | " 9 1/2 "   | 74                 | 7         | 60 | 5 05   |
| 16d "      | 3 1/2 " | " 8         | 46                 | 7         | 60 | 5 05   |
| 20d "      | 4 "     | " 6         | 29                 | 7         | 60 | 5 00   |

TINNED TACKS.

| Name and size.                 | Wt. of 5-ct. pkg. | No. in— | Price of    |          |
|--------------------------------|-------------------|---------|-------------|----------|
|                                |                   |         | 5-ct. 1 lb. | 12 1 lb. |
| 2 oz. tinned Swedes, 3/4 inch  | 1 oz.             | 250     | 4000        | 30 35    |
| 3 " " " " 5/8 "                | 1 1/2 "           | 250     | 2650        | 35 25    |
| 6 " " " " 3/2 "                | 3 "               | 250     | 1333        | 45 20    |
| 8 " " " " 3/4 "                | 4 "               | 250     | 1000        | 50 15    |
| 1/2-in. blued carpet, oval top | 4 "               | 250     | 1000        | 50 15    |

FLAT-HEAD STEEL WOOD-SCREWS.

| Length | No | Price | Length  | No | Price | Length    | No | Price |
|--------|----|-------|---------|----|-------|-----------|----|-------|
| 5/8 "  | 3  | 15c   | 1 in.   | 5  | 20c   | 1 1/4 in. | 10 | 29c   |
| 5/8 "  | 6  | 17c   | "       | 6  | 21c   | 1 1/2 "   | 8  | 29c   |
| 5/8 "  | 8  | 20c   | 1 "     | 7  | 22c   | 1 3/4 "   | 10 | 31c   |
| 3/4 "  | 4  | 15c   | 1 "     | 8  | 24c   | 1 3/4 "   | 10 | 36c   |
| 3/4 "  | 7  | 20c   | 1 "     | 9  | 25c   | 2 "       | 11 | 41c   |
| 3/4 "  | 8  | 21c   | 1 "     | 10 | 28c   | 2 1/4 "   | 11 | 45c   |
| 7/8 "  | 6  | 19c   | 1 1/4 " | 9  | 28c   | 2 1/2 "   | 12 | 55c   |

Double-pointed tacks, 25c per lb.; 10 lbs., \$2.20.  
Wire-cloth staples, 25c per lb.  
Crate-staples, 20c per lb.  
End-space staples, 20c per lb.

PRICE LIST OF FEEDERS.—Page 28.

|                                                                                                                                  | Price of |      | Weight of 10. |
|----------------------------------------------------------------------------------------------------------------------------------|----------|------|---------------|
|                                                                                                                                  | 1        | 10   |               |
| Simplicity feeder .....                                                                                                          | 5        | 40   | 3 lbs.        |
| Gray's covered feeder.....                                                                                                       | 15       | 1 40 | 8 lbs.        |
| Boardman feeder, 2-qt., complete ...                                                                                             | 25       | 2 00 | 20 lbs.       |
| Boardman feeder, in the flat, without jar but with special cap...<br>Special caps only, for either Mason or Lightning jars ..... | 15       | 1 25 | 11 lbs.       |
| Pepper-box feeder, 1 pint.....                                                                                                   | 8        | 70   | 4 lbs.        |
| Pepper-box feeder, 1 quart.....                                                                                                  | 10       | 90   | 6 lbs.        |
| Miller's feeder, nailed up.....                                                                                                  | 25       | 2 30 | 40 lbs.       |
| Miller's feeder, in flat .....                                                                                                   | 20       | 1 80 | 40 lbs.       |

Wire cloth, 2c per sq. ft.; full rolls, 1 1/4c; post., 1c ft.

FOUNDATION-MILLS.

|                                                             |  |
|-------------------------------------------------------------|--|
| 14-in. mill (boxed 115 lbs.), \$42.00; dipping-tank, \$2.50 |  |
| 12-in. mill " " 95 " 36.00; " " 2.50                        |  |
| 10-in. mill " " 65 " 25.00; " " 2.00                        |  |
| 6-in. mill " " 45 " 20.00; " " 2.00                         |  |

UTAH COMB AND EXTRACTED HONEY.

The carload of honey mentioned in our last issue has arrived. It comes from Ogden, Utah, is gathered from alfalfa and sweet clover, and is very fine flavor, and choice white in color. The comb is all in cases of 24 sections each, averaging about 22 lbs. net weight. The honey is so thick and heavy that, even if the comb were broken, there would be very little leaking. The cases are without drip-sticks or glass. Much of the honey was built without separators, and a few sections are bulged some beyond the wood, and should be handled carefully to avoid mashing the comb. Aside from the disadvantages mentioned the honey is exceedingly fine in appearance and flavor, and will easily grade fancy white. Price \$3 75 per case, or 17 cts. per lb.; 10-case lots and upward, 16 cts. per lb. The extracted is very light color, and fine flavor; is in 60-lb. cans, and candied solid. Price 10 cts. per lb. by the case of two cans. Net weight 110 to 120 lbs. per case. If you prefer to have it melted or liquefied before shipping please so request when ordering. Sample mailed free to prospective customers.

PREMIUM OFFERS.

We make this our annual premium number, and print thirty thousand copies. The extra copies over and above our regular paid subscription-list, which now numbers about ten thousand, we send to a select list of our customers. We make this number 16 pages larger than usual, in order to present some views of our factory, which will be of interest to all, as well as to show some improvements in supplies for next season. In this respect it will serve somewhat as an advance announcement, inasmuch as we incorporate also the revised price lists on supplies for next season wherever it has been found necessary to change them from prices ruling this past season. We want, also, to call your attention to the attractive premium offers. Every bee-keeper who keeps a dozen hives of bees or more should have a bee-journal. He can not afford to be without one. He may find in one issue a hint that will be worth more to him than the cost of the journal for ten years. Many have had just this experience. If you don't care to try it for a year, send 15 cents for three months' trial, and have it to read during the long winter evenings. You will be well repaid. If any one does not find his money's worth we will gladly refund it. If at all interested in a good fountain pen we know you will be greatly pleased with the "Post." It is simply perfect and the opportunity to get one on such reasonable terms will not be likely to come again. The owners take this means of introducing and advertising it; and when it becomes well known and introduced they will sell it only through agents at \$3.00 each.

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Wanted.—Buckwheat extracted honey.

On page 866 we tell how to get two papers for the price of one.

A. I. Root's Special Notices—matter on gardening, etc., is crowded out of this issue, but will appear in the next.

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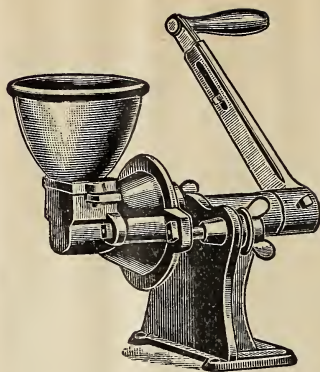
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A. W. CARSON, 113 W. 4th St., Joplin, Mo.

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E. W. SMITH, Plain City, Ohio.

**WANTED.**—To exchange two 60-lb. cans of pure alfalfa honey for two cans of pure linwood (basswood) honey.

I. H. GREENE, Berthoud, Colo.

**WANTED.**—Nuclei and full colonies of bees, for delivery in April; South preferred. Will furnish nuclei boxes.

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