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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

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No. 8.

STRAY STRAWS

FROM DR. C. C. MILLER.

SOFT-MAPLE bloom opened April 1.

PAGE 260 leaves the impression that J. A. Green is in favor of bicycles.

IF FLOUR of any kind is fed to bees, mix with it chaff, sawdust, or something to give the bees a foothold.

IN REPORTING failure or success with sealed covers, please say what covering, if any, was over the sealed covers.

THE LATEST USE for honey is to give a few drops, warmed, to canaries or other singing birds with drooping spirits.

THERE IS PROSPECT that H. Reepen, one of the German bee authorities, will be at the Chicago convention in October.

DON'T REPORT how well your bees have wintered till spring troubles are over. Springing is the hardest part of wintering.

WHICH IS MOST enjoyable—the anticipation of a big crop as the spring begins, or the "round-up" at the close of harvest?

TOOK BEES OUT of cellar April 4 and 5; 82.3 per cent alive, against 94 per cent 4 weeks earlier. A month later I can tell better how many winter through.

MARKET REPORTS show that the demand for best honey is beyond the supply, leaving the encouraging prospect that an empty market awaits the new crop.

SUGAR SYRUP is considered in this country as good as honey for spring feeding; but the best German bee-keepers insist that nothing can take the place of honey.

THE LIMIT of wholesale price for honey seems to be about 18 or 20 cents, as shown during the past scarce year. Honey is still a luxury. Will it ever become a staple?

A COMMON THING, in other countries, is to give with the name of a bee-keeper his occupation other than bee-keeping. Why not? It's always pleasant to know about such things.

JUST LET A. I. ROOT try selling me that song-book for 25 cts. (see p. 265). I'd brace myself to sing it all to him, and I'm sure he'd give me more than a quarter to stop before I got half through.

MRS. JENNIE ATCHLEY will be surprised some day to find herself a rich woman. She is reported in France as selling last season 2000

queens. Nothing new in that; but the report goes on to say that the price she got was from \$2 to \$5 each! Was that increase of price grown in France or America?

REV. W. F. CLARKE says, in *A. B. J.*, that the flavor is given to honey by the formic acid in the bees' poison. I always supposed that the flavor of buckwheat honey came from buckwheat posies.

THE BICYCLE, according to an editorial on p. 274, is as necessary for an out-apiary as an overcoat in winter. Now, honest Injun, would you advise an old codger like me to sell my horse and go to monkeying with a bike?

WHY IS IT that some people will use a second time a postage-stamp that happens not to be canceled, but would think it wrong to steal two cents? Or where's the difference between stealing a ride on a railroad and stealing the money to pay for the ride?

ALBINOS IN GENERAL are supposed to see better at night than in day time; so it is proposed by Reepen, that, in each apiary, half the bees be albinos to work at night, and half of the ordinary kind to work day time, thus doubling the force. Who says there's no Yankee invention in Germany?

ILLUSTRIERTE BIENZEITUNG occupies more than two pages with a report of the Michigan convention, in which Prof. Cook is reported as supporting Heddon's adulteration views. Will Bro. Gravenhorst please take notice that Prof. Cook was entirely misunderstood? Prof. Cook does *not* favor adulteration.

SEALED COVERS. J. P. Smith reports in *A. B. J.*, that part of his hives had Hill's device with 7 to 10 inch cushions, and part had sealed covers with 4 or 5 inches of dry material over. Result was about the same. C. F. Muth insists on the importance of having a dry and warm cover over sealed covers.

"MR. C. H. DIBBERN recommends placing bees, that have not had a flight for two or three months, in a room warmed up to a temperature of 50°. It will be sure death, Bro. D., to all the bees so treated."—*Apiculturist*. I don't know about a room, but it doesn't seem to hurt mine to go up to 50° or 60° in a cellar.

CRAZY BEES. C. Reynolds reports, in *A. B. J.*, an unusual occurrence. A wet horse-blanket that had been used to wrap around ice was hung about 12 feet from a colony of pure Italians, out of their line of flight. It was, in a short time, covered with bees sticking fast by their stings, while thousands more were trying to get at it.

LAYENS found by experiment that very old bees in queenless colonies not only *store* no honey, but gather nothing for their own subsistence, while other colonies are storing briskly. I have always supposed that, as long as a bee was able to fly, it would work if it could. Is Layen's observation exceptional, or is that the general rule?

MEAL FEEDING in spring is valued by some and opposed by others. If your bees can get plenty of natural pollen they'll not work on any substitute; and if there is nice weather for bees to fly, and not enough natural pollen to be found, I believe it's a good thing to offer them a substitute. The fun of seeing them work on it is something.

"A CHANGE OF PASTURE is good for cattle," is an old proverb; and now we are told that the same thing applies to bees, as proven by those who practice migratory bee-keeping. One writer gravely recommends those who have not the opportunity, to change the location of their bees throughout the season, to give them a ride on a wheelbarrow, to sharpen their energy. It would at least sharpen the appetite of the man between the handles.

LANGSTROTH'S REMINISCENCES.

THE INVENTION OF THE COMB-GUIDE.

One great difficulty which I had to encounter in introducing the movable frames was, to induce the bees to confine each comb to a separate frame. About a hundred years ago the Abbe Della Rocca, in order to have the combs properly built on the bars which he used in one of his hives, had small pieces of worker comb supported by a fixture which could be inserted in the hive, and removed when these guides were attached by the bees. Huber improved upon this crude idea considerably, but fell far short of Golding's simple plan of dipping the upper part of his guides in melted wax.

From the first invention of my frames I was desirous of securing straight combs, without resorting to the use of these pieces of worker comb. Under date of Nov. 24th, 1852, I find this suggestion in my private journal: "*Guide-combs*.—If none can be had, hive bees in, say, 24 hours; remove their frames; such as are right may be replaced; the combs of the others may be cut off and put in a proper position." This extract will explain, better than any thing else, how much I must have been troubled to get what worker comb I needed.

TRIANGULAR COMB-GUIDE.

Extract from my journal, Feb. 12, 1853: "Let triangular pieces be fastened to frames to serve instead of guide-combs. The equilateral triangles (not shown in print) show the ends which come against the side-strips; these may be inch on their top, or smaller, as experience shall determine. . . . I feel a strong persuasion that these will dispense with all guide-combs."

Little did I think, when I made this record, how much expense and trouble I should incur from this invention. To narrate at length my experience with it would require many pages. This I shall not attempt, but yet it entered too largely into my history to be passed by with only a brief notice.

I had a number of frames furnished with these guides, and waited with great impatience for the time when I could submit them to the decision of the bees. At last a swarm issued, was hived for a test, and allowed to remain undisturbed for several days. I had met with so

many failures that I tried to prepare myself for another. Opening the hive and lifting out a frame I could scarcely believe my own eyes when I saw that the bees had accepted the sharp edge as the true direction in which to build their comb. I lifted out another and another, and saw the same thing, with irrepressible delight. Yes! my comb-guide was indeed a success. But one swallow does not make a summer, and I afterward found out that, in a few cases, the bees built their combs without any regard to the guides, so as to make it impossible to remove them without cutting. If that first swarm had done so, and I had accepted the device as a failure, it would have been, humanly speaking, a very fortunate result for me.

After using this guide for two seasons I thought so well of it that I tried to patent it. My application was rejected on the ground of a rejected application in the files of the office, showing the same device. On paying the expense for a copy I found that some one had invented what he thought would be an excellent plan for destroying the larvæ of the bee-moth by placing a series of triangular strips on the bottom-board of the hive, the sharp edges pointing up, as mine pointed down. He alleged that, upon these sharp edges, the clumsy worms would be fatally injured as they fell from the combs! It is not strange that, for some time, I thought the examiner was trifling with me, for at first I could see no conceivable connection between triangular strips placed on the bottom-board of a hive for maiming worms, and my use of the same for securing straight combs. At last I came to the conclusion that the examiner did not know that bees build their combs from the top of the hive downward, and that he saw no reason why they would not build them upward upon these bottom strips as well as on mine. I succeeded at last in convincing him that there was no interference.

Next in order, the office informs me of another interference; and on paying for a copy, I find in the drawings certain strips not terminating in a sharp edge, but beveled, so as to leave their bottoms about $\frac{1}{4}$ inch wide. No claim was made for these strips, and not a word was said about them. They simply appeared in the drawings. More correspondence ensued; and at last, when I confine my claim to a sharp edge, the interference is no longer alleged against it.

I was now looking confidently for a patent, until notified of another interference. A party had applied for a patent on the very same device; and on sending for a copy I learned that a claim was made for my sharp-edged guide, when applied to the sides and bottom as well as the top of the frames. This application came from one whom I had appointed as an agent for the sale of my hive, and to whom hives with my guides had been sent. Both parties are now notified to prepare testimony as to priority of invention; but my former agent refused to contest his claim against mine, and the interference was dissolved.*

This matter being settled, instead of the expected patent I receive notice of another interference, a party having applied for a patent on the same device, to be used on the bars or slats of a hive. This proved to be a much more serious matter than the others, as testimony had to be taken by each party before a notary public. On hearing the testimony on the other side,

* I had already experimented with the guides for the side and bottom strips of the frame, and discarded this use of them. Put on the bottom one, instead of fastening the comb to the sharp edge, the bees, to utilize all the space they could, often carried it outside the true direction, leaving only the usual bee-space between it and the bottom-board.

I had no reason to question the honesty of my opponent or his priority in the use of the sharp-edged guide. Taking for granted that the patent would issue to him, I entered into negotiations to purchase the control of it. The proper papers were prepared, and I made him a visit to complete the business; but just before our papers were signed, he was informed that, if he sold his invention to me, a mortgage upon his property would be foreclosed. As soon as I learned this, I at once released him from his promised agreement, although he said he was still willing to sign it. I returned home with a heavy heart indeed, for, as matters then looked, the control of that comb-guide by some one else would prove a very serious injury to me.

While in this state of anxiety, instead of receiving notice that the case had gone against me, my lawyer in Washington telegraphed me that he had found a "way of protecting my interests." It seems that the Commissioner of Patents had told him that he had decided to issue the patent to the other party, when, just as he had left him, he met the late Mr. R. C. Otis, whom he knew he had purchased a large interest in my invention. Informing him of the adverse decision, Mr. Otis, to his great surprise, told him that he had just come from Missouri, where he had seen this very guide in actual use by a bee-keeper who had probably invented it before either of the other claimants. The commissioner was immediately informed of this new phase of the case, and consented to suspend the issue of any patent until further testimony could be taken. By the advice of my lawyer, Mr. Otis returned to Missouri and made an agreement that the new claimant should apply for a patent, which, if granted, should be sold to us for a certain sum. The application was made, and all the parties duly notified of this new interference. All now seemed to be plain sailing. If the Missouri man could prove his right to the patent, it would come under our control: and even if he had publicly used it too long for any patent to be granted, it would be free to all. Before the new issue was passed upon, the commissioner refused to grant a patent to any one, on the ground that the device had been anticipated in a printed publication.

L. L. LANGSTROTH.

THE TRUTH ABOUT BEE-ESCAPES.

THE VARIOUS BEE-ESCAPES COMPARED, AND THE PRINCIPLES UPON WHICH THEY WORK; A CAREFULLY CONSIDERED ARTICLE BY C. H. DIBBERN.

Noticing what Mr. H. Alley says, and your comments thereon, on page 173, I am reminded that the general principles of bee-escapes are not fully understood, and have never been thoroughly explained. It is true, that it is generally known that, in order to get the thing to work, we must have an escape-board, with an escape in that will allow bees to pass out readily, but permit none to get back. But just why it is that bees want to get out under certain conditions and not under others, is still a good deal of a mystery. During the past three years I have experimented more with bee-escapes perhaps than any other one man, and I think I can cast some light on the subject.

In the first place, it is the escape-board that furnishes the inducement for the bees to *desire* to leave the supers, or, rather, to find their queen and brood. There is no attraction about the escape itself, as in the case of the fly-trap. Place an escape-board, without any escape or hole in it, under a super ready to take off, and the bees will soon become greatly ex-

cited, and will pour out of a small knot-hole to the outside, if no other exit is found. Now, if the super had been separated from the main hive by a single thickness of wire cloth, no particular excitement would ensue, and, of course, no bee-escape would work. Now, in case the queen or young brood is present in the super, little excitement will be noticeable, and the bees will only partially vacate, perhaps knowing that they have the means for continuing their existence indefinitely. It would seem that, in case where bees are separated from queen and brood by wire cloth only, they are able to keep up communication, and do not seem to realize that they are really separated. This is, perhaps, the reason why some of the earlier escapes, made of wire cloth, did not prove very successful. The escape-board is nothing very new, as it was used with the old Reese escape, and was also a feature of escapes patented in 1885 and 1860.

Now, as we have the cause in the escape-board, the next step is the escape itself, and the principles involved. There are, perhaps, three classes or kinds of escapes now in general use; viz., those using springs, like the Porter and Hastings; those using pendants, like Demaree's and my Little Giant; and those using only shutes, without any obstructions, like the Larabee and new Dibbern. All these escapes, however, have some features in common. The first is the well, or place into which the bees pass after dropping through the hole or inlet, to escape. When bees find themselves in this small place, apparently cut off from both super and hive, they lose little time in getting to either one place or the other. As the hole through which they have passed is directly overhead, with edges projecting downward, they do not seem to find their way back very readily, and become more excited. In this condition they will readily pass through between springs, raise pendants, or pass long distances through shutes. Now, if the entrance were by perpendicular walls, without the overhead holes, bees would not pass through even such delicate springs as in the Porter, but, after feeling the obstruction, would generally return to the super. It will thus be seen that the well is an important point.

Another feature of similarity is, that all the escapes under consideration are placed horizontally in the board, all of which were present in my original escape, described Nov. 15, 1889, in the *American Bee Journal*, and after which all others have been patterned. It was Mr. Demaree who said, in regard to my invention, that bees would not pass long distances alone in the dark. That is quite true, and is just the principle on which my shute theory depends. Under *ordinary circumstances* bees will not pass long distances alone through narrow passages, neither will they pass through springs or pendants. After the bees get into the well they are no longer under ordinary circumstances, and, to rejoin their companions, will travel long distances, or pass through obstructions. The fact that they will not ordinarily do so is the main reason why they do not return through my shute escape, where no obstructions prevent them.

It is not an easy matter to fairly test bee-escapes, as hives under apparently the same conditions will vary greatly, even with the same kind of escape. I have several times put the super on again, and made another test, in a day or two, with varying results. I have tried all the well-known escapes, including some of my own that have never been published; and where escapes work at all, there is little or no difference as to the time required for clearing supers. During the last few years it has been

my aim to produce an escape, that should be more rapid than any now known; but while I have half a dozen patterns that will work as rapidly as any, I can not fairly say that they will do more. I have tried escapes with one inlet and four outlets, and *vice versa*, but one is no better than another, in that respect. The cut of the Hastings, with a chance for four bees escaping at once, with but one inlet, looks very nice; but it is no more rapid than the Porter, where a single bee seems to be examining the springs. I believe, however, that, where one is in a hurry to have supers cleared, to put from two to four escapes in a board is a decided gain. This is my conclusion after making many trials.

There is one other point I want to make clear; and that is, the distance required to make my shute principle a success. As I have shown, when bees are isolated by getting into the well, they will travel any distance to regain the hive bees; but no such large escapes are necessary. When I first discovered that the principle would work successfully I was using a sort of double honey-board the full size of hive. I then commenced to cut down the size of the proposed escape, all the while making tests. I have now reduced the size to $1\frac{1}{2} \times 5$ inches, with not less than three shutes, or gates. Such an escape is as simple and as rapid as any escape now known. If a less distance or fewer gates are used, the bees will pass back through it, and, of course, it fails to work.

I long ago tried some such devices as Mr. H. Alley describes—holes punched through tin. Sometimes they work all right, and sometimes they don't. If Mr. Alley thinks it is not the jagged edges that keep the bees from returning, let him try round smooth holes. Drones in supers will effectually stop up such escapes. I have also tried his honey-board theory, but found it "no good." C. H. DIBBERN.

Milan, Ill., March 28.

[Well, friend Dibbern, we believe you are the doctor on this question. You have experimented so carefully along these lines that your conclusion of the whole matter is doubtless pretty nearly correct.]

CUTTING COMB FOUNDATION.

HOW DOOLITTLE DOES IT.

I am requested to tell in GLEANINGS how I cut comb foundation, and what I use on the knife to prevent the foundation, or wax, from sticking to it. The writer says he is bothered with the wax sticking to the knife, to such an extent that the foundation is torn rather than cut. In cutting foundation I have a wide board which I use on purpose for this business, on one side of which are screwed strips half an inch thick, which are for the purpose of stops to keep the foundation from sliding on the board. These strips have notches in them half an inch wide by one inch deep, so spaced that they come just where the knife will run into them in cutting the foundation; and a pin is set in one end for the gauge-board to strike against, so that no time is lost in measuring. This gauge-board is made by nailing strips of the right length, in pairs, each pair being set a thirty-second of an inch apart, for the knife to run in, and the pairs nailed to suitable cleats, to make the whole thing rigid and strong. In nailing to the cleats, the pairs are spaced so that, when the knife is put in them, it will cut the foundation to the desired width, when it is ready to be cut the right length by using another gauge-board fixed for that length. If the notches in the strip screwed to the wide board are not in the right place for this lengthwise cutting,

change for a strip that has right notches. Having both boards ready, put from five to eight sheets of foundation on the board, bringing it up against the strips, and even with the pin; put on the gauge-board, and draw the knife between each pair of guides, thus cutting the foundation in the right place, and perfectly true, the same as a saw works in a miter-box. In using the gauge-board, the left hand holds it down firmly, but not hard enough to make the foundation stick together. This keeps either the gauge or the foundation from slipping. For the knife I prefer an old table-knife, such as our grandmothers used—one that has been worn till it is very thin, when the edge is made very sharp on an oil-stone.

How to prevent the wax sticking to it was a problem on which I worked a long time. I was told to heat it, by some; others advised the use of honey, weak lye, etc., all of which did not work to please me. Moistening the knife with kerosene worked the best of any of these, and this plan was used till one day when I was in a great hurry I drew the knife through the foundation as quickly as possible, when, lo and behold! the whole sticking matter was solved; for the friction caused by the rapid motion of the knife through the wax melted it to a sufficient extent so it did not stick to the knife at all. To be sure I was right, I quickly drew the knife to the middle of the pile and stopped, allowing a few seconds to pass before I tried to go on again, when I found the knife was fast and could not be moved, except by tearing the foundation. This may be old to others; but as I have never seen it in print I here give it to those who are fussing with honey, lye, etc.; and, if like me, they will appreciate bothering with those no longer. Eight sheets of thin foundation, or five of thick, are about all that can be cut with one stroke of the knife handily. Where the thin comes in narrow strips, several piles eight sheets deep can be put on the board at once.

POSTAGE ON QUEENS TO AUSTRALIA.

Friend Root, I think you are quite right about the postage on queen-bees to Australia, on page 186; but the words, "We can now send queens more cheaply to Australia than we can to a little town four miles distant from Medina," may be misleading to some, and cause trouble if the postal rulings are not fully understood. As I understand the matter, we have to pay two cents postage on any thing sent to Australia, as samples of merchandise, no matter if the package does not weigh more than one-fourth of an ounce; while only two cents are required for a package weighing four ounces. If the weight is above four ounces, then we have to pay one cent for each extra two ounces or fraction thereof, up to the limit of weight, which is, as you say, eight and three-fourths ounces; thus the postage on a package coming up to the full limit would be five cents. If you were to send a queen to a little town four miles from Medina, you would undoubtedly use the small Benton cage, weighing an ounce or less, and on this you would put a one-cent stamp, according to U. S. laws; but if the same cage were started for Australia it would require two cents. I thought a little explanation of this matter would help all who might be thinking of sending queens to the Old World.

THE GOVERNMENT LIQUOR-BUSINESS.

I read with considerable interest what the editor said on page 222, relative to "Government Distilleries." I note that "government distilleries are out of Uncle Samuel's line of business;" but instead of that they appear to be right in line with *his business*, for he receives 90 cents on every gallon of whisky dis-

titled before he will let it go. Again, friend Root wants to know how that distillery, which looks so beautiful to him, came in his adjoining county. I think I can tell him. A little over thirty years ago we were in the throes of a civil war. Uncle Samuel needed funds, and the whisky interests, known as "Gambrinus," told him he would furnish the funds if Uncle Samuel would give him a mortgage on his boys. Uncle Samuel agreed, and, as a result, we see the government receiving 90 cents on every gallon of whisky turned out of these distilleries, and \$25 from every saloon-keeper in the land, Gambrinus ruining from 60,000 to 100,000 of the boys of the country each year as his part of the contract. Thus our government, this Christian government, nationalized the drink business, and inaugurated a system of partnership with the accursed liquor-traffic, and handed down to us as legitimate the 250,000 licensed saloons and distilleries which exist to-day. All of these are right square in the way of God's kingdom advancing as it should in the world. Therefore, whoever would preach Christ Jesus (see page 809 of GLEANINGS for 1892) must necessarily preach against this greatest opposer of his kingdom, and use all of his powers in opposition to this stronghold of Satan.

Borodino, N. Y., Apr. 1. G. M. DOOLITTLE.

NEW ARTIFICIAL COMB.

PROGRESS THAT HAS BEEN MADE IN GERMANY.

The invention of comb foundation marked an era in bee-keeping. Aside from any other consideration, the bees were thereby saved the time of making comb, and the honey used to secrete the wax. Then efforts were made to do something toward saving what was still left for the bees to do. Wax was given to them in small shavings, to induce them to work it into comb; but although some success was reported, the scheme was in general abandoned. Something was done in the way of high side walls in foundation, but still much wax must be added by the bees before the cells were of normal depth. Then there were reports from time to time that we were to have actual comb made. Arrangements were just about completed, and the thing was just about to be accomplished. But the full accomplishment seemed always just a little further in the future, and seemed to be a veritable "will-o'-the-wisp," so that most gave up looking for it.

Now, however, comes to the front in the land of Dzierzon, Pastor Warnstorf, and says he can make comb with cells full depth. He not only says he can do it, but he does it; not only a little solitary specimen, but pound after pound of it, and so beautifully made that it will readily pass for that made by the bees.

One way of making foundation is to dip sheets of wax and then run the sheets through a pair of rolls. Another way is to have a press with an upper and an under plate fitting accurately together, each plate being an exact imprint of the foundation to be made. Melted wax is poured upon the under plate, the upper plate pressed down upon it, and the accommodating wax assumes the proper form.

Now, what is to hinder having the molds in one of these foundation-presses make cells half an inch deep? All that is necessary is to have the interstices of the mold, which form the side walls of the foundation, of sufficient depth. That is a matter easy of accomplishment; but the trouble is, that, when the side-walls pass a certain point as to depth, when the two plates or molds are separated there is no way of getting the deep side walls away from the press

without breaking; at least, there was no way discovered till Pastor Warnstorf struck it, and therein consists his invention.

Suppose a mold made with interstices so deep that it will allow side walls $1\frac{1}{8}$ inches deep. This will really be a series of hexagonal prisms, each one ending in a pyramid with three faces. Now let a comb be made with cells $1\frac{1}{8}$ inches deep, and suppose that, in some way, we have it detached from the mold. We don't care to have cells more than half an inch deep, so we will slice off $1\frac{1}{8}$ inches of the comb, carefully preserving without injury what we slice off. This will give us a comb with side walls $1\frac{1}{8}$ inches deep, but with no bottom to the cells. Now, suppose we have the power to change this from wax to brass, or, what is the same thing, make an exact imitation of brass, having a solid margin to it.

Without going minutely into details, I think it will not be very difficult now to understand the mode of operation. Although comb with cells on both sides can be made, it is much easier to have cells on only one side, and on some accounts it is considered better. So the lower mold is only the ordinary kind, as for making foundation. The upper mold, with its $1\frac{1}{8}$ -inch prisms, first passes through the brass grating spoken of; then the wax, being poured upon the lower mold, the press does its work and the upper plate is again raised, and the brass grating pushes down the comb. Instead of trying to pull the comb off, as in previous attempts, it is pushed off and comes away uninjured.

So far the size of the combs does not exceed 6 or 8 inches square; but when pieces are put together in a frame, the bees readily fasten them together. Two combs can be put together back to back, thus making the ordinary comb with cells on each side. Or, if room enough is left, the bees will build out cells on the foundation side, the same as on any foundation. Neither of these ways, however, is considered so good as to put two combs together, back to back, but with just room enough for bees to pass comfortably between them.

It is claimed that these combs are better than the natural combs made by the bees, especially during the main harvest. The bees will store honey in them readily, but no brood will ever be found in them, no matter where placed in the hive. The unilateral comb is considered better than that with cells on both sides, because, if the bees are allowed to draw out cells on the second side, brood may be put in it, and also because, if cells are on only one side there will be no need to reverse the combs in the extractor. By proper management the bees can be induced to prolong the cells to any desirable depth. The artificial comb is kindly received by the bees at any time, whilst foundation is at times torn down by them.

Thus I have given the advantages of the new comb, as claimed by its friends. It is only fair to say, that the new comer does not find all clear sailing, with no opposition. Indeed, its opponents seem rather more numerous than its friends; at least, more of them seem to speak out. Wide interest is, however, awakened, and no doubt it will be thoroughly tested during the coming season.

C. C. MILLER.

Marengo, Ill., March 27.

[It seems to us that Pastor Warnstorf's comb is a good deal of the "will-o'-the-wisp" yet. The pieces are small, and cells on one side only. Mr. E. B. Weed, of Detroit, accomplished as much, and yet we know that it ended only in failure. This attempt on the part of the Germans is, however, interesting, and we would not try to stand in the way of progress. If it has merit it will come out on top; if not, it will

speedily go the way of all other attempts at artificial comb.]

RAMBLE NO. 82.

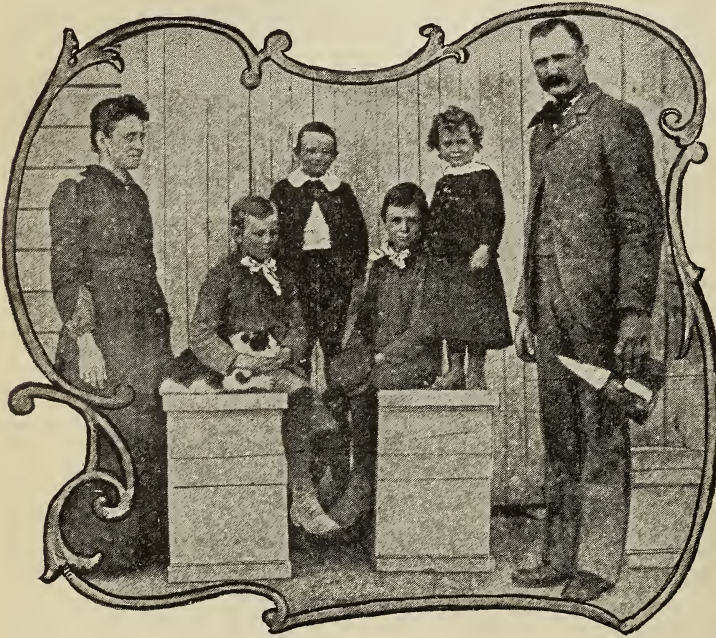
THE FERGUSON BROTHERS.

Almost two miles west from San Bernardino, and nearly half way between that city and Colton, the traveler encounters the Colton Terrace, a slight elevation of land caused by the washing away of the land east of it by the Lytle Creek. One bright warm day in January, when the meadow-larks were caroling, and when our Eastern friends were enjoying one of their oft-repeated blizzards, the Rambler measured ties from San Bernardino, along the Santa Fe R. R., until the terrace was gained.

The object of my visit was to find the residence of Mr. Geo. Ferguson, a noted bee-keeper of San Bernardino Co. With him was stopping my friend Wilder, who had written me that my presence would cause tears of joy to

San Jacinto Mountain, also snow-clad at this season. All along at the north of our range of vision the mountains are nearer to us; and the Cajon Pass, Devil Canyon, and the Arrowhead hot springs are pointed out to the interested observer.

There are many grand pictures thrown upon the retina of the eye in this valley, that the tourist becomes enthusiastic over, and ever remembers with pleasure. It is with pleasure that the Rambler points to Old Grayback, the highest of the mountains, and modestly remarks, "Well, sir, I have planted my feet upon that highest point." It is in the midst of this awe-inspiring scenery that Mr. Ferguson has his pleasant home. Mr. F. seems outwardly to be happily situated. The chains of matrimony seem, however, to bind him to home and the home duties; and that all of our readers may see the nature of the chain, I obtained a photo of the outfit, the parents at the ends and the links between. The links are four very bright and well-behaved boys who will, ere long, help more or less in the apiary.



MR. FERGUSON IN CHAINS.

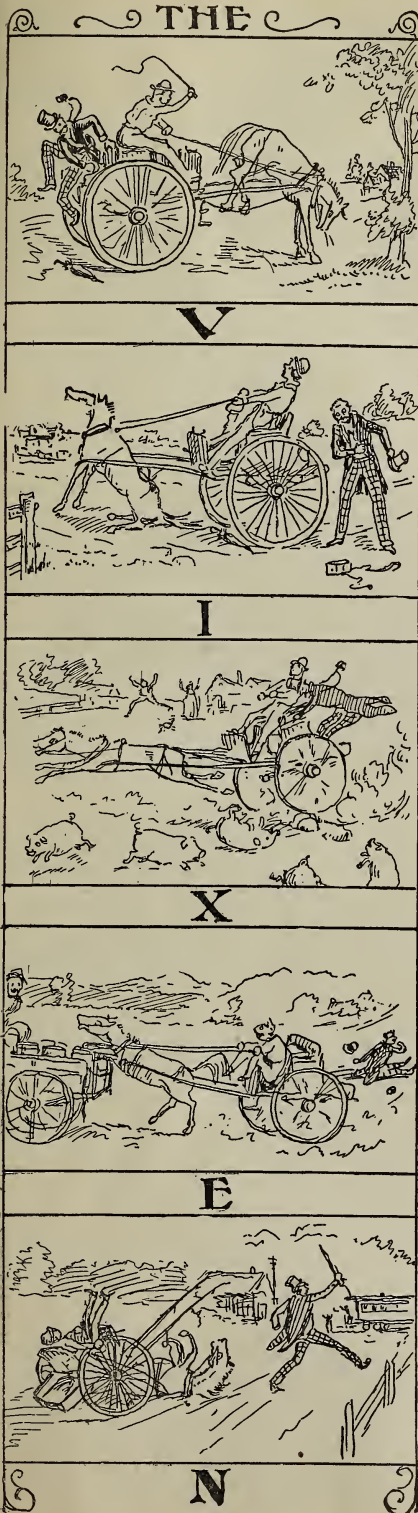
Mr. Ferguson is a bee-keeper of about 18 years' experience, and now owns about 400 colonies in two apiaries, located some miles from the home ranch, up what is termed Lytle Creek Wash. The Ferguson brothers, George and Samuel, worked their apiaries together for some years, but now own them separately. Samuel F., mentioned in a previous ramble, works his apiary upon the independent bachelor plan. He can "holler" and sing around his ranch, stomp the dust off his feet, hang his coat on any nail he pleases, sweep the floor or make his bed once a week, wash the dishes after he gets a good pile ready to make a worthy job of it, and there's no femininity around to make everlasting objections. Like all bachelors, Samuel is perfectly happy.

flow. A quail, and a horned toad stuffed with cotton and arsenic, were awaiting me as a present, chiefly for the rectitude of my intentions. These considerations being so delightful, I was happy to find the terrace and the residence of Mr. Ferguson. The house is near the railroad, and around it is a thriving young orange grove, and in its immediate vicinity a grove of tall eucalyptus-trees. The terrace has enough elevation to give a fine view of the valley to the east. Close to us is the town of San Bernardino, one of the oldest towns in Southern California, and, though not so beautiful in my eyes as Riverside, it is quite an enterprising town. Eight miles beyond, upon land that rises in terraces, we see the young and remarkably thriving town of Redlands. Immediately back of Redlands, and partly encircling it, the San Bernardino Mountains rise in their grandeur, their various peaks glistening with snowy caps. Far to the right, and isolated from the rest, is the

The Ferguson brothers are exceptional men, for nearly every person we meet in this country has previously been a resident of some eastern State or foreign country; but they are native-born Californians, their parents having arrived in the Golden State in the early pioneer days.

The hives used in these apiaries are a modified Simplicity, and worked for extracted honey. Mr. Ferguson's success has been marked by some great yields of honey; and, again, the scales have turned the other way, and the yields have been light. Taking the seasons as they average, Mr. F. has averaged a thousand dollars a year for the past ten years, which, with the chains that bind him, ought to make him happy, and which he seems to be.

Mr. F. has never been troubled much with fruit-men, and has not been ruined with the inroads of foul brood. Learning that a neighbor, Mr. Rouse, near Colton, two miles away, had a bad case of it, the 17-year-old colts were at-



tached to the wagon, and we were soon at the seat of war, and war it was, sure enough. Mr. Rouse, an old-time bee-keeper from the East, is one of those men who believe in no half-way measures, and he was making thorough work with his apiary. Out of 90 colonies he found almost 40 suffering with the disease. It was introduced to his apiary by purchasing bees in Harbison hives. His remedy was starvation, and rendering the combs into wax, boiling, stewing, and roasting the hives. I found Mr. Rouse also a married man, and his wife was upon the field of action attending to the boiling process. The hives and frames were thoroughly steamed for five or ten minutes, and then placed out to dry. When I saw how nicely the lady performed her part, and heard her remark that she loved to work with the blessed bees, I began to conclude there were some redeeming things in favor of matrimony; but my conscience soon seared over again, and I am happy to say I am still a free bachelor.

We asked Mr. Rouse to show us his worst case. He had one infected colony left, and we found them very docile, needing no smoke to control them. This was the first case I had ever seen, and I found the smell all that the highest authorities claimed for it, and none of the other signs were lacking. Mr. Rouse wanted to find a foul-brood inspector, but we had to tell him that San Bernardino Co. had none. The last board of supervisors would not appoint one because a member or two of the board were no friends of the bee, and remarked that they wished every swarm in the county had foul brood, and that it would be fatal. Better things are, however, hoped for the county soon. Foul brood, though a terror to bee-keepers, is not so virulent here as in the Eastern States. Very good yields of honey have been obtained from apiaries thus infected, during the first stages of the disease.

Mr. Rouse and his worthy spouse had our hearty sympathy, and we are confident their labors to eradicate the disease will be crowned with success.

Upon our return to Mr. Ferguson's we found Mr. Wilder had secured jack-rabbits enough for our dinners, which we duly enjoyed. Besides hunting quail and rabbits, our friend has pony Vixen lessons on the road-cart. Vixen had been used to the saddle for eight years, and the road-cart was a new-fangled machine to which she had decided objections. My friend, desiring to show me how nicely he had trained her to cart ideas, agreed to get me to the depot in time for the train. Our journey of two miles was full of exciting events. She first objected to leaving her pleasant surroundings, by performing a series of buckings. This failing to dislodge the cart, she sat down, with a very comical expression on her face. We got started, though, and the driving of Jehu was no comparison to our gait. The first obstacle in our way was a slow-moving load of rocks on the streets of San Bernardino. She failed to get over it at a bound, and, with an expression of disgust, she sprawled herself out flat on the ground. As it was near train time, I hastened away and left our friend in the midst of an admiring crowd, getting his Vixen (rightly named) on her feet again. On the whole, my trip was very interesting; and that it will also be so in a measure to your readers is the wish of the

RAMBLER.

[Only those who have had experience with the mustang can appreciate the series of situations shown by our artist, opposite. We have been just there ourselves. Indeed, our experience in runaways, and handling mustangs, turned us so completely toward the bicycle as a

better and more satisfactory means of travel, that we are for ever "agin" the horse. "Oh, yes!" some of you will say; "but *our* horse does not behave in that way." Very likely; but *we* never saw a horse with enough "git up and dust" but that was inclined to either buck or be a little fractious at times. A gentle sort of horse that anybody can drive, and that will carry you over the ground at a good rate of speed, is a very rare animal. Except, perhaps, during the few hours of learning, the bicycle never behaves itself unseemly. Really, if we were in Rambler's place (and every rambler ought to have one) we would have a bicycle. We would climb mountains and coast 'em—in fact, go almost everywhere a mustang could travel, with a "heap" more comfort; and we would have things all *our* own way too.

N. B.—The bicycle is also well adapted for bachelors.]

THE METZGER THEORY.

DR. MILLER EXPLAINS IT.

The theory advanced by Mr. Metzger, rather as an established fact than as a theory, has been the theme of much discussion across the water. In brief, the theory is that the spermatheca is not merely a receptacle for storing and giving as needed the spermatozoa, but a gland in which new spermatozoa are produced as needed. By some the theory is hailed as a great discovery. Some, jealous for the reputation of Dzierzon, oppose the new theory, on the ground that it comes in conflict with the theory of parthenogenesis. Others find no conflict between the two theories, the Metzger theory being considered only a step farther in the same direction as Dzierzon's. Still others, and among them names of great weight, consider the whole thing as a baseless fabric. In reply to the argument that there is not room enough in the spermatheca for the storage of a sufficient number of spermatozoa to last through the life of a queen, Prof. Leuckart replies that there is sufficient room for thirty millions.

In support of the new theory, Dzierzon is quoted as saying that an Italian queen mated with a black drone, in several cases that had come under his observation, produced at first black, yellow, and mixed workers, but later in life produced only pure Italians. Schönfeld adroitly turns this argument against the Metzger theory. He first says, that, if this were universally true, in order to have pure queens no attention need be paid to the mating, but only keep a queen daughter of a purely mated mother till old enough, and you would have a queen practically purely mated. But taking that only by way of parenthesis, it must be remembered that the new theory does not allow that the spermatozoa would live in the spermatheca till the queen had reached old age, and that only half a million of spermatozoa could find room in the spermatheca. As ten spermatozoa, or about that number, are used up for each egg impregnated, the half-million received from the drone would be used up in six or eight weeks, so at that time pure workers should appear instead of waiting till the queen became old.

Herr Reepen gives a heavy blow to the new theory by recalling a case in which Doenhoff crushed a part of the abdomen of a queen, and after that she laid drone eggs only. Dissection showed that the passage from the spermatheca was destroyed, hence nothing could pass from the spermatheca to the egg. But according to the new theory, as drone and worker eggs are

both impregnated from the spermatheca, these eggs, instead of producing drones, should not have hatched at all.

According to present appearances, the prospect of long life for the new theory is not of the most flattering kind.

THE NEW ARTIFICIAL COMB.

As an objection to the use of comb completely built out, one thing is mentioned that would perhaps be heartily approved by Doolittle, Hutchinson, and others. It is, that the vigorous building of comb in the hive is needed as an incentive to active work in the field. Indeed, this is strongly emphasized by more than one, and the source from which this opposition comes makes it worthy of consideration.

One writer goes so far as to say, that, if bees are prevented from secreting wax, in time the character of the bees will be changed sufficiently to show plainly deterioration, and this may occur within even two or three years. All this may, perhaps, lead to experiments and observations that may be of value in helping to establish the truth on whichever side it lies. Indeed, it may not be necessary to institute any new experiments, but to bring into play observations that have already been made, having a direct bearing on the subject in hand. It seems somewhat reasonable that active operations in the hive might incite to greater diligence in the field. In the face of that, however, stands the oft-confirmed observation, that, where no combs are needed to be built, the field work is greatest; in other words, that the yield of extracted honey runs away beyond that of comb. And if deterioration results from the suppression of comb-building, ought not some of those who have for years run for extracted honey only, be able to tell us whether any great harm had come to those colonies which continuously had been prevented from secreting wax?

DETERMINATION OF SEX.

What it is that determines that one egg shall produce a drone when laid in a drone-cell, and that another, laid in a worker-cell, shall be impregnated so as to bring forth a worker, has been the subject of some speculation and discussion. Some have held that the will of the queen was in control, and Quincy has been handled somewhat roughly for suggesting that compression of the queen's body was in some way effective. Without pretending that anything could be positively proven in the case, I have contended that there was as much proof for the compression theory as the will theory. Lately Mrs. Atchley gave, in the *American Bee Journal*, a report of an occurrence observed by her that she thought effectually settled the compression theory. A queen laid several eggs while standing on Mrs. A.'s hand, and these eggs were placed in cells. Some of them were protected, and hatched out, and in every case a worker was produced. And yet it is just possible that some particular position of the body might be assumed in occupying a drone-cell that would be different from that of a queen in a worker-cell, in such way that the position on the hand might be classed with that in the worker-cell.

H. Reepen, in *Centralblatt*, advances the argument that *Apis dorsata* has only one kind of comb, drones and workers being produced in cells of the same size. I can't see any possible reply to that argument. Indeed, I think I must entirely decline further allegiance to the compression theory. But I am not ready to swear allegiance to the will theory. Like Mr. Reepen and others, I think it will be more wise to say it's one of the things "I don't know."

Marengo, Ill.

C. C. MILLER.

[The greatest obstacle we see in the way of artificial comb (and we speak from a manufacturer's and shipper's point of view) is that, on account of its great bulk in comparison with foundation, it would hardly be within the reach of most bee-keepers. Foundation is, in a sense, artificial comb in the flat, which, on being put into the hives, is built out, in many cases, in a few hours, and what more could we ask for? Sheets of foundation would take only about a tenth of the box room of the artificial comb, to say nothing of the extra cost of boxes; and on account of the bulkiness of the comb, if it went by freight it would have to go at probably four times first-class freight. If it were shipped at all it would have to go by express; and the margins (or, rather, profits) on the sale of honey will not warrant such great expense. Aside from this, the comb would have to be packed very carefully, and even then it would be quite likely to be damaged in shipment.]

KEEPING DOWN INCREASE.

HOW TO LET THE BEES SWARM, AND KEEP THEM ALL IN ONE COLONY, AND AT WORK IN THE SECTIONS THE WHOLE SEASON.

When a colony swarms, I generally have one crate of sections or more on it; but if I do not, I take one from some other hive, or one with the sections with full combs in them. I now set the old hive off the stand and put on another hive-body on the old bottom-board, with five brood-frames in it, with starters in them spaced only $1\frac{3}{8}$ from center to center, and fill up the space with dummies. I next put on my queen-excluding honey-board, and then the crate of sections from the old hive, after which a half-depth body; over this is placed another honey-board, and, last of all, the old hive on top of the whole. I now run in my swarm that will show box honey if there is a good flow of honey. I next bore a one-inch auger-hole in the old hive, on the opposite end from the entrance below, so the young queen, when she comes out to mate, won't go in at the bottom entrance where the old queen is and get lost. Seven days after the hive swarms I take out the top brood-frames and pinch off all the queen-cells but the best one. Ten days after the colony has swarmed I remove two dummies in the bottom hive and put in two brood-frames with starters in them in the center. In seven days from this I take out the other two dummies and add the other three frames with starters, placing them in the center as before. As soon as the young queen begins to lay I take the old one out and put the young one in her place in the bottom hive. The old queen I sell, kill, or make a nucleus with. I thus get a young queen every year. Moreover, in 17 days from the time my hive swarmed I have ten new frames in the bottom body, and all worker combs if I have a good queen in the hive to start with. If they build a little drone comb I cut it out and put in worker.

If I had all the combs I wanted I take the combs from the top story to add to the bottom body, simply using the top for a nucleus to raise the young queen in.

The reason I think most bee-keepers failed in this plan was, they left five brood-frames in the hive till the end of the season, and took all the honey they could get in the sections, and then were disappointed because there was so small a swarm of bees left, and no honey to speak of to winter on; and then they had to be fed, and the swarm was not strong enough to winter. My way is different from any other I ever heard of, and it works better than any plan I ever tried,

because it keeps the swarms big and strong all the time.

CALVIN C. PHELPS.
East Windsor Hill, Ct., March 10.

THE "SMILERY."

THE DELIGHTFUL EXPERIENCES OF A BEGINNER DELIGHTFULLY TOLD.

Mr. Editor:—You may give me a corner in the Smilery, if you please. My application for this exalted sphere is based, not upon a big honey-flow which inducts so many into the mysteries of the Smilery, but upon my successful manipulation of the foundation comb you sent me. The process was so simple, and the comb so flexible and accommodating, that it almost jumped into place without giving me a chance to exercise my skill, which had been so laboriously acquired by studying the illustration, which tips the frame up this way and then turns it down that way, pushes it and pulls it and presses it, tips it and turns it and tightens it, then runs the imbedding-machine over it. Well, it is all right, Mr. Editor, to be precise, and we could not get along without precision; but every thing seems so simple about the process now, since I have caught on, and this, too, after I had studied the directions until my head turned around like an old-fashioned fanning-mill, I can not help giving vent to a little flippancy, even at my own expense. I hope a smiling Providence may pursue the man who invented that successful little machine, made out of a stick, and a nail with a little notch in the end of it. It works with so much "felicity" that I had the comb nearly sawed in two before I could stop it.

I have 15 or 18 swarms of bees prospectively. I say "prospectively," because I have bought some which have not been delivered, and intend to buy some more. I have them of all colors, sizes, and shapes—black, brown, yellow, and some are inclined to be white. My hives correspond very well with the different races of bees, only more so. I have some in boxes which stand on the end, while others hug the ground longitudinally. I have one in a log, one in a tree, one in a candy-bucket, and one in a beer-keg. A man living a mile from here has one in a nail-keg, which I am going to try to buy; and when they swarm I want to get one into a salt-barrel, and then I shall be fixed. Would you transfer them or not? J. J. TEMPLE.

Lewisville, Tex., Mar. 23.

[Yes, assuredly.]

THE PAST SEASON IN AUSTRALIA.

HOFFMAN FRAMES RAPIDLY HANDLED, ETC.

The honey-flow generally in this colony has been very good: some of us lost the first part of the season through wet weather; others have had an almost continuous flow from July last until now, and it is likely to continue until June next (midwinter). The winter in and around here (the Hunter River Valley) is hardly cold enough to prevent bees flying every day the year round. I fancy I hear some one say, "What a glorious country!" It has its drawbacks, as there is no rest for the bee-keeper. Our spotted gum (of the eucalyptus family) will probably give us a good winter flow. We have swarming according to flow, from the middle of August to the middle of March. The bees never have a rest. Imported queens may stop laying for a week or two, but colonial-bred queens never do so if the bees can get out and bring in a little nectar. This applies to the Hunter Valley and northern rivers.

The eight-frame hive is taking fairly well, also the Root-Hoffman frame. Our larger honey-producers predict that they will not last long; but from experience I had this season with about 40 hives, single, double, and triple story, I find I can handle them faster and easier than any other frame I have tried; viz., Simplicity loose frames, and Heddon's closed-end frames and hives.

Our father sails for Europe by the Massilia, March 18, and will return via 'Frisco, visiting, *en route*, New York, Chicago, and other principal cities of the United States, and will make a special point of calling at Medina to see Root's big bee-hive manufactory. He will, of course, keep his eyes open to learn any thing he can in the way of short cuts, etc., to be applied here in the manufactory of R. L. Pender. He will be able to give you a general idea of our continent and its honey resources much better than by my writing. Father is the proprietor of Drumfin apiary. This apiary won the national prize last year for the best-managed apiary in the colony, of under 100 hives and not less than 30. The Drumfin Poultry-farm won the national prize the previous year for the best-managed poultry-farm in the colony. In connection with the apiary and poultry, an orchard is cultivated, and pure-bred Ayrshire cattle are bred. These have won numerous prizes at our agricultural shows, beating those bred by our leading cattle-breeders.

HOT DAYS IN AUSTRALIA.

I often see reference in GLEANINGS to the heat of the sun troubling some of our California bee-keepers. In our Hunter River district I find a good hot summer day is the best to handle bees—a day when the thermometer runs between 120° to 130° F. in the sun. This is about our fairly hot days, and it is during such weather that honey comes in. Solar wax-extractors are being more used; but one like the Doolittle does not suit very well. We require one that is flat, as our sun is nearly vertical. I find a tinued wire sieve placed over a tin tray, and placed in a box with a glass lid, very good. The wax melts on the wire, and runs through and is much out of the direct rays of the sun, which has a tendency to bleach the wax too white. About 50 per cent of the wax that finds its way to our market is nearly white. We find white wax rather hard and brittle for foundation, so we have to melt it up with some very dark yellow wax to toughen it. The price of wax is about 18 cts. per lb. for the best, and 14 cts. for inferior. Honey runs from 6 to 8 cts. per lb. Most of it is sold to dealers.

W. S. PENDER.

West Maitland, N. S. W., Feb. 16.

[We shall be very glad to see your father at the Home of the Honey-bees, and will endeavor to give him the attention he deserves.]

GLUCOSE MIXTURES ON THE PACIFIC COAST.

"RAG SYRUP," ETC.

As the people of the Pacific coast are victimized with glucose at almost every turn and in almost every form, I am highly pleased to see GLEANINGS making such a decided protest against forcing glucose upon the people—mixtures that pass under a multitude of high-sounding names. As sweets have always been high as to price on this coast (with the single exception of extracted honey in large quantities), the "glucose fiend" has had a large field, and altogether too much favor, for he puts the vile

stuff in packages under all kinds of pretty labels, and sends it forth as "Drips" and "Syrups," changing its front name as often as the people discover that they do not like it, or mixing it with some article of food, very soon spoiling the sale of whatever it is mixed with.

In the mines I have seen cans that contained the simon-pure glucose. I don't think it was even colored. This the miners had paid one dollar a gallon for, and had not used half a pint out of the can, but had set it aside as "no good"—it made them sick, just as E. R. R. says it did him when he tasted it.

During my sixteen years on this coast, I have "rastled" with glucose (as the boys say) under many disguises, but have never been able to get it down. It is nauseating every time; and even if chemists in high authority do say that it is not harmful as a food, I take the homeopathic ground that any thing that is nauseating is not desirable, either as food or medicine.

I remember one rainy day, years ago, in a mining camp, hearing an old miner telling how the "drips" were made. He said in large cities these drip-factories send out men and boys to pick up all the old clothes, old boots, shoes, and rubbers, they could find; then they were all ground up and put into a large hopper, the same as the old settlers used to make lye in; then a chemical solution was poured over the pulp, and the result was the drips, "same as you've got in that can, pardner."

"But," said a listener, "what gives that tang to the stuff?"

"Oh!" says the narrator, "there is now and then an old cigar-stub or clay pipe left in the pockets of the old clothes, and that does for flavoring;" after that, "rag syrup" came to be a common name for glucose in the mines, and many believed that it was made in some such way.

We have just found the persistent visitor again at our house, in the New Orleans molasses. This is too bad, for it has shattered our last idol; for how can a New England Yankee cook or even live happy without his New Orleans molasses? The glucose spoils it for every purpose.

We have tried the glucose mixtures in the culinary department (unwillingly) many times during our sixteen years' sojourn in California, but it has been a failure every time. Now, if glucose is good for any thing at all, can it be spoiled by mixing it with other sweets that are good? I think not.

Now, I will make this proposition: If glucose is desirable as a food, let us have it straight. Put it on the market for just what it is; and instead of selling it as New Orleans molasses or pure "strained honey," at from one dollar to a dollar and a quarter a gallon, let the people have it at its real value, which, I understand, is about ten or twelve cents a gallon. Then if people can find a place for it in the economy of the household, let them buy it; but don't spoil the market for something that is wanted, by adulterating it with the nauseating stuff.

A. B. MELLENS.

Acton, Cal., Mar. 23.

[If glucose has any legitimate and honest use, we should like to know it. We hope the day will come when its manufacture will be prohibited.]

We presume that, of course, no intelligent thinking person, including our correspondent, will credit the rag-pulp story. Human nature at times is bad enough; indeed, it would not be above making and selling rag syrup for pure goods; but there are other ingredients that are cheaper than rags, and, of course, would be used instead.]

JAKE SMITH'S LETTERS.

MY NU APERY HELP, AND HOW IT SKIPT OUT.



A. I. Gleanings—
dear Str.—Did you
ever was reel bizzy a
workin at yure bees,
and 1 of yure gals
cum out an toled you
they was a lady wan-
ted to see you? And
then you diddent see
how you cood leeve
the bees jist then,
but you diddent want
to be impalite,
and you diddent
know but it mite be
1 of yure relations

that you set a good eel of store by, which she had cum to surprize you, and then you went in and found a young gal that wanted to sell you the life & deth of Calico-eye the queen of Hayweighye. And then you bot it to save time, and felt cheep when yure wife cast up to you that you was soft.

1 day last summer I was a hivin a swarm. & hed got them down on to a sheet when they all riz and settled on to the top of a oak-tree. Jist then 1 of the gals hollered to me they was a gentleman in the house to see me. It was a risky peace of bizness to go off and leeve that swarm in the yumer they was in, but I hed to go.

I went to the house and got off my rigin and slickt myself up sum, the gals all the time a snickerin to theirselves kind a quiet like, but I thot I woodnt yumer em by askin no questions. I made up my mind it was Gordus Tull, him witch married my wife's next oldest sister Anny frum Nebrasky. Gordus is 1 of the best fellows ever was, & Ide be glad to see him enny time, and I thot they hed him in the parler like he was a stranger, jist to surprize me.



THIS IS "THAT PICKTER."

Well, I opened the parler door, & I tell you I was surprised. You wood a been surprised too, woodent you? Jist look at that pickter, and see if you woodent. I thot, "If that's Gordus, he has changed sum." But it wuzzent Gordus, for he's of the cockcashun or white race, and this 1 was jist as black as a hive full of 25 year old cobm. His feetyours wuzzent what you mite call small, leastwans not his mouth and feet.

Look at the subdood meekness of his countenants. It was the subdoodest meekness I ever see. He hed a carpet bag that lookt very fool, but the way he handled it afterward it must a been fool of straw.

He toled me how his name was Rev. George Washington Augustus Jones, and he represent-ed the grate cultured youniversity of sum place, I disremember what; and he hed heer tell how liber! I wus, and he hed cum to giv me the preshus privilege of hevvin my name handed down the annuals of time as one of the found-lings of the grate youniversity.

I toled him how they was a swarm on to the top of a tree, and wood he excuse me for a short period of time. He replide he wood be grately delitened to accompenny me. So he coved up his cork-scroo curls with his stove-pipe hat, and took his carpet-bag and went along, sayin, "It will efford me plesher to render you all the resistance I can to the extent of my debility." He ment he wood help me.

So I let him help me, and when I clum the tree and sawed off the lim he held the hive under to ketch the bees. The lim cum down with a jerk, the Rev. George Washington Augustus Joneses hat cum off, and the bees lit all over his kinky head. He dropt the hive, grabbed his grip in 1 hand his hat in the uthther, and fit the bees for a minnit with each, then started like a streek; & the last I see of him he was makin a windmill of his self with both hands. I hevvent saw him sints, and ime afeerd I woont be handed down the annuals of time.

JAKE SMITH.

CALIFORNIA.

IS THE SMOKER UNHEALTHFUL?

In the course of a busy day a bee-keeper is obliged to inhale more or less of the smoke he directs from his smoker upon his bees. I said *obliged*, but this is hardly so. More truly I should have said that he can not help taking into his lungs much of the smoke that issues from the smoker while he is at work among the bees. To most persons this smoke is quite disagreeable; to some it is sickening. In my own case I find that, though it does not make me sick, still it is apt to be the means of bringing on a cold of greater or less severity. Just to what extent it affects other persons I am not fully prepared to state. I know, however, that it gives most persons a "cold in the head." Why this is so, I am sure those bee-keepers who belong to the medical profession can tell us. It would be well for all those who are thus troubled to be careful in the use of their smokers; they can, if they will, direct the blast so that the smoke will not be blown in their faces; at least, only a small portion of it will be inhaled by the operator.

PROPOLIS GALORE.

There is no place in California where the bees gather and use so much propolis as in the region opposite San Francisco. Why this is so I do not know, unless it is because it is "before the city." If this is so, the bees must understand Greek; for "before the city" is English, you know, for *propolis*. The place I mentioned where propolis is so plentiful is in the Oakland and Berkeley hills, opposite the Golden Gate and the Pacific metropolis. I have seen hives so badly glued with this natural product that the interior was almost coated on with a thick layer of this disagreeable stuff. It is mostly obtained from the alder and the balm-of-gilead.

RAMBLER OUTDONE.

While in Los Angeles early in February last, four bee-keepers, from as many counties in the

State, rambled about the streets of the Southern California metropolis one wet night until they brought up at the building of the Y. M. C. A. One of them proposed that the interior of the fine building be inspected by the quartette. The motion prevailed, and M. H. Mendleson, J. H. Martin (Rambler), W. W. Bliss, and the writer were shown about the various well-appointed rooms by the obliging secretary. We saw many interesting things; we managed to get the Rambler into several scrapes, but we will be charitable enough for the present not to give him away too severely.

There is one thing I must tell, however; and that is, the fun we had with the lung-tester in the gymnasium of the institution. We all knew what a hard blower Rambler was, from seeing his work in "GLEANINGS." We therefore expected to see him do his level best to raise the roof off the Y. M. C. A. building that night, notwithstanding the fact that it was raining as it had never done before in the City of the Angels. Well, the secretary showed bee-keeper Bliss how to send the air-tank skyward, and the latter proceeded to exhale into the receiver. Higher and higher went the miniature "gasometer." It began to look as if the roof would have to give way to let the top of the receiver escape in its upward tendency. Fortunately for the building, the contents of Mr. Bliss' lungs gave out before any great strain was exerted on the aforesaid roof. Then it came Rambler's turn. He was not going to be outdone by Bliss—oh, no! that would never do. So, throwing back his manly shoulders, he inhaled a full complement of the San Francisco air that then pervaded Los Angeles, and proceeded to exhale it into the tester. Upward went the tank. The trio stood back aghast as they saw the little "gasometer" mount toward the ceiling. Was the Rambler going to outdo those Californians who had been living on California ozone for years past? No; our good friend Rambler had not reached that lung power that the average healthy Southern Californian is blessed with. Bliss was in the lead by many cubic inches. Then the other members of the party tried the tester. They all beat the Rambler, but Bliss remained the champion blower of the crowd. And yet, Rambler was not satisfied. His well-known ambition to beat every thing in sight now asserted itself. He blew up the receiver again; but the register failed to record many more cubic inches than it did the first time he tried it. The others tried to beat their former record, but with little satisfaction. When the hour came for the visitors to take their departure, Rambler looked the picture of despair. For once his record as a champion blower was broken. As we wended our way to the hotel where we were all staying, the ex-champion was non-communicative. For a full half-hour he lived within himself.

The next morning all the party, except Bliss, who sallied forth early in the morning to duly celebrate the victory he won over Rambler the previous night, started to take in the town. It was a mean, wet morning; we were all without umbrellas. The Rambler, even, forgot to bring his faithful rain-shedder along with him when he left home a few days before. I think it was Mr. Mendleson who suggested that we buy a job lot of parasols. Umbrellas, in Los Angeles, are called parasols, for the reason that they seldom have much rain to speak of there; and as they have any amount of sunshiny weather, the umbrellas serve as excellent sun-shades. Well, as I was going to say, we invested in a lot of umbrellas. They were of family size, and were all alike. As we three walked the main streets of the city abreast, we were a sight to behold. Our three wide-spreading umbrellas took up nearly the full width of the sidewalk. The won-

der is, that we were not taken to jail for obstructing the street.

W. W. BLISS; SUMAC AND FRUIT.

Speaking of Bliss a while ago having such strong lungs impels me to say a word about that gentleman, which I think will not be uninteresting to the readers of GLEANINGS.

I did not leave Los Angeles without paying him a visit. He had pressed me for a few years back to visit him when I should take in the southern portion of our State. He lives at a place called Duarte, it taking its title from the given name of the original Mexican settler, who was given a grant of land taking in a good section of the country thereabout. Duarte is something of a rival of beautiful Riverside as an unrivaled orange locality. I learned from Mr. Bliss that he came to Los Angeles with his mother some years ago. He had been troubled with weak lungs. In fact, it was thought that his life was not worth much at one time before he came to this State. The air of his native Michigan was too severe for his delicate lungs. He came here; and the change that came over him was marvelous, as those who saw the way he can raise a lung-tester consider him one of the strongest-lunged men in the State.

When Mr. Bliss came to this State he knew nothing about bees. He fell in with Mr. E. E. Shattuck, for years one of the most prominent apiarists of the country. He soon became an expert bee-keeper. Being of an inventive turn of mind he devised many contrivances that helped to make work in the apiary less burdensome. When land was yet cheap in the foot-hills he took up a government claim. He soon bought out some of his neighbors, so to-day he has a little over three hundred acres of hill land. He has cleared off something like 40 acres of this and has planted it to fruit-trees, which have been in bearing for a couple of years. He grows mostly apricots and French prunes. These are dried, and sold to local dealers who ship them to the East and other points. He told me that he would soon clear off more of the land and set out additional fruit-trees, mostly oranges. His location is a particularly warm one. Tomato vines are seldom injured by frost. I saw mulberry-trees on his place on the 10th of February, that had already made six inches of new wood. The same trees here have not yet commenced to leaf out; their buds are, however, bursting open.

Mr. Bliss is no longer engaged in active apicultural pursuits. He makes comb foundation, and deals to a small extent in apiarian supplies. His machinery was, I am told, all of A. I. Root's manufacture. When asked why he gave up bee-keeping he replied that, when he first located on the bee-range where he now resides, the white sage bloomed at a different time than the sumac, with which the hills in his neighborhood abound. But during the later years that he kept an apiary, the sumac bloomed at the same time that the white sage did. The consequence was, the two kinds of honey were stored together. This resulted in the beautiful white-sage honey being badly discolored. Sumac honey is of a dark color, and does not bring near the price the former does. For this reason he decided that it was more profitable to raise fruit. From the way honey sold in this State the last season, I am sure he could have sold all the dark honey his bees might have stored, at a fair price. I should say that the vicinity is yet a good one for an apiary, although the sumac is liable to bloom at a time when the sage is at its best. A good deal of the land thereabout is already planted to oranges and deciduous fruits. Some horticulturists are rooting out their deciduous fruit-trees and planting oranges instead. This same thing

is being done in many places in California. Deciduous fruits are being more extensively cultivated in the more northern counties, where they not only do better but come into the market several weeks earlier than they do in the south. This is one of the wonders of the State. Why fruits should ripen sooner 500 miles further north is something hard to understand. Even oranges ripen earlier 200 miles north of San Francisco than they do in the regular orange-belt of the State. No one can doubt that the southern counties have a finer climate, all things considered.

PUT MONEY IN THY PURSE.

I have borrowed this head from my friend the late lamented Willie Shakespeare, and now use it for the benefit of our impurcious apicultural societies. I should like to use it also for the benefit of individual bee-keepers; but I refrain from doing so because I believe that the bee-keepers of our land already know how to line their pockets with gold. Should there, unfortunately, be any bee-keepers who need a little more filthy lucre, they may be able to take a hint from the plan I am about to relate for the aforesaid societies.

We know that our societies are not overburdened with a big bank account. There are many calls upon the society; there are printer's bills to pay; the secretary is too ill paid, and there are lots of other things which should have a little more of the grease of the "almighty dollar" rubbed upon them, that the industry might run in a smoother manner than it now does.

The plan I would offer is this: When the society meets the next time in annual convention, let some member propose that the society get up an exhibition which it will have exhibited at the leading fairs in the State. If there are many fairs, or should they meet at about the same time, then let there be several exhibits. One member might give, or rather loan, a few hundred pounds of comb honey; another could give a quantity of extracted honey. Then there could be beeswax, etc. These loans could be swelled up until the amount collected would run up into tons, if the premiums warranted a grand display. The products of the apiary, along with the different appliances used with the same, would, I think, justify the society in getting together a creditable showing. Where liberal prizes are offered, the association should be able, without any great trouble, to carry off all the premiums. It might be possible to show such an exhibit at several fairs in one season. After show time is over, the wares contributed could revert to those who loaned them, or the person attending to the show could sell the different articles, and turn the proceeds over to the owners. I never saw this plan published; it may be new; and if it is I should like to see some of our societies try it. I think it could be made to work. There are many fairs where liberal sums are offered for the best display of honey. Oftentimes these premiums are never taken advantage of. At the last fair given by the Mechanics' Institute in San Francisco, a premium of \$50 was offered for the best display of comb honey. When I was at the fair early in its opening, there was no exhibit of honey of any kind. If I had not sold my comb honey early last season I should surely have had a quantity of honey there, and probably would have captured that \$50 prize. There was no offer for any other kind of honey, as there should have been. A society working in the lines I have tried to outline could get the agricultural societies in their districts to "map out" a fair list of premiums for competition among apiarists.

Should it be said that a society, giving a fair, object to awarding premiums on such a layout

as the one I have just described, then the society that wishes to recuperate its funds in a legitimate way could arrange so that one of its members, the secretary, for instance, could get up the exhibit and draw down all the premiums in his own name. Later they could be turned over to the society for which they were really intended.

If any one knows of any reason why this plan should not be tried, I should be pleased to hear from him. There is no doubt in my mind that it would be one of the very best means to advance the interests of the bee-keeper's pursuit. We know full well, that, when the making of a honey-exhibit at a fair is left to the individual bee-keepers themselves, very little, if any thing, is done in that line. It is simply a case of "what is everybody's business is nobody's business." Where but a few jars of honey are now shown at a fair, and that of any thing but an inviting appearance, we could show tons of the most exquisite honey-nectar, I might say, that would tickle the palate of a god. W. A. PRYAL.

North Temescal, Cal., Feb. 28.

BEEES IN THE OPEN AIR.

OBSERVATIONS BY J. A. GREEN.

We have occasionally had accounts of bees building comb in the open air during warm weather, when, for some reason, they were unable to find any thing that would serve as a hive. Such cases have been most frequently noticed in California or other warm places. Even in that warm and equable climate such a thing is considered remarkable. Now, I don't like to have Illinois left behind in any thing, and I am going to help her hold up her end, even in the matter of climate, that execrated and villified climate, which is the one drawback to what would otherwise be the "garden spot of the world," which we have so often heard about.

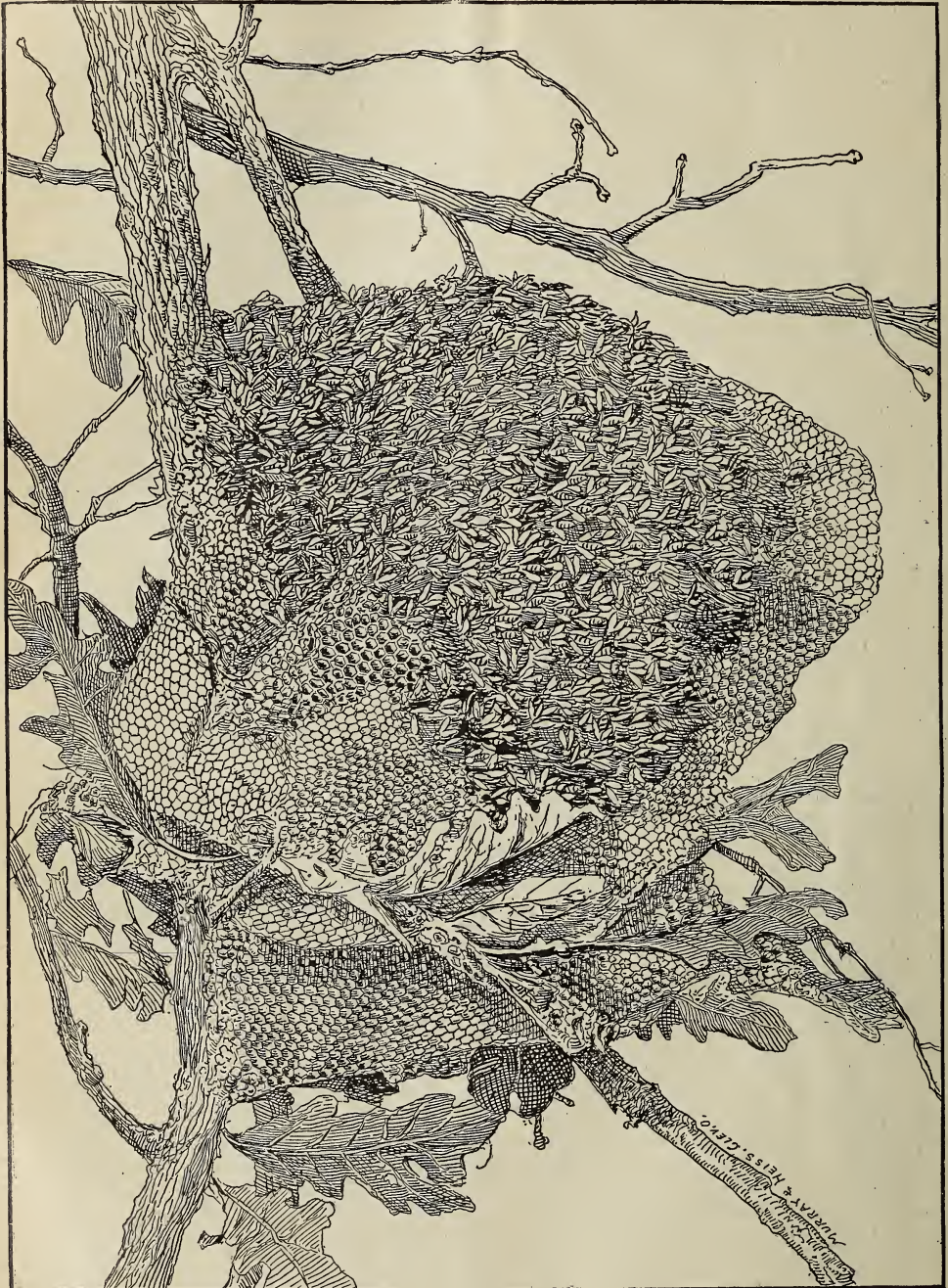
On the 25th day of last September I discovered a swarm of bees hanging on a tree in an out-of-the-way corner of my apiary. It was late in the afternoon. I was busied with other matters and I concluded to let them hang there until the next morning. Morning came with new duties, and I forgot all about the bees, and did not think of them again for several days. When I finally remembered them and went to look for them, I was surprised to find them still there. A closer examination showed that they had considerable comb built, stored with honey, and brood in all stages. Some of this brood had hatched, so that it could not have been later than Sept. 8th or 9th when they settled there, probably several days earlier. It must have been an after-swarm, led by a virgin queen, or her wing would have been clipped.

This apiary is situated on the edge of a sixty-foot bluff, with perpendicular face. Close to the brow of this bluff is a white-oak tree with its limbs projecting beyond the edge. The bees were on one of these overhanging limbs, which was in such a position that it could not readily be seen except from one spot, which ordinarily I would have no occasion to visit. This accounts for their not having been seen before.

As they appeared to be getting along very comfortably, I decided to let them stay there a while in the interests of science. They got along well through October, and were apparently just as happy as their sisters in hives. I fed a great deal of honey in the open air by putting out unfinished sections, cappings, and combs from the extractor, putting out a fresh lot every day. Of course, the bees worked very briskly on these for a time, and, according to the usual teachings,

there was danger of inducing robbing, especially where a colony was in so undefended a position. There was no trouble from this source, though I certainly did not contract the entrance to this

ting off the limb, I hung it up in the same position near the ground and took another photograph of them at close range. At this time the weather had become quite cool, and the bees did



A COLONY OF BEES IN THE OPEN AIR, AS SEEN IN ILLINOIS.

colony's hive, for their hive might be said to be all entrance.

About the 20th of October I took a photograph of them as seen from the ground, and then, cut-

not cover, the combs as they had before, most of them having withdrawn to the interior.

If you will examine the large picture carefully I think you can see that the bees are of the five-

banded variety. It would seem that these extra-yellow bees may count hardiness among their good qualities.

All summer long there were piles of hives and supers containing empty comb scattered about the apiary, besides stacks of empty hives into which they might have gone if they had wished. Other swarms took advantage of these opportunities; but these were either perfectly satisfied to remain where they were, or they had no idea of looking up a home for themselves. It is in order for those who claim that bees send out scouts to look up a home to go to before swarming, to stand up and explain.



I do not know whether the habit of selecting the bare limb of a tree for a habitation, *a la Apis dorsata*, ought to be encouraged or not; but certainly the trait that would lead them to hang patiently on the limb until the apiarist comes to hive them is a desirable one. I most solemnly aver that I did not ring any bells, pound any tin pans, flash any mirrors, nor go through any other time-honored performance to induce these bees to settle and wait till I should be ready to hive them.

The fall yield of honey in my locality was very limited in quantity, so these bees were not very abundantly supplied with stores. I am very sorry now that I did not feed them enough to last them until spring, and see if I could not winter them. I thought I would give them only enough to last them as long as they could reasonably be expected to live out in the open air without protection, and then unite them with another colony. I overestimated the amount of honey they had on hand, though, and on the 17th of November, after a week of very cold and stormy weather, I found them just dying of starvation. I intended to save the combs, which would have been a very interesting specimen, but they were unfortunately broken in transportation to my new home. I have the pieces yet, and may try to patch them up. It would make a very interesting part of a bee-keeper's exhibit.

Ottawa, Ills., Feb. 25. J. A. GREEN.

[This is quite an interesting case—the more so as we have the full and exact history. There have been other recorded instances where bees have taken up their abode in the open air, even in the Northern and Middle States. We not only believe that bees do nothing invariably, but they are quite liable to perform some strange and unaccountable freaks. We presume it would be quite impossible to compel a swarm to stay in the open air—that is, providing we allow the queen to have perfect liberty; but they do so occasionally, without any compelling. The photo was hardly clear enough

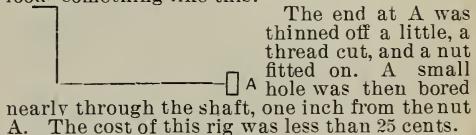
for reproduction by the half-tone process, and so we made the next best thing—a zinc etching.]

RECollections AND EXPERIENCES; BY AN OLD BEE-JOURNAL EDITOR.

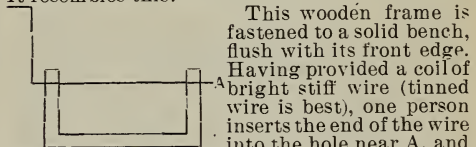
QUEEN AND CELL CAGES; BEE-CELLARS, HOW TO MAKE; WINTERING, ETC.

During the summer of 1874 or 1875 we bought of C. C. Van Deusen, Sprout Brook, N. Y., about three dozen spiral queen-cages. These were nearly or quite one inch in diameter, and made of heavy wire. Two button-molds, one for each end, and a mold with a hole burned through its center, were provided for each cage. These were slipped between the coils, the perforated one forming a rest for queen-cells. These cages were too thick and too heavy, yet we often used them.

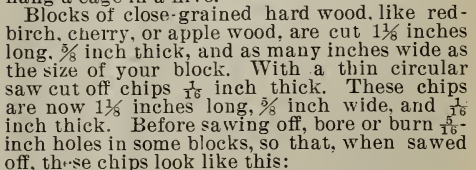
Finally we made a lot of cages from No. 18 gauge stiff wire (wire not annealed), as follows: We procured a piece of common round iron, $\frac{3}{8}$ inch in diameter, and about 31 inches long. Three inches of one end was bent at a right angle; then 10 inches was also bent at a right angle, 18 inches of the bar remaining. It now looks something like this:



A board 16 inches long was nailed to each end of it; a $\frac{1}{8}$ -inch board, five inches long; a $\frac{3}{8}$ -in. hole in each short piece near the top allows the iron shaft to enter, after which the nut A is screwed on. The machine was now complete. It resembles this:



Blocks of close-grained hard wood, like red-birch, cherry, or apple wood, are cut $1\frac{1}{2}$ inches long, $\frac{3}{8}$ inch thick, and as many inches wide as the size of your block. With a thin circular saw cut off chips $\frac{1}{16}$ inch thick. These chips are now $1\frac{1}{2}$ inches long, $\frac{3}{8}$ inch wide, and $\frac{1}{16}$ inch thick. Before sawing off, bore or burn $\frac{1}{16}$ -inch holes in some blocks, so that, when sawed off, these chips look like this:



Soak these chips for some time in linseed oil. Some strips of tin are cut $\frac{1}{2}$ by $1\frac{3}{8}$ inches. Bend these round a half-inch rod, and solder both ends together. Our cages are now ready to use.

If we introduce queen-cells into queenless

hives, insert a chip, with hole near the center of the spiral cage; put the point of a cell in this hole; draw the upper coils apart a trifle, and put a solid chip in the coil just above the cell. If to be used as a nursery, and to confine the queen when she hatches, fill a tin rim, described above, with prepared candy; put this in the bottom half of the cage, and insert a solid chip under it. Years ago we put blocks of sponge, saturated with honey, into these rings; but they were uncertain, and the candy of modern times is a great improvement.

To introduce queens, slip a perforated chip in the bottom coil; roll up a ball of candy as large as will drop into the cage, and, with a little rod, crowd it back over the hole a trifle. The bees gnaw this out and liberate the queen. Now, friends, why is not this cage, used seventeen years ago, as good as any recently invented and put upon the market?

RECORD-MARKING OF NUCLEI.

Various systems for recording the condition of nuclei and colonies have been recommended, but we never found any system so complete as to number the hives. Years ago we painted numbers on squares of tin, for all our hives. Tacks held these on; but strong winds often blew them off. We finally procured the small eyes intended to fasten cords to picture-frames. These are quickly screwed in, are certain in results, and are quickly transferred. We read that ordinary lead-pencil marks on zinc become indelible, and more distinct with age. This plan is simple, and worthy of a trial.

Our daily transient record is kept on thin narrow boards, numbered consecutively. We write on both sides, and abbreviate many words; as, "htd" for hatched; "No" for number; "gvn" for given; "q" for queen; "br" for brood; "cpt" for capped, etc. During showers, and mornings and evenings, these records can be examined, the future planned, and the present work ascertained.

We have also a good-sized well-bound book in which we record the hive-number, pedigree, age, size, color, and characteristics of queens; also the traits of the workers; also how the queens were finally disposed of. It takes time, and is trouble to keep these records; but they afford us satisfaction and profit, for we can at any time ascertain which are prolific, which give a cross in breeding, and which bees are most industrious and peaceable.

As we always clip our queens after they lay, we are never at a loss to identify them. When two queens are in one hive we designate the ones in right end as 16, the other as 16 a, the a always pointing to the queen in the left end, when it follows the number used on a hive.

A good-sized market-basket carries our paraphernalia. Across one end we fit a box which becomes a part of the basket, and which reaches down about half the depth of the basket. In it a small apartment is set apart to hold the chips used in queen-cages; another holds tools for grafting queen-cells; another holds some wire nails used to mark these grafted cells; another holds a small wide-mouthed bottle for honey, the rest being used to carry spiral cages. The rest of the basket is devoted to punk wood, wings, record-boards, a can of bee-candy, and the smoker. How profitable and handy to go loaded! matches and knife we always carry in our pockets.

We nearly forgot to mention an old case-knife, ground narrow and thin, and made very sharp on both edges. This we use to cut out cells, and trim and insert the same. To keep this sharp and avoid danger, a little wooden case was made, into which the knife-handle wedges.

BEE-CANDY; TRANSPOSITION-TOOLS.

By request, friend Root mailed us a pound of prepared bee-candy. It came in a little can, provided with a wide-mouthed cover that screws on. The postage cost considerably more than the candy, but the convenience of that can far more than compensates the cost of postage. The many improvements almost persuade us to again embark in the queen-rearing business.

The small wide-mouthed bottle for honey referred to, is kept ready to introduce laying queens. To keep this cork from going too deep and thus fitting too snugly, also to prevent its rolling, we put two thin wire nails through it at right angles, allowing them to project on all ends about $\frac{1}{8}$ -inch, cutting off the heads.

After reading G. M. Doolittle's book on queen-rearing, we decided to try our hand at transferring larvæ into queen-cells. He recommends goose-quill toothpicks, but these were too much trouble for us, so we tried our hand at forging them from thin steel wire nails; we succeeded very well as follows: Close up the steel jaws of a vise. With a round-faced hammer draw out the point of a nail thin and flat. Use a file, if necessary, to fashion the point to your idea; then insert the flat point a trifle in the crevice between the jaws of the vise, and turn over the nail as far as you wish. We made some wider, and some we bent more than others, so that, when using, we choose the one that pleases us most. Several of these can be made in fifteen minutes.

We have used a good deal of wired foundation, also very thick sheets without wire. Last season we had neither, so decided to try wiring the frames horizontally. A board larger than our frame had $\frac{3}{8}$ -inch cleats nailed on it, so that the frames just go over them, the top-bars resting on the cleats. A hinged hook at top keeps the frames from dropping off, and a projection at the bottom holds all secure. The right side of our brood-frames comes even or flush with the end of the wiring-board, and a piece of tin is hinged to the latter, so that it swings up against the side of the brood-frames. In this tin, four holes are put to indicate where they are to occur in the brood-frames. After being marked, the tin is swung back and the holes are finished.

At first two of us put in the wires quite slowly; later, the writer could, unaided, make considerable headway. This method of wiring proved quite satisfactory. In very hot weather a few broke down; and when honey was scarce, some colonies would eat some of them off at the wires.

Since we have used the square frames our bees have been wintered out of doors about half the time. Fortunately we seldom encountered a long period of very severe weather. At such times the danger is that bees will use all the stores near them, and finally starve.

In preparing to winter out of doors we invert the bottom-boards, so that the space under the frames is nearly two inches. We never have over seven or eight frames in each hive. These are in the middle of the case, with followers at each side, shingles to go loosely, set in to close the spaces below the followers; then quilts, carpets, or bran-sacks are tucked over and at both sides. By the way, bran-sacks with a hasty seam at one side, to get the necessary width, stuffed moderately with clean chaff, make fine cushions. Who else has used them? A water-tight close-fitting cap completes the task. When two queens are to be wintered, this outdoor plan is not advised, for, to some extent, the cluster is divided.

For some time we have contemplated constructing a bee-cellar right in our bee-yard, for

which the location is especially adapted, as the ground slopes gently in one and sharply in three directions.

BUILDING A BEE-CELLAR.

To build a substantial warm cellar, with small outlay, was the desideratum. We succeeded very well, except that it required a good deal of hard labor, as the ground is hardpan of the rouest type. The slopes made it easy to dispose of the dirt, hence we concluded to excavate with team, plow, and scraper, including alley to the cellar. We planned to throw the dirt out of a channel 50 feet long, $7\frac{1}{2}$ feet wide, and 9 feet deep. By alternate process, and cutting the banks perpendicularly with pick-axes, we finally succeeded in getting the channel. Pine posts, $6\frac{1}{2}$ feet long, split from heavier stuff, had shoulders cut to receive $2\frac{1}{2}$ -inch plank 8 inches wide. These posts occur every two feet, and stand against both sides of the channel. To these posts the pine plank are lightly spiked. The cellar is 36 feet long. Cedar posts, cut $7\frac{1}{2}$ feet long, are gained down a little at each end, to provide a shoulder inside of the plank, and rest upon the latter, thus forming the roof of the cellar: The posts were laid close together, and a few hemlock brush put on to prevent dirt sifting through. At the north end, posts were set and old boards nailed on to hold up the loose dirt. At the south end an alley 14 feet long, $3\frac{1}{2}$ feet wide, ascending a little to the outer surface, was prepared similar to the arrangement in the cellar, except that boards were needed on the outside of the posts to hold up the loose dirt. At the end of this alley a wall was laid, wide enough to retain the dirt, and high enough to hold about two feet of dirt on the top of the alley. With plow and scraper, enough dirt was put on to cover the cedar-post top three or four feet under ground. Three doors, one at each end and one near the middle of the alley, completed the cellar. A ventilator at the south end of the cellar reaches out through the top, and 23 feet of 8-inch tile go out at the north end at the bottom. The 36 feet of cellar slope 15 inches toward the north end, so that water, if any, can escape, while air can be admitted through the tile. If nothing occurs to prevent, this tile ventilator will be lengthened to about 150 feet, below frost, before another winter, so that warmed air can be admitted to the cellar at any time in cold weather, while in warm weather the air will be cooled before reaching the cellar.

Bees were put into this cellar Nov. 12 and 21. Since then the temperature has been uniformly between 42 and 44° Fahr., although from Dec. 23 to Jan. 22 the weather was very cold, the temperature for at least fourteen mornings having been from 2° above to 12° below zero. During this cold weather the ventilators have been closed. The place is rather damp, and mold has formed on the bees that drop down, and on the posts at the sides of the cellar. The bees are quiet, only one colony having thus far shown signs of soiling the outside of the hive.

After the fall rains, for a time a little water trickled out of the west side near the bottom. How the bees winter in this cellar, we hope to be able to report next June. J. H. NELLIS.

A REPORT FROM ANOTHER ALFALFA REGION.

HOFFMAN FRAMES NOT SATISFACTORY.

Six years ago last June I shipped from Kansas seven colonies of bees. They yielded honey abundantly, and it sold readily for 25 cts. retail and 20 cts. wholesale. As a natural consequence, nearly all the farmers caught the bee-fever. Honey has gone down, and the bee-fever

with it, and their bees are fast passing into the hands of bee-keepers. Last year was the first poor yield since I have been here, many of the farmers getting no surplus. I got 65 lbs. per colony, spring count, and I know of no one else who did quite as well.

This part of the valley is sown mostly to alfalfa, with a few patches of red clover. Our main honey crop is from alfalfa; but where it stands mixed with red clover the bees work almost exclusively on the clover. The latter yields two or three good crops, but the tubes on the bloom are not nearly so deep as they are east of the range.

We cut all of our own supplies, except sections, make our own foundation, and are about able to paddle our own canoe by A. I. Root furnishing the paddles. This, I think, is quite an improvement over my first start here when I bought fruit-boxes to work into 2-lb. sections.

We winter our bees on their summer stands, mostly in double-walled hives, with floor large enough for outside cover to rest on. I have done considerable experimenting on hives and frames on a small scale, but will not now ask space for a description, further than to say I have always used fixed distances, but not self-spacers like the Hoffman frame. I have a few, however, on the Hoffman principle; but when I want to take out only one frame (which is all that I wish to disturb, in a majority of cases), and that frame usually in the middle of the hive, I can have it out before I could loosen the follower of the Hoffman frame. I also fear the bees in this valley use too much wax for the Hoffman frame.

WM. WILLIS.

Montrose, Col., Mar. 9.

THE PAST WINTER IN COLORADO.

AN EX-BACHELOR OFFERS ADVICE TO RAMBLER.

Of all the literature that comes to my home, GLEANINGS is the first to be opened and read; first to be welcomed; brightest and best of them all. Indeed, words fail me in trying to tell of its merits, and how it is welcomed in my home. Sometimes it does not get here on time, and I feel perfectly blue; and I say to my wife it seems that I have lost something. And, hold now! speaking of my wife, perhaps not everybody knows I have a wife. Well, I have "all de same shust." Thus it is that the bee-keepers are finding themselves queens. Call them what you may, friends; but if all the bee-keepers enjoyed married life as well as I do, who can blame them for getting married? Thanksgiving day, 1892, marked a change in my bachelor's life, which thus far down life's steep decline I have not for once regretted; and my admonition to the bachelor friends out in California, that Rambler talks so much about, is, to get married. But I will not dwell long upon one subject.

Dr. Miller, in Stray Straws for Feb. 15, remarks that the cold has been no greater—indeed, not so great—in his locality as during some other winters; but that its staying qualities have been unusual; and, again, March 1st he says the severe winter has the hopeful side that the ground is continually covered with snow, and that, therefore, the clover ought to be well protected. In the same issue you remark editorially that your bees have never gone so long without a cleansing flight as this winter, and that your apiarist thinks their last flight was during the latter part of November.

Now, friends, it is too late or too early, I should say, for fish-stories; but the evidence is too plain to be misconstrued, when there are plenty of bee-keepers in this locality who can testify to the same story, that our bees have

been out at least two thirds of the days since Christmas; and to-day, talk about fine winters! We have had a most beautiful and sublimely grand winter—little snow, little cold weather, excellent roads, and every thing that goes to make up a first-class mild winter. Alfalfa is starting up, and from the present outlook we shall have a pretty early spring.

Although the winter has been very mild, yet I think the bees are coming through in pretty good shape; at least, mine seem to be pretty strong at the present time. I have been confined so closely at home, building me a honey-house and shop, that I have not visited around much, and have seen but few people to ask in regard to the way that their bees are wintering through.

Bee-keepers are, I believe, cherishing the idea that the old saying that one extreme follows another will be verified this season; and who is there but hopes that it will be thus—namely, since the honey crop was so short last season, it will be more than doubled this one?

ARE THE SEASONS IN THE IRRIGATED ALFALFA REGIONS UNIFORM?

I noticed on page 132, Feb. 15, that one W. H. Upton, of Morning Sun, Iowa, asks whether the seasons vary as much in the irrigated districts as in other places. I have seen no statements, pro or con, upon the subject, as yet, so I feel frank to offer my opinion. It is this: The season does not vary enough to make any showing at all; but when the bees commence to gather honey from the alfalfa there is one constant stream, so to speak, of honey coming in every day. It might be said that it tapers off toward the close, and you can then see the difference; but usually, for six to eight weeks there is not much of a variation. THEO. V. JESSUP.

Greeley, Colo., March 8.

A VISIT WITH NATHAN STAININGER, AT HIS APIARY.

HOW TO KEEP DOWN INCREASE AND SECURE LARGE CROPS OF HONEY; SWARM-CATCHERS, ETC.

It has been remarked, that one valuable feature of a convention is the opportunity it affords for private talks between individual members. Now, if such interviews can be held right on the scene of action, in the apiary, shop, and honey-house, where all original methods and bright ideas may be illustrated and demonstrated, there is not only an added charm, but a clinching effect.

Accordingly it is becoming customary for bee-keepers to visit around among themselves, and to write up such occasions for the benefit of all; and as I like this fashion, I wish to tell you about a pleasant visit I enjoyed last fall with one of Iowa's most skillful honey-producers.

For several years past I have had pleasant business dealings with my friend Mr. Nathan Staininger, formerly of Denison, and for the past three years a resident of Tipton, Iowa, which is about 25 miles from my home at Mt. Vernon.

I had never met Mr. S. until, as an outgrowth of our correspondence regarding some of his methods, he challenged me in a friendly way to come down there and "size him up," or something to that effect. I promptly accepted, and early the next morning I knocked at the door of his neat residence. In the suburbs of the city. Just as I expected, and as his good wife informed me, my friend was in the shop a few steps back. The door was open, and I entered. He was seated in an easy-chair, but in his work clothes, and fully occupied for the time. A

sleek-looking agent was entertaining him with some stereoscopes and views. This gave me an opportunity to take in the situation.

This was his large and very neat and clean honey-room and shop, with a large and well-equipped work-bench in one end, an extractor and other honey-utensils in the other; a foot-power saw at one side, and the whole middle of the room occupied by a huge pyramid of glassed cases of comb honey of snowy whiteness. Several other piles of nice fall honey stood at the sides. Through the back window and screen door I could see a neat apiary of about 230 colonies.

My friend patiently took in the panorama, and, after declining the fervent overtures of the agent, and receiving his retiring bow, he turned to me with an inquiring but businesslike air, which I recognized as the announcement "next!" I introduced myself. We both laughed, shook hands, and were soon lost in bee-talk.

I stayed all day and all night. You see, I wanted that pile of honey to help supply my customers, and we had no time to talk business until too late for the train that day.

Friend S. makes a specialty of comb honey, and his system and appliances reveal a tact in selecting the best ideas of others, to incorporate with his own. His brood-chamber is just the right size and shape, he thinks, being cut to fit the brood-nest (?) except that about an inch is allowed for sealed honey above the brood, upon which the bees can wipe their feet before entering the sections. There are eight brood-frames, a little deeper and some shorter than the L. frame, being two square inches less in size.

He discourages excessive and premature swarming, and keeps the white honey out of the brood-chamber by shifting the two outside combs to the center, replacing them with the two that contain the most young larvae and eggs. If this is done at just the right time, swarming is often prevented entirely, and piles of comb honey are the result. As a proof of this, there stood the only good crop of comb honey that I know of having been produced last season in this part of the country.

He uses the T super without separators. It is the same size as the brood-chamber, except in depth, and that is just right to take 24 sections, $4\frac{1}{2} \times 1\frac{1}{2}$, with no space at the ends to be filled up, as with T supers for the L. hive. He fills the sections nearly full of extra-light flat-bottom foundation, 14 square feet to the pound. He gets nearly all of the white honey in sections, and depends upon the fall crop to complete those that may be unfinished, and to furnish stores for winter, and he extracts what is over.

Mr. Staininger keeps all of his bees in one apiary at present. He clips his queens, uses a swarm-catcher, and never loses a single swarm. The grass is kept close with a lawn-mower. The yard is smooth and level, but slightly sloping to the southeast. With a few exceptions there are no trees nor vines.

His swarm-catcher is a wire-cloth box or cage, about 4 feet long by 12 inches wide and 10 high. It has a board for the bottom or under side, and one end is open full size. This open end is bound with a wooden frame, which is made to fit closely to the front of the hive while doing the catching act. A cloth curtain is attached to the upper side of this frame, which is thrown down over the opening as soon as the swarm is secured.

The bees are sprinkled with water, to keep them from worrying while in the cage, and from taking wing afterward. The swarm is then dumped from the cage into the hive it is to occupy. He has tried, with some success, Dadant's

method of returning swarms to the parent colony, 48 hours after hiving. He rears queens, from imported Italian mothers, by Doolittle's transposition cell-cup process, but he has the cells built out in queenless colonies, or nuclei, instead of in upper stories. He showed me with enthusiasm a lot of such cells just started, and others further advanced.

Although this was the 28th day of September, and there was apparently not a drop of honey coming in, the bees ready to rob upon a moment's notice, and no feeding was done, still the queen larvæ were swimming in an abundance of royal jelly, and the young queens, just hatched, were well formed, and of fair size.

His secret of success under such unfavorable circumstances is, that he does not depend very much upon the bees to feed the queen larvæ. He just fills the cell-cups about half full of the jelly before inserting the larvæ, and the bees have but little to do about it except to seal the cells at the proper time.

He winters all in one cellar, with good success. He leaves the bottom-boards on as in summer, but removes the covers. A warm mat of woolen carpet is placed over the frames and tucked down closely, confining the bees, except at their summer entrance at the bottom. A free circulation of air over the mat is provided for. This mat is removed, or a board is placed under it, before the bees begin to gnaw much in the spring.

Friend S. reports that, from about 170 colonies, spring count, he received, during the past very poor season, 12,700 lbs. of honey, nearly half of which was in sections. Not counting about 2500 lbs. on hand, and sold at home, what he shipped to dealers brought him \$1276.93. He has 230 heavy colonies in the cellar.

Aside from the bee-business, Mr. S. runs a thriving watch, clock, and jewelry business down town, where he spends his evenings, and where he has a skillful jeweler in charge.

I prize the many practical suggestions I received during my visit, and the aspirations they awakened; but the cordial hospitality with which I was entertained prompts the kindest regards. God bless my friend and his home circle.

OLIVER FOSTER.

Mt. Vernon, Linn Co., Iowa, Mar. 28, 1893.

OURSELVES AND OUR NEIGHBORS.

Therefore take no thought, saying, What shall we eat? or, What shall we drink? or, Wherewithal shall we be clothed? (for after all these things do the Gentiles seek); for your heavenly Father knoweth that ye have need of all these things. But seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you.—MATT. 6:31—33.

For almost the first time since our business was started, we found it advisable last fall to stop our wood-working machinery for about three months. Heretofore we have kept our machinery running the year round, making up work during the dull season, in anticipation of the rush during the busy season; and even after doing this, we have, during several seasons, found ourselves sold out before spring was fairly here. In such cases we have, as you know, by means of electric lights, run our works day and night in order to keep up. Of late, however, we have had several poor seasons for honey, in succession. Others have come into the field, until it has seemed that the supply business in some of its branches was rather overdone. This state of affairs, however, does not belong particularly to our industry. It happens now and then in almost all kinds of business,

especially in any kind of business that has been growing and developing as has the business of producing honey. Other establishments in our vicinity have had their periods of lying still at certain seasons. But I do not know but I have boasted a little that *we kept our* business going the year round, and kept our hands at work right along—that is, a large proportion of them—winter and summer. Not only that, but by means of our exhaust-steam heat, and well-protected comfortable rooms, we have given our help comfortable places to work in, even during the most inclement weather. Of course, a good deal of our help was inconvenienced by our stoppage last fall; and the more so because we could not tell them how long we should be obliged to shut down. At first we thought it might be for only three or four weeks. At the end of that time, however, the prospect was no better, and so the time of starting up was put off from time to time, until many of them became discouraged. A great part of them, it is true, found something to do elsewhere, and a good many lost scarcely a day. Some people seem to have a faculty of making themselves useful, and are, therefore, always wanted; but others do not have such a faculty. You know how it is. I think, however, that a good many might cultivate this talent of being useful somewhere every day, a little more if they tried to. But this, however, is outside of our line of talk to-day.

This spring we have had a fairly good trade. I believe we sold as many goods during the months of February and March as we ever did; but notwithstanding this, there were conjectures among our help as to whether we would shut down this year as we did last; and as the matter was talked over from one to another, a general uneasiness seemed to get started. Quite a few came to me, and wished me to give *them* a promise of work right straight along through the season as usual. I do not mean that they wanted a *promise* as usual, for of late years I have been careful about making such promises; and, in fact, I sometimes say, "Why, my good friend, there is not a man, nor woman either, in my employ, who has a *positive promise* of work every day in the year, no matter what the future may be." Perhaps I might add here, that I have found by experience that it is, as a rule, very unwise to make such business engagements. Of course, when we have good men or a good man, it is an excellent thing to let him know what to expect; and under many circumstances, you can give him a writing to that effect—that is, that he is to have work the year round. This agreement should include that your helper is to give good and faithful attention to his business, etc. I have many helpers who have been with me for years, and who expect steady work unless some unforeseen disaster should hinder; but at the same time there is no written or verbal agreement, that I know of. The reason why these people do not become uneasy, and hunt up a job elsewhere, is because they have known me long, and have faith in me, and I have known them long, and have faith in them.

Well, when this uneasy feeling got started among our people, and when I told one after another that I could not make them any positive promise, as usual various reports got afloat. Several came to me, wanting to know if it were true that we were going to shut down on the first of June; and one good friend had reported, so I am told, that we were going to shut down during 1894, and not run at all; and he became so uneasy in regard to the future that he finally gave up his place entirely, and went away hunting work somewhere else. Of course, he was not a very valuable man, for these uneasy ones

who are always borrowing trouble, instead of making the best of the present, are seldom valuable hands. Another thing, a discussion arose as to who was to stay and who was to go when this dull time came when there should be work for only a few; and some even went to our old hands and tried to convince them that it was not fair nor right nor Christianlike for them to have *all* the work, and others have only a little. I was finally obliged to say to such, that such matters would have to be settled by their employers, even though, in one sense of the word, it did not look exactly fair. Just think of keeping one man one week, and another man the next week, and so on during the dull season, so as to give all an equal chance! Perhaps I might add, that, where our good help want to take a vacation, we are always glad to arrange matters so as to accommodate, even though they should want to be gone for three or six months. Well, this matter of worrying about the future came up so often that I finally gave the friends a talk one day at our usual noon service; and as the day following was "text day," I asked each one to hunt over his or her Bible, and see what that had to say in regard to this matter. Of course, I had prayed over this state of affairs, and I was not greatly surprised when we had such a number of bright, hopeful, and deeply spiritual texts that they seemed to me like an April shower after the storms of winter; and it was this event that brought to mind the sentiment expressed in the text at the head of this talk to-day. Of course, the severe winter, with its many losses of bees, makes the outlook, not only for our helpers here, but for bee-keepers generally, rather unpromising. We do not know what April showers and a favorable season may have in store for us. But it would be very unwise—in fact, it would be foolish for us to worry, and borrow trouble over a future that we know nothing about. While thinking of the anxiety of the friends here around me, I have been reminded that probably there is more or less anxiety in the heart of every reader of these pages. What shall the harvest be? We do not know; and I for one am glad that I do not know. God knows, and that is enough.

Some of the friends who do not love the Bible because they do not take it right, may take exceptions to the expression, "Take no thought," etc. The Bible surely does not mean to say that we should not think of the future, and make careful provision for it; but you will notice, in the last verse of our text, it says that, instead of thinking about what we shall eat or drink, or in regard to clothing, we are to "seek first the kingdom of God, and his righteousness." And, by the way, that is my old, old text—the one that has been such a joy and comfort to me ever since I have found these Bible promises to be a mine of wealth beyond any thing else the world has yet furnished. These were the words of our loving Savior who came into the world, and who looked on the world and wept because of men's narrow, low, and selfish strife to get all there was to be had, or to get ahead of their neighbors. If we listen to him, while it is our privilege to commune with him and to get instruction from him, we ought to be ashamed of worrying. It is well enough for those who have no faith in God, to be selfish and grasping; and Jesus said, "After all these things do the Gentiles seek;" but for the Christian who trusts in God—why, the idea is awful. I wish I could repeat the texts that we had at that noon service. They came first from one side of the room and then from the other; and as one text started a thought, somebody else took it up by another text, until they seemed to branch out in every direction.

Some of the texts I am going to give you

were repeated at that noon service, and some of them have occurred to me since then in thinking of the matter; and I hope they may do you as much good as they have myself. The chapter from which our text is taken is brimful of reproof and promises in this line. Commencing at the 19th verse, Jesus says, "Lay not up for yourselves treasures upon earth"—those old familiar words that we have heard from childhood up; "but lay up for yourselves treasures in heaven." And, again, "Therefore I say unto you, Take no thought for your life, what ye shall eat, or what ye shall drink; nor yet for your body, what ye shall put on." The meaning is, of course, that we shall not be *anxious* about these things in a narrow way. Sometimes the younger ones at our table, especially when they come in from their plays very hungry, will begin to sing out, "Give me some of this;" or, "Give me some of that." As a reply I often say, "Shall I give you some before mamma and the baby, or anybody else, has had any?" They almost always hang their heads at this, and look foolish. Well, when somebody comes to me, and says, "Mr. Root, can't I have a place the year round?" etc., my reply in such cases is often like that to the children: "Why, my good friend, if I should keep you the year round, no matter how dull business may be, it would necessitate stopping somebody else, that you might have a place. You are a big strong man, and can work in the harvest-field, or almost anywhere else. There are in my employ, as you know, not only fathers who have large families to support, but there are widows with considerable families of children. Would you want me to stop their work that I might keep you?" Now, this is the sort of spirit that these verses are intended to rebuke. Jesus says, again: "Behold the fowls of the air, for they sow not, neither do they gather into barns; yet your heavenly Father feedeth them. Are ye not much better than they?" And Luke, in presenting the same subject, closes with this touching thought: "How much more are ye better than the fowls?" The thought is to me as if the Master meant to say, if God cares for the fowls and the birds, is it likely or reasonable that he forgets to look after the welfare and comfort of his own children—those created in his own image?

But there is a condition to this, remember. We are to be seeking first God's kingdom and his righteousness; and this includes looking after the widows and fatherless. If they are in the crowd seeking for a livelihood, surely any big strong man should stand back and give them the first chance. In fact, the promise is to those who do this, and not to the selfish and greedy ones. The average millionaire can not find any comfort in these promises at all. In fact, he has voluntarily cut himself off from them. Millionaires are not happy. We have recently been told of millionaires, or people who were so wealthy that they were almost millionaires, committing suicide. With all their wealth, this world had nothing to offer them—no attraction. They seemed to have forgotten that "a man's life consisteth not in the abundance of the things which he possesseth." Another of the texts was, "I have been young, and now am old, yet have I never seen the righteous forsaken nor his seed begging bread."

In regard to wanting a place whether others had one or not, somebody repeated the text, "In honor preferring one another." We are told that the Savior "pleased not himself;" and for those who are seeking the kingdom of God, and his righteousness—those who are working for the general good of mankind, without thinking of self or how much they have been doing for humanity, we have the following wonderful

promise, when the lives of these good people shall be finished: "Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world." When the end of all things comes, it is not to the *greedy* and to the *strong*, and to the successful ones in elbowing *ahead* of the rest of the crowd; but it is to the humble and faithful follower of Christ Jesus. In fact, they are to inherit *all* things. "Blessed are the meek, for they shall inherit the earth." Again, the kind and loving Savior uses these wonderful words to his faithful, trusting, obedient ones: "Fear not, little flock; for it is your Father's good pleasure to give you the kingdom."

Now, please let us understand, friends, that these promises are to the rational and consistent Christian. In this world we meet many who complain and murmur, saying they have been unselfish and kind, and yet God has not rewarded them. Some of them say, "I have been too honest to get a living." Some even say, "I have tried Christianity, and it does not bring sufficient to support my family."

A young friend of mine who was dismissed because he would persist in leaving his own work and rambling about through the different rooms of the establishment, urged as a reason why I should *continue* to keep him, that he had been going to meeting right along, regularly of late. What he said was true. He had been attending the meetings; but this fact did by no manner of means atone for his neglect of business during working hours. Christianity must be consistent. If a man is not honest, and faithful to his employer, attending *all* the meetings won't amount to very much in enabling him to earn his daily bread. While considering this matter, I can almost say as did David, "I have been young, and now am old." I am not very old yet; but I am getting older day by day; and my observation is this: That there is a continual and *unceasing* call for good men and good women. Of course, we want a well-balanced man. We have not any use at all for one who thinks that going to church is going to excuse him from attending strictly to his business. The man who commences Monday morning to figure sharp and keen to see how he can get more pay without rendering a corresponding equivalent to his employer, is not wanted anywhere; but one who sets to work on Monday morning to look after his employer's interests, to study up short cuts in business, to look out for leaks and losses, and unnecessary waste, if he is even fairly bright and smart will be wanted right and left. Some of my very best help, and some who are climbing steadily to better pay as the months and years go by, will often say, "Mr. Root, wouldn't it be a better way"—and then he will go on to explain how he could make a short cut—kill two birds with one stone—possibly have the team take a load both ways instead of carrying an empty wagon half of the time. Just now we have a carload of beautiful potatoes stored in a good cellar; and in order to keep them from sprouting, I want that cellar open nights, or at any time when it is *colder* outdoors than it is inside; but when the air outdoors is warmer than it is inside, I want the doors closed, and the shutters put over the windows, so as to keep the sunshine and warm air out. If it were not for my burden of cares, I could attend to this nicely, and I really enjoy the fun of doing it.

The same operation is required with our hot-beds and greenhouses. Oh how I do love to manipulate the sash and the shutters, so as to make every hour of the 24 count in the growth of these plants! It needs wisdom and sense, and *devotion* to the business in question. Sometimes a fierce wind, even when the weather is

warm enough, twists and whips off the little plants, recently moved from the greenhouse, so as to do them considerable injury. If it is a cloudy day, the sashes may be put over them to keep this wind off. If the sun is shining, however, the shutter should take the place of a sash. Little plants, newly transplanted, should be protected from the sun by means of shutters until it clouds up, or until night comes. You see, we must watch the *sun*, watch the *temperature*, watch the *wind*, and watch the *rain*. We must make all *four* of these *serve* us.

How many people are there, do you suppose, who could be intrusted with such a task? Not very many. We want somebody who *loves* the plants; somebody who loves them because they are *God's* creation would be the right man for the place; but as such duty would not occupy all of his time, we should want to set him at work transplanting, getting out weeds, and sowing seeds in the meantime. Then he must have enough interest in and love for his work to keep watch of the sun, the clouds, the rain, and the temperature, at the same time he is doing this other work. Oh! there *are* such men, for we have quite a lot of them in our different departments. But they all bring a good sum of money almost anywhere. When we find such a man, we tell him what he is to do, and keep an eye on him to see that he does not get caught; and when we find that he manages it all nicely—no plants are scorched or frosted, nor left covered up so they can't get the rain when it comes, then comes the pleasant feeling—we can *afford* to increase his wages. The chances are that he will be *surprised* when we tell him he is worth more money. You see, he has been so devoted to the interests of his employer—or, in other words, he has been so devoted to his allotted task of making the little plants thrive and *boom* (the last word may be slang, but no other one expresses exactly what I mean), that he did not even know he was worth more money. It is like those people in the text, who said, "Lord, when saw we thee a hungered or thirsty?" etc. Contrast this kind of man with one who is worrying all the while because he does not get what he *thinks* he is worth, or because he does not get as much as A, B, and C right around him, when *he* is sure he is a better man.

While thinking of these things, and this matter of worrying about the future, another old familiar text brings up past memories—"O thou of little faith! wherefore didst thou doubt?" Why, my dear good friend, there are thousands and thousands of good places, with excellent pay too, for the man who will enter into his work with such heart and soul that he can manage a greenhouse and a lot of plant-beds, or do a hundred other things of like care and responsibility. The only condition is, that he must be in love with his work and with his fellow-men, instead of being in love with self, and narrow selfish interests. The last verse of our text hits the whole of it—"But seek ye *first* the kingdom of God, and his righteousness, and all these things shall be added unto you."

GLEANINGS is still a welcome guest at my home, and is a great blessing to my wife and myself. It may be some satisfaction for you to know that here in far-away Australia GLEANINGS carries spiritual blessings with it, and that in many homes you and your very practical Home talks are very much talked of and appreciated. I believe what is wanted in the work to-day is more of the homely influence you disseminate through your journal, to successfully lessen existing evil. God bless you, and long spare you for the excellent good you are doing. A very poor honey crop this year all over. I shall be sending away an order to you about April next.

GEORGE KENDALL.

E. Bundaberg, Queensland, Australia, Feb. 22.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

GROWING MUSHROOM SPAWN IN AMERICA;
SOME NEW AND VALUABLE FACTS
FROM OUR GOOD FRIEND
E. GRAINGER.

Mr. Root:—Some time ago I read (in GLEANINGS I believe it was), that mushroom spawn could not be produced in the ordinary hot-bed frames. For several years we have found, in taking down our hot-bed frames in the fall, that the manure which was put in early in the spring time was more or less full of mushroom spawn. If these beds were covered, we used to get quite a nice lot of mushrooms until the frost prevented their growing. Without using any spawn whatever to start them, they just seemed to grow of their own accord. Last fall we took some into the greenhouse, put it under the soil where we grow lettuce, and it produced mushrooms successfully during the winter. Had we saved all the manure with mushroom spawn in it we could have made a very large bed without the expense of buying spawn. We use quite a lot of cow manure in connection with our potting soil. Sometimes we get it in the summer, about August, from milkmen who are in the habit of milking their cows under a clump of trees. Last year we got one man to bring us some of this, which was perfectly dry. It was laid in a pile in the sun, exposed to the weather. It got wet during a thunder storm, and I noticed, in a day or two after, it commenced to heat. We leveled the pile down until it was about a foot deep; and when doing so I saw that it was full of a white stringy substance which experience has taught me to recognize at once as mushroom spawn. We took it into the potting-shed, threw it under the bench, covered some fine soil over it, gave it a watering, and in a short time we picked the best and finest mushrooms we ever saw grown in the winter. They were extra fine, and came up thick all over the bed. This year we have gone into this more extensively, following directions given in best works on mushroom culture, using imported spawn. They have been tolerably successful, but do not produce as many nor as fine mushrooms as the beds made as described above. To test the two we took some of the spawn from the hot-bed frames, just as it was, and buried it in a corner of our mushroom-bed that was spawned with imported brick spawn, and we noticed the mushrooms came sooner there, and were finer, than those grown on the other part of the bed. We made one bed in the summer, putting the manure into one of our greenhouses after all the plants had been taken out. It got very dry from the heat of the sun; and, being busy, we neglected to water it, and did not expect to get any mushrooms. There was no spawn used; yet where the drip from a ventilator got on the bed, and gave sufficient moisture, very fine mushrooms grew thickly, showing that, had the proper amount of moisture been given, the bed would have been quite as successful.

We give you these facts from our observation, which, we think, go to prove that the main point in growing mushrooms is to have the beds just moist enough; and when the temperature becomes low enough they are bound to grow.

It would appear from the above, that any manure has more or less spores in it, that produce mushroom spawn; and it requires only the right temperature to develop them. We are now trying some in a cellar, which, we

think every thing considered, will be the best place, as the temperature can more easily be kept equal.

There are three distinct kinds grown here; viz., the "horse" mushroom, which we sometimes find in the fields in the fall; the common meadow mushroom, which is the kind generally produced from imported spawn; and the St. George mushroom, this last being the best of the three varieties. It is stronger, larger, much heavier, and has more substance in it. This is the kind produced by the cow manure referred as above, and we think it is the same variety advertised in the *American Florist* as new.

We find mushrooms very profitable here, getting from 60 cts. to \$2.00 per lb., average-sized ones selling from 60 cts. to 75 cts. a dozen in the summer. We will let you know later on how we succeed with the beds we are trying in the cellar.
E. GRAINGER.

Toronto, Can., Feb. 24.

[Friend G., we are very glad indeed to get the above facts. It has been impressing itself on my mind for some time, that a good many of these so-called toadstools are edible mushrooms. You know I made one experiment in that line; and the result was, that what we had thrown away as toadstools proved to be as good mushrooms as any on the market. I have read somewhere of a scientific man who made tests of all the mushrooms that could be found. He had each specimen properly cooked, and then took one mouthful. If it tasted good, and no unpleasant result followed, at the next meal he ate a dishful. This settled the matter that it was an edible variety. Now, this can be very easily done, and I am quite certain that a single mouthful of even the poisonous varieties would be safe. Another thing that impresses itself on my mind is the fact that people are often made violently sick by eating freely of some article of food that their system was unused to—green cucumbers, for instance, and new fruits and vegetables of various kinds. And another thing along in this line, I am inclined to think that one might so accustom himself, by taking a little at a time, that he could eat, at least to a certain extent, of the so-called poisonous mushrooms. I am very glad indeed to know there is a probability that we shall very soon be able to grow our own spawn; nay, further; that there is already in our fields just as good mushrooms as any to be found anywhere in the world. Of course, neither mushrooms nor any thing else will grow unless some seed has been planted at some time. This spawn you mention must have existed on your premises, and perhaps it has been for years unnoticed, only waiting for the right kind of encouragement, such as you have been giving it, to spring forth and minister to your wants.]

THE PLANT-BEDS AND THE GREENHOUSE FOR
APRIL, 1893.

The greenhouse has done nobly. We never before had such nice plants with such steady, uniform, vigorous growth, as this has given us. But its beauty is just now pretty much on the wane, because the orders have cleaned out nearly every thing that is fit to be shipped.

The six rows of American Wonder peas that were sown in December are now white with bloom, and also contain pods, some of them almost large enough for use. The greenhouse seems to have had some peculiar effect upon the peas, to keep them growing and bearing. Snails threatened several times to eat up the peas and every thing else; but a prompt and

liberal application of tobacco dust laid them out at once. By the way, we have suffered much loss for several years past by snails eating our wax beans; and we have only recently discovered the cause of our trouble. Plenty of tobacco dust makes an excellent fertilizer, and also does up at once any such enemy. Right over the six-inch tile that carries the exhaust steam to the greenhouse, we have a plant-bed about 75 feet long. This was filled with onion-plants growing nicely; but I thought we would put some wax beans between every other row, thinking they would be about ready to take the place of the onions when they were sold off for onion-plants. To my surprise, however, the wax beans came up—or it seems as if they came up almost as soon as I turned my back after planting them; and in a few days more they put out great broad leaves, so large they shaded the onions and every thing else; and, all together, we have the most promising lot of wax beans under glass I ever saw. We have made tremendously heavy plantings of Jersey Wakefield cabbage seed this season; but so many of the orders have been away up in the thousands that at present we have not a plant fit to send out, and it is the same way with Early Summer. With our rich plant-beds and plenty of sash, however, it is an easy matter to push cabbage-plants, and we have got thousands on the way.

The orders have not been so strong for celery-plants as yet, so we are in hopes to have lots of nice ones before the demand comes.

The weather has been, perhaps, the finest I ever saw for the fore part of April. We have had sunshine almost every day, and frequent "April showers," and no very severe frosts.

The demand for lettuce-plants has been rather greater than usual. To-day, April 11, we are putting up an order for 3000 Grand Rapids, to go away off to Colorado. As they are cold-frame plants, with large bushy roots, I think we shall be able to get them through in good order. By the way, a cold-frame plant that has had its foliage pretty severely pinched by the frost, after it once gets vigorous in the spring has a more stocky and bushy root than we can get very well from greenhouse plants. I suppose we might do it by cutting back the foliage; and, by the way, our American Pearl onion-plants raised in that new greenhouse are getting to be just beauties. They grow so fast we cut back the tops twice. The last time, one of the men sheared them so closely I feared he had done them harm. The bed looked like a small boy after he has been to the barber-shop in the month of June. There was hardly any thing left but stumps and roots. We gave them a good cultivating, however; and, by the way, this cultivating in plant-beds we do mostly with the head of a nice steel rake. Sometimes a garden-rake breaks off at the shank. Do not try to mend it, but take the head and use it for a weeder. If it has a dozen sharp tempered teeth, or more, all the better. After cultivating the ground up very nice and loose, and then giving the plants plenty of water quite frequently, they started up and made an astonishing growth. I am sure this method will pay, for we do not want to take onion-plants out into the field with a great long slender top that would just droop down in the dirt. They should be sheared off a week or ten days before transplanting. We do it with common shears; and by holding a large square tin pan close to the row of plants, the tops may be readily saved. In fact, we have been selling them on the wagon. After they were gone, the boys said several customers wanted some more of those "chives." That reminds me that we used to have chives in our garden when I was a boy; and if there is a demand for them, we certainly should be glad to

furnish them. They look like onions, only they grow in great clumps, and only the foliage is eaten. When the plant gets fairly rooted, you may shear off the tops almost every other day; and it will keep growing and spreading and increasing in area.

Our American Pearl onions that wintered over can now be said to be safely out of the woods. There is a good stand, and we shall doubtless have quite a crop of big handsome onions about strawberry time. The peas we planted in the open field about the first of April are now up nicely, and large enough to cultivate; the same way with beets.

We have had bad luck in getting pepper-plants. Although we have sown the seed again and again, even in the new greenhouse, we have but a small supply of plants. We think it can not be the seed, because we have tried seed from three or four of the best seed-merchants, but very likely because they require a higher temperature than almost any other plant.

The Freeman seems to promise to be the coming potato. When I told you I had six barrels, I had no idea that so many of you were going to want a barrel apiece. We are trying to get some more at some price, but I fear we shall not succeed.

A year ago Peter Henderson advertised the St. Martin rhubarb roots and plants. On their recommendation I bought half a dozen roots and half a pound of seed. The roots we received were rather small, and I did not think best to make a test last year. This morning, however, I had a sauce-dish of the St. Martin rhubarb, and also one of the ordinary kinds. Sure enough, the St. Martin has a very distinct and pleasing berry flavor. If your eyes were shut you would think it were something between a gooseberry and a huckleberry. Come to think of it, I do not know but it is more like the Sterling strawberry, after all—that is, there is a peculiar tartness about it that reminds one of the strawberry. I think it is going to be an acquisition. So far as vigorous growth is concerned, I do not see that it is any different from the common. The leaf-stalks, perhaps, have a brighter scarlet tint than we ordinarily see in the common rhubarb.

My experiments with fertilizer furnished by the Mapes people begin to promise better. At first I used rather too much, and the onion-plants were set back a little; but after they recovered they showed a darker green, indicating strength and vigor. When I raked it into the seed-bed for cabbage-plants, and then followed it with lime, just as we are in the habit of using guano, it seems to have almost the good effect of guano; but as it *contains* some guano, this may in part account for it. We will make further tests, and report.

We are having excellent spinach now right along, that wintered over without any protection.

Is it not strange that something often happens to a plant that we value particularly, and take unusual pains with? We gave our Timbrell strawberry-plants the best place in the new greenhouse, and did every thing we knew how, to make them grow. They started with wonderful promise. But a few days ago I noticed that a leaf would be missing here and there. Finally one plant had lost all of its leaves; and this morning only two were left having any leaves on at all. As nearly as I can make out, it was the work of mice. What does possess such vermin to go and pick out the most valuable thing you have on the premises? If I had put my strawberries in the open ground, and given them the same treatment as the ordinary kinds, I should have been very much further along.

SOME GERMAN POETRY.

Some time in the winter, one of our sturdy German workmen handed me a little bit of newspaper clipping. The print was German, and, of course, I could not read it; but he said it was something that would just suit me, and he said it was like what I wrote for GLEANINGS; but as he could not talk our language very well, that was all he could tell me about it. But he insisted that it was something of such great value that it ought to be put into GLEANINGS. At the time, I did not know that it was poetry, but we gave it to "W. P." to translate. Our German friend made inquiries every two or three weeks, but somehow or other the translation did not materialize. When it did come, however, I for the first time understood why it is difficult to make a translation, so as to make poetry and rhyme in English out of what was poetry and rhyme in German; but I was so much pleased with the result that we give the translation below; and as our German friends may like to see how well our stenographer did his work, we give also the German text for their benefit. By the way, don't fail to consider what a fine compliment I received from our good friend Mr. Ruff when he told me that it was just like my writing. Here are the "Golden Sayings" that took such a hold on him.

Goldener Spruch!

Wer seinen Acker fleißig baut
Und dabei Gott dem Herrn vertraut —
Wer gleichermaßen wohl bemißt
Was er der Wiese schuldig ist —
Wer seinen Viehstand sorgsam pflegt
Und Futter stets in Vorrath legt —
Wer jeden Handel baar besorgt
Und nicht leichtsinnig fauft und borgt —
Wer mit der Sonne früh aufsteht
Und frisch an seine Arbeit geht —
Am Sonntag ruht, und Herz und Geist
Mit Gottes heil'gem Worte speißt —
Wer sich an Ordnung, Reinlichkeit
Im Haus und Hof und Stall erfreut —
Wer Habsucht und Verschwendung flieht,
Wer seine Kinder fromm erzieht —
Wer mäßig bleibt in guter Zeit
Und gern entbehrt in Noth und Leid —
Wer auch in dem Geringsten treu,
In Wort und Werk von Falschheit frei:
Mit dem wird's gut im Hause sein,
Wie es auch kommen mag und gehn.

GOLDEN SAYINGS.

He who gladly turns the sod,
And thereby shows his faith in God;—
Who takes no more from off his farm
Than comes back to it from the barn;—
Whose flocks and herds are warmly housed,
With hay and fodder well inclosed;—
Who buys his goods for cash on spot,
And buys things needed,—borrows not;—
Who rises at the break of day,
And fresh to labor speeds away;—
Who rests on Sunday, heart and mind,
And feeds on heavenly love divine;—
Rejoices much in order, cleanliness,

In house and yard and all his premises;—
In greed and fraud takes no delight;—
Who rears his sons in wisdom's light;—
Who does his work at stated hours,
And thus evades misfortune's sorrows;—
Who faithful is in least and most;—
In word and deed is always just;—
It shall be well with him at home, without,
In going in and coming out.



Seest thou a man diligent in his business? he shall stand before kings; he shall not stand before mean men.—Pr. 22:29.

H. P. LANGDON, of East Constable, N. Y., has the largest house-apery in the world. It is 11 x 100 feet. It is well equipped according to the latest ideas, and is a success.

If R. L. Taylor and the others fellows don't keep still, we shall be on their side of the fence. We are talking about self-hivers versus queen-traps, as discussed recently in the *Review*.

OUR winter losses at the Home of the Honey-bees have increased from 20 to about 35 per cent; and if this beautiful spring weather will only hold out a little longer, our wintering and springing troubles will have ended, for there are lots of hatching brood all over the apiary.

THE *Bee-keepers' Enterprise* is the title of a new monthly, to be issued May 15, by Burton L. Sage, who is to be its editor and proprietor, at New Haven, Ct. If we can judge any thing by the prospectus sent out, it is going to rival in appearance any of the bee-journals now published.

WHEN we said of the *Progressive Bee-keeper* in our last issue, page 273, that we had no doubt but that it would be "as successfully conducted as before," we had reference to its editorials and general good selection of matter, and not to its business management whatever that may have been. We make this statement, as the Leahy Manufacturing Co. misunderstood the purport of our editorial.

TYPES do queer things; and not the worst is pulling up sometimes while on the press, and pulling some more type. Well, a lot of 'em, by mutual agreement, pulled up on the reverse side of this form all at once, and "sot down" on the horse's head that Rambler tells about as having such a funny expression while she was sitting down. That "funny expression" was just "too cute." Our readers will have to supply in imagination what the lines fail to supply.

If you are going to paint your honey-house, barn, or shop, use Venetian red and genuine French ocher, mixed about half and half. Don't try to get too cheap an ocher. Something worth between 6 and 7 cts. per lb. would be about right. The mixture of ocher and Venetian red makes a very nice bright red tint—a color that will not fade nor turn brown. Of course, two coats should be used. This color would be hardly suitable for painting hives; but for such use, as light a colored paint as possible should be used.

LATEST reports show that winter losses from colonies outdoors will not be as great as has been anticipated. Indeed, in most sections the mortality will be no greater than usual; while those colonies in the cellar fared much better than in former winters. The beautiful spring weather is a rather pleasant surprise to most of us. It means lots of brood, and this, of course, means a big working force when the honey harvest opens up.

"OUTDOORS" is a book of 80 pp., nicely bound and printed, covering the subject of yachting, cycling, football, baseball, horsemanship, rowing, and canoeing. If you wish to see what it is, send five two-cent stamps to the Pope Manufacturing Co., Boston, Mass., and you will be pleased. This may sound a little like gratuitous advertising; but it is preaching the *gospel of outdoors*, and we are glad to encourage any such noble enterprise. We feel also as if these sports had a place right alongside of our favorite pursuit—for by some our industry is regarded as a pastime.

It seems that the *Evening News*, of Washington, D. C., has been offering prizes of a bicycle to agents who secure 100 new subscribers. Master Frank Benton was the one to secure the first wheel, and he did it in 72 hours, and is now at work securing another for his sister. As he is a boy only eight years old, the feat is quite remarkable. But then, he is unusually bright, and, if his parents will pardon us, handsome. Master Ralph will be better known if we state that he is the youngest member of the N. A. B. K. A., and is the son of Frank Benton, now in the Department of Agriculture, Washington, D. C. We are always glad to know that anybody has come in possession of a wheel, for we know that he is adding greatly to the joys of life, besides driving away disease and perhaps escaping premature death. This remark applies not especially to boys, but to indoor middle-aged people, who get very little fresh air.

PRESENT indications seem to show that this season *springing* is not going to be so bad as *wintering*, although in average seasons these conditions are reversed. Our spring weather so far has been most beautiful. So far as we can ascertain from reports, the same conditions have existed nearly everywhere. Colonies that were very weak, and would, in ordinary springs, have spring-dwindled to nothing, are beginning to build up. Young bees are beginning to hatch, as the result of the warm balmy weather, and natural pollen is coming in. No one knows what the mortality of wintering and springing would have been with our usual cold and wet Aprils. As it is, the cellar-wintered colonies, coming out into such beautiful weather, will build up amazingly fast; and those that have been wintered outdoors, even though they have dwindled down, will make good use of the weather.

In this issue we start a new department under the heading "Trade Notes." It follows Editorials; and hereafter, when there is appropriate material on hand, it will be found under that head. We intend that this department shall keep track of and describe all recent useful improvements, whether of our own or of others; and we shall be obliged to manufacturers and others if they will furnish us material for this department. So many devices, ideas, and methods that have been submitted to us in the past have been found to be either worthless or abandoned, that our "editorial we" will have to sit on the judgment-seat. That functionary will endeavor to be as impartial as possible; and if he considers the device or idea not worth

noticing, he will not describe it, as our subscribers will not care to wade through descriptions of no practical value.

THE MAINE STATE BEE-HIVE.

SEVERAL have written us, furnishing us facts in regard to the Maine State bee-hive, by R. S. Torrey, as mentioned on p. 273. It seems that it was but a slight improvement over the old box hive, and very much the same shape. Its inventor was the most prominent bee-keeper and supply-dealer in the State before the introduction of the Langstroth hive and system in 1870. Along about that time, the *American Bee Journal* began to be taken, and progressive ideas, including father Langstroth's hives, shoved the Maine State hive to the wall. Mr. Torrey was also a seller of secrets for "making honey as good as bees' honey."

SEALED COVERS VS. ABSORBING CUSHIONS FOR OUTDOOR WINTERING.

ON page 273 we asked our subscribers to "overwhelm" us with reports showing the comparative tests between colonies under sealed covers packed in chaff, and colonies packed in chaff without the sealed cover, or on the absorbing-cushion plan. Well, we did not get deluged nor even overwhelmed; but a few reports came in that were so conflicting that we are unable to tell which way the wind blows. Some are greatly pleased with the sealed cover, and will use no other method in the future. Others are decidedly disgusted, and somewhat blame us for giving as much prominence to the idea as we have; others can detect no difference between the two methods. In our own apiary, we are not entirely decided, although the advantage seems a little in favor of the absorbing cushion. It is proper to remark, however, that our sealed-cover colonies, although nominally so, were not so actually. They were prepared so late in the season, that little or no sealing was done. The sealing, if it is done at all, *must* be done by the bees before cold weather sets in, along in September or in the early part of October.

As to the position of the other bee-journals, the editor of the *Nebraska Bee-keeper* reports bad results for sealed covers. The editor of the *Bee-keepers' Guide*, on the other hand, publishes a splendid testimonial for it, saying that he has used the plan for the past 20 years, and that he has always wintered successfully.

Now is the time to send in reports, when the discussion is fairly before us, and our interest, if we ever had any, has not died out. Don't be afraid to *deluge* us, for the truth is what we are after, and we can get it only by comparative tests in *many* and *varied* localities.

Later.—Since writing the above, reports are coming in, though a little tardily, more in the "overwhelming" style. The great mass of them show that there is no difference between colonies under sealed covers protected by packing, and similar colonies equally protected under absorbing cushions. If these set forth the correct status of the case, it will account for the conflicting reports mentioned above; for we know that colonies, under precisely the same conditions, in the same apiary, will winter very differently. If a colony happened to be under a sealed cover, and died, and another under an absorbing cushion, and lived, it would prove nothing. We are not entirely satisfied yet, and desire to be deluged with reports. Let them pour in by the hundreds.

Still later.—Hold on! Another big pile of reports are coming in, and the evidence seems to be turning more in favor of the absorbents. At this rate the sealed covers will have another "black eye."

J. A. BUCHANAN, AND THE CHARGES OF ADULTERATION AGAINST HIM.

SINCE the matter was written with regard to Mr. Buchanan, on page 275, we have received a letter from him which materially modifies the situation: but as the *Evening Star*, published at Steubenville, Ohio, came out with bold headlines, to the effect that J. A. Buchanan, of Holliday's Cove, W. Va. (a suburb of Steubenville, just across the river), had not only adulterated honey, but plead guilty, it seemed to us that it knew whereof it spoke, although at the time, as our readers will remember, we could scarcely credit the report; and before we could pass judgment we desired more light, not only from Mr. Buchanan, but from others. In response to this, Mr. Buchanan sent us a long letter, a short extract from which we here give:

Mr. Root.—I have your letter of the 28th inst., making inquiry as to my innocence or guilt of adulterating honey. No matter how it looks to you or to any others, I am innocent of this charge; and when I was called before Justice Trainer he asked me if I plead guilty or not. I told him I would prove to him that we did not adulterate our honey, and could easily prove this; and I asked whether if I would do so it would end the matter. He said it would not avail me any thing, as the law holds the party who sells the goods, and the seller must pay the damage or fine, even if he is not guilty; and at this juncture the inspector's attorney came in and stated the same. Then I remarked that, as I must be fined in any case, what would be the wisdom of standing a trial? They both said it would only add an additional cost, and nothing to my advantage. Then I said that I might as well pay the fine and end the matter for the time. It might be that these men's opinion was given that they might get their fees without any labor on the case, and that it had been better for me to have had the case tried at the time. I never sued any one, nor have I ever been sued in my life. I am 52 years old; never quarreled with a man, nor had one quarrelsome word with a living man. I have talked plainly with those who have wronged me. But I am not posted in law, from not having any thing to do with it, and possibly I should have stood a trial, but was governed by what these men said. J. A. BUCHANAN.

Holliday's Cove, W. Va., Mar. 30.

As nearly as we can make out, there has been "bad blood" somewhere. If the editor of the *Evening Star* is not malicious, some of the editorials in his paper in regard to this matter, which have appeared lately, begin to look that way; at all events, we shall place a charitable construction on the letter above—at least for the present.

Although Mr. Buchanan paid the fine, it does not necessarily follow that he plead guilty to the serious charge of adulterating honey, as alleged by the *Star*. He did what many another of us *might* have done—he paid the fine to end the matter. But here, again, like many another, he made a serious mistake, because the payment of the fine was, in a sense, a confession that he had adulterated. It would have been far better for him to have stood a trial. If his statements are true, as we have reason to think they are, he has been the victim of a certain commission house. Indeed, we have sold honey ourselves which was afterward pronounced adulterated, by consumers. We made the mistake of selling the honey on the reputation of the seller, and another mistake in not testing it as we now do honey before it goes out. Whether the honey in question was adulterated or not, we can not now say; but we certainly think, in view of the sure and simple ways of detecting adulteration, that no prominent honey-buyers should be "taken in" by any such bogus goods. Let every lot be tasted—not necessarily every can in a carload of honey, but here and there a can, so as to get a fair average of the whole lot. If there is any doubt about it, let it be subjected to the alcohol test, as given in our

last issue, on p. 275. It might be well, also, if further tests then appear to show adulteration, to submit a pound or two to the State Chemist, who, we understand, is authorized to analyze and report, free of charge.

Later.—Since writing the above we have received another letter from Mr. Buchanan, furnishing us such evidence and testimony as to leave no doubt in our mind that he is entirely innocent of the charge of adulterating; and so far as pleading guilty—that seems to have originated with the *Evening Star*. As we said in our editorial of April 1, we had hitherto known Mr. B. as a reliable and honest man, and we are very glad indeed to have additional assurance to the effect that he has been so all along. We are sorry that we said as much as we did in our issue for April 1; but we did not think it possible that the editor of the *Evening Star*, or any editor, would dare to say a man had "pleaded guilty" unless it were true.

TRADE NOTES.

THE NEW CRANE SMOKER.

As promised in our last issue, we herewith present engravings of the new implement. It is the invention of Mr. J. E. Crane, of Middlebury, Vt., with some improvements of our own. He has already secured a caveat, and, we understand, proposes to take out letters-patent.

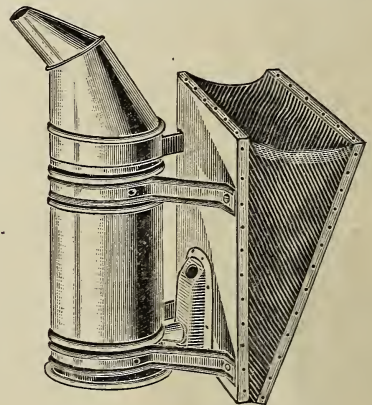


FIG. 4.—NEW CRANE SMOKER.

Fig. 4 is the outward appearance of the new smoker, and shows that it is beautiful in design, and handsomely and well made. Indeed, it is the most expensive in construction of any smoker ever before put out. The bellows, to begin with, is made ample and substantial, having an inside spiral spring, J. Fig. 1. These springs have been carefully tested; and on an extensive test, with Clark smokers, we find them to be, to coin a word, unbreakable, and elastic. The boards are nicely finished on the outer surface, and the valves are adjusted with great care, each one being inspected before going out.

So far, the smoker presents no new ideas. The particular feature which Mr. Crane claims as his invention is the check-valve F, in combination with C, Fig. 2, by which smoke is prevented from going into the bellows, and by which a strong concentrated blast is secured. Its details of construction are shown in Figs. 1 and 2. The particular valve is shown in F, Fig. 2. A stamped canal, C, covers the whole, and is perforated at C. A pressure of the bel-

lows opens the valve F, and throws it tightly against the hole C, leaving no exit for the air to escape through except the smoker-cup. The moment the pressure is released from the bellows, F drops down into position, closing the hole and leaving ventilation through C. Thus it is that smoke can not get into the bellows,

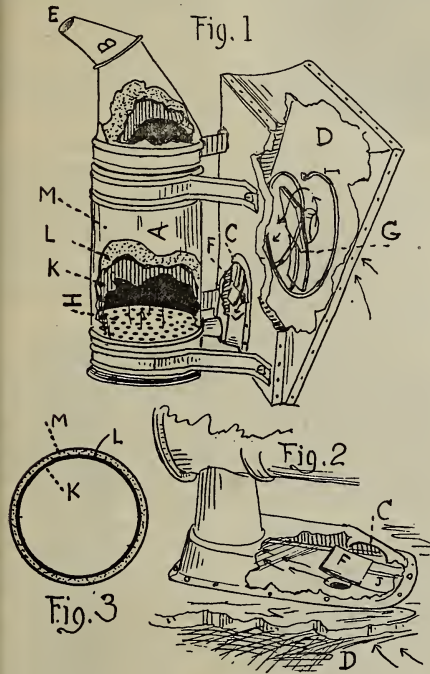
legs. The cup can at any time be released by means of four screws; so also, in a similar manner, can the canal covering the special check-valve.

The new smoker presents also still another feature. The bellows is reversed, the large end being upward. But there would be no advantage in reversing the bellows were it not for the fact that the nozzle is curved, as shown in Figs. 1 and 4. This makes it unnecessary to twist the hand out of the natural and easy position. By always holding the smoker in an upright position, a stream of smoke may be sent at right angles to the plane of the bellows, without disturbing the contents of the fire-cup, and this will avoid throwing sparks. A little practice in manipulating this smoker will show that this combination of bellows and curved snout is the thing. We will suppose that the smoker is standing on the ground. The hand grasps it in the natural way, brings the nozzle above the edge of the hive, and a couple of whiffs, without twisting the hand in the least, sends a stream of smoke over the frames.

This smoker has been submitted, in its less perfect form, to Dr. Miller and others. The doctor was greatly pleased with it, as were also the others.

TAYLOR'S COMB-LEVELER DEVICE.

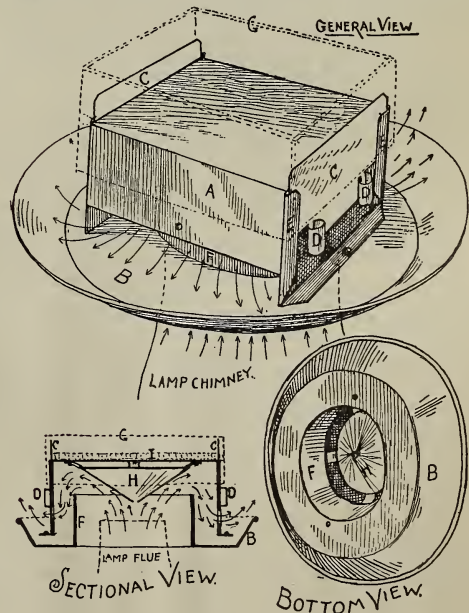
Some weeks ago we received a letter from B. Taylor, mentioning the fact that he had just invented a device for reducing the depth of cells in partially drawn-out sections. All comb-honey producers have what are called, at the end of the season, unfinished sections. Some of these contain honey, and others only just the pieces of drawn-out foundation. It has been generally admitted, that a certain number of these unfinished sections can be used advantageously, in the way of bait, to start the bees



and thus it is that the full power of the bellows is fully conserved; and so strong is the blast, that, no matter how much fuel may be crammed into the cup A, the air has got to go through. In other smokers of this class, there is either no tube between the bellows and fire-cup, or else, if there is one, it has a sort of ventilating hole that soon becomes clogged up in consequence of the air passing back through the bellows. In the absence of a connecting tube, the blast is necessarily very much weakened when the smoker-cup is much crammed with fuel, because not all of the air is compelled to go through the cup.

Another feature is, that the smoker-cup and nozzle, up to the ring B, in Fig. 1, is lined with asbestos, L, and sheet steel, K, Figs. 2 and 3. The object of this is to prevent the bright tin surfaces from becoming too hot, and radiating heat. This does away with the use of projecting shields, that are in the way, and more or less unsightly. This asbestos and steel lining also prevent the inside of the cup from becoming too thickly coated with creosote; and it is needless to say, that the smoker will last longer thus lined, and that it will be much easier to remove and to adjust the cone B. The grate, I, Fig. 1, is secured in a bead near the bottom of the cup, and instead of having large perforations that let hot coals drop through more or less, the holes are very small—a trifle larger than that which would be made by a darning-needle through a piece of paper. In the old-style smokers, the grate-holes must be large to let the weak blast through.

The fire-cup itself is fastened to the bellows by means of very neat and strong folded-tin



TAYLOR'S COMB-LEVELER.

into the sections; but it has been found advisable not to use many such. Although the bees will fill and cap them over, the finished product is greatly inferior to those combs made direct from sheets of comb foundation. The problem

with some bee-keepers has been to reduce the depth of the cell-wall in these unfinished combs, back to the original foundation; but no practical way has been devised until lately.

Immediately after receiving the letter from Mr. Taylor, we asked him to send on a sample of his device as soon as he had it perfected. He did so and herewith we give engravings showing different views of the same.

It is simply an ordinary shallow pan, having a square box made of iron, mounted in the same (see sectional view). The inside dimensions of this box are just a little smaller than the inside dimensions of the sections. By referring to the bottom and sectional view, it will be seen that the top plate I is designed, when hot, to come in contact with the ends of the cells. To heat this plate I, a lamp-chimney, as shown in the sectional view, is introduced into the under side of the device at F, the implement itself being supported by a box of the right height, having a hole in the top through which the lamp-chimney projects. The cone, H, shown in the bottom and sectional views, disperses the heat so that the plate I will remain equally hot at all points.

The operation of reducing the cell-walls in partly finished sections is, to place one over the square metallic box, as it were (see dotted lines C and G in the general view), allowing the combs to come in contact with the heated plate. The ends of the cells melt rapidly, and the wax refuse runs down the sides A, and is caught in the bottom of the pan at B. The stops D D prevent the cell-walls from being melted down too far; and as the plates C C slide in the grooves E E, the stops D D may be regulated to suit the width of the section, so as to give the required depth to the comb.

Although we have never tried it, we presume it is a fact that the bees will build out these combs, reduced to foundation again, as rapidly and perfectly as they build from regular foundation; and probably no one could detect, after the combs were finished and capped over, those that were built from leveled-down comb, and those from foundation.

In accordance with Mr. Taylor's request, we gave the device a careful test, and found it melted down the cell-walls, leaving the ends clean and sharp, without any ragged edges; but while the operation seems to be a little slow, quite likely greater speed could be obtained with a little practice.

Just how far this machine may prove to be practical, we can not say; but we should be very glad to receive reports from those who have given it a thorough trial on quite an extensive scale. The only question that remains in our mind is, that it might be cheaper to use new sections and new foundation rather than to take some sections that might be soiled from bee-travel, and level them down. Over against this, it may be said that the unfinished sections are waste capital that are of no use to bee-keepers; and if, at a slight additional expense, they could be used over again, something will be saved.

We have just been permitted to examine into the details of H. P. Langdon's device for preventing swarming—not only for preventing swarms, but materially increasing the honey crop. We are not yet at liberty to make public the details, but we would simply state here that our friend Langdon has a plan that *promises* better than any thing we have ever seen. The system has already been indorsed by a number of the leading lights in apiculture to whom the plan has been submitted confidentially. Some even go so far as to think that the invention will rival in importance that of

the extractor and the comb-foundation machine. While we do not hold so hopeful a view as this, we believe that most bee-keepers will want to try it as soon as the inventor is ready to have the details published.

SPECIAL NOTICES.

ST. MARTIN RHUBARB-PLANTS.

Good healthy plants, from seeds planted a year ago, 25 cts. each; \$2.00 per dozen. If wanted by mail, add 5 cts. each for postage.

SECOND-HAND WOOD-TURNING LATHE.

We have a bargain to offer in a wood-turning lathe. It is similar to Barnes' No. 3 lathe, without legs, which sells for \$20.00. It is some heavier, has cone pulley for different speeds, and has been fitted up practically as good as new. It is now at Mayville, Mich., where we sold it to a party who wanted a lathe for foot-power. He found this too heavy for that use, but considers it a rare bargain for any one with steam power to run it. We will sell it for \$12.00.

STOWEL'S EVERGREEN SEED CORN.

We have obtained from C. S. Clark, mentioned on page 276 of our last issue, the man who furnishes D. Cummins with that extra nice corn for his canning-factory, two bushels of seed. The price will be 5 cts. per ½-pint; 15 cts. per quart, or 75 cts. per peck. If wanted by mail, add at the rate of 12 cts. per quart for postage. This strain of Stowel's Evergreen is certainly superior to any thing in the way of green corn we have ever before got hold of.

THE PALMER RASPBERRY.

We have been for years testing the new raspberries as they came out. Two years ago we bought 500 plants of the Palmer raspberry; and last season it gave us the first crop, with which we were so much pleased that we propose to drop all other varieties. We hurried some of the tips in the fall, in order to extend our plantation, but find we can spare perhaps a thousand or more nice strong plants. Price, per 10, 40 cts.; 100, \$3.00. If wanted by mail, add 2 cts. each for postage. These plants were grown on our rich market-gardening ground, and are, therefore, extra large and strong.

OUR MAMMOTH SWEET CORN.

I am sorry to say that our seed of the above variety, the present season, is not germinating just at present as it ought to do; and on that account we have, under the circumstances, decided to fill orders with Stowel's Evergreen—the kind used by the Cummins canning-factory, mentioned elsewhere, in place of the Mammoth. Of course, I can purchase some more seed of the Late Mammoth, of some of the various seedsmen; but if I do so, I should not feel sure it would equal our own strain of Late Mammoth we have had for so many years. In fact, I have sometimes tried purchasing Late Mammoth when we were sold out; but it was never as rich and sweet as our own strain. From what we know of Stowel's Evergreen, we think it will fill the bill nearer than any other variety; and it also has the merit of not getting too old for table use as soon as the Mammoth does.

LAWN-MOWERS.

The time is at hand when the grass on our lawns and bee-yards will need trimming. You can do this with nothing more satisfactory than a lawn-mower. On the inside of last cover you will find the two mowers we have sold for a number of years, but at further reduced prices. There is no better mower built than the Globe; yet we sell it at the ridiculously low price of \$5.00 for the 18-inch, and from that down to \$4.00 for the 10-inch. The Young America is an excellent one for a single driver, and the price at which we offer them does not cover cost, but we must sell them. They were bought as a bankrupt stock in the first place, at a very low figure; and yet, to close out the last of them, we will sell them at retail, even below that. Those who can use a quantity of either style will do well to write for prices.