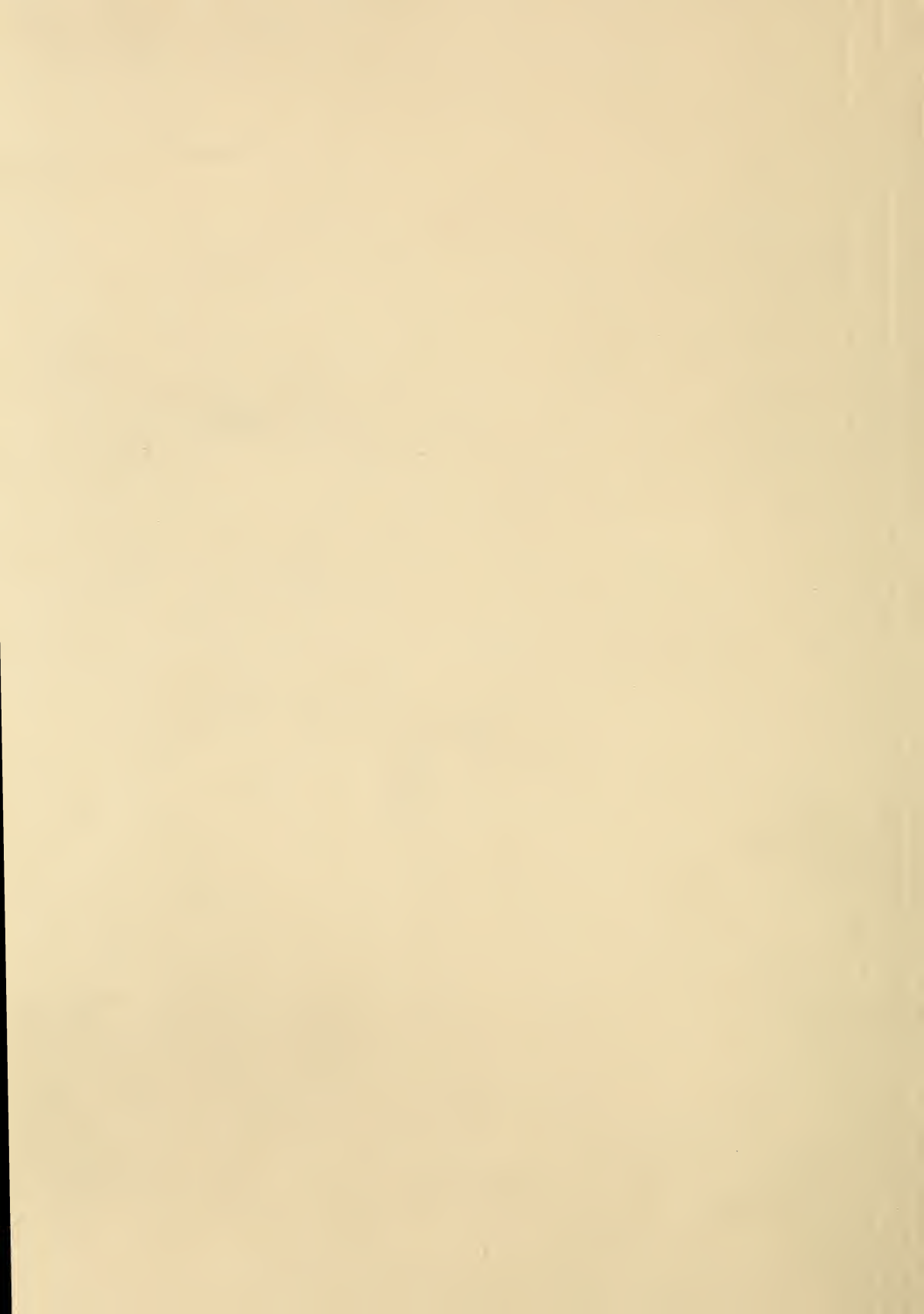


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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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GOOD QUEENS can not be reared, according to M. Bellot, in *Revue Internationale*, unless the bees have a supply of, or can gather, fresh pollen.

I DON'T BELIEVE a word of that suggestion, page 366, that "the use of tobacco is on the increase among ministers of the gospel." Too much intelligence among them, if there were no other reason. [I agree with you.—Ed.]

I'M WAITING for the "ample proof" of that new secretion S. P. Culley has discovered. "What he says appears very reasonable" to the editor, but not to me. But I reserve my usual right to change my mind if the proof is "ample."

THOSE "RAYS OF DARK" are something new, aren't they? p. 355. If Tabby sees at noon by rays of light, and at midnight by "rays of dark," will there not be a point of time between the two when the "rays of dark" will neutralize the rays of light, and Tabby will be stone blind? [That is beyond my depth.—Ed.]

RARELY have bees wintered as well as the past winter, says *Revue*: few dead bees, light consumption of stores, no trace of dysentery. Somewhat different in this country. [According to the *Canadian Bee Journal*, bees wintered fairly well in Canada also—doubtless for the reason that, it being colder there, greater preparation had, as a matter of course, been made.—Ed.]

IT SEEMS A QUESTION whether plain sections are better filled than old-style. I arise to say most positively and emphatically that they *are* better filled. Put in the same super old style and plain sections, both the same width, and if the plain don't outweigh the other when filled, then I give up wrong. ["Both the same width." Ah, yes! There's the catch. No, no one will dispute your proposition.—Ed.]

IN VIEW of the fact that so good an authority as Mr. Cowan advises repeated boiling of

affected honey, are we to understand that Harry Howe is mistaken in saying that spores will not vegetate in honey? [See Mr. Cowan's article elsewhere in this issue for answer to your question. But say, doctor, I had expected ere this to see you clear off the fence, on my side of the line. Better scramble over now while I keep Taylor off your coat-tails.—Ed.]

HARRY S. HOWE gives in *American Bee Journal* a rather novel plan for stimulative feeding. In early spring he sets at one side of the apiary one or two hives with combs of honey from the colonies that have died; and when he has thus used up all such honey, he takes full combs from the colonies to put in these hives, thus letting them store the honey over and over. But say, Harry, if you do this in fruit-bloom, don't the bees work on these combs when they should be on the trees?

IF CRITIC TAYLOR does not follow his usual practice of closing his eyes to the faults found in *Review*, he will call attention to the repeated use of the split infinitive in *April Review*. And will Mr. Taylor kindly inform us what authority he has for saying he remembers of a thing? [Tut, tut, doctor. We were not to discuss infelicities of expression any more; or at least there seems to be a sort of tacit understanding to that effect. But principles and methods are proper subjects of criticism in a bee-journal.—Ed.]

I SAID, p. 166, my bees had left drone comb unfilled in sections, while worker comb was filled. S. P. Culley says, p. 353, "Perhaps he had little or no drone comb in the brood-chamber, and the queen laid eggs in the section of drone comb." Drone comb *was* scarce in the brood-chamber, but the queen didn't lay in the section. The foundation didn't entirely fill the section, and what was lacking was filled out with drone comb, and that drone comb was left with shallow cells without eggs or honey, as if the bees would say, "These drone cells are intended for eggs, and we'll not put any thing in them till the queen lays in them."

EDITOR YORK and some 400 others started to write "stopt" for "stopped," and that sort of thing. Lately "thru" for "through" and some other changes have appeared in the

pages of the Old Reliable. Now in the Chicago public schools the spelling is to be as follows: tho, thoro, thorofare, thru, thruout, prolog, etc. Evidently the time is coming when we who pride ourselves on being such good spellers will be left with no advantage for our years of labor in learning to spell. [We have often thought of adopting *tho* for *though*, and *altho* for *although*. We have for some little time used the short form for *program*, *catalog*, and perhaps one or two other words; but we hesitated to go further, in view of the fact that we do so much printing for other people; and two forms of spelling could hardly be used in one office. But we are in *thoro* sympathy with the movement for shorter spelling provided the changes are not made too abruptly.—ED.]

YOU GIVE some pretty good reasons, Mr. Editor, p. 342, why I should give up comb honey and produce extracted. But ought not some one to supply the demand for comb? And is it not a separate trade to produce extracted? and is it better for me to leave the trade I've already learned? But aren't you wrong in thinking that extracted will usually bring 60 per cent as much as comb? Let's figure on the market reports. . . . Say, I've figured, and the figures support your view. But I'm not going to give up comb yet. [No, doctor, I did not mean that you should give up producing comb honey, by considerable, although my remarks might have implied that. But I do think it would be to your advantage to produce a little extracted in connection with comb honey; and I also believe that a shallow extracting super will get the bees a good deal more in the working fever in bait sections than in the comb-honey super.—ED.]

DIFFERENCE IN CLIMATE is not considered always as much as it should be. You say, p. 352, Mr. Editor, that C. Davenport and the Dadants have practically the same winters. What makes you think so? The Dadants are about 225 miles south of the southern boundary of Minnesota. They are about 60 miles south of Medina. But the distance north or south doesn't always tell the climate. I think the winters at Marengo, which is only 60 miles north of Medina, are more severe than at many points much further north. Many varieties of apples that are all right at Medina will not live here. Quinces and peaches will not live here. Only a few of the hardiest cherries and plums will stand the winters. Last winter was unusually severe. Fruit-trees were killed outright, as well as hardy roses well protected. A bed of the hardiest tulips is a rotten mass. [Yes, perhaps I was mistaken in not making more allowance for the distance. The locality of C. Davenport must be much more severe in winter; and that is doubtless the reason why he prefers the smaller brood-nest.—ED.]

I'VE 16 SUPERS containing the new foundation alternating with the old style, and I'm waiting to see what the bees say about it. Also twenty supers filled one side with old-style sections and separators, the other side with fences and plain sections. [Putting the

two kinds of foundation in alternation in the same super is not the correct way, according to our experiments. It should be placed, one kind of foundation in one half of the super, and the other kind in the other half. What for? If one foundation is very much better than the other, when the two kinds are placed in alternation the poorer kind is helped along by the better next to it, because the bees have a disinclination to have every other comb built out better than the rest. There is a decided tendency on their part to fill out evenly all they do fill, in a bunch by itself. In making tests for the last two seasons we have found that the principle of alternation is not likely to lead to accurate results. I suggest, if it is not too late, that you change a part or all of those supers so that the thin base will be *wholly* on one side or half of the super and the common foundation *wholly* in the other half.—ED.]

IF THAT OLD FOGY, Stenog, would occasionally read a dictionary, he wouldn't ask such questions as that on page 343. My Webster, 47 years old, gives "bur," but "fuz" is not in it. And say, Stenog, what sense is there in wanting to spell "past" wrong because "pass" has two meanings, to go by, and to adopt? Why don't you insist on two different ways of spelling "out," when you say, "The light is out, and the blossom is out"? [Strictly speaking, there is no "right" way of spelling a word. There is what is called a conventional or established way, and that way is as binding as to call a spade a spade when we mean a spade and not a spoon. We read that "the Levite *passed* by on the other side;" and to substitute *past* for *passed* causes the reader to look twice to catch the meaning. Do you propose to spell all words alike that are pronounced alike, such as *peel* and *peal*; *quean* and *queen*; *rye* and *wry*? As for spending years in school learning to spell, that is an exaggeration. I don't believe there is a good speller in the United States who ever spent a week in learning to spell. If one does not learn to spell when he learns to read he will never spell. Extremely rare words may admit of a few exceptions. If you will rip up the whole alphabet from A to Z, and have a precise character for every sound, as we have in shorthand, I shall be much pleased. English spelling is very irregular, but no more so than French.—ST.]

ALL RIGHT, Mr. Editor; send on a few of those barns Draper wants tried, and I'll give them a fair show. I've always had a kind of uneasy feeling that one story with big frames *might* be better than two-story hives of smaller frames; but I don't want to believe it if I can help it. Ask Draper how many men I'll have to engage to carry one of those hives into the cellar. [We are preparing to send you some of those "barns." I have just been looking at those great big frames, and I could not help feeling that there is something in having great cards of brood all in one batch instead of having an equal quantity in two batches divided off by two sticks and a bee-space. The two sticks and the bee space may

have nothing to do with the matter except that the queen would lay more eggs under the former condition than under the latter. Like yourself, I do not want to think that the Dadants are right, but I feel a little afraid they are—especially so as they can show results, and have been showing them, for the last twenty years and more—not on a small scale, but on a large one, covering a large number of out-apiaries. And it is a little significant that all France seems to be following them, notwithstanding the conditions of climate and language among bee-keepers are so radically different. But those “barns” of hives are not so radically different from the ordinary ten-frame Dovetailed hive, which is the same thing exactly, only $2\frac{1}{2}$ inches deeper; same cover, same bottom-board; same top-bars and the same bottom-bars; same tin rabbets; same supers; same every thing except length of end-bars and depth of side and end boards of body. The regular Quinby frame is $18\frac{1}{2} \times 11\frac{1}{4}$, outside measure; regular Langstroth, $9\frac{1}{2} \times 17\frac{3}{8}$. The difference in length, then, is only $1\frac{1}{8}$, while the difference in depth is $2\frac{1}{8}$ inches. The Dadants have said that, if they were to start anew, they would adopt the Langstroth length and make the frame $2\frac{1}{8}$ inches deeper. This would give about the same comb area, and yet give bee-keepers the same standard covers, bottom-boards, supers, etc. Lest some one may accuse me of starting a new fad, I will say I do not indorse any such change at present. I want the evidence of my own senses first.—ED.]



“These showers bring flowers to gladden our bowers,”
Say all of the diligent bees;
“So let us all hours, with all of our powers,
Get honey, and live at our ease.”

AMERICAN BEE-KEEPER.

The editor advises having a fine comb handy by in the apiary to extract stings from the scalp.

Mr. W. T. Flower says there is nothing gained by uniting weak colonies in the spring. It means the sacrifice of one queen, and two queens will lay more eggs than one queen.

Mr. Alley says too much packing over bees is detrimental. He speaks of one bee-keeper who piles mats and quilts over his bees till the pile is a foot thick, and this man has never had a fairly good colony of bees in the spring.

Mr. A. J. Gray, of Birchtown, N. Y., says he purchased, about seven years ago, 42 Carniolan queens, and introduced the most of them into Italian, black, and hybrid colonies, of which he had about 100 in the apiary. From that time till now he has been so well pleased with

the Carniolans that he has, as far as possible, been changing to that stock. He keeps his stock pure by introducing queens from Carniola.

Mr. Alley speaks of Mr. Doolittle's honey selling at 20 cts. a pound, and says he has sold his at 25 cts. He attributes this all to the ignorance of the buyer. Last fall he could have bought the best Vermont white clover honey at 13 cts. in Boston, and that is the best honey in the world.

If one man is first on a given territory, has he a right to try to keep other bee-keepers away? Suppose the coming of the second apiary stocks the field so that neither man can get any surplus, as is often the case, how much better off is the second man for exercising his right to keep bees there?

I notice for the first time that the signatures of writers in the *American Bee-keeper* are engraved from the original writing. This looks quite realistic, and Mr. Doolittle is much pleased over the idea. He also speaks rather left-handedly against leaving off the address of a writer. I confess I must fully agree with Mr. D.; for to leave off the address seems to rob an article of much of the interest that is due to personality and location. If all the people in a convention were to be boxed up so that only the voice could be heard, it would be a dismal place for me.

Mr. Doolittle reproves Dr. Miller very gently for not wanting *Apis dorsata* to be fooling around in the neighborhood of the doctor's home. He asks: “How came you, doctor, to have a right to any territory exclusively for your own use in this world? Did God give you a right to turn the rays of sunshine on the flowers around Marengo, that they might bloom for your Italian bees and not for *Apis dorsata*?” The same question might have been asked about the introduction of common rabbits into Australia in 1864. They increased in weight fourfold, and from a coopful to untold millions in numbers. The government spent millions of dollars in killing them, but to no purpose. Locusts were a blessing in comparison. Dr. Miller has a right to feel some degree of fear in view of such facts. Yes, God has given all men a full right to exercise what they deem to be prudence, and one has as good a right to keep an unknown bee off his place as he has to put up screen-doors to keep out flies. In point of fact, however, *Apis dorsata* will, in all probability, flourish about as well in Marengo, Ill., as lemon-trees would there outdoors.

AMERICAN BEE JOURNAL.

Concerning robbing, Mr. Harry S. Howe says that, when the bees start to rob a place, if we can make them think they have got it all, there will be no further trouble; while if we cover up or take away the honey they will keep on looking for it. That's a good way to treat teasing children too.

In the report of the Vermont Bee keepers' Convention it is said that Mr. Boardman sprayed 75 trees with 60 gallons of water and 1½ lbs. of Paris green. He thus secured 150 barrels of apples. He sprayed the first time just as the buds began to open, and the second time just after the blossoms had fallen.

Mr. J. H. Tichenor, of Crawford Co., Wis., believes that we should do all we can to get farmers to keep at least a few colonies of bees. His first reason is that farmers are learning that they must spray their fruit-trees, and in so doing are slaughtering bees by the wholesale. If every other farmer owned one colony each, just a hint to them that they might kill all of *their* bees would be sufficient to prevent this evil.

Cogitator laments the advent of a batch of new spells at the hands of Mr. York; but 'Tater says he is too old to get rid of his orthographical prongs now; but adds he is not too old to find fault, and does find some with the word "thoro." He thinks the word should be left alone or spelled "thuro." He observes, "Don't rile us with what impresses the eye as a bran new [*brand-new?*] word, with its first vowel masquerading in the place of another vowel."

Some one asks Dr. Miller if he ever becomes tired of answering questions. He likes to do so when the questioner is present so all the bearings may be understood; but when correspondents ask questions in such a way that he can hardly tell what is meant, "that tired feeling" comes on. Sometimes the penmanship is so poor that he can hardly make it out. But as a whole he seems to enjoy the work. Few of his readers realize the amount of work he puts on his department of "Questions and Answers."

At the Vermont convention Mr. Leonard said it was not all the dark honey that was made the first of the season. He had some honey spoiled by the bees bringing in something to stop cracks with, just as the season was closing. He did not know where it came from, but thought it was the same as the last run of sap—the honey that was gathered last. It was sometimes colored by the bees using old comb and capping, and sometimes by the bees taking honey out of the brood-nest, and carrying it upstairs. It was not caused by the bees walking on it, as he had left the honey on till time to pack for winter, and it was nice and white.

Mr. F. L. Thompson says in the *Progressive*, "Sad experience has taught me that, all things considered, it is not the best policy to follow the leaders, but to cultivate an independent judgment in the matters which touch the pocketbook." Mr. York shows up the fallacy of that by adding, "As Mr. Thompson is one of the leaders, some will probably make a near application of his teaching by not following his present advice." I know by cor-

respondence the light esteem in which Mr. Thompson seems to hold all rules concerning spelling, punctuation, prosody, and syntax. Really, I do not believe he would unqualifiedly indorse the multiplication-table without first putting a coat of varnish on it, or something of that sort. But it's a fortunate thing for us that Mr. T. is very well qualified to act as an independent worker, even if one can not indorse all he says.

Concerning barrels for honey, a honey-dealer writes to the editor: "A barrel is a very unsatisfactory honey-package for the man who handles it in the last instance. Nineteen times out of twenty the barrel must be taken apart to get the honey out." In reply to this, Mr. York says he has often "wished that those who put up their honey in barrels could be compelled to buy and handle such honey for a while. After they have had a little experience with the stuff leaking out, and a number of pounds soaking into the wood—all the loss, of course, to come out of their own pockets—we believe they would be done with putting honey into barrels or wood of any kind. Tin is the thing for a honey-package. In some instances half a cent a pound more can be secured for honey in tin."

FOUL-BROOD GERMS.

The Difference between Spores and Bacilli; some Misconceptions Corrected; the Latest Method of Treating Foul Brood as it is Practiced in England; Various Antiseptics Considered; Washing Out Foul-broody Combs with Water under Pressure a Dangerous Practice.

BY THOS. WM. COWAN.

Since I wrote to you on this subject I have received GLEANINGS for April 15, and in it I find two letters in reference to which I should like to make a few remarks. Mr. Harry S. Howe, writing with regard to the several boilings in order to secure the sterilization of honey, points out that "the spores of *Bacillus alvei* do not develop in honey, nor can they live in honey except in the spore condition." I would agree with this entirely if it were restricted to honey in a *normal* condition. But it would indeed be a bold person who would venture to say that honey is always in this state, and that it can not be in such an abnormal condition as to form a suitable medium for the germination of spores of bacilli. We know the living spores remain dormant, and bacilli can not grow in honey, because in a normal condition it has an acid reaction; but should it, from any cause, become even slightly alkaline, there would then—if other conditions obtained—be no hindrance to their germination and development. It was with a view to the possibility of such a condition that I wrote advisedly in my last letter respecting several boilings of honey—"supposing a nutrient medium to exist in the honey, the unaffected spores would germinate into bacilli, and could be destroyed in the next boiling."

On page 310 there is "A new treatment of foul-brood" by our old friend Rambler, and a recommendation to uncup a comb affected with foul brood, and wash it under a faucet of water running with considerable force. I should like to point out the great danger of this plan. The combs that are uncapped contain thousands of spores; and in washing, many of these would be driven out of the cells and spread by the running water, we know not where; and as they are not destroyed they are at any time ready to re-start the mischief. When the combs are in this condition it is always safer to burn them, as we thus destroy all the spores. Then as to formalin, I do not think it would have any more effect upon the spores than any of the other drugs have, although it may be equally efficient in destroying bacilli. It seems to me that, in many cases, the non-success of drugs has been owing to not properly understanding the great difference between spores and bacilli. Now, in any inquiry into the influence of one drug or another on micro-organisms, it is necessary to bear in mind that the influence of certain conditions on the micro-organism may be a twofold one. First, the condition may be unfavorable to the growth of the organism; and, second, the condition may be fatal to the life and existence of it. The second condition involves, *a fortiori*, the first; but the reverse is not the case. A great deal of confusion has arisen on this subject owing to the failure to distinguish between these two propositions. We constantly hear of this or that substance being an "antiseptic," which means that it is inimical to the growth of micro-organisms, or that it is a "germicide," meaning that it kills the organisms. The scientific man, of course, knows and understands the difference between the two; but the great bulk of people do not, therefore they expect drugs to perform impossibilities. I see Rambler calls formalin an antiseptic, therefore it is probable that it will prevent the growth of spores only while in contact with it, or kill the bacilli. This is precisely the behavior of all the other drugs used, and they can do no more. Spores are invested by a thick double membrane; the external sheath is supposed to be cellulose, and the internal one probably of a fatty nature, both being bad conductors of heat. It is this double membrane that gives spores this great resistance to high and low temperatures, to acids and other substances. I do not think any amount of soaking in water would render the spores open to the influence of diluted formalin. Now, we know there are many antiseptics, and these can be used effectually against foul brood. Carbolic acid, phenol, thymol, salicylic acid, naphthol beta, perchloride of mercury, and many other substances, even when considerably diluted, prevent the growth of bacilli.

Now, we have had considerable success in England in our treatment of foul brood, which involves the use of drugs. We call this an antiseptic treatment because it is the same in principle as the antiseptic treatment in surgery, which has made it possible to perform with success the marvelous operations of the

present day, and such as could not have been effected without almost certain loss of life from blood-poisoning induced by the growth of various micro-organisms. We insist on an antiseptic always being present in the hive or in the food we give to our bees. No syrup or honey is given without first being medicated, and the antiseptic used kills any bacillus that may be growing, or prevents the spore from germinating, although it does not kill it. Then we know that there are certain chemical substances which evaporate at the ordinary temperature of the hive, and whose vapors prevent the growth of bacilli, although they do not destroy them. Among these are eucalyptus, carbolic acid, phenyle (or creolin), lysol, camphor, naphthalene, and others. For convenience and economy we use naphthalene, and have some of this always present in the hive. Our treatment is this: If we detect the disease in its earliest stage, before any of the affected larvæ are capped over, we simply feed the bees with syrup medicated with naphthol beta, because at this stage there are no spores present. The medicated syrup is used by the nurse-bees in preparing food for the larvæ, and in this way the bacilli are destroyed. It is, however, seldom that the bee-keeper is sufficiently expert or alert to detect the disease at this stage, but more generally notices it only when the combs have irregular patches of brood, with sunken and perforated cappings to the cells containing the coffee-colored mass inside. In this condition the cells are crowded with innumerable spores, and the treatment just mentioned would not have the slightest effect upon them. If the colony be weak we destroy the bees, combs, and quilts, and disinfect the hives. We thus destroy the spores and so remove the source of infection. Should the colony be strong in bees we make an artificial swarm of them, confine them in an empty hive, and feed on syrup medicated with naphthol beta. We use this drug because it is non-poisonous or corrosive, and has no odor repugnant to the bees, is a powerful antiseptic, and can be used in great dilution, thus rendering it economical. The frames, combs, and quilts are then burned, and the hives disinfected by being either steamed or scrubbed with boiling water and soap, and then painted over with a strong carbolic-acid solution. The bees are confined in the empty hive for 48 hours, by which time all the honey they may have taken with them will be consumed, and such of the bees as are diseased will have died off. Those remaining are then put into a clean hive furnished with full sheets of comb foundation, and are fed with medicated syrup for a few days longer.

With this treatment, when faithfully carried out, we have had considerable and very gratifying success. The whole secret of this success lies in having the drug ever present to act on the micro-organism, and either kill it or prevent its development and growth. I do not see why formalin, if used in the same way, should not be as efficacious.

[I am sure we bee-keepers of the United States are exceedingly obliged to Mr. Cowan

for the valuable information he has given us, and for the clear way in which he has discriminated between spores and bacilli.

As I understand him, the purpose of medicating syrup fed to bees is to kill the spores immediately on their entrance to the bacillus form, as well as the bacilli themselves. Drugs can in no sense kill spores; but if the syrup is medicated with the proper antiseptics, when the spores do hatch (if I may adopt an unscientific term) the microscopic life is killed at once.

This naphthol beta is something that I believe American bee-keepers can use with profit, especially those who have had foul brood in their vicinity or at least have had it in years gone by, and are troubled with its reappearance occasionally. If every year all the syrup fed to the bees in such apiaries is medicated with naphthol beta, the time will come when the last traces of the disease, even in the spore form, will be wiped out.—ED.]

FOUL BROOD.

Danger from Improper Diagnosing.

BY W. A. H. GILSTRAP.

Mr. Root:—On page 224 you think it is Prof. Cook who thought Mr. Jackson had no foul brood. Yes, it was "our own Prof. Cook." I am not sure it was foul brood, but in common with many others I believe it very confidently. Repeatedly I have heard Mr. Jackson give Prof. Cook's words on receiving a sample of the diseased brood, which, as my memory serves me, is this: "I do not think your bees have foul brood; in fact, I state positively that they have not."

I suppose from the language used that he judged from appearance without using a glass; but "they died; ah, they died!"

Mr. Jackson is a venerable gentleman whose word has never been questioned that I know of, and I believe his photo would be accepted by any physiognomist as a splendid type of honesty. He never questioned the honor of Prof. Cook, neither do I.

J. W. Paine, of Selma, the Fresno Co. Inspector, and the writer, evidently made a bungling job on Mr. Paine's bees, and the Tulare Co. inspector did as bad or worse with Q. L. Abbott's bees. To explain these cases would probably be unprofitable.

Had I thought you would think so quickly that I referred to Prof. Cook, his identity would have been better hidden. The aim was to show that it is unsafe for a scientist to judge without a glass, or for any one to suppose that this fatal malady (or what resembles it so closely) could recover by climatic influence when extracting honey. If it takes an expert to detect this deadly enemy, with a microscope, our case is almost desperate.

Grayson, Cal , April 3.

This was referred to Prof. Cook, who replies:

DIAGNOSING FOUL BROOD WITH A MICROSCOPE IMPRACTICABLE ON THE PART OF THE AVERAGE BEE-KEEPER, AND WHY; THE LATE RAINS IN CALIFORNIA.

Dear Mr. Root:—I wish to thank you and Mr. Gilstrap for your courtesy in calling my attention to the article on page 224 of GLEANINGS, and giving me opportunity to reply to the same. I have had a great many inquiries regarding foul brood since I came to California, and so of course I do not remember Mr. Jackson's sample. I can say, however, that I am always very careful before expressing an opinion in any such case. If I wrote Mr. Jackson that his bees positively had not foul brood, I feel very certain that there were no signs of it in the sample sent. I regret exceedingly if any thing I wrote led to such disastrous results, but I am very positive that, if he sent me a sample of foul brood, I could not have been mistaken in my diagnosis.

You are quite right in the opinion that the microscope test is not practicable for the ordinary bee-keeper. A good $\frac{1}{4}$ -inch objective will show the bacillus; but the latter has to be stained, and this requires microscopic dexterity. A good microscope could be had for from twenty to thirty dollars—one that would bring out these germs; but the skill and dexterity required in manipulation and determination would make it of little use to the average bee-keeper.

But I do not think it is necessary to use the microscope to determine the presence of foul brood, especially when in the active state. The brown ropy mass in the cells is a sure indication that the disease is present; and if no dead brood shows this I should unhesitatingly declare the disease absent. If we add to this the characteristic odor, the sunken cap, and the perforations through the latter, we may be absolutely sure of the disease, without the microscope. I have often received cases with dead brood where none of these symptoms were present, and in such cases I have felt warranted in pronouncing the colonies exempt. Of course, it may be that there was foul brood in the apiary, but not in the sample sent. I can make no specific explanation, as I do not remember the special case.

I do not think that foul brood is very apt to leave an apiary when once established. I have known several apiaries in California entirely ruined by it. I would not say, however, that bees might not recover from this trouble, though I have always had my doubts. Some of the best bee-keepers in California have assured me that they have known it to be present, and afterward disappear.

Although we have had rains of late, we have had less than seven inches for the season. This is only half of our average at this place, and only about half of what is generally supposed to be requisite to secure any honey crop. I presume there will be little honey taken from this section this year, yet I think we shall have to have experience to *know*. It is possible that, even with so light a rainfall, it might come at such a time as to secure a honey-flow. I think most of our bee keepers

about here despair of any paying crop this season. They feel that, if they get enough to keep the bees, it will be all they can expect. I know of several who have taken their bees north, in the region of the large alfalfa-fields. I saw our friend Martin in Los Angeles last Monday. His bees are between Los Angeles and Santa Monica, and he tells me he has hopes of a partial crop, though he spoke of others, who have had many years' experience, who have given up all hope of any honey for market this season.

Last year we had about the same rainfall as this, and got almost no grain crop in this vicinity. This year we shall have quite a grain crop. It is to be hoped that there may be a light change in the honey harvest.

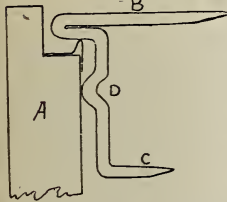
Claremont, Cal., April 26. A. J. COOK.

VARIOUS ITEMS.

A Novel Frame-support; Hive Doorways; Ball-bearing Extractor; Gearing; Deep Dadant Hives; an Easy Way of Making Increase; those Honey-leaflets; Candied Comb Honey; Rambler's Skunks.

BY E. H. SCHAEFFLE.

Inclosed please find sketch of staple for supporting and end-spacing section-holders and frames. With the lower point clinched fast, the staple could not be loosened by usage.



For a metal frame-spacer, cut from a sheet of lead $\frac{1}{4}$ inch thick, pieces with a face 1 inch long, and the required width. Set these close up to the top-bar inside. The 1-inch face will prevent the spacer from becoming entangled in the meshes of the extractor, while its soft material will not dull the edge of the uncapping-knife.

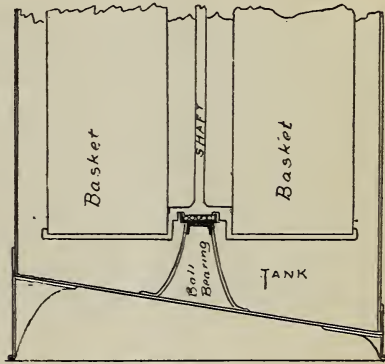
Inclosed please find sketch of staple for supporting and end-spacing section-holders and frames. With the lower point clinched fast, the staple could not be loosened by usage.



For convenience, and on account of irrigation, toads, ants, and grass, my hives are set up on scantling, 2 in. above ground. I find an extra alighting-board, like the inclosed sketch, a great convenience to the bees. On raw days they tumble down on it, lie there for a minute, and then crawl into the hive, while those that alight in the grass lie there and die, unable to

recover from their chill. On warm working days the board is covered with alighting bees, and it is necessary to drop the front edge so they won't strike it coming in. As the board is removable, it is not in the way in moving the bees.

The Cowan extractor is geared too slow, and there is not sufficient depth under the baskets. Each season I have a large per cent of very heavy wax-like honey. To extract it the extractor must be run at a very high rate of speed, and the same kept up for some time, which is very tiresome work for an invalid. I have secured an old-style dentist's foot-treadle, with heavy driving-wheel, and turned it and the extractor over to the tinsmith; but



he reports that the sides of the extractor are too light to fasten any thing to, so I must devise some other method of securing the extractor quickly and securely to the floor. My extractor rests on the same floor I uncapped on. When the extractor is full I slip the hook of the pulley under the bail of the extractor. With two pulls of the rope it is up to the level of and on to the table adjoining, which is just high enough to hang a wire gauze strainer on to the faucet, and slip a can and funnel underneath. I prefer this to standing on a platform while extracting, as I can sit down to it.

An extractor should hold at least five gallons below the baskets, so as to fill a can with each extracting. As it is, the honey overflows the socket that the center-rod rests in; the fine iron mixes with the honey, runs out, and spoils that lot. Can't that socket be raised 6 inches above the baskets, and the weight be supported on ball bearings? That would make it run lighter, wear longer, and always have it out of the way of the honey below.

This is the season of the year when queenless hives can be detected by the bees not carrying in pollen. Don't take my word for it, or allow the theory of another to influence you, but open the hives and prove it. Make your examination early in the morning.

I have concluded to try some hives built on Mr. Dadant's suggestion, 12-inch-deep bodies, and 12 frames, for extracting; and I will try an extracting-super of the same depth. Among my pick-ups is a hive with frames 14 inches deep. For several seasons past I have used it

as an extracting-super, and it is always the best. This season it is full of honey while the bees in the other shallow supers have hardly got started. I believe the bees prefer to work on one solid comb, to the same space divided up by wooden bars among several supers. I know this is the case with comb honey, as I can produce one-third more honey in 2-lb. sections, without separators, than I can in 1-lb. sections with separators.

Owing to the two past dry years, and my inability to look after my bees in person, I have, in common with most California bee-men, lost about half of my bees, as I can not look after them myself, and build them up a frame at a time. I am doing it in a wholesale way by placing on the hives, early in the season, other hives filled with empty brood-combs. As soon as the queen has these nicely started with brood the top hive is slipped on to a bottom-board and set in another part of the apiary, care being taken that each brood-chamber have brood not over three days old. In this way I shall have twice the number of hives, all strong, long before swarming-time, and in time for the best honey-flow. Now, don't tell me that I ought to do better than that, "queen the hives," etc., for I can't do it, and so do what I can.

The present honey-leaflet wants to be shortened and spiced. No one but a bee-keeper would ever wade through it. I find a better way is to paste the best recipes on the back of the cans that you retail honey in. That reminds me that, for the first time, I have secured a honey-can that suits me. These are the same long flat pattern that the maple-syrup canners use. It makes a very neat, large-looking, and excellent seller. I have them made in 2, 5, and 10 pound sizes. What I want now is a glass jar to hold 12 fluid ounces or 18 ounces of honey, with "Pure Honey" and a bee-hive blown in the back, but the amount of the contents *left off*. Our merchants won't handle a jar that has the quantity contained blown in the back, as it interferes with their getting their price; nor do they want it to hold over 12 ounces. Where can I get this jar?

To melt sugared comb honey, put one tablespoonful of water, to each pound of honey, in a pan; add the combs; set it in the oven, and maintain just heat enough to melt slowly the combs. When they are all melted, set the pan to one side; and when the wax is a solid cake, punch a hole through it along the side of the pan; drain out the honey, and then melt your wax into a cake. If care is taken not to get the honey too hot it will be found uninjured by the melting.

Rambler complains of skunks. He does not say which breed, but I take it he refers to the four-legged variety. If so he can get rid of the pests by strychnining a piece of comb containing brood, and placing the same about four inches under the ground, in front of the hives. The keen scent of the skunk will enable him to find it, and the strychnine will do the rest. "Rest" is a good word, and I will take and give your readers one.

Murphys, Cal., March 29.

[Your frame-support would doubtless prove very efficient; but one objection would be that it would give very slight hold for the hands while manipulating; and frames in the hive would have a tendency to swing flippity-flop (when hives are handled) unless spacers were used.

It is very important in chilly weather, as you say, to have a means of ingress to the hive, by which the bees can crawl from the ground clear into the entrance. Without such provision, thousands of bees are lost during chilly weather. We know that from our own experience here.

We have been experimenting with ball bearings in extractors, but as yet we have not quite settled on any thing that suits us. We have determined this much: That such a form of bearing should not be in the bottom of the extractor, to be smeared over with honey. We connected one such extractor, having a ball bearing, to the line shaft, and let it run a week. Then we lubricated the bearing with doses of honey, with the result that the bearing was soon gummed up, and practically worse than nothing. We have made some large Cowan extractors with ball bearings *on top* of the cross arms; that is, the weight of the reel and combs are supported on a ball bearing that is clear up and out of the way of the honey. The bottom of the reel is held by a bearing that merely holds it in position, but does not hold the weight. Such a form of extractor we believe to be an improvement; and before another season we shall probably have it on all of our large extractors. It will be of no particular advantage, however, on our small machines.

With regard to gearing, we have to strike an average, as nearly as we can, for bee-keepers everywhere. Three-to-one gearing, on a large machine, is a little too high and requires too much power for bee-keepers who extract honey as heavy as 11 pounds per gallon. It is possible that we ought to have two sets of gears; but that would necessitate considerable expense, and the construction of a special cross-arm, to say nothing of a large gear-wheel that would stick up more or less in the way.

When we get a little more time we propose getting out a sort of pictorial honey-leaflet that will contain very few words, and represent the art of producing honey, from start to finish. It will be named "Honey, from the Hive to the Market." I have just ordered some special instantaneous photographic films; and I expect, in a few days, to take a series of snap-shots representing several of the steps in the production of comb and extracted honey. The story now told in type will be pictorially represented in half-tone.

But before we begin on the work we shall be glad to receive suggestions so that the new honey-leaflet may be made to fill exactly a "long-felt want."

I omitted to state that the new leaflet will be almost solely for the information of *consumers*. Of course, the price will have to be a good deal higher than that of those we have been selling during the last year or so.—ED.]

GRADING BY PICTURES.

Experience of a Honey-seller and a Honey-producer; the Western Grading and the Eastern Grading.

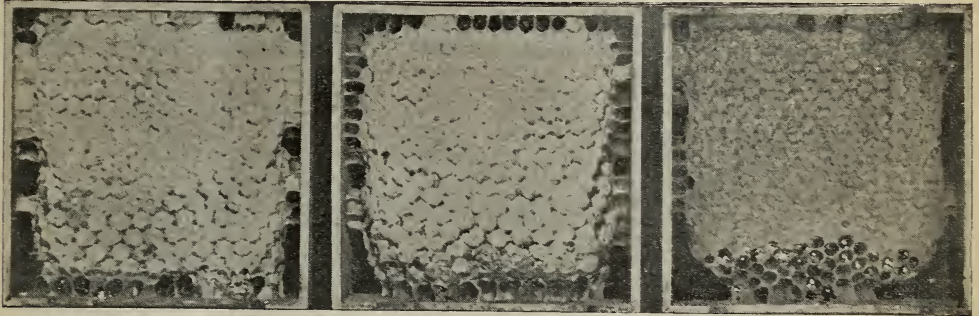
BY S. A. NIVER.

Mr. Editor.—The convention of bee-keepers' societies of the State of New York assembled in Geneva, N. Y., last January, and appointed me as a committee of one to formulate a plan for grading comb honey by the illustrated or picture method, to be submitted for their consideration with a view to adopting some uniform system of packing, marking, and quoting prices.

plain that it is at the lowest or poorest grade, that dividing line between what shall be packed and marked No. 2, and what shall be sent to the extractor. After that decision is reached it isn't difficult to select the other two, so that the samples will represent the poorest allowed in three evenly graduated divisions.

My experience as a "knight of the grip" and as a producer of comb honey convinces me that the No. 2 in the illustrations shown below ("or beside or behind our intrinsic existence") is poor enough; and in the best interests of both producer and consumer, any grade below that should be consigned to the extractor.

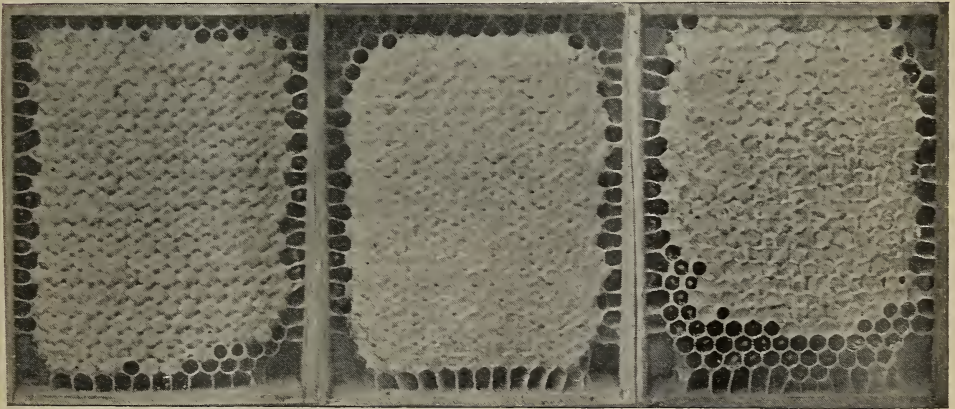
Having decided on the starting-point, the



" FANCY "

" NO. 1. "

" NO. 2. "



" FANCY. "

" NO. 1. "

" NO. 2. "

After studying the subject, and consulting other bee-keepers as far as practicable, I had photographs made of two styles of sections—the standard $4\frac{1}{4} \times 4\frac{1}{4}$, and the "Long Idea," in this case $4\frac{3}{4} \times 3\frac{3}{4}$, which The A. I. Root Co. kindly prepared for printing.

This method simply contemplates deciding or guiding us in grading according to finish—that is, filling and sealing, the color and quality having designations of their own.

The first and most important point to decide upon is the place of beginning; and it seems

zero, how many grades shall we have above it? As few as possible in the interests of clearness. A glance at quotations in the leading markets, as shown in the bee-publications, reveals a mixed multitude without form, regularity, or clearness. On the same page one firm quotes 4 varieties of white honey (and nothing else), while another quotes two kinds of white, and lumps the rest as "dark." The average bee-keeper in this location doesn't extract much consolation from such uncertain sources. The commission man is just as dissatisfied

with the existing state of affairs as we beekeepers are, and is ready to co-operate heartily in any feasible plan to remedy the trouble. Mr. Segelken's valuable article on page 263 is in evidence on this point.

I believe that three grades will be nearer right than any other number, always remembering that this refers to "finish" only.

Now as to directions for loading and firing this combination. It would seem as if there would be little need of any thing besides the pictures; but perhaps it is better to say too much than too little in this case.

First, select a sample "No. 2" section by comparing with the pictures, which will represent the poorest section allowed to be packed. Then select the other two samples in the same way, or the better way of comparing sections until the three graduate evenly, which these pictures fail to do exactly. Now you have before you three pattern sections, which represent the poorest allowed in each grade. "Fancy" will consist of the finest-looking, best filled and capped sections to be found in the crop, but none presenting a poorer appearance than the sample section. No. 1 will consist of sections just a shade below "Fancy," and in like manner none poorer than sample section. No. 2 will consist of sections a shade poorer than No. 1, but none poorer than sample, the rest of the crop to be extracted for bait sections. Color and quality are to be designated by name. For example, Fancy White, or No. 1 White, Fancy Mixed, or Fancy Buckwheat, or No. 2 Dark, etc.

The advantages of this system are many and varied. If adopted generally we should know what is meant by quotations. Honey packed this way can be sold by *count* or weight as preferred. The retailer would find no culls left on his hands, or salable only at a reduced price, as is the case where all sorts—good, poor, and indifferent are packed in the same crate.

There, Mr. Editor, the matter is up for debate. Let us hear from the brethren.

Groton, N. Y., April 24.

[Having been the first I believe who suggested grading by photos or pictures, the idea having come to me in conversation with Mr. S. A. Niver, who was showing me how he graded his honey by setting off pattern sections, I feel greatly interested in this matter. A mere printed description of the grade admits of too much variation of interpretation by different ones. A picture is absolute.

It seems that this idea of picture grading was before the Colorado State Bee-keepers' Association that met in Denver Nov. 30 and Dec. 1 and 2 last. Instead of taking the scheme of the Washington grading as the basis they threw that aside and adopted a distinct method, and it is set forth in the two following very simple rules:

No. 1.—Sections to be well filled; honey and comb white; comb not to project beyond the wood; wood to be well cleaned; sections to weigh not less than 21 lbs. net, per case of 24 sections; but cases in lots must average 22 lbs. net.

No. 2.—Includes all amber honey not included in No. 1; to be fairly well sealed, and not to weigh less than 18 lbs. net, per case of 24 sections.

Culls.—All cull honey shall be sold in the home market.

This scheme of grading is made the subject of an article by F. L. Thompson, in the *Beekeepers' Review*, supplemented by some half a dozen pictures of each grade. As there is very little if any buckwheat or dark honey in the West, the idea of a fancy amber or a fancy buckwheat is not considered necessary or feasible. A No. 1 honey, according to this grading, is one which is well filled, *and white*, and a No. 2 is one which is off in color, or defective in filling.

Such a scheme would not be practicable in the East, where buckwheat is more highly prized by a large class of consumers than the best white honey that was ever produced. The general basis of the Washington grading must be preserved, whereby there can be a Fancy No. 1 and 2 Buckwheat, Fancy No. 1 and 2 Amber, Fancy No. 1 and 2 White. With this general scheme in view it appears that the last convention of bee keepers in York State authorized Mr. Niver to formulate a plan of grading comb honey by the picture method; and the pictures set forth the result of his work. In a private letter some little time ago, he said he was not able to obtain ideal sections of any of the classes for the photos, for the market had been pretty well cleaned out; but after a good deal of hunting he finally found what would be fairly representative, according to his notion, of each class. Contrary to the Colorado system of grading, each one of the classes or grades above shown would apply equally to dark amber and white comb.

Mr. Niver believes in picking out, if I understand correctly, pattern sections that are *below the average* in general appearance, of each grade. When I visited Mr. Morton he (Niver) showed me several thousand pounds of "Fancy" with the cells sealed next to the wood; but he did not believe in making sealing to the wood an essential feature, as that was carrying matters a little too far, for the reason that the great bulk of otherwise fancy honey produced by the average bee-keeper would have to be thrown into the No. 2 grade, and would have to be sold, as a matter of course, for less money.

If there is any criticism I could offer, it is that No. 1 and Fancy are too near of a grade. If I were grading I am not sure but I would put No. 1 with Fancy, and *vice versa*. There ought to be a greater difference. Still, if one will look sharply he will see that No. 1, while it is perhaps a trifle whiter, is not as well filled as the Fancy. I refer to the tall sections.

In view of the fact that the general scheme of grading is so very different from that of the York State bee-keepers, it might be necessary to have an Eastern and a Western grading. Owing to the difference in localities I do not see how we can well avoid having two classes of grading. The bee-keepers of New York would never be satisfied with the Colorado system; for "a mighty howl" would be raised as soon as it has proposed to put their fancy buckwheat into the second grade. In certain portions of York State, buckwheat is almost

the main crop; and in some markets it will sell for the same price.

RAMBLE 167.

Bee-keeping in Tacoma, Washington.

BY RAMBLER.

Feeling that I had been amply soaked in Portland I concluded that, if I had to take any more, a Tacoma soak would be equally pleasant, and also a change. My wheel and I boarded the Northern Pacific R. R. for that city, 145 miles distant. While on the journey the winds blew, the rain descended in torrents, and, as a grand finale, our car windows were bombarded with hail. Humid Nature here revealed her handiwork in the density of the growth of the forests. The little water-courses were plentifully lined with willows; little rear-wheel steamers were plying on these small streams, and in some places there was



G. D. LITTOOY'S APIARY.

barely room for them to squeeze through the bushes. Ferns (that always indicate moisture) were to be seen everywhere. There were but few farming communities along the route, but any number of saw-mills and lumber-camps. Those grand forests of spruce, fir, and cedar are melting away before the stroke of the ax and the whirl of the saw.

At Tacoma we strike tide water again which is navigable for large steamers. The city is pleasantly located, as nearly as I could see through the fog, at the head of one of the many arms or bays that branch out from Puget Sound. Owing to the lay of the land, the streets which run parallel to the bay are in terraces one above the other.

We find here about 50,000 people, and there seemed to be plenty of water for all intents and purposes. The streets were wet and slippery, the wooden sidewalks were being

repaired in many places, and, after a few hazardous plunges in the darkness in the early evening, I found a very pleasant abiding-place.

I knew there were several bee-keepers in Tacoma, for I had previously corresponded, and had some substantial dealings with them. One of these, Mr. G. D. Littooy, had purchased our Oro Fino wax; and as I had warned him from Portland that I would in due time drop in upon him I knew I should see at least one live bee-keeper, even if it did rain. The morning after arrival I set out to find the gentleman. I had an idea he was a free and easy bachelor; and when I found the house, and rapped on the door a few times, and there was no response, I felt a confirmation of my idea, and pictured to myself the rooms within in more or less confusion—the bed just as he had tumbled out of it in the morning, stove rusty, with a greasy skillet still on it; a bare table with dirty dishes on it; the floor more or less littered with dirt; cobwebs swinging unmolested from the ceiling; the curtains, if there were any, all awry. My meditations were broken by a sound of life at the rear of the house, and, stepping that way, I found an active-appearing, medium-sized young man splitting wood. This was Mr. Littooy; and as soon as I saw him I had some misgivings about his being a bachelor, for he was more neatly dressed, though in his shirt-sleeves, than the average everyday man. He soon led the way into the house, and, sure enough, the neat man had a fitting companion and two little cherubs of children, one of them a babe in arms. I must confess that the rooms had a bright and cheerful air, and a sort of halo that is never found in a bachelor's quarters—a sort of interior polish. Of course, the babies made some confusion; but it was an animated confusion. There was a childish glee, laughter, sunshine, a "well-spring of pleasure," and Mr. Littooy has a

happy home.

The bee-fever was imparted to Mr. Littooy by an aged Baptist minister, the Rev. Mr. Price. From him he purchased his first swarm at a good round price, and Mr. Price and round price figured together on several other colonies and hives.

Just as soon as the bee-fever gets to raging violently with an intelligent victim, the next proceeding is to try to illuminate the mind with bee-literature, and our new bee-man sent for circulars, papers, and books. In the first glamor of his experience he talked bees and bee hives in season and out of season; he sang in the church choir, but the music had the sound of swarming bees; the sermon went in at one ear, and out at the other; there was indeed a "bee in his bonnet."

He soon knew much more about bees than his instructor, and found that he could get

bees and hives much cheaper of other parties. The preacher saw the progress his pupil had made, and also found that he could enter the field as a competitor, and said, with some regret, that he had given his pupil a club with which to knock him down.

Mr. Littooy has become very expert in the manipulation of the Heddon hive. He prefers this hive, even if it costs more than others. Although he uses it, there are not many bee-men who follow his example. The Hoffman hive and frame take the lead. Cedar takes the lead here in hive-making, or at least in Mr. L.'s apiary, and it makes a very nice light hive. It is needless to say that Mr. L. and I were in entire accord respecting hives. Mr. Littooy has about 75 colonies of bees. A portion of them are in an out-apiary some 19 miles from Tacoma, and the rest are at his home, where they are nicely protected from sun and rain under a shed. The photo shows them up in good style; the person in the foreground is the enthusiastic owner, and, having recently made a good sale of honey, he has his hand in his pocket jingling the shekels.

Mr. Littooy has an excellent tailoring business, and he does not allow his bee business to interfere with it to a great extent. If he has not time to extract the honey he storifies until he has the opportunity.

The sources of honey here are willows, fruit, and maple in the early spring. Oregon maple is something like our eastern soft maple, and sometimes yields quite an amount of dark and strong-flavored honey. The main yield, and the best in quality, is from white clover. The great willow-herb, of which we have heard so much in Michigan, also has a plentiful footing here; but, I understand, not as yet enough to make much difference in the honey crop. For a good yield of honey from any source the conditions must be right, and mostly in respect to humidity. When the conditions are right, Mr. Littooy has secured 125 lbs. of comb honey to a single colony.

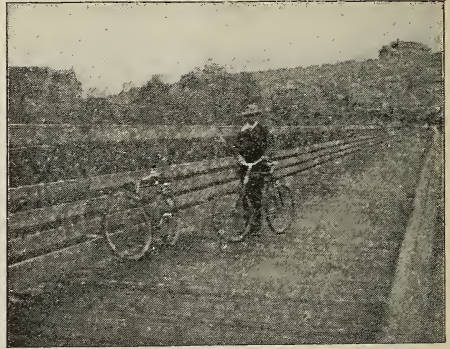
The greatest danger to an apiary here is spring-dwindling. A few hours of bright sun and then a cool shower soon depletes the hive of its working force. The climate, though, is quite mild, and the bees often gather pollen in February.

Mr. Littooy sells all of his honey in the home market, and, like all bee-keepers who have a good trade at a fair price, he is disturbed by outsiders who put the price down; and when it is once depressed it is a hard matter to get it back to its former rate.

Mr. Littooy is an expert wheelman, and we made arrangements to go out the next day and view the surrounding country; but the clouds have a careless way of shaking out water at the most inopportune moments, and, as the Oregon Dutchman expressed it, the morning "was too vet." It also has a habit of holding up for a time that it may take a better hold later; and people who are well enough acquainted with this trait of Jupiter Pluvius do quite a little business between showers; so when one of these periods arrived in the afternoon, Mr. L. and I started out on our wheels. He led off at a good strong pace

toward the Indian reservation, some three miles distant. Mr. L.'s patron, the Rev. Mr. Price, lived here on a little square of wild land, and his little cabin was among the stumps and underbrush. He is now 83 years of age, has lived in this portion of the country several years, and claims to be the pioneer bee-keeper in this portion of Washington. When he first came here bees could not get enough honey to sustain them; there was too much forest, and no honey-producing flowers; but the more it became settled, the better became the honey pasturage; and as these fertile hills and valleys come under cultivation, bee-keeping will become more and more profitable.

It is a remarkable fact that some people can handle bees, talk bees and bee-fixtures, even write interesting articles upon them, and never get down to real practical profitable work with them. Furthermore, as the years storify on the best of bee-keepers they become more and more conservative, and, after the age of 60 or 65, rarely adopt new methods and



LONGEST BICYCLE BRIDGE IN THE WORLD.

fixtures; in fact, they become back numbers, etc. Mr. Price feels himself in this class, and gives Mr. Littooy the credit of having a better knowledge of bees than he ever had. The reverend gentleman boasted at one time the possession of 100 colonies of bees; but I believe his dealings were more in the sale of colonies and fixtures than in the production of honey. There was an evident neglect of the small apiary of forty colonies, and an octogenarian can well be excused from much active work in the apiary. His attention is now devoted to the founding of an apostolic asylum, as he terms it. His cabin is the nucleus, and he has with him two aged impecunious bachelors; the three are the only inmates, and it is a forlorn-looking institution, fully in keeping with the forlorn apiary in the rear.

Such are the characters we meet while upon our travels; and some there are who might ridicule the outfit, and use it to cast discredit upon the ministerial calling; but the bent form, the careful walk, steady with a stout cane, the whitening locks, the dimmed eyes

and dull hearing lead us to pity and venerate the aged man.

On our return to the city Mr. L. coached me off into another direction, and over one of those nice wheel-roads for which this humid country is noted. These wheel-paths are very convenient near a city, and, being nicely graveled, and used exclusively for wheels, they are always in good order. One of these paths led us over a bridge 600 feet in length, and of considerable height, for it spanned a deep gulch. This is exclusively a wheel-bridge, and shows the enterprise and enthusiasm of the Tacoma wheel fraternity. Mr. Littooy assured me that this is the longest wheel-bridge in the world, and I shall believe him until some one contradicts it. He insisted upon honoring me with a position on it while he snapped the camera at me, and I herewith present the result.



PREVENTING AFTER-SWARMS.

Question.—Will you please tell us in GLEANINGS something about after-swarms? If the nice weather of the past two weeks keeps up, swarming will soon be upon us. I am always pleased with the first (or prime) swarm; but the after-swarming is often so long-drawn-out that it becomes a nuisance; yet so far such swarms are something that I have been unable to dispense with.

Answer.—There have been various methods given for the prevention of after-swarms, such as removing the old colony to a new stand as soon as the swarm has left it; setting the hive containing the new swarm on the stand it previously occupied; cutting all of the queen-cells but one on the sixth day after swarming, and hiving the after-swarm in a box on the top of the old hive till the next morning after they come out, when they are to be shaken out of the box in front of the old hive, and allowed to run in so that the young queens will, all but one, be destroyed. All of the above plans have their various advocates, who think them superior to any thing else; and in the hands of experienced bee-keepers there is no question but that they will work quite well. But I should feel that I was remiss in my duty did I not tell the questioner of two other plans which I have used for nearly a score of years with good success at all times, and use them in accordance with what I wish to do with the old colony of bees. Where I wish to remove the old hive to a new stand, while the swarm is in the air, hiving the new swarm on the old stand, I proceed as follows:

As soon as a swarm is seen issuing from any hive, I go to the shop, or to some place in the yard where I get a box or hive, which has previously been prepared, having the desired number of frames (I prefer frames filled with

comb foundation for this, or, better still, frames filled with empty combs) in it, taking it to the hive from which the swarm came, when the frames of comb are set out of the box near the hive. I now open the hive and take out the frames of brood, putting them in the box. If the combs of brood seem to be well covered with bees, and the weather is warm, I shake a part of the bees off in front of the hive, before putting the combs in the box. If few bees, or cool weather, I put all in the box, setting the box a rod or two from the hive in the shade, as soon as all the frames of brood and bees on them are in the box. I now put the frames of comb which were taken from the box into the hive, and re-arrange it, by which time the swarm will return, if the queen has a clipped wing, as all queens should have where natural swarming is practiced. If the queen is not so clipped, then the swarm is to be hived in this prepared hive on the old stand, the same as any swarm is hived.

I next put the combs of brood and bees, which are in the box, in a hive where I wish a colony to stand, and adjust the entrance to suit their wants, when they are left till the next morning. By this time nearly all the old or field bees have gone back to the old location, so that the young bees which remain are ready to accept any thing in the shape of a queen. I now go to my queen-nursery, in which I always have virgin queens at this season of the year, and select such a one as I wish them to have, and place her in a wire-cloth cage and take her to this hive. Upon opening the hive I take out one of the central combs, holding the same up before me. As the bees are all young, they will at once take to filling themselves with honey; and while they are so doing I let the queen run on the comb where there are a few cells of honey not occupied with other bees eating out of them, when the queen will commence to fill herself also, the same as she sees the others doing, I holding the cage over her till she begins to feed. The frame is now lowered down into the hive, and the hive closed. In this way the queen and bees appear natural, and I have yet to lose the first queen put in under such circumstances. As the colony now finds that it has a queen, the bees proceed at once to destroy all of the queen-cells, so that no after-swarms ever issue—at least an experience covering nearly a score of years says that none do.

The other plan I use is equally successful with the above, but is used only where I wish to treat swarms the way they are treated by some, by hiving them on a new stand, in which case I proceed as follows: As soon as the swarm is hived I go to the old hive from which it came, and mark on it with a pencil, "Sw'd, 6-15," which tells me at a glance that a swarm came from that hive June 15, should that be the date on which the swarm issued, and the one which was marked on the hive. If it should be another day the date is different; but the plan is the same as suited to any day on which a swarm is cast. On the evening of the eighth day from the date on the hive I listen a moment at the side of the old hive; and

if swarming has been done "according to rule" I hear a young queen piping, when I know that a queen has hatched, and an after-swarm will be the result if it is not stopped. If no piping is heard I do not listen again till the evening of the thirteenth day; for the next rule is, that the colony swarmed upon an egg or small larva being in the queen-cell, which allows the queen to hatch from the twelfth to the sixteenth day after the prime swarm came. If no piping is heard by the evening of the 17th day no swarm need be expected. When it is heard, which it will be, in nine cases out of ten, on the eighth day, I go early the next morning and take every frame out of the hive, shaking the bees off each (in front of the entrance) as I take them out and return them again, so I shall be sure and not miss a queen-cell, but cut all off, for we know that there is a queen hatched from the piping which we have heard.

Once in a great while the bees will take a notion to go with the queen when she goes out to be fertilized; but such a happening is of rare occurrence, and has nothing to do with what is known as after-swarming.

The above is a sure plan of accomplishing what we desire to, under all circumstances which may arise where the old colony is left on the old stand. My experience tells me that in the above two plans we have something we can "tie to," as the expression goes.



A BUNCH OF QUESTIONS.

I have wintered bees successfully in single-walled hives for the last eight years by bunching them together and packing them in chaff. This winter we have lost half of our bees by dysentery.

1. If the bees had been kept in the cellar under proper conditions, would the loss have been greater or less?

2. If the bees had been packed in chaff 12 inches thick all around, instead of four or six inches, would the loss have been the same?

3. Why should one stand of bees die with the dysentery when others having the same protection come through all right?

Petersburg, Neb., Apr. 11.

A. L.

[1. Probably less. Cellar-wintered bees last winter fared better, as a rule, than those outdoors, but no better than those properly protected in double-walled hives.

2. There probably would not have been very much difference.

3. This is a question that we can scarcely answer. There must have been a difference in the stores or else in the bees. Some colonies, like human beings, are more nervous than others; and possibly the cold spells had a tendency to disturb the one colony more than the other, with the result that, in their

efforts to keep warm, they made themselves less comfortable, and consequently subject to disease. A human being who worries or frets is always more liable to disorders than one who knows how to go on in the even tenor of his way.—ED.]

PREVENTING INCREASE.

In reading GLEANINGS for April 15 I see that I failed to explain sufficiently the method of preventing increase that I described. The traps are to be put on all hives previously to swarming. But no queen is to be removed until swarming takes place, and the queen found in the trap. Then she must be taken away, and the traps replaced by an entrance-guard, or arranged so as to permit the young queens to go back into the brood-nest. This is to have, as soon as possible, a "settlement" among the virgin queens, and secure the strongest one for the future sovereign. Leaving the trap, as a trap, would finally secure alive only the last emerged, and probably not the best; besides, the first queens caught in the traps would not be able to go back and destroy the remaining cells, while the swarm is out; so the "settlement" would be unnecessarily delayed for perhaps several days.

Knoxville, Tenn.

ADRIAN GETAZ.

THE PORTER BEE-ESCAPES—HOW TO USE THEM.

When I undertake to clear my supers of bees by the use of the ordinary escapes I surely feel much like a beginner; for after waiting many hours I seldom find half of the bees have taken their departure. Will you please teach me how to clear the combs without shaking and brushing?

Please let me correct Bro. Gifford's mistake on page 229, which sends out the impression that we had a disastrous freeze. All tropical trees are not killed as far south as Palm Beach, for my place is two miles north of there and I have a large assortment of tropical trees, including the coffee, sour sap, mango, mango-steen, avocado peas, rose apples, avocado pears, banana, pineapples, etc., and I can assure you that not one tree or plant was killed. Even the coffee-berries and the coconuts remain on the trees unharmed, and all fruits are coming out very thickly in bloom. In fact, the visitor finds very little damage done in the Lake Worth country, and I have taken in over \$100 cash from two pomelo-trees since the "freeze." The hum of the bees in a single tree is now as loud as the flight of a swarm.

M. E. SPENCER.

Lake Worth, Fla., Mar. 25.

[You did not give the escapes long enough time to do the work, I suspect. It is usually the practice to put them on the night before; and the next morning, or along in the afternoon, the super should be fairly clear of bees. It is very seldom that every bee will be out of the super; but if there are a dozen or so left they will usually take wing as soon as the cover is raised—or at least a whiff or two of smoke will dislodge them.—ED.]

EMPTY COMBS ABOVE OR UNDER THE HIVE ;
IMPORTANCE OF FEEDING.

If I am not mistaken, Dr. Miller and others, including the editor, recommend putting a hive containing empty combs *under* the hive containing the bees, to prevent swarming. My limited experience is directly opposite. When my bees get the *upper* story filled with brood and honey, they are apt to swarm, regardless of room below, either with empty combs or empty frames. I always work on the tiering-up plan of two or more stories; and as long as I can keep the queen at work in the lower story with empty comb above for the bees to store honey in, I am not troubled with swarms.

During the past dry year, bee-keepers who did not feed lost heavily. I lost all that I did not feed; and in order to preserve the combs I tiered them up five stories high. Three of these colonies have swarmed this month, with three stories of empty combs below, and the two upper filled with brood and honey. My bees always winter in the top stories; and even during the extracting season I can keep the queens below only by using the zinc queen-excluders. I use nine frames to each story, of about the standard L. capacity, being a little shorter and deeper. My best queens will keep two stories well filled with brood during the best of the season, and keep about three combs full in winter. DELOS WOOD.
Santa Barbara, Cal., April 24.

[I think you must have misunderstood me, friend W. I did not intend to recommend putting empty combs under, for that has never been my practice, although I may have partially agreed with the doctor that such a plan might be better at times.—ED.]

DARK HONEY FOR POPCORN CRISPS ; BEE-
KEEPING IN HONOLULU ; OVERSTOCKING.

Your idea is good to dispose of our dark honey by having it worked up into popcorn crisps, caramels, etc., and I wish you would publish the recipes in your paper, especially for popcorn crisps.

Last year's honey crop was small here, owing mainly to the Japanese, who have gone into the bee business, and they seem not to have the least idea that it can be overdone by having too many colonies in one place. They form companies, and have at one place as many as 900 hives. Here where I am are over 2000 colonies within a radius of less than three miles. My last year's average per hive was only 50 lbs., while the year before it was 150.

Our surplus honey we get from algerobattrees, not indigenous to these islands. They are only as yet growing to any extent on the Honolulu side of the island. C. F. WOLFE.
Honolulu, S. I., March 9.

[Our honey recipes are all very fully given in our honey-leaflet.

My, oh my! it appears you have overstocking to a greater extent than we have anywhere in this country. Can not something be done to educate those Japanese in regard to the folly of overstocking?—ED.]

THOSE SUPER SPRINGS—A SUGGESTION.

Your wire spring in super is one of the best improvements you have given us in a good while, and I hope you will excuse me for suggesting that you can greatly improve it by making the springs $\frac{1}{4}$ in. wide, and of a thickness sufficient to give the necessary pressure. It would not wobble at all, as the round wire wants to, and one would not have to be so precise in driving it, and it would fit better on the cleats. J. E. WILLIAMS.

Sparks, Ga., Feb. 23.

[The first springs we made were flat; but we found they were going to be considerably more expensive to make, both because the labor of making and the material would cost more. Then, too, propolis will make more trouble with such a spring than the wire springs we use.—ED.]

BLEACHING TRAVEL-STAINED COMB HONEY ;
ONE WAY OF DOING IT.

In GLEANINGS, April 15, you wished to know if any one else had a plan for bleaching travel-stained honey. I have bleached it by setting it in a window in the sun—not too close to the window, or it will melt the comb. It is a rather slow job unless you have a large window; but it will bleach it nice and white.

W. J. AUSTIN.

Chittenango, N. Y., April 24.

HOW TO MANAGE A HORSE AMONG CROSS
BEES.

I notice in GLEANINGS, that a man lost a horse by the bees stinging it to death. This may be old to some who work their horses near the bees; but if they bother, put a large blanket over the horse's head, and then you can lead it away in safety.

JOHN S. LUDDEN.

Cranesville, N. Y., March 23.

HOW TO REPAIR A PUNCTURED SINGLE-TUBE
TIRE.

Thread a large darning-needle with rubber thread; inflate somewhat; back your threaded needle into the cement-tube, then butt the end into the puncture deep; pull out the needle slowly, often leaving four strands cemented together; cut smooth, and use at once if desired. It can hardly be detected, and almost never fails to make a permanent mend.

San Saba, Texas.

B. R. RUSSELL.

[I have tried a modification of the plan you describe, and it certainly does work very successfully; but if one follows exactly your directions he will not succeed, I am afraid. The method of repair that I have practiced is this: I break off the end of a darning-needle in such a way as to leave quite a long slot in its end. Over this slot I string half a dozen or a dozen small rubber bands; then draw the bands, all of them, up so they are stretched to two or three times their length. When they are thus drawn I dip the needle-heads, bands, and all, into some rubber cement; then force the head with the bands into the puncture of the tire

perhaps an inch or two down. I next let go the bands and slowly draw the needle out alone, leaving the bands in the tire. With a pair of scissors I cut off the connecting ends, and the repair is complete.

This may be a little outside of bee-keeping; but at the same time many bee-keepers go to their out-yards on bicycles, and a little kink of this kind may be worth much.—Ed.]



H. C., Ia.—By “ripe cell” is meant a queen-cell that has a queen in it ready to hatch. The term “ripe cell” is very often used, and it is very expressive.

R. A., Cal.—Brood or queen cells should be kept at a temperature between 98 and 101 or 102. The nearer you can keep it to blood temperature, 98°, the better.

A. W. H., Ohio.—We can scarcely understand how you could have had such losses as you had. Apiaries should be protected on at least three sides by woods, buildings, thick-growing shrubbery, or a tight board fence.

S. D. G., Neb.—The two colonies you speak of as having died, lack of bee-bread would not have any thing to do with the matter. In fact, it is generally considered that, for successful wintering, there should be no pollen or bee-bread in the combs.

J. M. C., Ala.—If your bees have bee-paralysis, you have a very difficult disease to cope with. I would advise that you separate the affected colonies, as you suggest. In the mean time keep us posted, as we are interested to know just how these cases turn out.

C. P. B., Ore.—The condition you find in front of your hives (dead bees) shows that these are simply superannuated bees that have died of old age. We usually find them in front of entrances of all hives in spring, about the time bees are cleaning house, preparatory to the work of the season.

R. M., Wash.—If the foundation you speak of came from a responsible maker I should say it is all right. The white deposit you refer to may be due to the fact that too much soap as a lubricant was used to get foundation off the rolls. This soap dries, and leaves a white deposit. Your foundation is all right, probably.

E. G. M., Ark.—All combs that have been subjected to a freezing temperature, and that are afterward stored in a bee and moth proof room, will be perfectly immune from the depredations of moths until wanted. If you have not a tight room, and have extra hives, these can be made bee-tight, and made to stand anywhere in the yard. Combs stored in these will be perfectly safe until you require them for swarms or otherwise. Yes, Carniolans do have a tendency to run to yellow, we are told.

G. B. R., Ia.—The only kind of telephone that you can use to give notice of swarming at the house is the acoustic, and is sold by such firms as Perry Mason & Co., of Boston, and Montgomery Ward & Co., of Chicago. The copper wires should be strung so as to run in such a way as to run through the apiary back and forth, being careful to avoid sharp angles. The tighter the wire can be drawn and not break, the better. When swarms issue, bees will tap this wire so often in their flights that it will give immediate warning at the house.

J. R. V. B., Jamaica.—If you have an absolutely non-swarming hive that will stand the test of a hundred years, you have a bonanza. I wish I could share your confidence and enthusiasm. Personally I do not believe that swarming can be absolutely controlled by any device, although I believe it can be very greatly checked under some conditions. I shall be very glad to hear from you further after you have tried it; but I have seen so many attempts to control swarming by mechanical devices, that failed, and failed absolutely, that my faith is very weak.

G. W. H., N. Y.—If you intend to make a large honey-tank you had better make it of galvanized iron; for such has an amount of surface to the honey that is comparatively small. But if you desire only a small tank, say one holding two barrels, I think I would make it of tin; but tin tanks must be watched very closely to prevent rust. They should be painted on the outside, and when left it will do no harm if honey is smeared over the inside, as the latter is an excellent anti-rust, the same making a sort of varnish that keeps the moisture off the metal.

W. C. G., N. M.—The cage you send is of the right principle, but it is too expensive. You speak of the fact that, with a regular Benton cage, it is necessary to have the wire cloth loose before putting in the queen and bees. This was so formerly; but within the past two or three years the cage has been modified as you will see by the sample we send you by today's mail. You will notice a cork in one end—or in both ends for that matter. In one end the queen and bees are inserted; and when the cage is full, the cork is pushed in and the cage and bees are ready. This arrangement is very much cheaper, and, to my notion, somewhat handier.

W. E. P., Neb.—Our A B C of Bee Culture was written with special reference to beginners. While it is in a sense a dictionary or cyclopedia, we recommend that each beginner take up the different subjects according to the season of the year that he is doing the reading. For instance, he receives the book in winter, let him read up on wintering; if in the spring, he should read up on dysentery, spring dwindling, feeding, and robbing; and then, later on, comb and extracted honey, and swarming. But perhaps you desire something that you can digest in a shorter space of time. With that end in view we would refer you to the matter on pages 32, 33, and 34 of our catalog we are mailing you.



EDITORIAL
BY
E. R. ROOT

THE heaviest losses seem to have been in the Northwest. In New York the bees have wintered quite well.

THOSE of you who have not done so will do well to try, this coming season, shallow extracting-supers to start the bees up above; then after the bees have got nicely going, substitute the super for comb honey.

WE are rearing queens *a la* Doolittle — yes, going one step further. We are raising cells in the lower story of the hive with a laying queen. How this is done will be explained a little later as soon as we can determine whether the method is an entire success.

THIS has proved to be an almost ideal spring for bees. The winter in most localities turned abruptly into beautiful balmy weather; and had it not done so just at the time it did, the loss of bees throughout the country would have been enormous.

THERE seems to be a great scarcity of bees and queens this year. We have difficulty in supplying the demand at the Home of the Honey-bees, notwithstanding that we have orders, and have had, with all the best breeders in the country. Their own trade seems to take up all they can supply themselves. No doubt, ere another issue is out, there will be queens in abundance.

THERE seems to be much interest manifested in that Dadant-Langstroth (or what might be called jumbo) hive proposed by A. N. Draper, in our last issue, and spoken of again in this number. So much has been said in favor of these hives that it seems to me time that a few of us should be trying them on a small scale. It would be folly for any one to adopt them largely until he *knows* whether his locality is adapted to them.

BEE-PARALYSIS.

WE have just heard from one of our correspondents who has bee-paralysis in his apiary, the same having started from a queen that he says he purchased from a prominent queen-breeder. As our friend lives in Alabama, the disease is making a good deal of trouble. He has not told us who the queen-breeder is. Two years ago all the leading queen-breeders of the country, with perhaps one or two exceptions, agreed to destroy any colony they found in their apiaries, affected with bee-paralysis. Some objected to such a radical procedure; but I firmly believe it is the only safe thing to do. Foul brood in a queen-rearing apiary, if nothing but queens were sold, would probably do no harm; but bee-paralysis might and probably would do considerable damage in the apiaries of the South.

LAWN-MOWERS, AND HOW TO MAKE THEM CUT.

AT this time of the year there is a good deal of lawn-mowing to be done around the hives, and the query arises, How many know how to set or adjust the knives so as to make them cut? In general I may say the cutter-bars should be adjusted so that they will scrape or shear the whole length. You will find screws or adjusting-bolts whereby the bar can be raised or lowered. Even if the knives do rub a little hard, better so than to have them touch too lightly.

Another thing, do not be afraid to use oil frequently. I find it an advantage to pour in a little oil on the bearings that hold the revolving blades, at least every half-hour while working. Indeed, I have thought that a machine runs easier when oiled every fifteen minutes. Oil is cheap, but man power is expensive.

NO INSURANCE—A BEE-KEEPER'S LOSS.

THE following letter from one of our contributors, and one who was proposing to write us a series of articles, is at hand:

I must write you to-day telling you of my misfortune, as I know I shall have your sympathy and that of the whole bee-keeping fraternity. Day before yesterday my house burned down with most of the contents. My loss is about \$1500. No insurance. I am ruined. I have nothing to build with, and nothing with which to purchase furniture. My little girl's clothing all burned except one dress, which she had on. My family consists of my wife, a boy, and girl. My wife is an invalid. I am nearly fifty years of age, and not in good health, so you will see that I am in a bad condition. I always try to see some good in all things, but it is difficult to find a bright side in this case.

Bradford, N. Y., Apr. 29.

A. J. WRIGHT.

This is indeed serious, and I am wondering why a bright, intelligent man of forethought like our friend Wright did not carry insurance. It carries its own lesson, and a terrible one it is. We would enter an appeal for aid but for the fact that there are so many calls of a similar nature that it would be hardly right to call upon our readers for assistance. There is a silver lining to every dark cloud, and I believe friend Wright will see one, even if it does not appear just yet. Some of the greatest calamities end in the greatest blessings.

WAX FROM FOUL-BROODY COMBS NOT SAFE.

ONE of our patrons recently sent us a lot of wax that he had rendered out from a lot of foul-broody combs, and he was honest enough to tell us of the fact at the time of making the shipment. As soon as I knew of it I told our freight-man to be on the lookout for it, and the foreman of the wax-room to be prepared to receive it and give it special treatment. While I believe there would not be much danger, I feel sure it is wise to err on the safe side. We have, accordingly, taken this wax and brought it to the boiling-point, or as nearly so as we could, in a barrel by itself, using a jet of steam. After it was boiled for an hour or so, and was allowed to stand, the next day it was treated as before, and still again it was heated, after which it will be mingled with the general supply, and then heated once

more. This, of course, will render it entirely safe. The recent discussion regarding the power of the spores of foul brood to resist prolonged extremes of heat goes to show that even three hours of continuous boiling might not kill them.

I can not help thinking that it is very unwise certainly unsafe, for any one to render up old foul-broody combs. Wax with a steam-jet can not be heated much beyond 200° F., and never more than 212° if surrounded by a vat of boiling water; and even if one can thoroughly sterilize his wax, he runs a tremendous risk while he is going through the process of sterilization.

We desire to say to our friends and patrons that we prefer not to receive wax from foul-broody combs; and if any one has ever sent us wax from such combs, without telling us what this wax was rendered from in the first place, there would be a *possible* danger of giving some innocent user of foundation foul brood. I do not mean to raise any scare, but I do not think we can be any too careful when dealing with this insidious enemy.

SPRAYING FRUIT-TREES WHILE THEY ARE IN FULL BLOOM.

It would seem that it is not altogether the whisky and rum power that is repealing good and wise laws almost as fast as they are made. Read the following:

Inclosed please find a clipping from my county paper, stating that a law has been passed in this State, legalizing the spraying of fruit-trees while in blossom. Please make a note of the above law in next issue of GLEANINGS. It is, perhaps, needless for me to say that I am not in favor of said law. I am very sorry indeed that the Empire State, having as a motto "Excelsior," has made such a sorry mess of it.

Ransomville, N. Y., Apr. 27. C. E. PALMER.

Another dispatch from Assemblyman Darrison says: "The bill to permit spraying of fruit-trees when in blossom passed the Assembly this morning."

This repeals the old law against spraying while fruit-trees are in blossom. The old law was advocated by those who claimed that spraying while in blossom killed the honey-bees, and who also urged the claim that certain kinds of blossoms could not be fertilized except by the assistance of bees traveling from one blossom to another. The advocates of spraying in blossom time have carried their point in the Assembly.

This whole shameful piece of business comes either from ignorance or misconception, or else it is spite work. Years ago there was something of a feeling between fruit-growers and bee-keepers; but not only scientific men but practical gardeners and fruit-growers came forward with such testimony that for some time back it has been generally recognized that honey-producers and fruit-growers actually *need each other*; and when our experiment stations throughout the land declared there was nothing gained whatever by spraying fruit-trees at a time when it might kill the bees, we supposed everybody understood it, and many of the States passed laws to prevent people who were contrary, and who were vicious enough to poison the bees purposely, by using their spraying apparatus while the bees were working on the blossoms. I notice by the May number of *Vicks Magazine* that Prof. Slingerland, who is, perhaps, our best authority, decides there is absolutely nothing to be gained by spraying trees while they are in full bloom. See the following:

Is there a law forbidding spraying apple-trees when in full bloom?

Vice-pres. Willard.—There is; you have no business to kill your neighbor's honey-bees.

Prof. Slingerland.—Last year I said I did not think there was need of a law in this State to prevent men from spraying trees in bloom. I now think the bee-men are right. There is no earthly reason why you can not kill as many fungous and insect enemies just before and just after the tree blooms, as when the trees are in blossom, because the enemies are out before the blossoms open. You can not get the spray in the blossoms before the petals fall. There is no question about the killing of the bees. Chemists have analyzed them. They carry the poison home and kill the brood.—From *Vicks Magazine* for May.

THE REPEAL, NIPPED IN THE BUD BY SENATOR RAINES.

One of the clippings given above says the bill passed the Assembly, and this led me to believe that perhaps it had not gone through the Senate yet. Knowing that W. F. Marks, President of the New York State Association of Bee-keepers' Societies, the man who secured the passage of this excellent anti-spraying measure, would know the real facts in the case, I immediately wrote him, asking for particulars. This is his reply:

Mr. E. R. Root.—Replying to your favor of the 4th inst., I will say an attempt was made to repeal the law "to prevent the application of poison to fruit-trees while in bloom," but it failed. The opposition stole a march on us, and got practically through the Assembly before we knew it; but when their bill reached the Senate, thanks to Senator Raines, who was watching for it, it was promptly killed.

It stands the New York bee-keepers, and friends of the law, in hand to be on the alert, and no time should be lost in strengthening our position and in disarming the opposition. The attempt is liable to be repeated at any future session; and the way to defeat it is to be ever ready to meet the issue. It is the best law on the statutes—short, but every word is to the point, and, backed by public sentiment, it is the only thing that will prevent the practical extermination of the honey-bee in large portions of this State.

In order to create a sentiment against spraying fruit-trees while in blossom, and in favor of the law, we are circulating a pamphlet (copy inclosed) consisting of abstracts from various articles on cross-fertilization, and extracts from bulletins on spraying. The matter is in a condensed but convenient form, and is worth preserving, as many of the bulletins quoted are "out of print." As many farmers might think the matter was prejudiced if they knew some of the articles were written for the bee-periodicals, it was thought best to omit giving credit for the articles—an omission which, in view of the above-mentioned fact, will, we trust, be forgiven.

The principal hostility to the law appears to be in Niagara, Orleans, and Genesee Counties. Bee-keepers in those counties should *organize at once*. Please urge them to do so; and urge every bee-keeper in New York to do his best in upholding the law, and in creating a sentiment in its favor. The intelligent fruit-growers are heartily in accord with the bee-keepers.

W. F. MARKS.
Chapinville, N. Y., May 8.

Senator Raines, if I mistake not, is the one who introduced the celebrated Raines anti-liquor measure. This law, I believe, has been the means of closing up hundreds of saloons, and making it very unhealthy for a lot more that are still in existence. It is no little pleasure to us to feel that we have so distinguished a champion on our side, both in morals and in the cause of the little bee.

As Mr. Marks well says, the bee-keepers of New York need to be on the alert, for they were nearly caught napping. Nothing but consummate ignorance and prejudice would be at the bottom of the repeal of so good a law.



And he said unto them in parables, How can Satan cast out Satan?—Mark 3:23.

In olden time the Savior said, most emphatically, that Satan was not the proper person to uphold law and to put down the works of the Devil. In connection with the words of our text, "How can Satan cast out Satan?" Jesus says, "And if Satan rise up against himself, and be divided, he can not stand, but hath an end." I believe all the world has assented to this through the ages that are past; but in recent times, even within the past few years, there seems to be a class in community who evidently think it is possible for Satan to cast out Satan. Let us go back a little. There seems to be a strange feature in humanity that makes it love to view and dwell on suffering. When a chicken's head is to be taken off, the children will all run to see it unless mamma or possibly papa himself says no. Even though these things seem to be necessary, it is not well for children to be around while they are being done. Children of an older growth all run and push through the crowd to get a glimpse of somebody who has been injured in an accident. A good many times the police have hard work to keep the crowd away so as to give a woman air when she has fainted on a hot day. Why do they all run and elbow each other, and push and jostle just because somebody is suffering? Is it sympathy and love for our fellow-man? I fear it is not. Of late there seems to be a great mania to see a suicide, or, if we can not see it, to read all the disgusting details in the papers. I have often thought there would be fewer suicides if people would just bury the body decently and say as little about it as possible—that is, if such a thing could be done. I believe teachers, doctors, ministers, and humanitarians, agree with me. If a man is to be hanged, people congregate from miles around—that is, they did so when hanging was public. Our authorities, however, decided long ago that such punishment should be made in private; and then it turned out that they could not make it private. A crowd or the rabble, if you choose, would tear down the fence, or demand, in spite of constable or police, that they be permitted to look on and witness the dying man's agonies. I well remember in our town of Medina when a man was hanged for the murder of a whole family. I think they made a pretense of putting up a fence around the gallows. But the fence disappeared the night before; and, if I am right, the men who put it up calculated that such would be the case, so they did not waste much on nails or lumber. Perhaps I might as well say that I myself was a witness of the hanging, but I did not help tear the fence down. This happened before I was a Christian.

Now, I do not mean to say that I am entirely free from the mania that seems to possess the general run of people in this respect, for I

would probably go now with the crowd if my conscience did not admonish me it was wrong. I hope my readers will never imagine that I am temperate and peaceable because I have no inclinations to be sinful. God knows, if nobody else does, that it costs *me many* a struggle to do right.

Now, why do people wish to see a man hanged? Why did I shut my store and leave my business, and go off with the crowd to see a man hanged, whom I knew so well that I might almost call him a neighbor? In olden time the American Indians used to have a "big picnic" when they captured a prisoner and put him to death. Hanging was too tame and too speedy. There was not *torture* enough about this method; so they burned him at the stake with a "slow fire. Away back through the early ages it used to be a fashion to give prisoners to wild beasts, and great crowds gathered to see the victims torn limb from limb. Yes, even the nobles and the royal family themselves, with their fine ladies, came out to witness such exhibitions of cruelty. Later on they had bull-fights; and, even though a man by his skill and great muscular strength might come out victorious through many a conflict, the bloodthirsty populace must keep him at it until they found a dumb brute that *could* gore him to death. I suppose such a death was considered a full reward for all his bravery and intrepidity. Why, we have had quite a little difficulty, *even of late*, in enforcing laws in the United States against bull-fights; and finally somebody thought it would be better to rule out the dumb beasts entirely and let two *men* fight together. I wish I could say that our United States of America had shut down on prize-fighting entirely. May God hasten the time when these things will be remembered as only relics of former ages. The motto on our coins still reads, "In God we trust." Oh that it were *true* we were trusting in God to such an extent that our people would refuse to *go* to places of public resort simply to see one man torture another!

There is *one* thing that modern times have not as yet revived (in the way of horrors that make one's blood run cold), and that is *cannibalism*. When we speak of a race of people or of a locality where they are cannibals, that one word seems to express in itself the most fearful depths to which humanity can sink. But I have actually been afraid, if these things go on, that sooner or later cannibalism *would* be revived. At a recent prize-fight, we are told, when one of the men by brute strength began to wear out his opponent, the crowd, who were hungering and thirsting after—what? Righteousness? no, they were hungering and thirsting for *bloodshed*; they wanted to see the man to whom God had given the greater endurance murder his weaker opponent. They yelled to the victor, "Kill him! kill him!" Did they want the man killed because he was guilty of some crime? No, no! They had no spite against him at all. Their feelings had simply become wrought up to a pitch where they wanted to see *somebody* die. We are told the American Indians used to

be crazed at the sight of blood. You have all heard the story, perhaps, of a great peace-meeting between two warlike tribes. They had shaken hands, "buried the hatchet," and then they had a big dinner. Two children quarreled over a gaudily painted grasshopper. Then the children's *mothers* quarreled, and then the *fathers* quarreled. Then the *neighbors* took sides. Pretty soon blood was shed, and before the sun went down two great tribes, and the greater part of them, lay dead on the battle-field. They were *crazed* at the sight of blood. The Great Spirit smiled on them in the morning as they planned to bury the hatchet and to be brotherly; but, oh dear! what an *end of good resolutions!* You all know, without my telling you, of this craze that seems to have a place, more or less, in almost every human heart. If a family is murdered, people must drop their spring work and every thing else, and go for miles to look over and listen to the horrible details of the tragedy. It is like the craze for gambling, the craze for strong drink or other stimulants, the craze for wealth or fame. In modern times, when there are good laws to *restrain* this thirst for bloodshed, people are inventing all sorts of excuses to gratify them; and one of the latest excuses for lynching is the corruption of our officers of law, the slowness of legal proceedings, and the uncertainty, after all, of any punishment for the guilty; therefore *lynch* law has begun to be fashionable; and all at once it transpires that a crowd can be collected in almost any community who are so loyal to the cause of righteousness that they will drop every thing at any minute to rise up and punish transgressors themselves. If some member of community gives evidence of being possessed of the Devil, this element springs forward with an alacrity it has never shown before in any thing else, to punish the criminal and do away with all such devilish work. The Bible tells us the law is a terror to evil-doers. These people have evidently got it into their heads that a better way would be to teach mankind that *mob rule* is a worse terror to evil-doers. I am not defending criminals, mind you, nor am I urging that we shall let such terrible outrages go unpunished as have been committed of late, especially by some of our colored people. I am simply suggesting that the people who hang these criminals, and burn them at the stake, are not moved to this work just because they *love righteousness* and *hate iniquity*. I can not prove it by statistics; but is it not true that the crowd who spend their last dollar to go to a bull-fight or to a prize-fight would do a good deal more than that if there were a chance of seeing a negro put to death by mutilation and slowly burning him at the stake?

On this last occasion (I suppose everybody has heard about it) crowds to the extent of several thousand went many miles to witness the spectacle. I have not the paper now; but if I remember correctly the railroad companies ran excursion trains on purpose to carry people and bring them home again. Now, it is the business of the railroad companies to carry people wherever they want to go, *as a*

rule; but I do hope that a national law will soon be enacted forbidding railroad companies to carry mobs, especially where said mob proposes to *defy law*. There has been some feeble attempt made by the courts to stop lynching. I presume people console themselves by thinking that this crime, which it is not even pleasant to talk about in print, will soon be a thing of the past when such terrible punishment so speedily follows. In other words, they seem to have a sort of fond hope that Satan *can*, in these latter days, cast out Satan. It does seem as if every colored man in the United States must know of the fate that surely awaits him when he lets his low beastly passions run away with him; but, sad to state, the thing is not being stopped. Years ago they used to put a man in prison for debt; and in England they hanged for what we would call very trivial offenses. Did it lessen crime? We are told it did not. Sometimes it seems as if certain people were possessed with a *craze* to commit crime. Please do not think I am laying *all* the blame on our friends in the South. It is not many years since there was a foolish craze among the Puritans of New England to stamp out witchcraft, and they had public exhibitions of the *drowning of witches*. Crowds came to see it, and I presume many good people deluded themselves by thinking that, in so doing, they were showing to the world that *they* loved righteousness and hated iniquity. I have been told that it was my own ancestors who tortured the witches, and that it was my own Congregational Church that had a particular hand in it. If so, I shall have to pray once more that God may help us *all* to beware of the wiles of Satan.

Dear friends, it is hardly likely that what I am writing will be read by any one who had any thing to do with that awful public spectacle that has been pronounced a disgrace to the present age, and a still blacker disgrace on the annals of the history of our American republic. Just at a time when we were trying to persuade the Filipinos that we *love* them, and are conquering them only that we may give them the benefits of modern civilization (?), our country has been guilty of this fearful thing. How can we persuade them that we are a nation of people who love even our enemies, and would be just and fair to *all* persons, regardless of sex or color? If the man who was tortured was the only one who was *unquestionably guilty* it would not be so bad; but we are told that a quiet, inoffensive, law-abiding colored minister was put to death without any good evidence that he was guilty at all. The man, before he was burned at the stake, simply declared that this minister paid him twelve dollars if he would murder a man. The criminal was evidently casting about for something to say or do to help his prospects; and he simply said what many another man in his position might have said. He declared he was innocent of a part of the crime, and that he was hired to do the other part. The colored minister had some sort of trial. But the crazy mob had sense enough left to decide that it had no kind of evidence that would warrant them in putting him to death; and

they decided to put him somewhere in safe keeping until he could have some sort of trial. Before morning he was horribly mutilated, and hung up on a tree and riddled with bullets.

Those who have been watching this lynching business as one case after another follows thick and fast, will notice there seems to be a study on the part of those who take the law into their own hands to make each case a little worse than the preceding one. The details are so horrible I dare not put them in print on these pages; but at the end we are told each bloodthirsty one in that crowd of thousands carried away with him some fragment of roast flesh or burned bones of the victim; and I am just told that a white minister of the gospel, who attempted to remonstrate against this reign of mob law, received a piece of the dead man's body as a warning to leave that part of the country; and, not satisfied with this, the inside of his church was completely wrecked. I said these things are not confined to our friends in the South. This lawless element and this craze for scenes of this kind exist everywhere.

In our own State of Ohio, only a short time ago, there was a case of lynching just because the neighbors thought an old man had been cruelly treated by one of his sons; and, if I am correct, none of the perpetrators of the deed have been punished by law. But God's punishment will surely fall upon us by something more terrible than any thing that has happened yet, if we as a people decide to let *lynch law* take the place of judge and jury. We are all responsible; and it is with the hope that this little plea of mine may suggest to somebody that Satan can never cast out Satan that these words are sent out to you. One of the sheriffs in this recent case tried his best to pacify the crowd, declaring that the culprit should be punished to the fullest extent of the law if the law were allowed to take its course; but they would not listen. This vicious element is looking on. It is watching keenly to see whether those who take the law into their own hands get punished or not; and every case that is dropped, and nothing done, only hastens the time of the calamity to which we are surely tending unless we wake up and declare as a people that *law* and *order*, and not mob law and *disorder*, shall govern our land.

There is only one way known, since the world began, of casting out devils or devilish work; and this nameless crime that seems to belong particularly to the colored man is certainly the work of the Devil if any thing is. The power of Jesus of Nazareth alone can cast out devils; and even the devils themselves seem to assent to this. In Mark 1:24 we read that the unclean spirit said, "Let us alone; what have we to do with thee, thou Jesus of Nazareth? Art thou come to destroy us? I know thee who thou art, the Holy One of God." It is through the gospel of Christ Jesus that the world must conquer all this kind of work.

Law and *gospel* always have gone and always must go *hand in hand*.



ANOTHER SENSATIONAL "SCARE."

I think it was Artemus Ward who once said, "What is the use of knowing so much when so much that you know *ain't* so?" Within the last few days I have seen in three different periodicals statements to the effect that pure water is not wholesome. The first one came from the *National Druggist*. Well, if druggists are making money by selling alcoholic liquors, I do not wonder they are glad to hunt up some German scientist, or somebody else, who cautions people against drinking too much pure water, or water that is "too pure." The argument seems to be that chemically pure or distilled water is too strong a solvent. Suppose we just for a moment grant this; then what water shall we drink? Almost all well waters, and the water from many springs, contain more or less lime, soda, and other mineral salts; but the composition of no one well or spring is like that of any other well or spring. They all contain minerals, and different kinds of minerals—that is, nearly all. Here and there we find springs of soft water coming from sandstone rock, that are almost perfectly pure. If you evaporate some of it in a spoon, little or no residue is left. Water procured direct from the clouds, in a clean tin pan or some other dish, is so much like distilled water that no one could possibly tell the difference by the taste. As both leave no residue whatever on evaporation, both are alike chemically pure. Freshly fallen snow, when melted, affords the same kind of water. Physicians have for ages past recommended cistern water for drinking purposes in preference to any other water easily obtainable; and this thing has been so well tested that it is too late in the day to go back to it. Thousands of people—perhaps I might say millions—have recovered their health by getting their drinking-water from soft-water springs or from well-made cisterns. The only objection to cistern water is that it collects smoke from the roof on which it falls; sometimes vegetable matter from old shingle roofs, and oftentimes lime or other minerals from the cistern in which it is stored. Cistern water is acknowledged to be very much better than the average well water. Well, within a few years past, thousands of people like myself have found distilled water more wholesome and much more favorable to digestion than even good cistern water.

Manufacturers of the various sanitary stills have received testimonials from not only people all over the world, but from the highest medical authority, in favor of distilled water. You know I have discussed this matter at great length; have hunted up springs all over Uncle Sam's domain; have compared the water, and talked with people about different waters. Well, my decision is most emphatically that the best mineral water in the world is that which contains the *fewest* minerals. While staying in Arizona, near Salt River, my

stomach so rebelled at the "grain of salt" that nobody else seemed to notice, that I used to travel to the ice-plant in order to get distilled water to drink. In Bermuda I was greatly delighted, as you may remember, to find that everybody in the island drank only rain water. But the roofs of the houses are all whitewashed; and my digestion pretty soon began to rebel against the faint taste of lime in all the drinking-water. Hard well water I have been unable to drink—that is, right along—ever since I was a boy; and although people have laughed at me again and again, I have all my life saved up rain water, or else traveled miles to soft-water springs when I became very thirsty.

I have been using the sanitary still considerably over a year; and the distilled water is like bread and butter (I mean *good* bread and butter); I never tire of it. It never makes a bad taste in my mouth; and it never induces my digestive apparatus to begin to "kick" after I have taken a big drink. Why, the *National Druggist* and the German scientists (I do not care how big the latter, nor how many there are) might just as well tell people in the country that pure air is not wholesome, and advise them to go into the thickly populated cities, and breathe smoke and poisonous gases, together with putrid smells, and call the latter more wholesome. I should not wonder a bit if some of these "big" scientists should tell us next that bathing once a week is found to be unwholesome, and that a man will live longer if he never bathes at all and never washes his clothes. God made the pure air and the pure water, and wholesome food, for the use of man; and the man himself, or some miserable excuse for mankind, who invented the stupid yarn that pure water is not wholesome—the scientist or any other man who tells you that water may be *too pure* to be good—probably would object to a man who always tells the truth, and would persuade you that a man who would deliberately lie a part of the time is a better member of community than a truthful one.

If the soda-fountains in most of our drug-stores would furnish a glass of distilled water at the same price as their other drinks, I for one would take the distilled water in preference to anything that any druggist can conjure up or mix up; and I presume there are thousands like myself. But the distilled water should be furnished for a cent a glass. Every druggist has to keep it for compounding medicines; and pure water certainly ought to be furnished at a moderate price to people who are willing to pay for it.

On page 355 of our last issue, Mr. A. J. Wright suggests that, if God intended people to drink pure water, he would have provided it instead of hard water, such as is so often found in springs and wells. Permit me to ask what kind of water is provided by Nature most abundantly—the pure water that comes down in the form of rain, or the water under the ground, that we have to dig for as a rule? In many countries rain water is almost the only source of drinking-water; and even in the United States a very large portion of the

people use rain water for cooking and drinking purposes. Rain water is distilled water from Nature's own apparatus; and nobody would ever think of distilling rain water if it could be taken direct from the clouds, without being contaminated by the smoke and dust that are found even on a slate roof, or the impurities found in the average cistern.* Distilled water is a most powerful solvent, as the chemist or even the manufacturer will tell you; and it will grasp hold of and dissolve a multitude of substances that ordinary water from wells will not. It is this powerful solvent property that makes it so valuable in dissolving and removing impurities that must be taken from the human body day by day, if we would remain in perfect health. Even the patriarch Job regarded snow water, which is the same as rain water, as a perfect cleanser of the hands. Perhaps I should apologize for the amount of space I have taken in this matter; but when men who lay claim to scientific attainments tell us that pure water is not wholesome, it becomes a serious matter.

STILL LATER.

One of our medical friends has been kind enough to forward me a clipping from *Deutsche Medicinische Wochenschrift*, a German medical journal, to the effect that "distilled water taken into the stomach causes swelling of the gastric epithelium, followed by desquamation and even inflammation. . . . The addition of enough chloride of sodium (table salt) to distilled water to produce just a faint saline taste obviates the difficulty. . . . The various pure spring and mineral waters, if not too highly charged with mineral contents, are much better for therapeutic use than distilled water, unless salt is added to the latter."

So it seems the whole scare, when summed up, amounts to this: One who drinks distilled water may not get sufficient common salt, unless he salts the water he drinks, or, what amounts to the same thing, takes a little *more* salt with his daily food. For more than a year back I have drank a quart or more of distilled water every day; and while at home, nothing but distilled water. I have not seen any thing yet of "desquamation" nor "inflammation."

THE DANGER AND HARMFULNESS OF PATENT MEDICINES.

It affords me great pleasure to notice that the W. C. T. U. is backing me up with some heavy testimony along this line, or perhaps I

* No objection has been made, that I notice, to cistern water; hence the inference would be that rain water is better after it has in solution a certain amount of nastiness than when absolutely pure. Filtering is, of course, a great advantage; but no filter as yet invented can take out soluble matters so perfectly as the distiller.

Perhaps I might mention that the water found in our fruit is soft; that is, it has none of the minerals found in water from wells; and in many countries where the water is strongly alkaline, and where fruits are very plentiful and cheap, many people eat fruit when thirsty, and drink almost no water at all. The water in milk is also soft. The animal economy of the cow, acting like a sanitary still, removes the minerals from the water she drinks. This, however, does not do the work so perfectly that a cow may be safely permitted to drink *any* kind of water.

am backing that organization up, for I understand it has been at work for some time. It publishes a little eight-page pamphlet, with the above title. It is largely the report of the Massachusetts State Board of Health, and gives a correct analysis of pretty nearly all the popular patent medicines; and they decide exactly as our Ohio State Food Commissioner has decided, that these things owe their popularity to the alcohol, opium, salicylic acid, cocaine, etc., they contain. Just one illustration: A medicine, largely advertised to assist inebriates in breaking away from the drink habit, had a testimonial from a noted temperance evangelist. Now, this very medicine contained a large per cent of alcohol. I am glad to see that this little pamphlet does not spare ministers of the gospel who lend their names to testimonials, and religious papers that publish glaring advertisements of these dangerous drugs. Permit me to quote a paragraph:

The habit of "dosing" grows, and one vaunted remedy is tried after another, until the health is thoroughly undermined, and the poor deluded mortal is a physical wreck, his only comfort being, if he takes it, that he has been useful in helping to build a steam yacht or a palace for the patent-medicine manufacturer.

All through Florida you will see palatial mansions built and owned by patent-medicine men whose names have become household words, and their "steam yachts" are almost always an accompaniment. I wish these pamphlets could be scattered broadcast all over the United States. Single copy, 2 cents; 60 cents per 100. Address Mrs. M. M. Allen, 809 South Geddes St., Syracuse, N. Y.



STEAM - BOILERS, POTATOES, CLOVER, AND STRAWBERRIES.

Well, friends, the above is a rather queer "rotation" in farming, is it not? but with myself it comes about in this way: We have for several years been using three ordinary steam-boilers, side by side, of 60 horse power each. With these boilers we use for fuel all the sawdust shavings, and refuse from our factories, the sawdust and shavings being blown directly into the furnace under the boilers. Well, besides the above we have been obliged to buy from \$500 to \$600 worth of coal every year, and yet this slack coal costs us only \$1.25 per ton, laid down at that; but during the past few months we have put in a new water-tube boiler—one large boiler, made on a new principle, taking the place of the other three. In the old boilers the water circulates *around* the flues, and the heat passes *through* them. In the new one the water circulates *through* the flues and the heat is outside of them. Ernest has already told you about it. Well, the new boiler is such an improvement that we have not used a shovel-

ful of coal since it was fired up. Furthermore, we have had wood and kindling to sell, to the extent of several wagonloads a day, because there was more fuel than was needed to keep up steam. The new boiler has given us very much more power than the old ones all together. It was made by the Wilcox & Babcock Co., New York. So much for new machinery.

As we are now using no coal, quite a quantity of wood ashes is produced every day, and we have been told that wood ashes are productive of scab on potatoes where applied to the ground. But I wrote to our Ohio Experiment Station, asking them if, in their opinion, these ashes would be productive of scab, if applied to the clover and strawberries which I use in my rotation. The reply by Prof. W. J. Green, which I give below, I am sure will be of interest to many of our readers. I also asked him if he would recommend mammoth clover instead of medium, where it is all turned under, to prepare the ground for potatoes without cutting any clover or pasturing it off.

It is commonly believed that unleached ashes favor the development of the potato scab, but I have conducted no experiments to determine whether this is a fact or not. Not being able to give you anything from my experience on this subject I do not like to risk an opinion, as it is a matter of considerable importance to you. I suggest that you write to the Experiment Station, New Haven, Conn.; also to the Experiment Station, Amherst, Mass. I think, however, that if I were situated as you are I should not hesitate to use the ashes on clover, and to plow the clover under for potatoes. I do not believe that you will have as much trouble with the ashes causing scab as with the scab germs which remain over in the soil from one potato crop to another. The ashes which you are using are, of course, less valuable than those made from hard wood; but if ashes do have any effect in promoting the growth of the scab-germs it is probable that it would not make much difference what kind of wood they were from.

You speak of growing potatoes and strawberries with clover for rotation. Permit me to call your attention to a fact which you no doubt have observed, and which may be of value to you. We have had so many successful potato crops planted in July, on ground where a crop of strawberries had been grown, that I am beginning to think the strawberry crop is an excellent one to precede potatoes. More than that, if the potatoes are laid out about this time of the year, or some time in May, and allowed to sprout in the light, it is not likely that there will be much, if any, scab on them. Such has been our experience; and I think now that, if I were growing potatoes for seed, I would take just this course. Put the potatoes out to sprout about the middle of April; plant about the first of July, on ground where a strawberry-bed had just been turned under. We secured in this manner 200 bushels of Bovee per acre in 1897, and 300 bushels of Enormous in 1898. Not only this, but all that we have grown in this manner were almost entirely free from scab. I do not think that the Mammoth clover would be any better for you than the medium.

W. J. GREEN.

The Ohio Ag. Ex. Sta., Wooster, O.

LONG-RANGE FORECASTS.

On page 378 of our last issue, I alluded to a slander on the United States Weather Bureau. Since then a letter from the chief of the Weather Bureau has been addressed to me on the subject, and I take pleasure in submitting it to our readers:

U. S. DEPARTMENT OF AGRICULTURE, }
WEATHER BUREAU.
Washington, D. C., May 4, 1899.

Mr. A. I. Root, Displayman, Weather Bureau, Medina, Ohio.—Sir:—Referring to clipping from daily paper, giving long-range forecasts, which are alleged to have been furnished the Life-saving Service by the

Weather Bureau, and to your remarks in connection therewith, on Form 1043—Met'l., both of which have been referred to this office by Mr. J. Warren Smith, official in charge of the Columbus office of the Weather Bureau. I beg to say that forecasts of the character given, which cover not only the month of May but the entire year, are not issued by this office, nor by any office or official of this Bureau, and I concur with you in the opinion that misstatements of this kind lead to the impression that the Weather Bureau is entering the domain of charlatanism, and that they should be promptly corrected.

The forecasts of the Weather Bureau are calculations based upon telegraphic reports of weather conditions throughout the United States and Canada; and during the season of tropical storms the field of observation is enlarged, and includes the West Indies, the shores of the Caribbean Sea, and the Mexican coast of the Gulf of Mexico. The period covered by these calculations, or forecasts, is necessarily limited to the time required for storms or fair-weather types (after their appearance or inception), to traverse in whole or in part the region of observation. As our continental storms and other types of weather move, as a rule, from west to east, and the storms traverse the continent in three to four days, it is obvious that a forecast for a greater period can not be made; and experience has shown that it is not possible to determine the exact course and character of a storm over the eastern part of the continent when its presence is directed over the Pacific-coast districts; neither is it possible to project accurately a storm's path from the Rocky Mountains to the Atlantic-coast line. As a matter of fact, atmospheric movements can be calculated with a degree of accuracy that entitles the calculations to be classed as forecasts for periods not exceeding 48 hours, and any statements of weather conditions for greater periods can safely be considered guesswork.

Statements are sometimes made of the average weather conditions of a section or locality, as shown by records of observations which cover a period of many years. Such statements are valuable in so far as they represent the general character of the weather for any month or months, but are valueless when an attempt is made to apply the results obtained to single days; and forecasts, to be of practical value, must be applicable to specified days. In this connection it may be stated that the only so-called long-range forecasts that possess the merit of having been based upon any form of calculation are those which are made up of the averages referred to; all others, without any reservation, are well within the domain of charlatanism.

Very respectfully,

WILLIS L. MOORE,
Chief U. S. Weather Bureau.

USING AN ONION FOR A NEST-EGG, ETC.

One of the girls in the paper-room informs me they tried my new invention, but the good old hen did not seem to like the onion "flavor," and left her nest and hunted a new one. Now, I think that hen must be too aristocratic; but if it works that way every time, we have a big invention still. When you want to "break up" a hen that is determined to sit, just give her a nestful of onions. If she goes off in a huff you have broken up her sitting. If she sticks to the nest you can just give her a lot of nice eggs after she has had the onions a few days, and she and the chicks will be free from vermin. You see we are a gainer by taking either horn of the dilemma.

KIND WORDS FROM OUR CUSTOMERS.

The goods arrived to-night all right. Many thanks for your prompt, kind treatment. It is a pleasure to do business with a firm that does as well as and better than it ought.

Salem, N. Y., April 22.

EALY S. SAFFORD.

I give you credit for being the most prompt company for filling mail orders that I have ever had any dealings with. Whenever I order any thing from you I

expect it in five days or a week, while things ordered from some other companies are sometimes two or three weeks coming.

Aliceville, Kan., April 26.

J. P. F. SMITH.

GLEANINGS AND ITS SUPERLATIVELY HIGH MORAL TONE.

GLEANINGS is a fine journal, and almost the greatest attraction it has is its superlatively high moral tone, which, in a large measure, seems a characteristic of bee-men. It's the best business-religious magazine I know of.

E. B. ROOD.

Jacksonville, Fla., April 11.

ANOTHER USE FOR THE FAULTLESS SPRAYER.

Did you know that one of those little implements for spraying makes a fair sort of powder-gun? They are not as good, likely, as the more expensive implements made especially for that purpose, but I find one quite useful. I find it necessary to turn the implement upside down very frequently to keep the contents loosened up, and in a condition to be blown or drawn out by the air.

R. M. REYNOLDS.

E. Springfield, O., April 12.

GLEANINGS GROWING BETTER.

I want to tell friend Ernest how I am pleased with GLEANINGS. It seems to get better every time. I learn something new and useful from every copy. I feel like writing Mrs. Barber a private letter of thanks for giving us her plan of starting bees in sections, for I believe it will work, and I will try it at once. I put a super of unfinished extracting-frames on a strong hive a few days ago, and in about three days I found the bees working in the racks. I was just thinking of trying boxes under them, and Mrs. B.'s article came just in time to help me out of the doubt.

Utopia, S. C., Apr. 21.

W. I. HERBERT.

The sections you sent me are magnificent. The V groove is cut just deep enough to give good strength, and on just the right bevel to fold at right angles, and no further. Your material is perfect. I must give you credit for turning out the best sections I have ever seen. The Hoffman brood-frame would be better if the wide part of end-piece extended $2\frac{1}{2}$ inches further down. I notice in overhauling some of my hives in which the bees died during winter that the comb would seldom deviate from being straight until it came to the narrow part of the end-piece.

Nirvana, Mich., Apr. 17.

F. D. LACY.

I may not know when my time expires; but I want GLEANINGS all the time. I count the days for it to arrive. Perhaps I read it as no one else does. I begin at the last end, looking for specials; after that I turn to the first page for the Stray Straws; after that I read the solid matter. As a whole it is par excellence. Long may it wave.

I see that A. I. is getting old. I am sorry to know it. I want him to live a long time yet for the benefit of humanity. I think he is doing the best that can be done for that somewhat frail organization. Ply the water. It is the best medicine known to man, and perhaps to angels.

Mexia, Tex., March 22.

E. N. SWINBURN.

Dear Sirs:—I inclose a small order. As I intend to increase my stock this year I expect to send you orders for other supplies later on. My first order for this year is received. It was for 60 supers, 500 special fences, and 30 pounds of foundation. When I received them I could almost cry for joy. This is the first order for supplies that I ever received, since I've been in the business, that was free from error or bad workmanship, and I have ordered goods from six different supply-houses, including yours.

Once upon a time I was thrown into a large stream of water. I was taken with cramp, and could not move a muscle; but I was perfectly conscious. There I floated face downward, and all the bad things I ever did came back to me—some things I thought I had forgotten. Suddenly I was seized and pulled ashore by the one who threw me in, when I immediately regained full control of all my muscles. I thought of this incident when I unpacked your last shipment. Now, I am very particular about every thing fitting as it should about a bee-hive; and when I beheld the lovely workmanship on the fences, supers, foundation, and the Tinker zinc; and when I pulled out my pocket-rule and found the measurements *exactly* as I ordered them; and when I saw that the fences were

billed at less than the price I quoted in my order, then all the bad things I ever said about the Root Co. came back to me and I felt ashamed.

Eden, N. Y., Apr. 22.

E. W. BROWN.

Brother Root.—Wife said we ought to tell you how much we appreciate Home talks in GLEANINGS. I guess she is a little like Sister Root—lets the men do the talking.

We took GLEANINGS first for bee news, and of course, read Homes; and when you told of the Holy Spirit's dealings with you we soon realized you had something we did not have; but now, praise the Lord, we know something of this deeper work of grace in our hearts by real experience; and it was largely through your experience we were led into it. The book you so highly recommend, "The Christian's Secret of a Happy Life," makes this grand experience very plain. Our Homes is practical every-day religion. The help and encouragement it has given, you may never know till "we know as we are known."

Alsea, Ore.

F. A. BATES.

I have just finished reading *Our Homes*, published twenty years ago this month, as well as for Aug., 1880, and Dec., 1881. After looking at your picture, with Blue Eyes on your knee, I desire to make one request; and that is, that the first number for 1899 contain the picture of all the Roots and Rootlets in a family group, for I know there are thousands who would be pleased to see their far-away friends, even if only on paper.

I see in my last paper that Mr. Lamberson considers himself a silent friend; but that will not do me, as I am never silent in praise of GLEANINGS and your company when a friend wants bee news. A gentleman five miles from my place called, and we held a bee convention. He wished to learn bee culture. I advised him to send for the A B C book and GLEANINGS. I gave him one of your catalogs, as you sent me two. I am not afraid that he will hurt my trade, for a "pleased customer is a talking advertisement," and there is room for one more bee-keeper, the same as when I began.

Mohawk, N. Y.

C. R. MORTS.



ADVANCE IN PRICE OF PERFORATED ZINC.

The price of sheet zinc continues to advance to such a degree that we are compelled to make a further advance in perforated-zinc sheets and honey-boards, the advance to take effect immediately. Honey-boards are advanced 2 cents each right through the list on all numbers, and both retail and wholesale. Root zinc strips will be \$1.00 per 100. Root zinc sheets, 28x96, will be \$1.60 per sheet. Tinker zinc strips will be \$1.40 per 100. Tinker zinc sheets, 24x40, 75c each. We have used a carload of 12 tons of sheet zinc during the past six months, and the demand increases.

DEEP DOVETAILED HIVES.

Referring to the article of A. N. Draper, in last issue, we have had a number of calls for the extra-deep hives from those wishing to try them. These hives will be wanted only in 10-frame size; and the only change from regular fixtures, is in the brood-chambers, frames, and division-boards, all of which are made 2½ inches deeper. The regular bottom, cover, and supers are used. We are prepared to furnish these deep Dovetailed hives, in any of the 10-frame combinations, from Medina only, at 25c each extra; in lots of 5 or more, 20c each extra. In ordering, use the regular hive number preceded or followed by the word "deep."

A LADIES' \$100 CLEVELAND WHEEL, ALMOST NEW, FOR HONEY.

We have on hand a second-hand Cleveland ladies' wheel, \$100 pattern, model 28. It has been ridden but very little, and is almost new; gear 66, 7-inch crank, single-tube tires (Goodrich), wood handle-bars, brake, and gear case. This last is a very important feature, and the chain can be run a year without attention be-

cause the gearing is shut up in a tight case, closing out moisture, dust, and grit. We will take \$35 cash, or honey, either extracted or comb, at market prices, to the amount of \$35. Speak soon if you wish to secure this bargain, as our Clevelands have nearly all been sold, for the members of the Root Co. get a new wheel every season.

ONE TANDEM FOR HONEY.

We still have on hand one Remington combination tandem, in fine order, and as good as new, that cost us at wholesale \$108, that we will sell for \$35 cash or \$35 worth of honey at market prices. Full particulars on both wheels will be given on application.

Special Notices by A. I. Root.

The German doctor who is responsible, so far as I can learn, for all the newspaper statements in regard to the danger of distilled water is Dr. Hans Koeppel.

ALFALFA SEED—ADVANCE IN PRICE.

Instead of \$4 50 per bushel, as given in our seed catalog, read \$5 50 per bushel; \$3.00 per ½ bushel; peck, \$1.60; pound, 12 cts.; pound by mail, 20 cts.

JAPANESE BUCKWHEAT—ADVANCE IN PRICE.

Greatly to my surprise, this variety of buckwheat has run up so that the best figures we can make at present writing are 35 cts. per peck; 60 cts. per half-bushel; \$1.10 per bushel. If any of our readers have any to spare, I wish they would let us know, or advertise it in GLEANINGS, for the time to sow it is before a great while. If the price only holds up to something like what it is now, it will be a splendid thing for farmers and bee-keepers—that is, if they can get hold of some seed so as to raise a crop.

THE FAULTLESS SPRAYER.

The demand for these and the sale of them are unprecedented. Fourteen dozen brass ones were placed in the store one morning, and before night we were told there were not enough to fill orders; but before another night we had another stack in by express, and now we are just about holding our own. By the way, even though this sprayer is well named "Faultless," just one trouble has come up. If you notice on the card attached to each sprayer, it says you must oil the leather plunger whenever it is dry. Now, there have been some complaints that the sprayer did not work right. Two persons said it could not work without any connection between the pump and the tank; but after we told them to oil the plunger according to directions printed on the card attached to each machine we did not hear any more complaint. Now, please remember Paris green is destructive to leather and every thing else, and you had better wash it off after using, and be sure the leather plunger is kept soft and pliable with oil.

"WISE YET FOOLISH."

BY ANONYMOUS.

Why doth the little foolish bee
Come out in winter chill
To see the sun and breathe the air
That's always sure to kill?

How quickly will the cold wind blow
Clear through her summer dress,
And leave her out quite dead to rights,
All curled up in the grass!

Why can't she wait, e'en though 'tis late,
Till dandelions grow?
Then she can hop from top to top—
Sip nectar as she goes.

But then, you know, they say 'tis so.
She lives for just one year;—
Must early start to do her part
Or have the queen to fear.

MORAL.

It's good to try, e'en though you die,
To do the best you can,
Than stand and rot in just one spot—
Move on, and be a man.

Medina, O., March 28.

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- POULTRY KEEPER.

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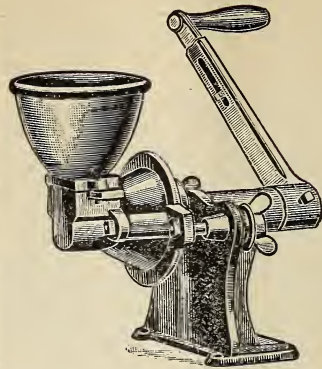
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GLEANINGS ONE YEAR, and one untested Italian queen, for \$1.00 only. We begin mailing these queens in June, and orders are filled in rotation, so the sooner your order comes, the earlier you will get the queen.

GLEANINGS ONE YEAR, and No. 1 Repairing Outfit. Price of this combination only \$1.75. We can ship these outfits from Syracuse, N. Y., Mechanic Falls, Me., Medina, O., or Des Moines, Iowa, so the freight will be low.

GLEANINGS ONE YEAR, and Mantel Clock, both for \$4.50. Can ship clocks from Cleveland or New York city.

Last of all, if you don't want any of these clubbing offers, send us 50 cents for Gleanings the remainder of the year.



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