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GLEANINGS

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

BEE CULTURE

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS

FROM DR. C. C. MILLER.

EARACHE. "A drop or two of warm honey will alleviate the pain," says Farm Furrows, in *Homestead*.

I wish friend Aikin would tell us more about the quality of sweet clover if he has some he's sure of. He calls it semi-white. What I have seen is, I think, as white as white clover.

If GOVERNMENT should be induced to tackle *Apis dorsata*, I say double the appropriation and first try it fully on its own ground before risking by its introduction the danger of having on our hands another English sparrow.

HONEY-CURED HAMS. R. H. Rhodes has them, and says they are superb. Into a barrel $\frac{2}{3}$ full of hams under brine he pours a gallon of best alfalfa honey, and after six weeks takes out and smokes. Nothing hard to do in that, surely.

ALFALFA HONEY is bad about granulating, says R. C. Aikin, p. 115. Isn't it possible that it may be different in different localities, just as it is amber in some places, although generally white. Its very mild flavor will always recommend it with many.

"WHEN THERE ARE different kinds and fields of bloom at the same time, bees of different colonies will be working in different fields."—R. C. Aikin, p. 116. In corroboration I may say that, one year, two colonies stored white honey for me when all others in same apiary stored dark.

WHEN RIDING any distance on a very cold day, do not fail to have plenty of wraps for the knees. If convenient, place a lantern under the robe, and see that it has air enough so that it will not go out. You will be surprised to know the amount of heat a lantern will give.—*Homestead*.

THE *Revue Internationale* copies the article of F. Greiner, in *GLEANINGS*, as to the age when bees may commence field work, and remarks, "While very young bees may become field work-

ers for lack of older ones, and while old bees may build combs and feed brood in the absence of young bees, yet the bee-keeper does ill not to take into account the natural law of the proper division of labor."

R. C. AIKIN had good work in a good season with only two separators in a super, but it wouldn't work other years. He says, "The past 20 years I have been through all sorts of seasons, from one that did not give winter stores to an average of 227 pounds per colony, and I know that strong colonies and full-separated supers are the things for good section honey.—*Progressive*."

THE OPINION prevailed at the late Chicago convention that, when a bee-keeper gets 22c for comb, he can produce extracted of same grade for 10, 11, or 12 $\frac{1}{2}$ cents. Doolittle rips that to pieces in *A. B. J.* by saying he can get only one-quarter more extracted than comb of same grade; for to be of same grade it must be all sealed, so he must have 17.6 cents for the extracted.

"A READER" springs the question in *American Bee Journal* whether with *Apis dorsata* we should not be helpless against production of drones with worker and drone-cells all the same size. He says, "We have just been priding ourselves that we had overcome that drone business by the use of full sheets of foundation. Now we don't want to fall clear downstairs after climbing so high."

SOMNAMBULIST says in *Progressive*, "Had you noticed that Dr. Miller unwarily but openly declared that 'all his experience lay in a jug?' Here's a job for A. I. R." Sommy keeps clear of the law by not saying that something stronger than vinegar was in the jug; but you can see the spirit in him, no matter what may have been in the jug. I don't get that jug to sour very rapidly, but I've soured on you, Sommy.

MR. EDITOR, you seem to have the impression that the nails I use for end-spacing are driven diagonally. I hardly see how an exact job can be made in that way. If you look close you'll see that they are driven in perpendicularly

their full length, then bent to place. [Yes, I had the impression that you used the diagonal nails; but I now recall that they were as you state on the frame that you sent here.—Ed.]

"I WANT THE FRAMES to stick together some," says ye editor, p. 128. All right, have 'em stick to your heart's content, but remember that others, and possibly a majority, are still more emphatic in the wish that they should *not* stick. [I suspect that you do not get exactly the right idea of the little word "some." I did not mean *much* sticking, but just enough to hold the frames together without rattling while the hive is carried across the apiary. I doubt whether the majority who, when they have tested the style of frames shown on page 94, will desire to dispense with the slight sticking between the end-bars altogether.—Ed.]

IF I UNDERSTAND you correctly, Mr. Editor, side walls of cells $\frac{3}{8}$ deep and .008 thick will be reduced to natural thickness by the bees. Now, do you know this to be the case during a flood of honey? [Yes, you understood me correctly. I based my statement on numerous measurements made by Mr. Weed. There may be a difference in some cases. As soon as deep-cell foundation is given to the bees, they begin immediately to thin down the walls to the natural thickness. The cells are so near natural, and as honey is coming in, the bees naturally conclude that it is so little work to fix up this comb they will commence on it before any thing else.—Ed.]

SUGAR is forbidden by the medical profession in diabetic cases. A correspondent asks if honey is equally proscribed. I think generally; but isn't it possible that the proscription comes from carelessly ignoring the essential difference between cane sugar and honey? Mr. Editor, can't you get a verdict from competent, conscientious medical authority that's fully up to date? [We have a good many physicians among our subscribers, and we should be glad to hear from one or more on this point. As for my own case, I know that I can not eat cane or maple sugar, without trouble; but I have partaken of honey quite freely, with no disagreeable effects. Prof. Cook is certainly right, if my case means any thing, that the bees do digest or prepare nectar so that it shall be more readily assimilated. Perhaps "digest" is not just the word; but the bees do *something*, and that *something* makes it "set" better with me.—Ed.]

WHAT A. I. ROOT SAYS, p. 131, reminds me that formerly physicians sent patients with weak lungs to some points in the West, with great results, while they don't get any such results from the climate nowadays. Formerly they were weeks on the way in open wagons, now they're shot there in a stuffy car. [Are you sure, doctor, that patients with lung complaints do not get benefit nowadays by a change of climate? A stuffy car may have something

to do with it; but as their duration there is so *very* short (shot through space) it seems to me it would make but little difference either way. But if I had consumption I would stay at home and go on the beef diet. I have seen it work admirably in cases right under my observation, so I have unbounded faith in it, provided the patient does not wait too long. It will cure nearly every thing *providing* the patient has grit—that is, self denial—and does as *he is told*.



DRAWN COMBS.

HOW THEY HINDER OR PREVENT SWARMING;
HOW THEY ADD ONE-THIRD TO THE
CROP; A VALUABLE ARTICLE.

By J. E. Henderson.

I am very much interested in the subject of drawn combs that is being discussed in GLEANINGS; and as the editor calls on others to write I will give some of my experience.

I have been using drawn combs for over 15 years, and I would just as soon think of doing without them as I would think of doing without bed-clothes on a cold night. They are the most valuable property a bee-keeper can have. I am like the editor—I have tested this matter of drawn combs very carefully, not only in my own apiary, but in some of the leading and largest apiaries of other apiarists; and I find from experience that bees will invariably take to the drawn combs first, then to full starters next. As yet I have never leveled down, but will give it a test this season.

I find there are several advantages in using drawn combs. The bees will commence sooner and finish sooner; and by their use the bees are not so prone to leave the case on cool nights, which is quite an item. I always place four drawn combs in the center of each case as a nest-egg, and I find these combs just as fancy as those drawn from foundation.

On page 79, J. E. Crane says if they are not cut down the bees hesitate about sealing them, and are apt to be dirty in appearance. The brother's bees up there act differently from mine. I find my bees work on sections of full depth, and seal over much sooner than from sections of full starters of foundation. If drawn combs have had the proper care in the fall and winter, I should much rather have them than foundation. I don't think these combs are appreciated by bee-keepers to the full extent of their value. I also find, when cases are supplied with drawn combs, and bees once fairly at work in them, it lessens the desire to swarm when put on eight or ten days before white clover comes in bloom.

By the use of drawn combs it will make a difference of a third of a crop more in their favor, even in a poor year. In 1892 I took two hives of bees, as nearly alike as two peas. One I supplied with drawn combs the whole season through, and the other with full starters of foundation comb. The one supplied with drawn combs gave a surplus of 162 lbs. of fancy honey; the one supplied with foundation gave a surplus of 120 lbs., and not any more fancy than the first one. It was all from white clover.

I have been experimenting in this line for quite a number of years, with good results. For this reason I am in favor of drawn combs. I also find that, with drawn combs on during a poor year, I can get nice sections of honey when they would not even draw out foundation. I don't doubt in the least that the day is not far distant when we all shall be using drawn combs made by machinery.

Elm Grove, W. Va.

[The article above sets forth from a practical standpoint all or nearly all the advantages that I suggested might accrue from a theoretical standpoint, as set forth in my convention paper read at Lincoln. That drawn comb will hinder swarming, can hardly be doubted. In all our experience we never had any trouble in preventing natural increase when we gave the bees plenty of empty extracting-combs; and the same must hold true with the drawn combs and sections, to a very great extent.—Ed.]

COMB FOUNDATION AND DRAWN COMB.

FISHBONE IN ORDINARY FOUNDATION; USING THE BUCKWHEAT SEASON TO SECURE DRAWN COMBS IN SECTIONS; GOOD SUGGESTIONS.

By *F. Greiner.*

The value of comb in producing honey, both extracted and in the comb, has long been well understood; and it seems all ought to agree pretty well on the subject, at least now, after all that has been said of late. I am not going to offer any evidence to prove how much more honey may be produced by the use of ready comb, as it is generally conceded the gain will more than pay the cost; but I may offer some suggestions as to how to secure the comb.

The producer of extracted honey, of course, has no trouble in obtaining all the comb he may need in a short time; and, once in possession, he is well fixed. It is far different with the comb-honey producer; his combs are sold with the honey, and a new supply must be looked for every year. Fortunately we are not situated as are our German honey-producers. After setting forth the advantages of our little pound sections to them, Vogel, the German, made the following reply to me: "Our honey seasons are not to be compared with yours in America. Of this I am sure. It would take us one year to have the comb built in such sec-

tions; another year to have them filled and finished." When the use of comb foundation was suggested, Vogel again replied: "To secure comb honey, which will attract and satisfy our buyers, the comb will necessarily have to be built from the very start by the bees; comb foundation is not wanted."

I myself have not yet learned "to chew" even chewing gum; and I still object to the fishbone found in comb honey built on foundation; but with our American consumers of comb honey it seems to be different. Evidently they chew and like it, and the fishbone meets with their approval.

It may be said here, that a good grade of comb foundation could not be detected in the finished product; but of this I am not so sure—at least, I have so far been seeking in vain for such undetectable comb foundation. At our last convention of the Ontario, N. Y., bee-keepers, the question of foundation in comb honey came up, and, to my great surprise, not one of the Ontario Co. comb-honey producers present had ever used or gotten hold of that "good grade" of comb foundation. One friend from an adjoining county, I will call him B, as I wish to refer to him again later on, said that he was pretty sure no such undetectable good grade of comb foundation was offered for sale, but that he had made and used such himself, and he also offered samples, which I shall test the coming season. Be that as it may, the majority of our bee-keepers had found that it paid them well to use comb foundation such as they could obtain; and since the honey-consumers do not object to use of it, if they don't object I may offer suggestions as to "how to have the foundation drawn out previous to the honey season." I must, however, first cite another saying of our friend B, above mentioned—a saying which suggested to me the idea I wish to bring out. He said: "Buckwheat honey is and has been a curse to bee-keepers." Why? "The inferior article has lowered the price of honey more than any thing else."

Now, this may be true; and while I am pondering over it the thought strikes me, "Why not use the buckwheat honey-flow for the purpose of drawing out section foundation, to have ready for the next season, thus not only relieving the market of at least a part of the inferior product, but also making our chances for a crop of a fine grade of honey the next year all the better?" Now, this is not mere conjecture. I have had quite a little foundation drawn in this way, although not exactly for use in sections. The plan will work well, I am quite sure. It would be well to have the supers, in which comb-building is to go on, protected during this time, as the nights are often quite cold. It will also be found a good plan not to allow too much room, so the foundation may be drawn out *evenly all over the frame.*

Except when the brood-nest is greatly contracted, six half-story frames may be quite enough. The frames may be removed as fast as the foundation is sufficiently drawn out, and replaced by others. Should any honey have been deposited in the combs, this could easily be removed either with the extractor, or, better, by a careful exposure in the bee-yard. One colony worked in this fashion might easily furnish enough comb to fill a dozen section supers or more, depending altogether on the honey-flow; and, further, we might continue the procedure by feeding, or, where no buckwheat is grown, feeding might be substituted.

A bee-keeping friend, located within a few miles of me, follows a similar plan to obtain comb. He sets apart his best comb-building colonies for the purpose, and during the time just previous to his expected honey-flow he feeds and thus gets his foundation drawn in half-depth frames. When drawn, the comb is cut out and fitted into the sections in such a manner as to leave a small passage-hole in each of the four corners of each section, etc.

I hope some of the readers of GLEANINGS will test these plans the coming season, and report their success.

Of course, when the perfect comb becomes a fact, comb made by machinery, so light that it can not be detected in the honey afterward, and also sold reasonably cheap, then we need not trouble ourselves any more to obtain it by feeding or otherwise. All will depend on what will be the cheapest way to attain the same or the best result.

Naples, N. Y., Feb. 6.

[I had not thought of it before, but I do believe that American consumers, so far from disliking the so-called fishbone, as a resultant from the use of foundation in sections, actually do like it. It gives them something to chew. The fact of the matter is, I suppose, the average consumer does not know how honey in natural combs does taste. If he ate the honey of his fathers, he has forgotten how it chewed; and as practically all comb honey of *to-day* on the market is built from foundation, the consumers do not know that there is any difference between comb honey from foundation and that which was made without. But this is true: The fishbone is just so much waste, and somebody has to pay for it. We have made foundation with no side walls whatever—just the mere rectangular bases united together, and we have also made foundation with very little side wall. While it is perfectly practical to make both of these articles, they have given dissatisfaction to bee keepers, owing to the fact that they would sag or stretch in the hive; we are, therefore, aiming in the new product—that is, the new deep-cell-wall foundation—to make an article that will not sag—the ability to resist stretching being due to the deep cells rather than to heavy side walls or thick bases.—ED.]

HOW I RAISE AND SELL EXTRACTED HONEY.

VALUABLE TRADE SECRETS FROM A VETERAN AT THE BUSINESS.

By *Chalon Fowls.*

When I first began raising extracted honey, fifteen or sixteen years ago, I could not sell a hundred pounds a year in my home market; now it takes from one and a half to two tons of honey a year to supply my home market, and my trade is constantly increasing. My success in building up a home market is due, I think, to my methods, which are as follows:

First the keynote of success in selling honey is to have a first-class article to sell. As nearly all the honey raised in my locality is gathered from basswood and clover, it follows that I shall have the finest-flavored and whitest honey in the market, if only the most cleanly methods are employed from the time the nectar is gathered until it reaches the market, just as a like result is obtained by the cleanest and most improved methods in the gathering and handling of maple sap. An examination of the bee under a microscope shows that it is one of the most cleanly as well as the most beautiful of insects, which insures cleanliness in the gathering process (I'm afraid the maple-sap gatherers would hardly bear comparison here). When the bee gets home with its load it must deposit it in a clean receptacle; old combs will not do, neither must the queen be allowed access to the surplus combs, as eggs, larvæ, and pollen result in dirty combs; therefore the queen is confined in the brood-chamber by means of perforated zinc.

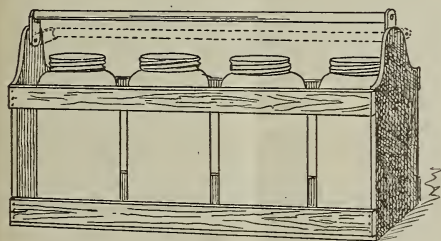
The honey is not taken from the hive and extracted until it is sealed up just like section honey. It is then extracted, and stored in nice tin cans holding about 75 lbs. It will all candy solid, and is liquefied only as wanted for market. When I want to put up some for market I put one of the cans in a larger can, supported by a suitable frame, so as to leave room under and all around, to be filled with water. The whole thing is kept hot several hours on the stove (a gasoline-stove is the best because slower); but I do not want the water to boil at any time in the outside can. After it is perfectly liquefied it is put into my filling-can, which is provided with a gate. Then I am ready to fill small packages for market.

I use only flint-glass pint Mason jars and third-pint jelly tumblers for the grocery trade. I never use the green glass when I can get the flint, as the honey does not show up nearly as well. Grocers are requested to place the honey in front somewhere, or on the counter, where the light will strike through it. When a customer sees it shimmering in the sun, as clear as crystal, he is attracted by its beauty, and will buy. I want no showy-colored labels on *my* honey. I leave that for the glucose-mixers. They want something to plaster over their vile

If you would like to have any of your friends see a specimen copy of Gleanings, make known the request on a postal, with the address or addresses, and we will, with pleasure, send them.

stuff to *hide it*, while I want to show my honey, as it looks finer to a honey-lover than the finest work of art on a label. Lithographs are so common nowadays that people take little notice of them; but any choice article of food, put up in *clean and attractive* packages, always commands attention; therefore I use only a small white label, 1 by 2 inches, giving my name and address, and the words "Pure Honey." We might get a pointer here from the druggists, who are apt to display clear and sparkling liquids in the window.

I make a tour of the principal towns in my county every two months or oftener, according to the demands of the trade; and if any of the stock left is beginning to candy, or has become unsightly in any way, it is replaced with fresh goods free of charge. However, this very seldom happens—almost never—except in the case of some little stock that is carried over the summer.



FOWLS' HONEY-PEDDLING CASE.

I consider it to my interest that the grocer who handles my honey shall make a good profit—20 to 30 per cent is none too much on small packages. They should be classed as "fancy groceries," and should bring a better profit than honey in bulk, or sugar and flour. In this way I secure the hearty co-operation of the grocer, which would not be the case if his profits were small.

I sell pint Mason jars at \$2.75 per doz., \$30.00 per gross; third-pints, \$1.10 per doz.; per gross, \$12.00. Pints run about 19 lbs. to the doz.; third-pints, about 6. Pints retail for 30 cts. each; third-pints from 12 to 15 cts. each, according to circumstances. But it will be argued these prices are too high, and honey will not be used largely if these prices prevail. I answer that this is for a fancy article in small packages. Do not choose red raspberries in pint boxes sell high? and yet good fruit can be bought cheap in larger quantities, and large quantities are used too. Almost any grocer will sell on smaller margin in bulk by the crockful or pailful, as the large packages need no display, and the profit on the large package is as much as on the little one.

I believe bee-keepers ought to push the local trade more. Much might be done by advertising in one way or another. I would suggest,

Mr. Editor, that you get up some notices printed in large letters on cards, say 12 by 20 inches, to hang in stores. They might run something like this:

FOWLS' PURE HONEY FOR SALE HERE.

DON'T BUY IMITATIONS.

See that Fowls' name is on the package.

Or if a larger amount of matter is wanted, something like this might do:

FOWLS' PURE HONEY FOR SALE HERE.

Notice to Consumers.—Pure honey is the most healthful sweet known. Many of our modern diseases are traceable to the excessive use of cane sugars. Honey is more easily assimilated in the human stomach. This is the decision of eminent physicians. But honey, to be healthful, must be pure. Honey compounds are *not* healthful, and are *not* cheaper. Consumers should realize that honey that is 100 per cent pure is cheaper as well as more wholesome than a compound that only *claims* to be 50 per cent pure, even if the pure article sold for double the price of the spurious. Our pure-food laws are for our protection, and require that a formula be printed on all mixed goods.

I sell the most of the honey sold in bulk in my own town, and I find but comparatively few will buy in bulk, although the price is much cheaper. By far the larger number want only a pint or less at a time. Of course, I do not undersell the grocers on the same size of packages they handle. In soliciting orders from boarding-house keepers and families I prefer to take along my samples in flint-glass Mason jars, and I carry them in a sample case which allows the light to strike through, just as in the grocery. Even amber honey from fall flowers looks fine if I can get the jars between my customers and the sun; and once people begin to admire its beauty, it's not difficult to get them to taste, which sometimes goes a long way toward making a sale. As I never allow any but my best honey to go in to the grocery trade I have to work off all my off grades to families, boarding-houses, and bakeries. The dark and strong kinds, if I have any, are used for cooking, and recipes are given away with the honey, some of which I have taken from the book "Honey as Food," advertised by the *American Bee Journal*, and some that are original with me. I have used type-written copies of recipes, but find this too much trouble, and think now I should like some printed leaflets with a few good recipes, and some extracts from Prof. Cook's article on honey as food, which appeared in the *American Bee Journal* some time ago. The reason I do not want to use the book "Honey as Food" to give to my customers is that I have found by trying that some of the recipes are worthless, and I am afraid they might try one of that kind the very first one, and then chuck the book into the stove in dis-

gust, without testing the honey for cooking any more. I inclose some of my recipes, that you are at liberty to publish if you wish. Those published in GLEANINGS are good, I know, because I tried them last winter.

It's a pleasure to know that the editor is honest and conscientious just at this time, when the politicians are stirring up strife and trying to make all the people think evil of their neighbors. The kind of honesty that thinketh no evil is quite refreshing; and so our good editor, in publishing the recipes, gave credit to the journal in which he found them, and generously added a free puff. I suppose he never "think" that the whole list had been purloined from the book "Honey as Food;" and the editor of the *American Bee Journal*, not to be outdone, published the same list, advertising his book, "Honey as Food," in the same column, and returned thanks for the use of his own property, and added a free puff too.

Oberlin, Ohio.

[The article above came before our honey-leaflet was gotten out. In fact, this leaflet came as the result of a suggestion from friend Fowls and one or two others.

In addition to the leaflets, it might be a good idea to have on sale cards after the style of the notice above. A neat tasty card setting forth very briefly why honey should be eaten might be read in some cases while the leaflet itself would not be read at all.—ED.]

GRAND VALLEY, COL., AS A HONEY LOCALITY.

ALSO SOMETHING ABOUT SLEEPING OUTDOORS.

By M. A. Gill.

Mr. Root:—While reading your description of Salt River Valley, Ariz., I thought perhaps a few jottings from the Grand Valley in Colorado would not come amiss to the readers of GLEANINGS. First, I will say that last spring I was appointed bee-inspector for Mesa County, which gave me a good opportunity to see the resources of this valley. Your speaking of the large apiaries kept in one place in the Salt River Valley brings to my mind that I inspected nearly 600 colonies (on Mesa Creek, this county) in a scope of country not to exceed two by three miles, and only about a third of that area was in alfalfa; and right in the heart of this section I remember one apiary of 64 colonies where over 40 of them had five supers each of comb honey on them when I visited them. That night I stayed with Mr. J. P. Utterback, who has 200 colonies devoted to comb honey. You know nearly every one in this mountain region has a pack outfit (as they term it), which includes a bed. Well, after being shown the cozy spare bed in the house I noticed my friend bring out his mountain-bed and spread it on a forkful of alfalfa hay in front of the carriage-house.

"Now," said he, "if you wish you can sleep here with me."

It was during dog-days in August, at about 9 o'clock. The cool mountain air seemed to settle down the mountain sides, and lift the heated air of the valley out; and, oh! the matchless delight of drinking that pure fresh ozone is simply beyond description. It is certainly inspiring, and I imagined it was a little intoxicating.

Like you, I don't wonder these people are healthy; and, again, I *do* wonder that there are not more people whose lungs break down in the East, who sleep with their bed-rooms sealed up like a fruit-can.

You spoke of sleeping out on the ground on Dec. 29th. Well, I slept out that night too; but we had to scrape away about four inches of snow to spread our bed down. We slept well, took no cold, and why should we? Don't the doctors say that there is only one remedy that *always* agrees with every one, and that is pure ozone? I didn't have quail on toast, as you did, the next day, but I had a fine venison hanging up by 9 A. M.

You speak of some of the alfalfa honey being almost equal to the white-clover honey of the East. Didn't the committee at the St. Joseph convention decide that the first quality of alfalfa honey from the arid regions was the best in the United States? Are not you eastern fellows getting a little afraid of the quantity and quality of our honey when you put clover, willow-herb, etc., 1 cent per pound above our best alfalfa? Did it ever occur to you that we can outweigh you nearly one pound per gallon with our best alfalfa honey?

This county (Mesa) has about 4000 colonies of bees. I personally examined 3100 colonies last season. I destroyed by fire between 50 and 60, besides burning over 100 infected hives and other fixtures. I also drove quite a number of colonies back into their own hives after first saturating the inside of hive with coal oil, then burning it to a char, and giving them only V-shaped top-bars for starters.

That the honey they carry with them is digested before they can build comb and store it is proven, I think, by the fact that of all the colonies so treated only two showed signs of the return of the disease this fall. I will say I have again been appointed as inspector for the coming year, and will report to you later as to my success in stamping out the disease in this valley.

Grand Junction, Colo., Jan. 28.

[Amen to your remarks about sleeping outdoors, friend G. In regard to the alfalfa honey, I have just consulted Mr. Calvert, and he says the alfalfa honey that was put a cent below willow-herb, etc., was not first-class. He says we always rank nice pure alfalfa honey fully as high as clover, willow-herb, or any other, unless it should be the water-white mountain-

sage honey that never candies, even if exposed to a zero temperature. A good deal of the alfalfa sent us has evidently been gathered when the bees were working on something else. I am glad to know of the heroic measures your people have been taking to stamp out foul brood. Permit me to say in this connection, that, so far as I can learn, foul brood has never as yet made its appearance in Salt River Valley; and I exhorted the friends there to be very careful that it never *did* by any hook or crook get a foothold.—A. I. R.]

THE AUSTRALIAN BLUE-GUM, OR EUCALYPTUS-TREE, IN CALIFORNIA.

By J. H. Martin.

The above-named tree is attracting much attention on this coast as a means of increasing the honey producing flora. The species commonly known as blue-gum was first introduced;

and, though extensively planted for wood and windbreaks, it is not an attractive tree, for its habit is of the order of a bean-pole—very tall. This species has a small flower and a profuse bloom, commencing in November, and continuing well through the winter. The honey from the blue-gum (*E. Globulus*) has an amber hue and an acrid flavor, and its only favorable feature is its value in medicinal use. There are about 150 varieties of the eucalyptus-tree. Some are noted for their variety of uses—for timber, firewood, and shade, as well as honey-production.

Under the general name of sugar-gum are several beautiful trees having a branching form, long drooping leaves, and large beautiful flowers in profusion, and possessing interesting features. The tree derives its name, eucalyptus, from the peculiarity of the flower bud—

eu, good; *calypto*, to cover. The bud before it opens is protected by a cover. These covers are of great variety and size, and for the most part give names to the trees. In some varieties the cover is a mere disk which drops off when the blossom opens. In others the cover takes the shape of a cone, as in *E. Cornuta*. The photograph that accompanies this description was taken from the blossom of *E. Cornuta*, and shows blossom in the various stages of development. The closed bud has the appearance of a double cone. A little further along the upper cone is crowded off somewhat, showing the white filaments of the blossom ready to burst from their prison. They soon do burst forth in beauty, and the brown cone drops to the ground. The calyx develops into a hard hollowed cup; and in the early morning this cup is full of nectar, and a shake of the tree will cause a shower of nectar to descend.

This species of tree is very profuse in blossoms, blossoming sev-



EUCALYPTUS CORNUTA.

eral times annually, and it is an inspiring sight to a bee-keeper to see the bees scrambling over each other after the abundant sweets. I think the honey from this variety of gum is not so strong as that obtained from the blue gum. This tree is being largely planted at present, and in a few years we predict a marked improvement in honey-production, especially near our large towns. Nearly all species of the gum family are of rapid growth, and their chief season of bloom is during the winter months. As before stated, the blossoms are in great variety, size, and color. The general color is a creamy white; then there are others of a scarlet hue. The latter is named *E. Ficaefolia* and has the reputation of producing a honey that kills every bee that partakes of it. This charge is, however, not substantiated by good authority. The evidence is merely hearsay, and needs further investigation before we give it credence.

Bee-keepers in California should interest themselves more in the planting of honey-producing trees. Mr. N. Levering, of this city, is advocating the establishment of an arbor day by legislative enactment, just as they have already done in many Eastern States. An arbor day would be of benefit in this State, where so many wide areas are devoid of trees or even bushes. Let us plant trees, and extend our honey pasturage. Remember that the man who plants a tree causes unborn generations to rise up and bless his name.

[The eucalyptus has been spoken of many times, and very favorably, in our columns, for years back; but this is the first time we have shown a picture of the tree itself.—ED.]

ALFALFA IN ARIZONA.

CONDITIONS NECESSARY FOR HONEY SECRETION; THE AMOUNT OF IRRIGATION NECESSARY; HATCH'S 70,000 LBS. OF ALFALFA HONEY.

By C. A. Hatch.

This is the honey-plant of the Salt River Valley, where most of the honey produced in the Territory comes from, and is not only a grand honey-plant but the king of forage-plants. Here in this warm country it can, with plenty of water, be mown as many as five times in a year, yielding at a single cutting from one to two tons per acre. The usual method is to mow twice, and pasture or grow seed the other crops.

The first crop, which is usually cut the last of May or first of June, does not afford much honey, although the bloom is seemingly more profuse than on later crops. It seems to be necessary for honey secretion that the bloom should be old, the same as in white clover, basswood, and perhaps other plants. The fields left for seed are the ones in which bees truly revel, the flow being, when conditions are

right, equal to the best clover, and lasting much longer; in fact, during the last year, with an exception of about two weeks, caused by rains, there would have been a continual flow from June 15 until Oct. 1, if insects had not destroyed the bloom.

It has two insect-enemies—a small three-cornered bug, green in color, and a yellow butterfly about the size of the cabbage-moth. The bug feeds on the leaves and blossoms, but I could never see that the butterfly did any thing more than suck out the honey from the blossoms left by the bugs, but presume it must feed, in the larval stage, on the roots or something near by. This season there were so many of them that it gave alfalfa-fields a golden hue, and the whole field seemed to be alive. I am sure I could have secured another 10,000 lbs. of honey this season if it had not been cut off by these two pests. The entomologist who will discover some practical remedy for them will confer a great favor on bee-keepers of Arizona.

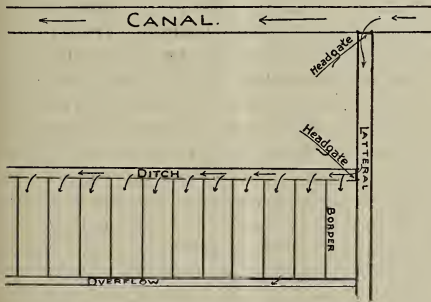
The manner of preparing the alfalfa-fields for the crop may be of interest to your readers. First it is well to remember that it is a strong grower and rank feeder, and requires a large amount of water for its development—almost twice as much as for any other crop—and is essentially an irrigation plant. It may grow, and even be profitable, without irrigation; but to bring it to the highest development, water so arranged that it can be given at any time is essential.

This whole valley (Salt River) has quite a uniform slope in one direction, of from 12 to 18 feet per mile, and seems to be especially arranged for irrigation. There are two plans of irrigation used here—"flooding," in which the water is allowed to flow over the whole surface; and "trenching," in which it is allowed to flow only in trenches, cut for the purpose, around the plants or trees to be irrigated. Flooding is used for alfalfa, barley, wheat, or any sown crop; and the other system, for fruit-trees, vegetables, strawberries, corn, etc.

Water is brought in broad ditches called canals, but these seem too small to an Eastern man to merit the name, sometimes coming 30 miles before any of the water is used. When the arable land is reached, these canals are tapped by smaller ditches called "laterals," which carry the water to the farms, where they are in turn tapped by an opening under a lock and key, which is under control of a public officer called "zanjero" (pronounced *zankero*), whose duty it is to open and close the head gate, and see that every man is getting no more than his share of water. The flow through the head gate is regulated according to the number of inches the land-owner has paid for, the price being so much per square inch; that is, what water will flow through an inch opening under a 5-inch head. One inch is counted great plenty

for an acre of alfalfa. The purchase of an inch of water entitles the owner to the use of that amount any time when the water is "on" in the canal, unless there be a general shortage; then he can get only his pro rata. In times of shortage the matter is arranged by allowing the water to run in a canal only part of the time, and allowed to accumulate or go into another canal the rest of the time. This arrangement gives each man his full flow when the water is "on."

In order to "flood" a piece of land perfectly it is self-evident that it must be nearly or quite level one way at least, and free from all inequalities of surface; otherwise, where water is left to seek its level, and soak in, some places would get too much and others not enough. So the would-be alfalfa-grower must therefore smooth his land and see that the slope is uniform one way only, and that there be no inequalities in the surface. All this is done by the use of a tool called a leveler, drawn by two horses, and then the field is divided into lands about two rods wide, having a slight ridge at each side called the "borders," which are thrown up by a V-shaped tool drawn by a team along the line, and are to confine the water to the land. The dirt must be moved for some distance, for the "border," otherwise a trench would be on each side, which would draw all the water. The accompanying diagram may make the "ditch," "lateral, and "border," plainer.



Water is usually turned on once after each cutting of alfalfa; and, if well done, is sufficient for that crop. The whole field is not watered at once, but only so much as the head of water will cover, and then other lands are taken in succession. The opening from the ditch into each land is called a tappoon, and may be a wooden box with a tight-fitting slide, or only a piece of the bank removed, to be again filled when no longer needed.

The alfalfa-fields in this part of Arizona are fully stocked with bees, and in some neighborhoods overstocked. The crop last year shipped through the Bee-keepers' Association at Phoenix amounted to somewhere about 13 carloads, of which your humble servant had the good

fortune to furnish over three carloads, or 70,000 pounds.

If any one desires to locate in this country there are plenty of chances to buy bees with the location, which would be the only way advisable.

Pasadena, Cal.

NOTES ON GLEANINGS FOR JANUARY 15.

OVER 400 CARS OF HONEY FROM A SINGLE STATE.

By W. A. H. Gilstrap.

In Straws I see Wisconsin reported with 1,800,000 lbs. of honey, or 75 carloads, at 12 tons to the car. Yes, Mr. Editor, John H. Martin put the California crop of 1895 at over 400 cars—about 425, I think. Last year I doubt whether we produced 50 carloads. But if any other State can knock our average out, let's have a show of hands. I think we are likely to put up some large figures in extracted honey this year.

LIGHT-WEIGHT SECTIONS.

Go for the editor, Dr. Miller. In this country merchants usually call a $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ section a pound, and I believe consumers generally believe them. He, therefore, *cheats* the consumer, and I more than half believe the producer who sells the honey by a voiddupois weight—16 oz. to the pound—is a party to the crime. An old peddler by me talks in favor of light weight, as he says it means "more money for less honey." That's "business."

GRADING.

I never heard of a half-crop of honey in this valley, that was *actually* water-white or that had sections *actually* unsoiled by bees. I hope grading-rules will not be among the impossibilities next season.

DEFUNCT BEE-JOURNALS.

Tell Dr. Miller to add to his list *The Western Apiarian*, published at Placerville, Cal., 1889-'90, and *The California Bee-keeper* (San Francisco, I think), soon after the *Apiarian* died. It lived but a short time. Mr. Israel once wrote to GLEANINGS that California bee-papers thrived until he wrote for them, and in a short time they died. I think his latest *nom de plume* is Skylark.

ALFALFA FOR HONEY.

Once Mr. Ball, of Nevada, gave an estimate on the amount of honey obtainable from a stated amount of alfalfa, and I thought he was imposing on the editor of GLEANINGS with something too big to be true. Since that I have learned alfalfa is very cranky as a honey-producer, and I can believe almost any thing. Mr. Aikin mentions some alfalfa traits which he would not find here. Alfalfa usually produces more honey here in rather dry localities. Where enough water is found to make the plant very

rank it is not apt to yield much honey. Most farmers in this valley cut the early crop of alfalfa usually in May, to get the fox-tail (a troublesome grass) before it fully matures. This cutting is when it is not fully in bloom, or, at least, not producing much honey. Later crops are generally left until they bloom freely and produce considerable honey before they are cut. When left for seed it is the "boss" for honey.

Last year my bees made a light run at the start. Too much electricity in the air checked honey secretion, I thought. Some light showers also made trouble. Then millions of small yellow butterflies helped empty the flowers. It is not rare for alfalfa honey to fail after Aug. 1st to 15th, in some localities.

Hanford, Cal.

[Over 400 cars of honey from a single State of this great Union! If I am correct, no other State has produced even half this amount in a single season of *any year*. These 400 cars and over, I suppose, do not take account of the quantities of honey produced in the same State, that are consumed locally. The government reports put North Carolina in the lead, and California near the end of the long list of honey-producing States. North Carolina should be near the foot. This only goes to show how grossly inaccurate government honey statistics are.

Tell the doctor to fire away; for, come to find out, we have not been shooting at *each other*, but in nearly the same direction.—Ed.]



BEE-PARALYSIS

Question. — Are you still of the same opinion regarding bee-paralysis that you were when you wrote what is found on pp. 536, '7, GLEANINGS for 1896? I see that there are very many who differ with you in their views in this matter; and I thought it possible that you might have seen something, since you wrote that article, to convince you that queens do carry the disease.

Answer.—In reply to the above I will say that I have seen nothing to change my mind in the least from what it was when I wrote the matter referred to. The colony I spoke of as having the queen from the colony which nearly died with bee-paralysis the year before, made about 100 lbs. of nice section honey; while her colony and the one on the old stand (the colony swarmed), having the young queen, went into winter quarters in fine condition. The one having the disease when I wrote (the worst I had ever seen at that time) gradually recovered, so that, by the middle of September, no affected bees were to be found in or about the hive; so, unless it

should break out again, my apiary is free from the disease. No one thing that I ever wrote ever brought me so many letters of censure as did that answer to the question on bee-paralysis, many apparently thinking that I really favored the shipping of queens from colonies that were known to have the disease. Some of these letters were very unfair, to say the least, and nearly every one wrote from a mistaken standpoint. When I write or speak of things I must give them as I find them, not from the standpoint of somebody else. All know that no one has proclaimed *caution* to a greater degree than has Doolittle, along all lines where caution is necessary; and I can not understand how any one could have construed any part of what I wrote regarding bee-paralysis to mean that I thought it would be safe for myself or any one else to be heedless or careless in the matter, or use queens from such colonies, for aught but experimental purposes. What I was aiming at was the headstrong way that many had in insisting that, the moment any signs of bee-paralysis were seen, the colony so showing should be eradicated from the apiary, and wiped off the face of the earth, by each and every one who saw those signs. If any person has not the time nor the disposition for a *thorough* and *careful* study of these matters, then such advice is well; but to so press matters that *no* one, no matter how careful, could look into this matter of bee-paralysis because he or she might be a queen-breeder, savored of keeping us in ignorance in the matter till the disease might so progress as to ruin our pursuit. I quite agree with the editor of this journal, that it is better to take a road a good way off from a precipice in our general driving; but if no one ever goes and carefully looks over, how can it be known that there is any precipice within a thousand miles? Neither do I believe it right for the masses to rush into a house having a case of smallpox; but that is not saying that *no* one should go into such a house, leaving its occupants to live or die as best they might, for fear some careless nurse might carry the disease to others. If you must be so careless that you are liable to spread foul brood, bee-paralysis, or any thing else, abroad, should a case of the same occur in your apiary, then by all means cremate any colony in which you find any signs of a dangerous disease; but if you can be a thorough, careful investigator, thus shedding light regarding something yet unsolved about our beloved pursuit, then go at it like a man, and don't be frightened for fear some one may score you if you stand for the right. *Don't* follow Doolittle, Root, Hutchinson, or anybody else, *blindly*, either, because they advocate something you are not familiar with; but investigate, experiment, and observe, until you *know* you are right, then go ahead, no matter what the masses may say or do.

In the world's broad field of battle,
In the bivouac of life,
Be not like dumb driven cattle—
Be a hero in the strife.

STORES FOR WINTERING.

Question.—In some of your writings I see that you think it does not require as much stores for wintering bees in the South as it does in extreme northern localities. What do you mean by this? Don't you think the bees will consume as much honey in the South from the middle of October to the middle of April as they would at the extreme North?

Answer.—Answering the last question first, I would say that I should estimate it would take more stores to carry bees from the middle of October to the middle of April, in the South, than it would at the North; but, if I remember rightly about what I wrote in this matter, I said it would take more stores to *winter* a colony where winter held as above than where we have winter for only two months, as they do at the South. After about the first of March, I understand it is *spring* in the South, while we often have six weeks of winter weather after that time. When bees begin to breed to any extent, then is when a great consumption of honey occurs; and if no honey is to be had from the fields at such times of rapid breeding, the stores in the hive are drawn upon so rapidly that starvation often occurs, when the apiarist thought his bees had sufficient stores to last for months, he judging from the consumption needed for the fall and winter months. Hence the wise apiarist has "an eye out" in this matter, from now on till the flowers give honey in the spring, unless his hives were very heavy in honey the preceding fall.

Some seem to think that mild weather, with no honey-flow, is a trying ordeal on the stores in the hive; but it depends very much on when this mild weather occurs. If in October, November, December, and January, and the bees are on their summer stands, I have found that, here in Central New York, they consume far less stores than they do in cold weather, as at this time there is no disposition toward brood-rearing, and the mild weather does not call for so much honey being used as "fuel" as does the cold. At such times, colonies outdoors consume but little more than do those in the cellar, or about a pound a month, while with cold weather the colony outdoors requires from a half more to double that amount, and this with perfect wintering. But let any colony become uneasy from any cause (go to eating voraciously) which always results in brood-rearing, and the consumption will increase, from the average, one to two pounds a month, to from five to eight pounds a month, resulting in that colony dying before spring, or its vitality becoming exhausted so that spring dwindling will be the result. When any colony becomes uneasy we call it

"sick," and many think it can not be helped. But the colony at its side remains quiet all the time, and the two were as nearly alike as two peas the preceding fall. If it is necessary that the first shall become uneasy or sick, why not in the case of the other? Who will tell us something definite about the matter?

[I am glad you have no bee-paralysis now in your apiary; but I infer if you had you would not destroy or remove it. While you would not, of course, send a queen from a diseased stock, you seem to think there is no harm in shipping queens from apparently healthy colonies, even though there may be a case of bee-paralysis in the same apiary.]

I can not help feeling, friend D., that, with the best of intentions, your position is wrong. Before me is a letter from a bee-keeper in the South, whose whole apiary of 70 colonies is diseased with bee-paralysis. It is practically a dead loss to him, and he has invested over \$400. He has tried every thing in the way of a cure, and yet the disease rages. This man claims he got the disease from a queen sent him by a queen-breeder, or at least that the disease developed in the colony soon after this queen was introduced. There are also others, whose names I do not feel at liberty to mention, who feel positive it is very contagious, and that it is almost criminal for any queen-breeder to keep, knowingly, a colony in the apiary, affected with bee-paralysis. If there is any bee-keeper in this land, friend Doolittle, who would proceed with caution, and who would be the least likely to transmit the disease from his apiary, it is yourself. But you will not forget that you have a very great influence among the bee-keeping fraternity; and perhaps some of them, less cautious than yourself, would say, "If Doolittle can do it, I can." You no doubt believe that the disease is not carried through the queen. Perhaps you are right; but if you are not right, and other queen-breeders who look up to you should take your position, fearful results would follow. I do not think any harm would result if you wished to experiment, provided you isolated such colonies as might have the disease; but to keep them in your general apiary, out of which you may ship bees or queens, is, to say the least, unwise.

I grant that bee-paralysis in the North occasions no alarm to the practical bee-keeper; but in the South, evidences are coming up continually, showing that it is even worse than foul brood.—Ed.]



THE DANZENBAKER SECTION; A STRONG POINT IN FAVOR OF THE TALL SECTION.

I find the Danzenbaker section a great acquisition to my apiary. The tall handsome sections, nicely glazed, weighing a pound, sell readily by the case at 20 cents each, while the 4¼ bring only 15 cents, and sell only when the tall ones are not in sight.

I find that, the nearer we come to the thickness of the brood-comb, the better they fill the sections, and the more readily they enter them.

Dealers prefer the 1½ section, whether the 4¼ or tall, and bee-keepers must cater to the demands of traders if they look for success in disposing of their product. I find the 4¼ x 4¼ section, 1½, glazed, filled, weighs a pound, and the New York retail trade demands it.

A firm to whom I applied for cartons for 1½ sections said to me, "Why don't you become an advanced bee-keeper, and adopt the *regular* 1½ or 1½ sections, so that you may obtain goods at regular prices?" I thought they needed a push toward progress. I take it that a man ready to make improvements is the *advanced* man.

Go on, dear brother, and may God strengthen your hands in all good works. "Take no heed unto the morrow." I have been young and now am old; yet have I never seen the righteous forsaken nor his seed begging bread."

B. F. ONDERDONK.

Mountain View, N. J., Dec. 9.

PETTIT'S NEW SYSTEM OF TAKING COMB HONEY.

An article in Dec. 15th GLEANINGS, by S. T. Pettit, with the above heading, was read by me with interest, and solves a problem for me over which I have pondered considerably. During the past season I have been testing 10 hives invented by T. I. Dugdale, of West Galway, N. Y., who formerly worked in the hive-factory of J. H. Nellis, of Canajoharie. This hive has the entrance in what might be called the hive-stand, and causes the bees to enter the surplus-apartment in the same way that Mr. Pettit advocates. I have been troubled a great deal to get the outer rows of sections on the Dovetailed hives properly capped; but to my surprise the outer rows of sections in the super of the new hives, although it contained 44 one-pound sections, a part of which extended beyond the 10 Langstroth frames, seemed to be just as readily filled and capped as in the center of the super. Why in such a large super the outer row of sections should be capped so much more readily than a super holding 24 sections, is made clear to me by Mr. Pettit's experiment.

I also wish to say that the article on "child-training" is a valuable one, which all parents will appreciate. Even a bear-story or a romance will give us a greater interest in our bee-journals, as "variety is the spice of life."

CHARLES STEWART.

Sammonsville, N. Y., Jan. 25.

[The plan spoken of by Mr. Pettit can be easily tried by any one who has the regular Dovetailed hive. I hope others will try the experiment, and report. It is by grasping at things of this kind that we make progress.—Ed.]

NOT TALL BUT SQUARE SECTIONS, 4¼x4¼.

You ask what we think about tall and narrower sections. My experience is that we want nothing narrower than 7-to-foot sections, and

nothing larger than 4¼x4¼. This size and width gives the best of satisfaction here. We use two tin separators to super. Wider sections are not built so well to the bottom-bar, and narrower sections are sometimes built very frail to the sides of the section. Do you see the point? Neither do we use starters more than 1½ inches deep, but full sheets of brood foundation in hive-body, every time, and wired. We want a section that weighs as nearly a pound as can be. Honey is getting too cheap to fool with ½ or ¾ lb. sections. Look out for Colorado and New Mexico. High prices on honey are over.

H. F. HAGEN.

Rocky Ford, Col., Jan. 26.

COMBS ON WIRED FRAMES.

I read somewhere in the current number of GLEANINGS a report of some one, I have forgotten who, in regard to having natural combs built on wired frames. I was somewhat interested in this, as I had been thinking about the same thing myself. After thinking the matter over I made some experiments along this line the latter part of the season after the hurry of the honey season was over. I had anticipated some trouble in having such combs built so that the center or septum would come upon the wire, or that the wire would be in the center of the comb when it was finished. The result of my experiments was very gratifying. They were more perfect than I had even anticipated. □ On thinking the matter over I had reasoned that the bees would cluster upon the wires, and that their first work would be commenced upon the wires, thus forming the center or septum of the combs directly on the wires; and the result of my experiments afterward proved my reasoning to be correct. Although my experiments were limited to but one colony, I am satisfied that there are some gratifying possibilities for bee-keepers in this direction.

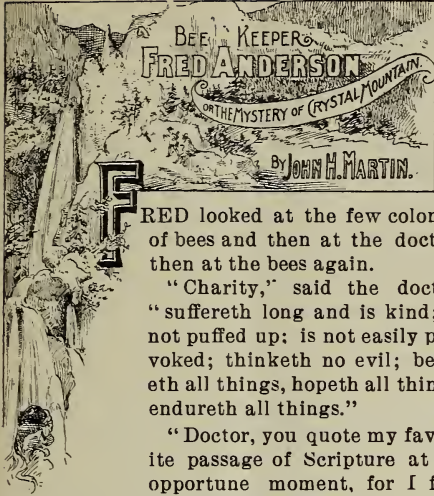
□ Of course, it will not be expected that combs built in this manner will compare in perfection with those built upon comb foundation; but in these days of close competition bee-keepers are looking for any methods that will economize expense; and if perfectly natural combs can be produced on wire it seems to me it must be a step in the right direction.

In this experiment I shook a colony of bees into the hive on wire frames, and fed them sugar syrup and diluted honey with a Boardman entrance feeder. I continued the experiment only far enough to satisfy myself as to its results, having the combs only partly filled. These combs I have preserved, and should be pleased to send you a sample of them if desired, as they will speak for themselves. Possibly you might think best to photograph them and present them to the readers of GLEANINGS.

East Townsend, O.

H. R. BOARDMAN.

[Yes, send them on and we will show them to our readers.—Ed.]



FRED looked at the few colonies of bees and then at the doctor; then at the bees again.

"Charity," said the doctor, "suffereth long and is kind; is not puffed up; is not easily provoked; thinketh no evil; beareth all things, hopeth all things, endureth all things."

"Doctor, you quote my favorite passage of Scripture at an opportune moment, for I feel far from charitable."

"And why?" queried the doctor.

"Why! Well, then, the idea, doctor, of my coming up here into these lonely mountains to take charge of only ten colonies of bees when I expected to manipulate a large apiary!"

"I don't remember of telling you that I had a large apiary," said the doctor. "If I did, I beg pardon; for it was far from me to convey an erroneous impression. Besides, Fred, what difference does it make whether I have ten colonies or five hundred if you get your pay for your labor? The pay will certainly be the same for the few as the many."

"I know our agreement is to that effect; but I hardly see how I can keep busy at present upon ten colonies of bees; and unless I have something to do, I—doctor, I'll—I'll fly—I'll be that nervous, you see. But must I consider all of your learned talk as merely theoretical management?"

"Largely, largely," replied the doctor; "but I have talked with you enough to know that you are a practical bee man, and it is our duty now to make the practical match the theoretical. There are ten colonies of bees before us. Now, not only theory but practice tells us that, in a good honey-flow, a colony of bees having a prolific queen can be safely divided every two months, or even oftener. These colonies have ten frames, eight of them filled with brood. When the colony is in condition to divide I insert a tin division in the center of the hive, equalize the hatching brood, secure the queen in one compartment, and introduce a queen to the queenless part. When the new queen is accepted, and the bees get equalized, I take out half the frames and bees and place them in a new hive beside the old one. If this operation is performed carefully, there will be no massing of bees into one hive to the depletion of the

other, for both have queens. I use division-boards in the new colonies, and insert frames of foundation as fast as they are drawn out. The result is, that on an average the division can be performed every two months, the year round, in this valley. You can readily figure what this will amount to. Doubling these ten colonies every two months results in 640 colonies at the close of the year, or 40,960 at the end of the second year. There may be a few failures in queens, and we will call it an even 40,000."

"Let me see," said Fred, as he took out his pencil and began to figure. "At that ratio we should have at the end of the third year, say, barring out the worthless queens, 2,000,000 colonies of bees."

"That is it," said the doctor; "you see there is plenty of work ahead if you only keep everlastingly at it."

"But, doctor, you do not really mean to increase so rapidly?"

"Only the first year," replied the doctor; "500 or 600 will be about all my field will at present bear; and, although I hate to think of it, I hope to open this valley to the public some time; then the rearing of bees for sale will be its profitable feature."

"Why, doctor, it would be necessary to run a railroad up here to accommodate a bee-ranch upon such a grand scale."

"That is coming in good time," said the doctor. "A new line from Ukiah to Humboldt Co. will pass within a mile of us."

The doctor now secured a smoker and two veils from a neat box used for that purpose, and they proceeded to investigate the interior of the hives; and, though their exterior was roughly made, and unpainted, the interior was fitted with the latest improved Hoffman frames.

"Why, doctor, your bees are the finest I ever saw," said Fred, with the eye of a critic.

"Yes, sir, and I want to show you a theoretical queen."

The doctor held up a frame, and they both looked for the queen.

"There she goes," said Fred, "through that opening," pointing his finger toward the spot; "but, my! she is a beauty, and so large!"

Thus they examined all of the hives; the bees were large and gentle, queens such as Fred had never seen, and new honey was coming in freely so late in the season that Fred was full of exclamations; and under them the doctor's face wore a pleased expression.

"Your queens are so fine, doctor, that I am anxious to know how you reared them."

"Well, then, I will briefly say that I have the same theory in relation to the breeding of queens that is put into practice in the breeding of horses. Perhaps you know that California horses beat the world for speed and other

qualities. The results are from breeding for a series of years in locations noted for a high and uniform temperature. Now, I have applied the same principles to the breeding of queens. For four years I have been experimenting; and by keeping my breeding-hives at a high and uniform temperature I have attained the results you have witnessed in the hives."

"Doctor, you say a high and uniform temperature; what do you call a high temperature, and how do you keep it uniform?"

"I find," replied the doctor, "that, for queen-rearing, 101 degrees brings the best results, and with the hot sulphur water, as it flows from the springs, there is no change of temperature; and, taking it at a point where it is cooled down to 101 degrees, and there placing my queen-rearing hives, you observe I can keep a uniform temperature both night and day. I tell you it is of the utmost importance."



"THEY EXAMINED ALL OF THE HIVES."

"What strain of bees did you commence breeding from?" queried Fred.

"I imported an Italian queen through the A. I. Root Co., and then I reared drones from a native strain. It has taken much labor and weeding-out. Within the past four years I have reared hundreds of queens, and the ten you saw are only the survival of the fittest, and I guarantee they are the finest in the world."

"I think so too," said Fred, "and it is not right to hide their value much longer in this valley. Why, doctor, you have a fortune just in the matter of queen-rearing in this valley."

"Possibly," replied the doctor; and, mounting his donkey, he said, "I think we have talked bees long enough for to-day. We will now return to camp by way of this terrace and the

Wis-ton-we; then we shall have seen about all of the prominent features of the valley. But, Fred, you can live here a lifetime and still find something new and interesting to admire."

"Much upon the plan of the botanist," said Fred, "who, putting his hand down upon the grassy lawn, said that under his hand there was enough material upon which to spend a lifetime of study."

"Yes, in comparison to the great world this little valley is but a trifling affair. But, Fred, trifling affairs sometimes make a great stir in the world. But, now, 'faint sounds the tinkling of the waterfall,'" quoted the doctor, as they approached the upper end of the valley. "The Wis-ton-we is an ever agreeable companion."

As the donkeys carried them safely down a steep grade, Fred espied the long glassy chute in the face of the cliff, through which he had been sent, or initiated, into the valley.

"There, doctor, I came near losing my senses in that thing; and until Sam explained the matter I was very angry at you. I was fighting mad, I tell you."

"Charity," said the doctor, "suffereth long and is kind; thinketh no evil; endureth all things."

After inspecting the peculiar elevator with its rude rawhide water-balance and rude mechanism, they returned to the doctor's cabin.

"I think you now have a very good idea of the valley," said the doctor, "and will need no chaperon to accompany you."

"Yes, doctor, and I think I will take a run down to the sulphur springs and take a bath."

Fred thoroughly enjoyed all he saw that day; and, after a prolonged bath, he felt much refreshed.

The evening shadows began to gather before his return; and as he followed the winding pathway up stream he heard Sam's voice echoing down the valley:

"H-o-o, h-o-o! all ye! h-o-o! eberybody h-o-o! Come dis way! h-o-o! de coffee am a bilin'; de hoe cake am a spilin'! h-o-o! h-o-o! all hans run for supper! h-o-o-o!"

Fred stopped to hear the music of that simple call; and as the echoes died away in the crags above he exclaimed: "I declare, if those negroes are not always musical. Perhaps it is because I am hungry; but that is the most artistic call to dinner I ever heard."

The doctor wished to make more extensive preparations for queen-rearing, and their conversation by night and by day was queens and bees. The rest of the week they were busy in the shop, talking, planning, and working; the-

ory and practice came in conflict quite often, but were usually settled upon the practical side.

Late Saturday evening, when the doctor bade Fred good-night, he said, "I must go out to the rancheria to-night. You and Sam will have the valley all to yourselves over Sunday."

The doctor was expected back before Monday morning; but Fred and Sam were left in an increasing degree of wonderment until Wednesday morning, when the doctor did return. At the breakfast-table he was disposed to be silent, and appeared much depressed. When they arose from the table he picked up his felt hat and said, as he held it up, "That was a sound hat when I went out Saturday night; now there are holes through the crown. Those were made by a bullet while the hat was on my head."

"Dat's what I call hewin' close to de line," said Sam; "for gracious, if de lead'd come so near my head, ebry kink in my wool 'ud been straightened, suah."

"Why, doctor, have you such enemies outside?" asked Fred. "That was certainly a close call."

"Yes," replied the doctor; "there are enemies without. Sit down again and I will tell you. You have not lived long enough in this western country to have learned the peculiar tactics of the land-grabber. He takes up a government claim of 160 acres, and then holds the several thousand acres adjacent by bulldozing off every would-be settler. If the settler is obstinate his stock is usually stampeded or mutilated. If he still persists in holding his claim, a bullet ends his career, and the land-grabber is monarch of all he surveys until another victim appears. In these remote parts the murderer escapes punishment, from the fact that the murder is not even investigated. There is such a land-grabber just over the mountains from us. Another murder was committed on his domain. In this case the murdered man had a spirited son, and, having heard of the mysterious man of the mountains, at the instigation of Mr. Landgrabber he was upon the watch for me, and that explains the bullet-holes. There are so many intricate and even dangerous passes around this mountain that I easily slipped away from my pursuers. Now, if I mistake not, this young man, if he persists in holding his father's claim, will, in due time, join his father in the spirit-land, and his taking-off will be laid to the mysterious man of Crystal Mountain."

"But, doctor, why don't you go right out and clear up this matter?"

"I fear, Fred, that there has been so much evil laid to me, that, should I appear openly, I should be shot on sight. I feel that, by and by, something will turn up to relieve me. Meanwhile I must stay in the valley and work out my destiny."

Secure in the hidden valley the doctor and Fred pursued their planning and work with the bees, and in a few weeks the episode was well nigh forgotten. Fred found the little apiary of ten colonies, which he at first despised, a center of great preparations for larger operations. The doctor had for some months been laying in a stock of supplies, and had enough for all present needs; but, even after it became dangerous for him to go outside the valley, his Indian allies, who roamed the country at will, brought him such small things as he needed.

Preparations for increasing the bees were not completed until the first of January. When every thing was in readiness the work went forward with much precision. Fred was delighted at the ease with which the divisions were accomplished, and said they could be done every six weeks. But the doctor said there was some uncertainty about it; and as two months' time was safe, and fast enough, they would stick to that.

As the months passed, Fred thought many times of his outside friends; and when working alone his mind was constantly upon Alfaretta. Many talks he had with the doctor upon her mental trouble. The doctor was always deeply interested, and would often say, in an absent-minded way, "Buell—Buell! If that name were only Bull—any way. I shall investigate that matter the next time I go to Sacramento."

Fred had been in the valley well toward a year; had made the fifth division of the bees, and was now the proud manager of 300 colonies.

Matters in the valley were moving along in their usual channel, when, one evening as they were about to retire, two Indians came into the valley in a much perturbed state of mind, took the doctor aside, and, after a hasty consultation, he departed with them. Fred and Sam sat for a long time speculating upon the unusual occurrence, and both fervently hoped the doctor would not again fall into the hands of the land-grabbers. The doctor not returning, they both at a late hour retired. Before sleeping, Fred's last thoughts and last little prayer were for the welfare of Alfaretta; and with her name this night he included the doctor; but he slept very lightly, and dreamed again of the night episode with Dawson, and saw again the white apparition on the stump. "I declare," said he, as he awoke, "how real that did appear!"

Again he slept, and dreamed; and as the streaks of dawn were breaking in the east he again awoke; and, sitting up, he said, in an undertone, "What a vivid dream! I thought I heard her singing."

Then to his astonished senses came the strong clear tones:

The night is stormy and dark,
My lover is on the sea;
Oh let me to the night winds hark
And hear what they say to me.



MR. B. K. S. BENNETT, editor of the *Pacific Bee Journal*, who published some reflections upon the character of one of California's prominent bee-keepers, Mr. Geo. W. Brodbeck, reference to which has already been made in our columns, has, in his January number, published a retraction expressing his regrets, as Mr. B. is willing to forgive and forget. We are glad to announce this happy termination.

THE NEW DRAWN FOUNDATION.

WE are receiving quite a number of testimonials expressing appreciation and surprise at the success we have achieved in producing the new article. Here is a sample of how a bee-keeper who not only knows what he is talking about, but who is well known to the whole fraternity, writes:

The sample of drawn comb is this day at hand. Thank you. I must say that it exceeds my expectations, and I predict great things for it if it can be put on the market at a reasonable price. I have had considerable experience with combs, and know their value.
E. T. FLANAGAN.
Belleville, Ill., Feb. 22.

LOW PRICES ON HONEY, AND WHY.

It will be noted in another column that California produced in one year about 425 carloads of honey, not including small amounts consumed locally. Arizona and Colorado are coming up rapidly to the front as honey-producing States; and one of the bee-keepers wrote the other day, "Look out for Colorado when our honey gets on your eastern markets." With continuous honey-flows from three to six months, is it any wonder that our western brethren can produce honey cheaply? Of course, the West has to contend with the freights; but even then, with their 600 or 700 cars of honey that is liable to appear at some seasons of the year, it is not much wonder that prices have had to drop some. We are in hopes that the new comb will help bee-keepers produce honey more cheaply. We shall see. One thing, however, is very gratifying. The fact that such vast amounts are produced and consumed yearly, shows that honey is coming to be more and more a staple article somewhere; for it is practically certain that no such amount could have been carried twenty years ago, even in proportion to the population at that time.

THE NEW HOFFMAN FRAME, AND JULIUS HOFFMAN.

SOME days ago we received a letter from Mr. Julius Hoffman, after whom the Hoffman frames were named. Here is what he says:

Mr. Root:—I have noticed in GLEANINGS, page 94, that you are doing your best to improve the Hoffman frame, and think the change will be a success. As for me, I still use and make it as I had it at first,

but make hive and frame $1\frac{1}{2}$ in. shallower than before, as I now raise comb honey principally. I am wintering 800 colonies. They seem to winter excellently.
JULIUS HOFFMAN.

Canajoharie, N. Y., Feb. 11.

Mr. Hoffman has for a good many years, in effect, secured the same results that we sought to obtain as set forth on page 94; namely, preventing the end-sticking of the top-bars. He long realized the necessity of keeping these intact, but he does it in an entirely different way. The hive-rabbets are shallow and narrow, and the frames come flush with the top of the hive. The ends of the top-bars are widened the same as the end-bars, and are entirely covered, so that the bees can not get at them to chink in propolis. But the general construction of the Dovetailed hive, or any hive based on Langstroth dimensions, made it necessary to depart from the original Hoffman somewhat.

Eight hundred colonies in winter quarters! Well, that is the kind of bee-keeper Mr. Hoffman is. The fact that he was so extensively engaged in bee-keeping, and that his appliances worked so well, led us to believe that he was a safe man to follow, and we did. The consequence is, we have pushed the Hoffman frame so that it is now used very largely all over the United States, when formerly it was used only in certain sections of New York.

APIS DORSATA AT THE LINCOLN CONVENTION.

ONE of our cotemporaries, in criticising the action of the Lincoln convention regarding *Apis dorsata*, jumped to the conclusion that it was at the instigation of a so-called "ring," made up of Drs. Miller and Mason, and York and the Roots. This is what the editor of the *Nebraska Bee keeper* says on the subject.

I have been reading with some interest the discussion, pro and con, of the action of the Lincoln convention in regard to the importation of *Apis dorsata*. Now, I wish to say that I think but one or two gentlemen know that such a resolution was thought of until I read it and moved its adoption. As to the why I feel opposed to the importation of *Apis dorsata* by the general government at this time and in the manner asked for by the Ontario County Beekeepers' Association, I will say:

First, I do not think it is a bee that would do us any good. A score of years ago we had in our employ a bright young man. A year or so later found him on his way as a missionary to Africa. Three or four more years pass along and he revisits his boyhood home and parents in our town. While here he described animals, insects, and bees, as found in that far-off land. Although not particularly interested in *Apis dorsata* at that time, yet from his descriptions, and those read later, I think they may be identical, or nearly so, and I at present believe worthless to us, other than as curiosities. * * *

Now, gentlemen, instead of growing, and throwing stones and slurs at "Root, Miller, York, or Mason," who did not introduce the resolution at the Lincoln convention, throw them at some one out in the Pacific Ocean. If Root or Miller or York had needed *Apis dorsata* in their apiaries, like gentlemen they would have inclosed a \$10 bill with a well-provisioned queen-cage to some agent or missionary in far-away lands, and had *Apis dorsata* queens to sell to their customers before the government agent could pack his gripsack ready to start. Whenever we have learned that *Apis dorsata* is any thing desirable it will get here.

[I wish all of our bee-keeping friends could not only hear but see Mr. Whitcomb give expression

to the above; sentiments. □ If you could feel his personality once, and understand his good-natured sparkle, you would no more think of throwing "stones" at him than you would at your grandmother.

"COMMERCIAL RATINGS."

ON page 72 of the *American Bee Journal* for Jan. 28, we find the following severe criticism in regard to the way commercial ratings are made:

"What a contemptible system it is, though! Now, suppose I had been an enemy of this man, what an opportunity to have ruined his reputation! On the other hand, had I been his most zealous friend, here was a chance for me to give him a high but false rating."

After having had many years of business experience with both Dun and Bradstreet, I want to make a little protest to the above. No doubt they sometimes get a report from a person who is prejudiced against somebody in his own town; but I am sure they recognize the possibility of this, and take great pains to avoid injustice. For instance, sometimes it is hard to get at once the exact facts in the case; additional facts follow sometimes for several weeks or months. The additional facts from some other standpoint usually corroborate the first one, but sometimes they present the matter in a different light. Again, we assist these agencies in keeping track of people connected with bee culture. Sometimes they think we have been a little too severe, or may be the reverse; and they often go to much pains and expense in order to get at a fair and impartial rating of the person. A few times I have known them to be misled; but I am sure such cases are the exception and not the rule. We are continually asked in regard to the standing of certain people; and where a stamp has been inclosed I have always felt it a pleasure to help business along by giving a recommend to any worthy man, or in cautioning about giving improper credit to the unworthy.

A. I. R.

USING WIRE STAPLES OR SIMILAR DEVICES
FOR SPACING FRAMES; A. I. R.'S
RECOLLECTIONS.

In the earlier volumes of the *American Bee Journal* this matter was discussed pro and con at such length that our good editor, Samuel Wagner, finally shut down on the discussion. Nails were suggested; blind-staples, and projections of wood, not only from the top-bar but end-bars. At that time I was using H. A. King's American hive, and advocated projections to hold the frames in place when the hives were to be moved. The editor suggested something like this: "The movable frames as given us by Langstroth can be moved near together or put far apart as you may choose. In using the fingers of the hand we sometimes want them close together. Again, we want them apart more or less. Is not this much better than to have them spaced at fixed distances?" About

this time, or earlier, Ransom & Cobb, of Cleveland, who manufactured Langstroth hives, fitted the frames all with wire staples driven at a certain point and depth. When the extractor came into use, a good many bee-keepers complained that these staples dulled their honeyknives. They caught against the ends of the hives in putting the frames back in place, and finally most bee-keepers decided to go to work and pull out the wire staples, nails, and ever so many other fixtures that had been attached to the frames to help this spacing business. When it was first suggested, a great many bee-keepers went to the trouble of putting staples, or something equivalent, into their frames clear through some large apiaries. Well, if I am correct, nearly every one who did this, sooner or later went to work and pulled them all out. There was no end of spacing-devices—staples, tacks, nails, folded bits of tin, or sheet iron, and pieces of wood tacked on where they seemed to be needed. Years later, when out-apiaries began to be so much in vogue, the Hoffman frame was introduced, and seemed to find a permanent place. This frame, with recent improvements, has several advantages that none of the early experiments right along in this line seemed to include.

It is said that history repeats itself. The frames with staples as *side-spacers*, as friend Boomhower uses them, were not popular. Why, then, should they be popular again? Hoffman frames, although discarded by individuals, have been used for perhaps twenty years, and they increase in popularity.

A. I. R.

THE LINDEN.

I come with a song for a tree near my cottage—
A treasure God placed in his own garden-bed;
A tree which has stood while my wife and my children

Grew sweet as the creamy-white blossoms o'er-head.

Around it the giants of nature are standing—
The oak and the walnut—primeval and grand;
But nothing in forest or field can compare with
The linden in whose cooling presence I stand.

When suns of mid-summer are hot and oppressive
We keep our noon-trysting beneath its deep shade;
Its emerald roof gives a promise of shelter

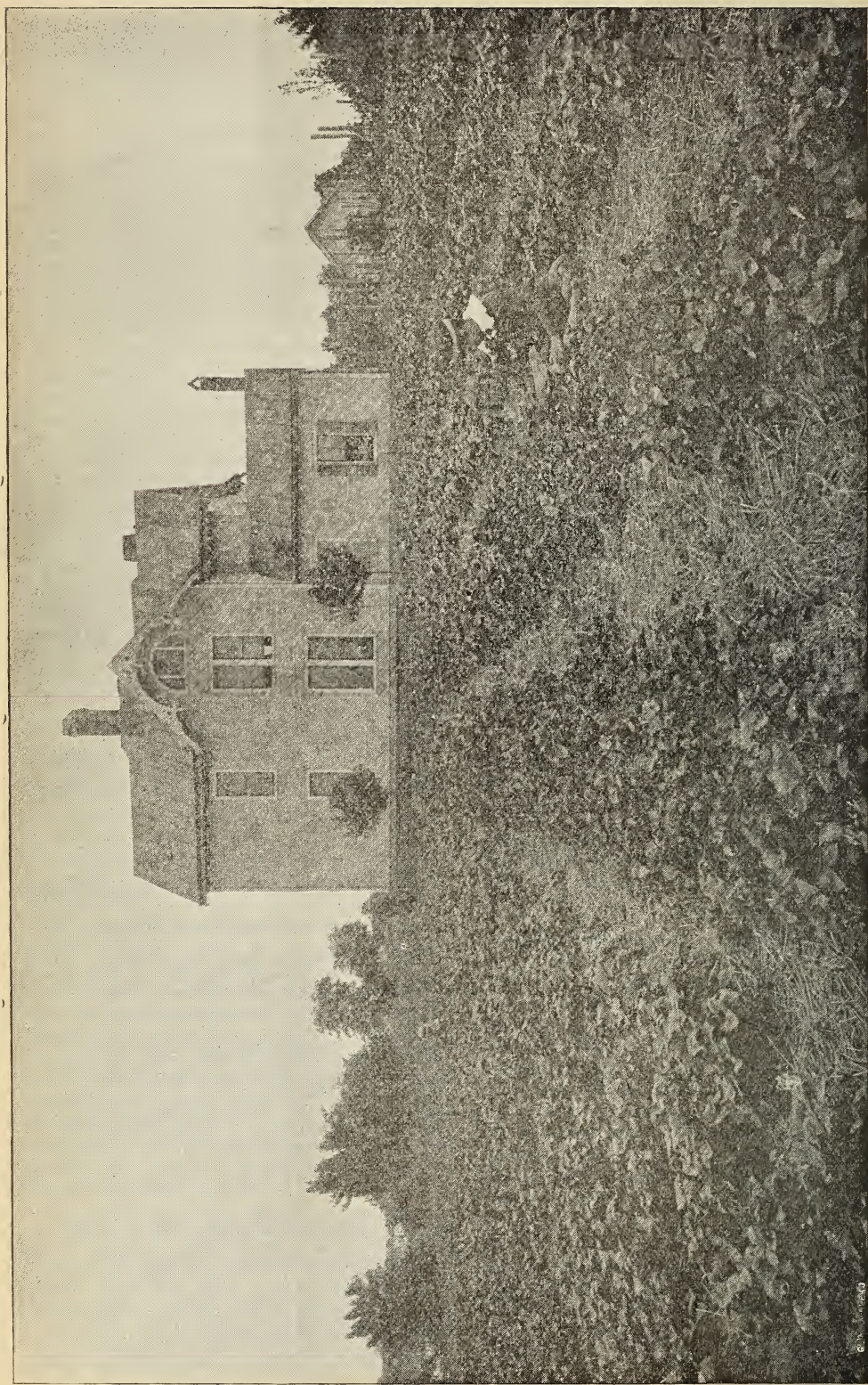
From fiery old Phoebus when scorching the glade.
The catbird and robin have left the ripe berries,
To rest in the boughs of my favorite tree;
They'll give me a song for the fruit which they pilfered.

And evening shall witness a bird-jubilee.

How charming to me is the music created
By swift-flying bees when exploring its bloom!
My dreamy repose as I swing in my hammock

Is often enriched by its grateful perfume.
Oh sing not to me of blest Araby's odors—
Of spices and incense from tropical seas!
But waft to my senses the fragrance of linden
Exhaled by the breath of the home-coming bees.

—Eugene Secor.



A MODEL STRAWBERRY-PATCH GROWN EXACTLY AFTER THE DIRECTIONS GIVEN BY T. B. TERRY IN HIS STRAWBERRY-BOOK.

GROWING STRAWBERRIES ACCORDING TO OUR STRAWBERRY-BOOK.

WHAT AN AMATEUR DID THE VERY FIRST TIME AFTER HAVING DIRECTIONS FROM THE BOOK TO GO BY.

I send you a picture of my strawberry-bed. I have tried to raise them several times, but without success. I finally sent for your book on strawberries, and went as nearly as possible by the directions in the book. I put in a small bed and had good success. We sold nearly a hundred dollars' worth besides all we could eat. I am only an amateur. I have the Sharpless, Crescent, Haverland, and Gandy. I forgot to mention that, while everybody else's strawberries were a failure in this locality on account of drouth this year, ours were a success. You can see in the picture we send that Master Verner S. is as fond of eating berries as he is of picking them.

J. L. SCHLEGEL.

Richmond, Ky.

It is very seldom we get a photo of a nice strawberry-bed of sufficient accuracy to show the foliage and the berries. Our good friend Schlegel owes his success largely to the fact that he is a photographer as well as strawberry-grower. The ground was put in order, probably, exactly according to Terry's directions; that is, by turning under a heavy growth of clover for the berries to grow on, the ground being, of course, duly enriched, that the clover might make a great rank growth. After the clover is turned under, and the ground worked up fine, and firmed, then the rows are laid out 4 feet apart, and the plants set out early in the spring. Then the runners were trained so as to have the plants evenly spaced all over the ground, leaving only sufficient space in the paths to walk between the plants.

During the first winter the plants were mulched with plenty of straw between the rows, and with cut straw between the plants; then during the heaviest freezing weather just enough straw was put over all to conceal the green leaves. When frosts were past so the plants began to grow, this surplus straw over the plants was pushed aside just enough to let the green leaves come out through them. Spring rains do the rest in the way of packing the straw down out of the way. The beds were kept so clean that not a weed nor even a spear of grass is visible through the luxuriant foliage. Friend S. has evidently carried out the plan to the letter, and every thing is just right. No wonder he sold a hundred dollars' worth from what he calls a "small bed." I am sorry he did not tell us just how much ground he did have.

Now it is not too late, dear friends, to get your own strawberry-patch into similar trim, or at least partly so. As soon as the snow goes off, and the ground is soft, get out every weed and spear of grass. If you have not put on the necessary mulching, get at it right away as soon as the snow is gone and the ground is not frozen. Nobody wants muddy berries. They must be kept clean; and straw mulching, or mulching of something else, is about the only way to do it. We use to a large extent coarse stable manure. We can get this at about the price of straw. Of course, it is open to the objection of weed seeds that will probably spring up and bother you before the berries are picked. If, however, you do not expect to run your strawberry-bed another season, you may let it get pretty weedy while you are picking the last of the berries; but do not let any of these weeds go to seed; and just as soon as you decide there are not enough berries left for another picking, plow the whole thing under—weeds, stable manure, strawberry-plants, and every thing

else. Then put in cabbage-plants, potatoes, or any thing else you happen to want on the turned-under strawberry-bed, and then you will have a crop for certain—that is, if the strawberries were manured as every strawberry-bed ought to be.



THE SODA SPRINGS NEAR ROBERT PHINNEY'S.

Along with the water, every now and then there arose a great bubble of some kind of gas. This gas is probably carbonic acid, although I did not have time to test it. The spring water is so strongly charged with gas as to give it quite a pungent taste—something like the effervescing springs of Manitou. It is so strongly impregnated with soda, however, that one does not want to drink very much of it. There are toward a dozen springs scattered along over perhaps half an acre, and the water collectively makes quite a good-sized little stream. It is so warm that on a frosty morning quite a fog hangs over the neighborhood of the springs, and follows the stream of water for quite a distance. The water is warm enough for a comfortable bath; and if one or more of the springs were inclosed even in a canvas tent it would be a rare bathing-place. I have been told by those who have tried it that it seems almost impossible to sink in the water, as it seems to buoy or push you up. This is probably caused both by chemicals contained in the water and by the force with which it pushes up through the boiling sand. No doubt these springs possess medical properties (that is, if any of the warm or hot springs do, aside from the matter of temperature); but it is so far away from everybody that there is not much prospect of their being developed very soon. In this neighborhood they have mail only once a week. How does that sound, friends, to those of you who live in towns where you have mails out and in, three or four times a day?

Next morning we made a trip still further up into the mountains. We crossed the beautiful clear Beaver Creek spring water several times, past the schoolhouse where Mrs. Phinney was teaching; and finally away up in a narrow canyon in the mountains we came to the residence of R. Cassner. Before reaching the place, however, I was charmed by a little babbling brook coming up out of the canyon, and actually running up hill—that is, if I took my eyes for evidence. It seemed to run up hill right merrily, too, for it babbled and flashed in the sunlight, and hurried along as if it had lots to do and could not waste a minute. Its final destination was an alfalfa field, where it spread its liquid treasures over the green and growing plants. We followed the stream until it came clear up to the door of the house. In fact, you could hardly get outdoors and in without jumping over it. A party of dogs met us at the bars, and barked so loud and long that the people could hardly make themselves heard when they tried to welcome us. I couldn't quite make out whether the dogs wanted to eat us up or whether they were simply manifesting their pleasure at seeing visitors.

Right back of the Cassner cabin is a mountain so nearly straight up for almost a whole half-mile that it makes your head swim; and away up under the very crest of the table-lands on top we saw some cliff dwellings. While

friends Elvey and Carey took their guns and went off for a hunt, I visited friend Cassner's garden and fruit-orchards, all of which are kept booming under the influence of this babbling brook. The growth of apple-trees, apricots, peach, pear, cherry, and every thing else up in these mountains, is absolutely wonderful. Let me give you some figures. I was shown one apricot-tree that had yielded \$50.00 worth of fruit during the past season; one Ben Davis apple-tree only nine years old, the fruit from which brought \$25.00 during the past season. Four peach-trees bore a ton of peaches. In the garden, eight rows of peppers, each row 30 steps long, yielded \$50.00 worth of peppers, and they were sold at 10 cts. per lb. Now, one secret of the large amounts received is, that almost all kinds of fruit brought at Flagstaff and Jerome 8 or 10 cts. per lb. The owner says he received about \$1500 from the fruit grown on four or five acres right around his little home.

Now, before you all get the fever for moving out on some of these mountain canyons to get rich raising fruit, let me tell you that this fruit had to be all hauled over mountain roads from 30 to 50 miles. There are nine children in the Cassner home; and, as nearly as I can make out, pretty much all of the nine were busy during fruit time, gathering fruit and getting it to the city markets. I know the prices mentioned are not very much out of the way, because while I was present in one of the mining towns a little girl came in and said her ma wanted 50 cents' worth of apples. Now, if a customer should give me such an order I should want a stout man with a wheelbarrow to deliver the 50 cents' worth. Not so in this case. The storekeeper put the few apples into a common tin grocery-scoop. He weighed them up as he would tea and coffee, put them into a paper bag, and the little girl carried them home without very much trouble. She got 5 lbs. of apples for her half-dollar. Why not ship apples into these mining towns, from the East? Well, it is the old story of the awful freights. In one of these mining towns they tell a story of a peddler who wanted 5 cts. apiece for some sewing-needles. When his customer remonstrated he said it was as low as they could possibly be sold, on account of the expense of shipping so far over the mountains!

Now, there is something exceedingly strange about these mountain-canyon homes. I supposed I had seen all of the fruit-orchards; but my comrade said he had another nice little strip of orchard over there by the creek.

"But," said I, "there is no room for an orchard. On the further side there are the rocky cliffs close up to the water, and we have already seen every thing there is on this side."

"Oh!" said he, "you will find quite a little strip of wonderfully nice ground when we get there."

And when we did "get there," sure enough, there it was. After we had seen the fruit-trees with their wonderfully luxuriant growth, we sat down by the door and tasted some of the beautiful apples. Although it was in the month of January, they were as crisp and delicious as any apple I ever tasted picked right from the tree. In fact, it seemed that day as if they were the handsomest and most luscious apples I had ever tasted in my life. I did not wonder then so much that people were willing to give 10 cts. per lb. for them.

I expressed a wish to see the wonderful spring where this babbling brook came out of the mountain-side. All the time it looked to me exactly as if we were walking down hill while the brook was running up hill to meet us. It looked down hill; but when I tried to walk I

could not get along as easily as one does in going down hill in reality. The spring came out of the rocky mountain in several places, making the moss, grass, and other vegetation grow with wonderful luxuriance wherever it laved them with its magic touch. The banks to keep the irrigating water within bounds are sometimes very frail, and, it seemed to me, insecure. But everybody has learned to be careful. If in jumping across the brook you should put your foot on the soft edge of the bank, you might let all the water get away in a hurry; but, as I have said, every one learns to be careful.

After I had finished my visit I jumped on my wheel and rode along beside the babbling brook. Oh, yes! sure enough, the wheel tells very quickly which way is down hill and which is up. Hills that looked too steep to climb up in going one direction were surmounted without any effort at all; but if you are going the other way, a hill that seemed very moderate to the eye would make you puff and blow till you decided to give it up and walk. I can not tell why these mountain canyons confuse one's ordinary judgment in this matter of up hill and down. There is something weird and enchanting about the whole matter. Mr. Cassner has the last dwelling-place up in the canyon. In fact, the road ends at his little plantation. I suppose there are hundreds of other places where wonderful results could be accomplished in the way of gardening and fruit-growing; but the great trouble at present is the enormous expense of getting your produce to market.

OUR HOMES.

Who forgiveth all thine iniquities; who healeth all thy diseases; who redeemeth thy life from destruction; who crowneth thee with lovingkindness and tender mercies.—PSALM 103:3, 4.

I returned from my western trip so as to reach home Saturday morning, Jan. 16. Several had cautioned me about going north right in the depth of the winter, especially in regard to the sudden transition from a warm or tropical climate to the cold Ohio winters. Saturday was a rather mild day for January, and I went all around home looking after things, feeling about as well as usual. Sunday morning I discovered I had taken cold. I went to church in the morning, but on the way home I felt pretty well satisfied that something was the matter. Next day a doctor was called, and he said my old trouble, malarial fever, had got hold of me, together with a very severe cold. He said I should have to keep warm, and not even look out of doors. He did not tell me my disease was grip; but from what I had heard of it I decided it must be "grip" for sure. At any rate, some tremendous thing was *gripping* at my vitals in a way I believe I had never experienced before. By the time our blizzard got along, 16 degrees below zero, I felt pretty sick. I do not know what gave me such a terrible cold unless it was the sudden transition. I was whirled from New Orleans up to my home here in Northern Ohio in just about 26 hours, thanks to the L. & N. R. R. I was well bundled up, and can not understand even now just how or why I caught such a cold; but I do know that, in a few brief days, my physical strength and energy seemed entirely gone, and I felt astonished to find my spiritual life also dwindling away, as it were. I remember of feeling strongly impressed that a sick-bed was not the best place in the world for one to make his peace

with God. For a little time I felt almost too sick to breathe even to myself that old familiar "Lord, help." I employed the same physician who treated Mrs. Root; and in about a week he said my fever was broken, but that I should have to be careful, and not be surprised if it took me a *good while* to regain my appetite, strength, and energy; and it was just about four weeks from the time I was taken down before I ventured to step outdoors.

I suppose others have had a like experience to my own. The idea *would* keep getting into my feverish brain that my work on earth was done, and that I was too rickety and broken down to think of any thing regarding the future. In fact, it seemed to tire me to think or even to live. As usual, Satan suggested that it would be a fine thing *not* to live. I remember one feverish night, while I was suffering, the idea some way got into my mind that death was not going to give me any relief, for I should soon get awfully tired of *being dead*. So I rejected Satan's suggestions. And, by the way, I am inclined to think there is a great truth somewhere along in this line.

Within the past year there seems to have been almost a mania for suicides. Somebody has called it an epidemic of suicides. Now, if some of these poor deluded victims of Satan do not get "tired of being dead," or, in other words, if they have not already discovered that they have made a terrible blunder, then I am mistaken. Some have chosen death rather than face the consequences of having their criminal proceedings brought to light. They seemed to think that in death, and a self-inflicted death, they will find a refuge. I feel sure they have made a mistake.

As I began to recover from the effects of the fever, and my brain began to get clearer, I remember a good many times, especially while suffering, that I prayed very earnestly that God would not only give me health, but that he would give me wisdom that I might advise and direct others in this matter of caring for these bodies of ours. By the way, I think I shall have to confess that I seldom pray with much earnestness unless I am in trouble of some sort. If this is true of all of us, dear Christian friends, we ought to be careful how we murmur or complain of sickness and pain, or trouble of any sort. For a time it seemed as if my prayers were not heeded. But I have had too many similar experiences to lose faith, and I knew that the great Father *would* in his own good time give me light amid the darkness. Our text has it exactly: "Who forgiveth all thine iniquities, who healeth all thy diseases." Not only that, but in the next verse we have, "Who redeemeth thy life from destruction." Without faith in God, the inevitable conclusion would be that I was going to destruction. I do not know whether other people are beset by similar despondent feelings like my own or not. I remember of feeling it almost impossible to shake off the impression that kept *continually* getting such a firm hold on me that I should never get well. The doctors told me years ago that I should never again be a "well man;" but since then I have had some most glorious experiences in the way of health, energy, vigor, and even rejoicing, because of my strength of muscle. Well, there is still a little more of our text: "Who crowneth thee with lovingkindness and tender mercies." For many days it would seem as if I was not making any gain at all. Then there would be mornings when I felt a good deal better, when I could sing with feeble voice, "Praise God, from whom all blessings flow." By the way, when we were out in the desert, although we were all professing

Christians it did not seem convenient or practicable to have any sort of family worship; and as a substitute I used to sing every morning, and a good many times through the day, the doxology.

Now, the purpose of this little talk to-day is to tell how God answered my petitions for health and wisdom, and how to teach others along in this line of getting well and keeping well. While I prayed I made the matter a study. I have sometimes wondered that God gives us so little specific direction in regard to what medicines we should take or what physicians we should employ, or whether we should use medicines at all or employ physicians at all. I can only say that, for myself, I have been forced to decide that he has perhaps wisely left these things, at least to a considerable degree, for us to decide as best we can. The great Father does not propose to do our work for us, nor even to do our *thinking* for us. He will not hear a farmer's prayers, and grant him great crops, unless the farmer uses both brain and muscle to accomplish the desired end.

The disease that had got hold of me was gripping for my lungs. The doctor said a little reckless exposure on my part might send me beyond the *reach* of doctors or medicine. I soon discovered that I should have to keep warm—a good deal of the time *too* warm to be comfortable. Unless I did, that unfeeling giant, which we may as well call Grip as any thing, made me feel his clutches. While doing this, some fresh air and a little outdoor exercise (not too much), I found to be of much benefit. With a weak stomach and impaired digestion I had to be very careful of my diet. Appetite did not seem to be any guide, for I did not really feel like eating any thing. After I got able to be out I noticed the chills came back once or twice a day, and kept giving me a setback. I remember of wondering what the cause could be, and I prayed earnestly in regard to the matter. One day after thus praying, the matter seemed to be made very plain to me—almost as if some kind friend had explained it. It was this: I was getting hold of business a little, and a good deal needed my attention. I would oftentimes be busy until dinner-time or supper-time. I sat down to my meals, and remembered, when I sat down, that I was *very much* exhausted; then an hour later I would have a chill. The suggestion that came to me was this: That I must go home an hour or an hour and a half before meal-time, and take a good long rest. Since the return of my sickness I had been troubled some with insomnia. I could not go to sleep just before meal-time as I did last summer. Then this suggestion, or this kind friend who was advising, said, "If you do not succeed in going to sleep, lie perfectly still for an hour or more before you think of taking food or nourishment." I felt happy in a moment; in fact, I felt sure I understood the cause of those chills, and that I should not have them any more, and I did not. A good many times it was hard to stop work at half-past three, especially when I did not feel faint or tired; but when I woke up just as supper was ready, I felt like a different person.

Perhaps you may say that Dr. Salisbury told me the same thing twenty five years ago. So he did, substantially; but I had forgotten it or had neglected it. And here is a great truth: God often answers our prayers by reminding us of things we knew already, but which we had forgotten or neglected. With the lean-meat diet, I was troubled with constipation more than I ever had been before. The grip seemed to have crippled my digestive or other organs, and the hot-water treatment did not seem to

do a bit of good. The doctor suggested a mild physic; but I told him physic would not work with me as it did with some people. When I told him how it distressed me he said I was right. By the way, I do not believe God intended we should take physic;* and yet I knew by sad experience that it would not do to neglect a matter of this kind day after day for almost or quite a week. I made this thing a subject of prayer, always adding, "Not for myself, but that I may safely advise others who have like troubles." The answer to this came also almost immediately. While talking with my mother and sister, I happened to mention the matter. My sister went at once to a bookcase and pulled down some sort of medical book. An old physician said that for eighteen years he had prescribed and used *ground wheat*, with scarcely a failure. I had that same feeling that her suggestion was in answer to my prayer. It was something I knew already; in fact, it has been several times printed in these pages. My sister happened to have some in the house. I took it right home, commenced using it at every meal instead of bread and butter, and in three or four days the trouble was gone. While Mrs. Root was preparing it her eye chanced to alight on something in one of the health-journals. It covers the ground so thoroughly that I give it to our readers. We extract as follows from *What to Eat*, published at Minneapolis, Minn.:

At this particular period, when the times are so hard, any thing which will aid us to economize is grasped very eagerly.

The first step is to go to the miller and buy a bushel of his best wheat, and direct that it be re-cleaned before delivery. At the present price this ought not to cost over 75c for the wheat, and 10c or so for the cleaning. The next article to purchase may be a small-sized grinder, but it is not entirely necessary. After using the ordinary coffee-mill, I found a machine better suited to the purpose. It is a reduced size of the large spice-mills which one sees in every well-regulated grocer's shop. I presume there are others as good, but mine cost \$3.00, and was made by the Enterprise Mfg. Co., of Philad. Iphia. Every kitchen is supplied with the ordinary double-bottomed tin boiler. You are now ready for business. Time, and three hours of it, for cooking, is one of the essences of this dish. Another important feature to be observed is that the wheat should not be broken until you are ready to start cooking the same. Since three hours are necessary, a part of the time during the preparation of the evening meal will have to be used, and the rest in the morning; but, above all means cook it at least three hours, and you have a dish fit for every American sovereign.

I came near omitting one point, which every one will want to know, and that is, that each grain of wheat should not be broken into more than four equal parts (two make it splendid) before cooking.

About this time I happened to notice³ Dr. Miller's little tract, "Food Value of Honey." I read it, and here seemed to be another suggestion. I found that, while fruit and vegetables did not seem to agree with me at all, the wheat with, say, a teaspoonful of thick nicely

* I have tried a great many kinds of physic in years past, especially the little pills that have been recommended as being so "mild," and that work along in harmony with nature's course. But my conviction is that they are in one sense *poisons*, all of them. Of course, one may accustom himself to take poison daily, in moderate quantities; but the result, as your family physician will tell you, is that the poison must be gradually increased in quantity to produce the desired result. I have been told there is an epitaph on a certain tombstone, somewhere, that reads,

"I was sick, but would be better; took physic, and died."

This epitaph was intended, I presume, as a warning to future generations.

ripened honey, would be digested without a bit of trouble. Once more:

Several friends have written me at different times that, if I could not use milk as an article of food, I would find by trial that a small quantity of cream would be digested easily. I spoke to our milkman, and he said he would bring me five cents' worth of cream every morning, if I wanted it. Some of you may think that half a pint of cream every day is rather extravagant. Look here, my friend: It costs a dollar or more to have a doctor call. With this same dollar you can get twenty rations of cream; and for my part I should very much prefer to take the cream rather than the doctor's medicines (no disrespect to the doctor; for if he is a good one he is as anxious that you should keep well as you are). If you buy cream instead of medicine, you help the farmer instead of the druggist, and I think he needs help the most, *just now*, at least.

I get a great many bulletins from the different experiment stations. There are so many of them that it is impossible for me to read them all through; but I am rejoiced to note that they almost always have a summary, and I very much enjoy reading it. Now, suppose we have a summary to the little talk on health that I have been giving you to-day:

1. God does not always tell us which doctor to employ, nor what medicine to take.

2. He does, however, teach us in many ways to be careful of sudden exposures, and to keep these bodies of ours well protected during severe weather.

3. He also enjoins us to use both pure air and pure water, and take as much outdoor exercise as possible.

4. He tells us in different ways to be careful about overdoing; to rest our bodies; to take proper rest before partaking of our accustomed daily food.

5. While both God and nature (which is perhaps another name for God) do not seem to recommend physic, he has provided in great abundance food that will, at least to a great extent, render physic unnecessary.

6. While God has not seen fit to tell us *exactly* what kind of food we should use to nourish our bodies, he has, in his holy word, specially mentioned both milk and honey as things to be sought for and considered wholesome. Perhaps wheat has not been mentioned so specifically as milk and honey; but I think every careful reader of the Bible may gather that God's purpose and intention was that he should use both the flesh of domestic animals and the different grains that are recognized the world over as the obvious food, at least to a great extent, for mankind.

The modern way of grinding and preparing grains for food, I think, must be to a great extent a mistake. The method of grinding that has been outlined in this article is almost exactly, in the results attained, like the ancient methods of grinding grain.* All through the Territory of Arizona I found scattered almost everywhere stones hollowed out, somewhat trough-shaped, in which they ground or bruised the grain they used for food. The smaller stones, used to push back and forth inside the larger ones, are also found everywhere. Many of these are worn down to a thin edge at each of the ends. When we get back to outdoor life and broken or crushed whole grain, instead of fine white flour, we may expect to enjoy such health as God's children did in olden time.

* The ground grain is then cooked by slow heat a long time; and the cakes called "tortillas" are a staple article of food even now among many Indian tribes.