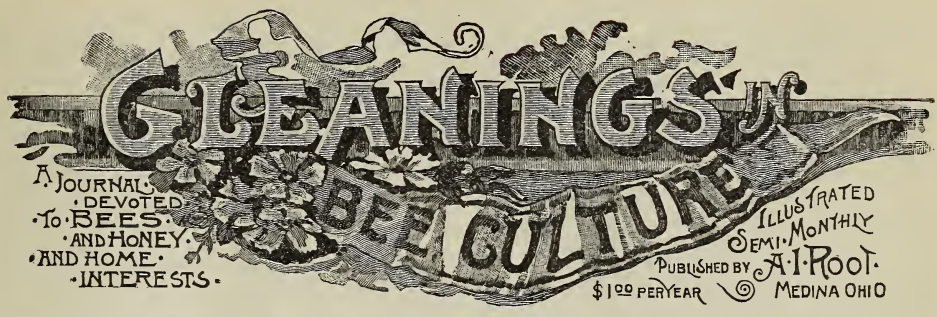


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Vol. XXI.

DEC. 1, 1893.

No. 23.

STRAY STRAWS

FROM DR. C. C. MILLER.

NOW BEGIN to plan for next year.

IT WASN'T RIGHT, Hutchinson thinks, to advertise a three-days' meeting at Chicago and then cut it down to two.

COLIC from eating honey, according to Isaac B. Rumford, in *Success*, may be prevented or cured by eating a bit of cheese.

FEEDING BACK, in R. L. Taylor's experiments, to finish out sections, yielded a pound of comb honey for every 1.7 pounds fed.

PROF. COOK, in *Review*, thinks bee-keepers can have experiment stations in all the States if they only insist on their rights. Let's "insist."

ONLY FIVE of the States had a larger representation at the Chicago convention than Ontario. And it came near capturing the next convention.

BEE-ESCAPES are nice things in some cases. But I don't use them one time in twenty—haven't time. But I use them a good deal off the hives.

MOVED AND SECONDED by Hasty and Hutchinson, that Taylor, of Minnesota, be appointed experimenter for his State. The name works well in Michigan, why not in Minnesota?

HUTCHINSON hits the nail pretty squarely on the head in the following: "I am becoming more and more convinced that we can not put our finger on any one thing, and say, 'This causes bee diarrhea.'"

HUTCHINSON proposes to learn to fight bee diarrhea by learning how to produce it at will. I think I can produce it at will by leaving fire out of my cellars. But the same thing will not work in all places alike.

"CHILL NOVEMBER" was very mild as to its front end this year. My bees flew nearly every day till the 10th—something very unusual. But the 15th brought the thermometer down to 16, and winter came with a jump.

POLLEN IN WINTER. S. Corneil, in *Review*, adduces facts which he thinks abundantly prove "that not only is there nothing gained by the exclusion of pollen from winter stores, but its presence is essential for the health of the bees."

The *American Bee-keeper* has an article in which the name of Langstroth is entirely omitted among the names of those who have brought into use the movable frame. Better use a footnote, dear A. B. K., to supply the deficiency caused by the ignorance of a correspondent.

QUIET ROBBERING is reported a failure on p. 856, and a correspondent of B. B. J. also reports it a failure. I wonder what can be the secret of the failure. I've practiced it for years, having hundreds of supers cleaned out without trouble.

JONES HAULED some bees upon a sleigh, One mild and sunny winter's deigh,
To help a neighbor.

The bees got out upon the weigh.
And made the horses run a weigh:—
'Twas fruitless leighbor.

THE KODAK is getting to be a terror to evil-doers. "Spotters" on the railroad on which I live are now armed with these deadly weapons. If a railroad employe enters a saloon he is afterward shown a neat picture of himself in the saloon, and invited to walk out.

YOUR HEAD'S LEVEL, Mr. Editor, when you say the North American should hold its conventions at a time when some other large gatherings assure low railroad rates. Go in strong on that idea; but then, don't forget that I had the idea copyrighted long ago, and give proper credit.

IT'S A MISTAKE, Hutchinson thinks, to commence a convention without having a program all ready to work from. Easy, friend H. Don't you remember more than one excellent convention in that same city of Chicago where there was less preparation as to program than at the last one?

WAX SECRETION. R. C. Aikin, in *Success*, thinks it takes about four days for bees to get under headway at secreting wax. He counts the beginning of the flow the most profitable time to furnish combs or full sheets of foundation; and the close, the best time to furnish only starters.

THE LOW MURMUR of bees in the cellar is considered by some a "hum of content," and by others a sign of something wrong. In October I heard the same murmur among my hives outdoors. In that case it could hardly have been the sign of any thing wrong, unless that the bees were colder than they liked.

TO WASH SILK. Mix ¼ lb. honey, ¼ lb. soft soap, a gill of gin, and a pint of cold water together. Put the silk on a table or board, scrub it with this mixture, rubbing it in well; then rinse in clear soft water. Shake it as dry as you can; do not wring it. Hang it up by the edges, and, as soon as sufficiently dry, iron it on the wrong side.—*Mrs. Rorer's Cook-book.*

SUCCESS IN BEE CULTURE is the name of the new journal that has supplanted the *Bee-keepers' Enterprise*. But there seems more enterprise in the new than the old. It has some very bright things in it, and in mechanical ex-

ecution it can stand up with the best. It seems sagely conducted, and I hope it may achieve the first word in its present name.

HASTY ADVISES the *C. B. J.* to leave out the sprinkling of short jokes. Don't you do it, Holtermann. We need more fun. Why, Hasty himself is so bubbling over with good-natured fun that it spices all he says. His articles would be excellent food without the spice, but they're much more palatable with it.

AN ACCIDENT furnished me a strong argument against loose frames, if such argument was needed. By some means a hive was turned on its side, and lay thus for a few days. The frames all settled down in a pile. Fixed distances would have held them in their places. Still, such an accident occurs only once in 32 years.

PREPARING FOR NEXT SEASON.

OLD FOUNDATION AS GOOD AS NEW.

By the time this number of GLEANINGS will have reached its readers, the bees will have all been housed for winter, or should be, at least, and the intelligent apiarist will be asking himself the question, "What next?" The next thing to be done, it seems to me, is to prepare for next season. He who fails to prepare now for the season to come, often finds the season upon him and he unprepared. The time to prepare is always when we have the *time* to prepare, not afterward. Therefore, when our bees are safely fixed for winter we should go to work in such a way that our "dish" will be sure to be right side up when the "raining of honey" comes next June and July. To this end, all the hives not occupied by the bees should be brought around and repaired if necessary, cleaned of propolis, etc., and painted if necessary. If we do not have as many as we may reasonably expect to use, new ones should be made, so that all will be in readiness at a moment's notice when swarming time arrives in 1894. If we are to use foundation or starters of foundation in our frames, let this foundation be procured and fastened in the frames during the winter while we have leisure. Don't listen to those who tell you that the bees will not work the foundation only as it is new from the mill; for in an experience of years I can not see any difference between foundation fresh from the mill and that which has been stored away in the frames for years, as regards the bees accepting it. To be sure, to me this old foundation looks cold and hard; and, while looking at it these cold winter days, my sympathies go out toward those who say the bees will not accept it; but when next June arrives, and I lift out this same "hard" sheet from the bees, after it has been in the hive an hour, I find it all soft and pliable, and just as good as new, or that which has been dipped in tepid water so as to restore its color, etc., as some advise.

Having the hives all in readiness, put them away where they will be handy when needed, and look after the surplus arrangements next. These should be cleaned of propolis, and repaired where necessary; and if we do not have enough, let new ones be made. To arrive at the number we wish, I have come to the conclusion that I am not sure to secure the best results unless I allow at least room for 150 lbs. capacity to each old colony in the spring, where working for comb honey, or 250 where working for extracted honey. Less than this finds me "napping," about one year in eight, with less money to jingle in my pockets than I might have had. The sections to fill our wide frames or cases should next be procured, made, and

filled with full sheets of foundation or starters, as we have elected to do. When filled as above they are to be placed in their holders, and all fixed in readiness to use, so packed that all dust, dirt, and mice are excluded from them.

We now have time to study on any experiments we have thought we should like to make when we were so busy during the last season; and by studying the matter over we shall see what material and fixtures we shall need to carry out these experiments. Much good to the bee-keeping fraternity is often lost by lack of time to experiment just when the "fit is on," and then allowing the thing to die without further thought in the matter. To overcome this tendency I jot down the new things I should like to try when they come to me; and if I do not have time to put them in practice then, I look this "jotting down" over during the winter, and prepare to carry out the plans the next season. If, after carrying out, we find these experiments successful, we should then give them to the world to pay the debt we owe to those who have come before us and prepared the way for our successful practice of the plans they originated. Don't be selfish, and try to keep whatever good you may have found to yourself; for in giving to the world there comes the greatest reward. Above all else in importance is a thorough knowledge of apiculture, and the long winter evenings which are upon us are just the time to gain this knowledge. Get around the back volumes of GLEANINGS, and other bee-papers if you have them; also any bee-books you may have, and thoroughly read them till what they contain is fully impressed upon the mind, so as to put what you learn in practice the next season, so as to be always advancing, instead of standing still or retrograding. Do this instead of spending your evenings at the store, saloon, or hotel, listening to the idle gossip, or worse than gossip, and, my word for it, you will make a success of bee-keeping which will astonish those about you.

Not long ago, while passing the saloon in our place I saw through the open door one of our would-be bee-keepers standing at the bar, apparently about to treat others gathered around, to that which has the power of not only wrecking any business, but destroying both soul and body. No wonder such a one does not succeed. If you are not interested to an extent sufficient to make you prefer the study of bees to the places named above, I can give no assurance of success; but, on the contrary, I shall be obliged to predict only failure, as all my knowledge of the pursuit compels me to say that the idea that "bees work for nothing and board themselves" is a mistaken one. G. M. DOOLITTLE.

Borodino, N. Y.

A DISCOURAGING SEASON FOR SOUTH CAROLINA.

J. D. FOOSHE REPLIES TO MR. CORMAL.

Friend Root:—I had hoped all along that we should have a good fall for honey, and that we should get enough for the bees to winter on, if no more; but the season is over, and this is the first one that I have ever known when bees had to be fed here to carry them through the winter. I shall have to feed at least 20 or 25 colonies. About that number may make out with what they have, as they were stronger, and not drawn on as were the others. In March, and up to the middle of April, my bees never did better. I had about 60 colonies—40 reasonably good ones, and the rest good strong nuclei. I had more swarms than for several years. They built up rapidly on seven-top turnip, and were in good

shape the middle of April, when high winds set in and blew a heavy gale for about ten days, so that bees lost every day of that time, and nuclei had to be fed. Then prevailing winds made things dry in a hurry; but about the 25th of April we had some of the hardest rains that I have ever known, and they continued to fall at intervals for three weeks; and during that time after each rain it would be very cool for three or four days, and, again, high drying winds, and then drouth for some time; and, again, in June we were flooded—so much so that it was almost impossible to save our crops from grass toward the middle of June. I plowed but two days in three weeks, and most farmers are feeling the effect of it now in short crops. All this made cotton late, which I hoped to get some honey from; but another drouth, commencing the middle of July and lasting till the 10th of August, when we had some rain, caused the prospect to brighten, and bees began to bring in honey about the middle of August, and they made some headway, when, on the 27th of August, we had the notable storm on the coast, which stopped all work among the bees for several days, or until goldenrod bloomed, which is about the last of September. They began work on it, and built up on that and peas until about the 13th of October, when we had another storm with heavy rains, and since that time they have gathered less honey from the asters than I have ever known. During all this time, every nucleus I had was fed, either with sugar syrup or by taking a frame of honey from the upper story of the strongest colonies, which weakened them every time I did it; but I was encouraged all along to think that, when they began to bring in honey, they would build up and gather a surplus, as in former years; but, you see, every time they started, something would come along to discourage and stop proceedings almost. The most singular thing that happened was, after the last storm the bees killed all drones—not one could be found in my apiary the last of October, so I had to give up queen-rearing earlier than usual.

I mention the discouraging circumstances fully, in order to show that bee-keeping, like all other industries, fails occasionally. My queen-trade, amid it all, has been good and profitable; but I had to feed a good deal for it. Many bees in this section have swarmed out, and all box hives are in bad shape. I bought several Oct. 1st, and Italianized; but they had no honey, and they had to be united to go through. With all these discouragements I trust that I am wiser, and shall learn lessons that will profit me. Queen-rearing is a specialty with me, but I do like to have honey to go along with it, as it keeps bees in a normal state, and the business is made easier and more profitable, and better queens are the result.

In November 1st GLEANINGS Mr. Cormal says I indorse the Alley plan of grafting cells to hatch queens. The only part of the Alley plan indorsed is the placing of the strips of comb on the bars. The grafting process belongs to Mr. Doolittle. If I remember rightly it was he who first gave the plan of transferring larvæ to old cups, and afterward conceived the idea of making cups from wax. This comes nearer to natural cell-building than any thing else I know, in that the larvæ grafted are of the same age, and hatch out more evenly than by any other plans given, and more uniform queens are the result, which I consider a great item in cell-building. We may let a colony choose its own larvæ, even from our best queen, which larvæ we always use in queen-rearing, and some larvæ will be too old; and if bees are left to themselves I find they always select larvæ from one to two or three days old. I have always thought, and

still think, that the only difference between queens reared from natural swarming and those grafted by the Doolittle plan is that, in natural swarming, the larva is fed, beginning with its existence in a larval state from the egg, which gives it, say, from 12 to 24 hours the advantage. The younger the larva can be transferred, the better; and that can hardly be done under 6 to 12 hours after it is hatched. I find, from my observation, it makes no difference as to the receptacle it is placed in, whether worker comb, drone comb, or wax cup. The bees make the base, and draw out, tapering as they go, until finished. I find that the drone-cells for cups with royal jelly are more convenient than any thing else that I have ever used, and I am highly pleased with them, as it saves me making wax cups, and I get just as fine queens as from any thing I have ever used.

I think Mr. James Cormal makes an unjust criticism on my article recommending drone-cells for queen-cups, in which he uses the word "disclaimer." I am sure that I have been charitable, and have not denied others the right to their plans, but gave mine for what they were worth. You are exactly right in your comment to his article. The receptacle for the larvæ, no matter whether worker-cell, drone-cell, or wax cup, the bees begin at the base, and enlarge, and then contract to a proper size, as in the natural cell. J. D. FOOSHE.

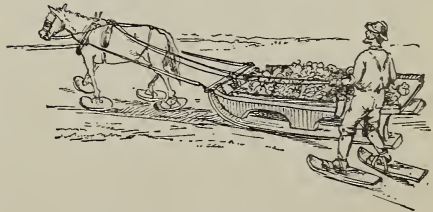
Coronaca, S. C., Nov. 11.

RAMBLE 97.

WITH ELISHA GALLUP.

While upon the photographic journey, as recounted in my last ramble, I kept an eye out for things of interest in the line of bee culture; and, seeing a large number of nucleus hives near Arlington, I ran out to see them, and counted over 180; saw a hive that had been upset by skunks; felt a cross bee on my ear, with about a dozen more trying to get at my face. I then concluded I had seen and felt enough, and ran back much faster than I ran out. After we pass some distance down the Santa Ana River we enter Orange County, and soon find the county-seat, Santa Ana, and it is one of those beautiful towns we so often meet in California. Its location being only ten miles from the seashore, with no intervening hills, it has a very uniform temperature all the year round.

Orange County is not very pretentious in size, but in its products it boasts of things as immense as those produced in any portion of the State. In the interior we find the products run more to fruits and barley, and a system of irrigation; but in the western part of Orange Co. there is as much diversity of products as you will find in the less favored Eastern States.



BOG-SHOES FOR MAN OR BEAST.

Large cornfields gladden the eye, and the growth seems to vie in height with the telegraph-poles. We also see green fields without irrigation, for there is moisture enough for the

natural growth of alfalfa and other grasses, and the fields are green all the year round.

The most productive portion of the county is known as the "peat lands." This large tract of land near the ocean is composed of the richest of peat; and, while the surface is dry enough to be tilled, there is plenty of water at a little distance below the surface; in fact, the ground over much of this tract is so soft that the crops have to be drawn out upon a sort of sled with broad runners, and the horses are provided with bog-shoes which are large cushionlike arrangements strapped to the feet, and which prevent the horses from sinking.

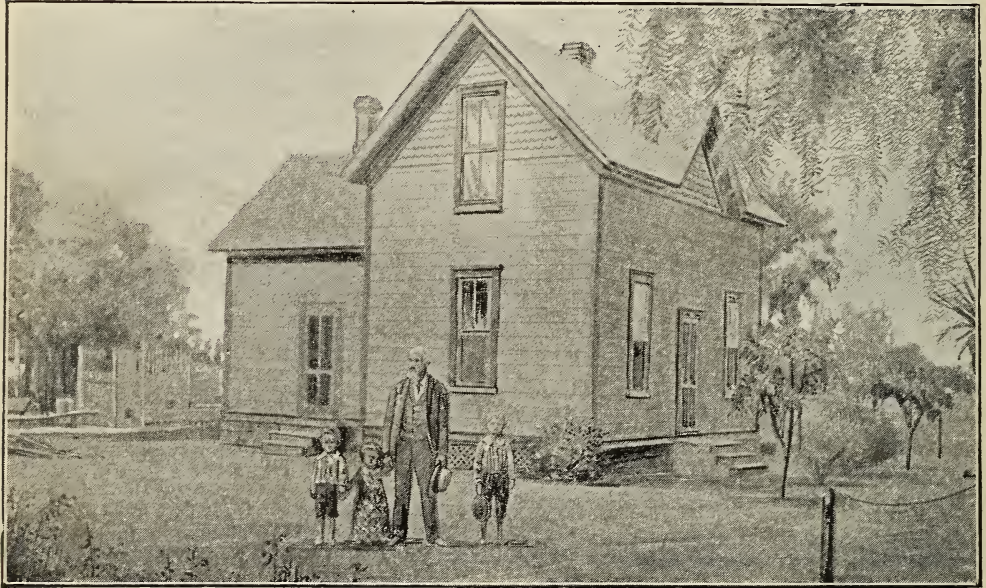
Garden-truck of all kinds is grown to perfection, and it is a common practice to plant a field to potatoes, corn, and pumpkins, and have the three crops growing at once, and yielding large returns. The lover of market-gardening would surely have all of his enthusiasm aroused by a visit to the rich peat lands, where no artificial manuring is required to attain great results.

The young American boys who seem to be worthy of emulation are the Miner brothers, who have, during the past season, obtained 20 tons of honey.

While in Santa Ana I thought it my duty to hunt up Mr. Elisha Gallup, an old-time bee-keeper, whose writings are still remembered by old-time bee-keepers. I found him in his cosy home in the suburbs of the town. He was divested of coat and vest, and seemed to be enjoying the climate. His age of 73 summers seems to rest lightly upon him; and but from being partially bald, and his remaining hair gray, he would look quite young. I told him that I had hunted him up in order to have a bee-talk if he was at leisure.

"Well," said he, "I am here now; fire away." So we exchanged shots for about an hour.

Mr. G. does not at present manage bees; but one can readily see that he has the old love for the pursuit. I found the father caring for his three little children, the mother having passed to the other shore a few months ago. The old-



ELISHA GALLUP.

The average bee-keeper, in passing through Orange Co., would think, from the appearance of the hills in the distance, that it would not be much of a honey-producing county; but from reports during the present season it will hold its own with the interior counties. The best quality and largest amount of honey is obtained in the foot-hills on the east side of the county, while a darker grade of honey is obtained in the low lands. As we near the coast, bees swarm to a greater extent than in the interior, and quite a number make it a business to catch such swarms and start apiaries, or sell them to those who wish to start a bee-ranch.

When entering the county through the foot-hills we catch glimpses of apiaries now and then in the canyons; and one of these, I was informed, belonged to four Mexican boys. It is seldom that a Mexican can get up energy enough to run a bee-ranch; but these young fellows, having got their hands in, and having young American bee-keepers to emulate, we should hope to see them make a success of it.

est boy is six years old; the next four, and the youngest a girl two years old. All are bright and extremely well-behaved children. The oldest came in from school, and the father remarked that he stood at the head of his class. The second boy was intent upon telling me about his pet "yabbits," which a kind lady had given him. Mr. G. keeps a few coops of poultry, and finds recreation in that and in caring for the little park at the railroad depot. Before I left town the next morning I photoed the residence and the occupants; and though it was early, and the usual morning fog was hanging over the city, I hope our artist can reproduce it for our readers.

There are many thriving towns around Santa Ana; and when in them, if you meet a genuine Californian you would think from his description that his individual town is the paradise spot of the earth. The water there is purest, the air most bracing, the fruit more abundant and better flavored; the boys best behaved, and the girls best looking. Some of these old-

timers will make you feel like settling down near them for life.

Santa Ana and some of the surrounding towns are supplied with pure artesian water; and, all other things being taken into consideration, a home in any one of them would result satisfactorily to the home-seeker. The soil is also adapted to the cultivation of the sugar-beet, and new factories are projected. The pioneer factory at Chino is a paying institution, and the beet-farmer would not exchange his lands for fruit or grain lands.

Altogether, Orange County is a desirable portion of California; and between the sugar and honey industries it ought to be one of the sweetest. With good soil, good water, genial climate, and a good class of people, what more does a country need to bring prosperity? is the question presented by the RAMBLER.

BEE-CAGE CANDY.

PLAIN DIRECTIONS HOW TO MAKE. FROM MRS. JENNIE ATCHLEY.

[The following letter, directed to Mrs. Atchley, was forwarded to us by her with her answer. We are very glad to give place to the whole.]

Mrs. Jennie Atchley:—As I have seen your advertisement or address in GLEANINGS, I take the liberty of writing to you, and inquiring how to make that bee-candy, as I have some colonies of bees that have not enough honey to winter on, and should like to feed them in the cellar, with the candy. If you will be kind enough to tell me how it is made I should be ever so much obliged. G. L. UNTERKIRCHER.

Manchester, Mich., Nov. 6.

Friend *Unterkircher*:—As promised, I will give a full description how to make candy, etc. To make a candy to ship queens with we should use nothing except the finest of confectioners' sugar, and thoroughly pulverize all lumps, and use honey that has been boiled or brought to the boiling-point; but be sure not to scorch the honey. Now work the sugar and honey together until it will stand up of itself; and if you will work it thoroughly it will be tough, and hold moisture. I use boiled honey to prevent the candy from granulating (honey that comes from the solar wax-extractor is good), for we have lost a number of queens on long journeys by the candy granulating, and it is a very nice job to get real good candy every time.

Now, if you wish to feed your bees only, common powdered sugar will do. As above, but any extracted honey will do. If you have your bees in a cellar you can lay a good chunk of candy right over the cluster, and spread it out thin till it is flat, or not more than an inch thick, and lay the cake on the frames over the bees, and they will take it down.

Then, again, you can use common coffee sugar and no honey, only use a little cream of tartar or a lump of tartaric acid to keep the candy from going back to sugar. You can make the candy hard, and, when it will snap by dropping it in water, you can pour it right into a frame, made ready by laying it on a greased paper on a table. It is best to use a frame that has been wired the same as for foundation, as the wires will hold the candy. If you wish, fill the frame full, and, when cool, hang right up to the cluster, and they will take the candy as they need it; and then this last candy will not start brood-rearing, as the former is likely to do, which is not good to stimulate your bees while in confinement. Then in

the spring, if you should not wish to take out the frame that contained the candy, the bees will build a comb in it, and all will be well. See A B C of Bee Culture for further information.

Beeville, Tex.

JENNIE ATCHLEY.

THOSE OLD BEE-BOOKS.

HUISH VERSUS HUBER.

We have now come to the last book which it will be desirable to examine in particular. A few remain, but I shall do little more with them than to give their names. I make this statement for the benefit of "The Stinger," who fears the books will be too "ancient" before I get through with them. I was just contemplating borrowing those 1004 old ones owned by Mr. T. W. Cowan, but now I guess I'd better not.

The book in question is called "Huish on Bees." It was published in London in 1844, and printed by that prince of good printers, H. G. Bohn, York St., London. It has 450 pages, 6x3; and for clearness of print and general beauty it is a pleasure to a printer's eye. It was written by Robt. Huish, F. Z. A., of England, one of the most eminent bee-men of his time.

In my last I put Huber forth in the light in which he is generally viewed, without committing myself to any of his doctrines. This book, however, is the most powerful opponent of Huber's teachings; and on nearly every page the reader sees that the blind old naturalist is pursued by a critic as remorseless as death, as shrewd as a lawyer, and as unsparing as a tiger. Every weapon in the arsenal—sarcasm, ridicule, contempt, dislike, and sneers—is brought to bear with as much vim and enthusiasm as clubs come down on every opposing head at the traditional Donnybrook Fair. And considering the fact that Huish wrote about 50 years later than Huber, I can't help feeling that he has the advantage of the latter in most cases. It is to be regretted, however, that the intense antipathy felt in England in those days against France accounts for much of the acerbity displayed by Huish toward his dead opponent, although the great Englishman was an honorary member of the National Institute of France, and seems to have understood French, making many quotations in that language.

The introduction to the book is a superb summing-up of the history of apiculture; and to show how Mr. Huish felt toward Huber I make a liberal quotation here. True, it is only a hair of the dog; but it gives, after all, a good general idea of the animal:

At the close of the eighteenth century, Mr. Huber, a blind naturalist, appeared, who directed his servant, or his servant directed him in those researches, for the supposed verity of which a surreptitious fame has been awarded him, and which has placed him on the pinnacle of apiarian science, an eminence on which he has been undeservedly elevated by a host of commentators, encyclopedists, editors, and compilers, who have been led away by the apparent originality of his pretended discoveries, but who never deemed it necessary to devote any portion of their time or ability in the investigation of the principles of that theory, of the truth of which they expressed their unqualified assent. If, in the course of the ensuing work, we may have laid ourselves open to the charge of having applied the lash of ridicule too severely upon this falsely celebrated naturalist, we can only answer, in extenuation of that transgression, that we have been encouraged to the commission of it by the thorough conviction, arising from an experience of above forty years, that the majority of the vaunted discoveries of Huber are the result of fiction and delusion, founded on obsolete theories and antiquated prejudices. The man who will assert, that, from his own evidence, he has heard the queen-bee speak

the French language,—that he has seen the queen-bee place herself in such an attitude as to strike the bees motionless,—that he has seen the queen-bees for six consecutive nights engaged in a duel,—that he has seen fortifications erected by the bees; we affirm, that the man who will tell us, and call upon us in a dogmatical tone to believe him, that ten hives will warm an apartment, and twelve a greenhouse if the bees be well shaken,—that the queen-bee is sometimes afflicted with the ague,—that he has seen a bee construct a cell from the foundation to the coping, with numerous other similar fooleries, possesses but a very slight claim indeed to the character of a profound or accurate naturalist. We are bold enough to declare, that the discoveries of Huber are not only improbable, but even *impossible*; and it is on the basis of that knowledge that we have unequivocally expressed our dissent to the principal points of the theory of Huber. We have, however, fearlessly thrown down the gauntlet to the advocates of Huber; and although we may stand single-handed in the contest, we fight under the banners of truth, and as such we despair not of the victory.

Two more pages like this follow; but the lash falls upon later writers who have "blindly" followed Huber, even against the evidence of what he did not have—eyesight.

The disputes between the old bee-masters seem to have been entirely in regard to the bee itself, and especially the sex of the worker. Huish says he is positive that workers have nothing to do with the procreation of their kind. He says, "We deny in the most unequivocal manner that any ovarium exists in the common bee." From this he argues that an egg laid by a queen will invariably produce a worker (if it is a worker egg), and that no amount of "royal broth," as he sneeringly translates the original French word, can make a queen from such an egg, any more than a hen's egg can produce a turkey. Certainly here was a far bigger mistake than Huber ever made; for workers certainly do have what might have been an ovarium, or egg-sheath, if properly fed with royal jelly, and given plenty of room. Here is a wonderful instance of an insect undergoing a radical change by a change of food.

Huber claims that some bees secrete wax, while others make comb of this raw material. Mr. Huish ridicules this as contradictory, by saying, "That is, although the silkworm spins its cocoon, still it makes no silk." The point is not well taken. If some silkworms were known to take cocoons that other worms had furnished, and were to draw these cocoons out into handkerchiefs, the analogy would be complete. Bees do not secrete wax in the shape of comb, but it is elaborated by the bees into cells after secretion; and that bees of one age might do one thing while others do the other is not absurd of itself—at least, not so hard to believe as that a bee manipulates no wax secreted by another bee.

Huber's theory, that workers lay eggs that develop into drones, is objected to by Huish on the ground that, in that case, we should have some 15,000 females, all laying male eggs, and these females rendered fertile by females!—a bad state of affairs truly. Mr. Huish distorts Huber's meaning in places, and makes fun of the idea that what might have been a queen was distorted into a worker by circumstances connected with its egg-life. It seems sad that these men should have been so widely apart, when a full knowledge of what is now called a "laying worker" would have reconciled most of their discrepancies on this score. Of course, the dispute was all on one side, for we do not know that Huber ever heard of Huish, for the latter must have been very young, perhaps not born, when Huber's works were first printed.

As an instance of how greatly Mr. Huish misunderstands Huber, I can not refrain from mentioning the following: Huber speaks in one

place of having seen combs 8 inches *wide*. Mr. Huish, understanding *depth*, or thickness, for *width*, immediately makes fun of comb with cells 4 inches in depth, as that would necessitate bees 4 inches long to fill them!

To-day the efforts of bee-men are directed almost entirely to the management of the bee, with the view of getting the most honey; and in this respect our bee-books present a complete and refreshing contrast to the old ones I have described. True, there are some things about bees we should like to know. For instance, do bees hear? do they make real honey of all sweet substances which they consume or imbibe? and the use of some of their organs is not yet, I believe, fully settled. But these are not now divisive questions. We are discussing differences in perforations in zinc, so small that a hair seems like a beam in comparison, and in settling on the best size of a frame within the thirty-second of an inch.

For vigor of language, Mr. Huish's book is a marvel. He draws one on by his energetic logic with almost irresistible force. Of course, we of to-day can take a bird's-eye view of the contested points, and sift out the chaff from the wheat, and read the arguments with perfect impartiality. Perhaps the time will come when we shall all see our points of difference in a new and better light, and find that we have all been partially right—that the shield was red on our side and blue on the other; when HUBER shall have as much in common in love as in name.

A fine picture of the author, in copperplate, faces the beautiful title-page.

Medina, Nov. 15.

W. P. ROOT.

THE NON-USE OF THE BEE-ESCAPE.

HOW AN EXTENSIVE BEE-KEEPER REMOVES THE BEES.

Agreeably to a call for bee-escape experience, from the editor of GLEANINGS, I would say for one that I gave the article in question a trial on a small scale; and, while I have no doubt of the efficiency of the invention, and know that there is a very great deal in getting used to a thing, I think, as in the beginning, that, while it might pay some people, it would not pay me. I use shallow frames in the cases (my crop is nearly all extracted), and tier up empty combs on the hives, case after case, until the close of the honey season, and then extract. *Mymodus operandi*, briefly given, is as follows:

I have a hive-cart similar to the California styles illustrated in back numbers of GLEANINGS. Provided with a large-sized Bingham I begin at the end of a row of hives, pry off the cover, start the bees down with smoke; pry up the top case; dislodge what bees I can, *a la* Heddon, with a shake in front of hive, and set the case on the cart. I then remove all the cases in this way (if any contain brood I leave them until fall), and replace the cover on the hive; repeat this operation until the cart is loaded. At convenient locations in the apiary I set bee-spaced bottom-boards, and on these I pile my cases, bees, honey, and all, to a convenient height, and place on top a cleated board, with a large wire cone opening outward in the center of the same, the hole at the apex the right size to permit the passage of a single bee; the bees rise to the light, pass out, and return to the hives. If robbers are troublesome I throw a cloth over the cases on the cart. A better plan than this is, to pile the cases in the honey-house at once near a screen-covered window, at the top of which are arranged bee-escapes. In a large apiary, however, there is seldom room for this last way.

The writer has practiced this method for over 20 years; and with no help, oftentimes, but a small boy in the honey-room, has removed the honey from 75 to 400 colonies each year. After the combs are emptied they are at once returned to the cases, and in the evening the cases are replaced on the hives, to be cleaned up and be ready for the fall crop, and safe from the moth, even if the fall crop fails to put in an appearance.

Now, Mr. Editor, I believe in all improvements that improve; but, candidly, I would not accept as a gift a full equipment of modern bee-escapes for my apiary. To people who brush the bees from the large frames, or who use only one case per hive to extract from, or to any one who likes to "tinker" with bees, or to the section-honey people, the escape may have a pecuniary value; but with my shallow frames with close-fitting end-bars, I say, not any for me.

In good seasons my yield is often from 125 to 160 lbs. per colony, spring count; and to raise all these heavy cases from the brood-chamber just to place an escape-board on the same, and then replace the cases, where one operation would do as well—yes, better—in the first place, and with a smaller percentage of crushed bees, doesn't strike my ideas of economy of labor very favorably. I have by this method removed ton after ton of honey per day, always choosing the days when the bees were flying freely; and although the time chosen is the close of the season, so that one extracting will do in the place of two or three, I have never used for this purpose a tent over the hive (we are provided with your folding bee-tents, and would not be without them, however, for some other operations). The fact of the matter is, a practiced hand will, by this method, remove the honey and place the cover on the brood-nest in less time than any one man could brush the bees from the combs, and the hive is closed, and you are away to the next one before the robbers get started. Another thing, this method doesn't hang fire. There is no escape to get choked or clogged by dead bees, and no smothering of the workers. Of course, it is a self-evident fact that our cases must be bee-tight everywhere except at the cones, to prevent robbing; but we take it for granted that such is the case with others as with us.

Monroe, Ia., Nov., 1893.

J. A. NASH.

[One objection to your plan occurs to us, and it is this: By the shake-out plan there will be a few bees left, and these, according to our experience, will be for the most part young bees. Now, when you tier up these cases in various parts of the apiary with a bee-escape, they (the young bees) will be lost on emerging from the cones. Perhaps in telling how this is with you, you would also be glad to tell us why you prefer the shallow brood-chamber. As you are a practical bee-keeper we should be glad to hear from you farther, as we believe you could give us many practical hints.]

HOFFMAN FRAMES DISCUSSED; V EDGES.

DR. MILLER HAS DECIDED THAT HE WANTS NO LOOSE HANGING FRAMES.

Quite a number of my hives are getting too poor to be longer used, and well they may, for most of them have been in use 25 years or more. If they had been kept well painted, no doubt they would now be in a good deal better shape. But I think it possible that they are right who think that a hive without paint is better for the bees. Even if a painted hive is just as

good for the bees, I doubt the economy of painting, for wouldn't the amount of painting needed in 25 years cost more than a new hive-body? But I suspect I made a mistake in not having the covers painted. A painted cover is less likely to warp and check.

Most of my frames are 18 by 9. Years ago I got started in that size, having bought out J. Vandervort, the foundation-mill man, when he left Marengo. I don't think the difference between that size and the standard Langstroth size amounts to much; but while changing I may as well be in fashion with the rest of the fraternity. So practically I am to adopt a new hive; and as it will probably be for life, it will readily be seen that I am deeply interested in the whole question of hives and frames.

Most important to decide is the frame. As to size, 17 $\frac{1}{2}$ by 9 $\frac{1}{2}$ seems so generally accepted that I feel pretty safe in adopting it. I should prefer something standard to something that is better, if the latter is only a very little better. But after settling on the size, the rest of the way is not so clear. There are several things to be decided, and there is no long-settled standard. As to some things I am pretty well settled, but not so much so as to others.

I feel very sure that I don't want a loose hanging frame. I've tried them very thoroughly for a good many years. With loose frames, exact spacing is an impossibility. Even approximate exactness is not compatible with rapid handling. Space too far apart, and you have brace-combs in plenty. Space too close, and the space is filled with propolis. Then the spacing differently at different times makes trouble. Here's one of the troubles that's not always noticed: Two combs facing each other are filled with honey, and sealed. Then the frames and spacing are in some way changed, so that there is quite a space between the sealed surfaces; and, the harvest crowding, the bees commence the new cells directly on the sealed surface. That makes it just the same as so much wood under the first capping, for the bees will never uncap it. With loose hanging frames, no matter how carefully spaced, if the hive be tipped up and a look taken at the bottom-bars, it will be seen that the spacing is any thing but regular, some of the bottom-bars having nearly an inch space between them, and others touching. At least, that's the way mine are.

I know there are some who prefer to have brace and burr combs, but I think the great majority don't want them. I'm sure I don't. They seem to me dauby, wasteful, and troublesome. With brace-combs you can not handle frames rapidly without killing a great many bees. There may be something in the argument that bees will more readily go up into the supers if plenty of waste combs are built between. But bees can be induced to go into the supers by better means. As exact spacing seems to be necessary for the prevention of braces and burrs, and as there is no practical way to have exact spacing with loose frames, that seems to settle the question in favor of fixed distances.

How shall fixed distances be secured? It is, perhaps, harder to be settled on that point than on any other. You, friend Root, have settled upon the improved Hoffman. That makes a strong argument in favor of adopting it, for two reasons: First, I am sure you have done so after careful thought as to what is best; and, second, I would rather have what is likely to be standard and kept regularly in stock. But after making a pretty fair trial of the Hoffman, and, to a less extent, the improved Hoffman, I must say I am not greatly in love with the improvement.

The improvement consists in having a space between top-bars the entire length, thus having less chance to kill bees, and having the frames rest on folded tin so as to slide easily. Theoretically that looks like an improvement, but in practice it has not seemed so. Whatever the reason may be, I find it as easy to slide the old-fashioned Hoffman top-bars on the wood rabbits—at least, it seems so to me. The number of bees killed by the ends of the top-bars, where they touch, is not very great at most; and, being thus closed, there will be no propolis deposited on the rabbit. Will not the little channel, back of the tin, be in time entirely filled up with propolis? Unless I see some objection other than I now see, I want the ends of the top-bars to be close-fitting.

The improved Hoffman has the upper ends of the end-bars close-fitting, and one side brought to a sharp edge, no doubt with the view of killing fewer bees. Theoretically, one would expect the angle thus formed to become filled with propolis. I understand there is no such trouble, practically, at Medina. There is at Marengo; and if, with time enough, that angle is not filled full at Medina, I shall be greatly surprised; and, when thus filled, it will be worse than having both edges of the top-bar full width, because a surface of bee-glue is worse than a surface of wood.

With frames spaced $1\frac{1}{2}$ from center to center, I feel pretty safe in saying that the main part of the top-bar should be $1\frac{1}{4}$ wide. The reasons, I gave not long ago in GLEANINGS; namely, that, with $\frac{1}{4}$ inch between top-bars, there was the greatest freedom from brace-combs.

I think I want the top-bar $\frac{3}{8}$ thick. It seems to be quite generally conceded that a thick top-bar helps to prevent brace-combs. Let me say here, that I believe that the prevention of brace-combs goes a long way toward preventing burr-combs over top-bars; for if brace-combs are started between top-bars, it seems easy to continue them upward as burr-combs.

Even if a thick top-bar should make no difference as to braces and burrs, I still think there is good reason for having $\frac{3}{8}$. An inch might be better, but I suppose it would be a good deal more expensive, and $\frac{3}{8}$ will do very well. One reason for a thick top-bar is, that a thick one will not sag. And if your top-bar sags, away goes exactness of space between top-bar and whatever is placed over; and without exactness of space, away goes exemption from burr-combs. Another reason for a thick top-bar is, that I believe it is not well to have sections too near the brood-combs. When I used wide frames to hold sections, I practiced putting a frame of brood in the upper story between two wide frames, the more readily to get the bees to work there. If left there till the bees commenced sealing the sections, they were always sealed dark. So I believe it is well to have the sections farther from the brood-combs by means of a thick top-bar.

So, with my present light it seems to me that I want the old-fashioned Hoffman frame, with a top-bar $1\frac{1}{2}$ by $\frac{3}{8}$. I shall look with great interest for foot-notes at the bottom of this; and if I am wrong in any of my views, I am willing—at least a little bit willing—to be converted from the error of my ways by the editor or any of the friends.

C. C. MILLER.

Marengo, Ill.

[One of the bitterest pills that an editor has to swallow is to have something in print out of place. Well, it seems we dictated two foot-notes to two consecutive articles from Dr. C. C. Miller. By some hocus-pocus they got together and were stuck on the article that appeared on page 845 of last issue. The major part of

the footnote belonged to the article above. As both articles were on kindred subjects, and having read both of them at the time of having made the footnotes, we did not read the one that appeared in GLEANINGS in connection with the double footnote. The reader will, therefore, find the answer to Dr. Miller's article above on page 846 of our last issue. We would have given a cookie to see Dr. M. scratching his head, trying to make out what that footnote had to do with his article. If he and our readers will forgive us this time we will promise not to do it again.]

THE NORTH AMERICAN BEE-KEEPERS' CONVENTION AT CHICAGO.

REPORT CONTINUED FROM PAGE 850, LAST ISSUE.

By E. R. Root.

MORNING SESSION, SECOND DAY.

First in order was a paper from R. F. Holtermann on

THE PRODUCTION OF COMB HONEY.

He regarded, as of prime importance, the man and the locality. One in a poor locality could not compete with a bee-keeper in a good one. As to the hive there was a great diversity of opinion and great diversity of conditions. While he would not lay down any particular hive, he considered any great deviation from the Langstroth hive and frame a mistake. As to the super, he would like an arrangement that would protect all four sides and the upright edges of the sections; but as it was not practicable to insert and remove sections from such an arrangement, he preferred the section-holder device—that is, a single-tier wide frame, without a top-bar. From this the sections could be removed easily; and as the sections came out clean, he preferred it. As to the size of section, that depended upon the convenience of the market, and what the supply-dealer recommended. All of these pointed toward the $4\frac{1}{2} \times 4\frac{1}{2}$. So far this was easy to decide, but not so the width. In Canada, 95 per cent used sections $1\frac{1}{2}$ inches wide; a few $1\frac{3}{8}$, $1\frac{1}{4}$, and $1\frac{1}{8}$; but the demand was increasing for narrower sections. As to the bees themselves, he would not go in so much for beauty as for business. He considered it a mistake for queen-breeders to run so much toward popular demands. Regarding the management, the bees should have plenty of good stores in the fall of the year. Hives should be leveled up with a spirit-level. The greatest cleanliness should be observed. The bottom-bars and top-bars should be scraped, and only such stocks as have bright clean combs should be used. He would use full sheets of foundation, and let the bees swarm, and thought this latter especially was an important factor in the production of comb honey. In the brood-nest he would use starters and hive on these. It was a mistake to try to discourage swarming. No apiary, he believed, should be run entirely for comb honey alone. At the close of the comb-honey harvest the extracting-supers should be put on, and thus avoid unfinished sections.

Some discussion arose as to the advisability of hiving on starters. R. L. Taylor thought we did not want to use them for comb honey. Referring to his experiments in the *Review*, he said that they showed it wasn't profitable. Mr. Holtermann urged that one experiment could not be taken as absolute, and Mr. Kretschmer thought that the honey-flow made quite a difference. N. D. West agreed, and added that he used to favor starters, but preferred now to hive on five combs. Some one in the convention, whose name we did not get, said that Mr.

W. talked like a bee-keeper of only a few colonies. Mr. West was promptly asked how many colonies he had. "Four hundred, in three or four out-aparies." This raised quite a laugh at the expense of the other bee-keeper who had just spoken. Mr. E. T. Abbott, referring to the experiments of Mr. Taylor in the *Review*, could not see the use of being so exact, and thought the taking account of the small fractions of an ounce all nonsense, and a waste of time. Mr. Taylor and others insisted that we must have exactness, so as to compare results.

REPORT FROM THE AUSTRALIAN DELEGATE.

Although this convention was represented by bee-keepers who had come great distances, none had come further than J. W. Pender, a delegate from the Hunter River Bee-keepers' Association, in Australia. At this point in the proceedings the president called on him for an address, to which Mr. Pender kindly responded. It afforded him no little pleasure to meet American bee-keepers, and to have the pleasure of meeting them at this time, in such a representative gathering. As to the bee-keepers of his own country, he was happy to say that they were following after American methods. The Langstroth hive and system had been adopted almost exclusively. As to a country for bees, he believed they had the best in the world. The resources were such that, in three years' time, he thought they could supply the markets of Great Britain. They had in profusion all the great honey-plants of the world, such as white clover, lucerne (or alfalfa), basswood, a great variety of gum-trees, eucalyptus, besides a large number that were peculiar to their own country. The honey was of the first quality—indeed, was so white in color, and so mild in taste, that the buyers in London were suspicious of it—that is, they thought it could not be pure—that it must be sugared. They produced almost exclusively extracted honey, because comb honey, owing to their hot climate, would break down in shipment. Their bees could gather honey nine months in the year, and the average per colony was over 200 lbs., besides increase. One apiary of 17 colonies produced 7000 lbs. of honey, and increased to 90. His own apiary of 40 colonies yielded 960 lbs. in 14 days. A letter of a later date says that this apiary of 40 colonies had produced 3700 lbs., and he expected to get 2000 lbs. more yet. All of this would be obtained inside of 90 days. As to price, they realized about 8 cts.

BURR AND BRACE COMBS.

This was the subject next under consideration. To avoid confusion, President Miller defined *brace-combs* as those that are built *between* the top-bars, and that *burr combs* were those that were built *between* top-bars and the next set of frames or cover. The question was asked, how many did not care for burr and brace combs. The discussion showed that, while a few did not, the great majority did object to them. Opinions varied as to how they might be dispensed with. Some thought it not necessary to have thick top-bars: that a $\frac{1}{4}$ inch bee-space between frames and the next set of frames or cover, and a top-bar not less than an inch, or, better, $1\frac{1}{16}$ inches, would prevent brace-combs; but it was urged that correct bee-spaces could not be maintained unless top-bars were thick enough to be proof against sagging, and that thickness had something to do with the matter. Testimony was not wanting, to show that the wide and thick top-bars did almost entirely prevent brace-combs. The question was then asked, how many thought honey-boards necessary. A show of hands developed a vote of 39 for them and 57 against them. The president here remarked that a

large change had taken place among the members of this convention. It was formerly held that the honey-board could hardly be dispensed with in practical apiculture; and James Heddon, on the floor of this convention a few years ago, had said that, when a brick might be thrown up and not come down, then and only then could the honey-board be dispensed with.

AFTERNOON SESSION.

The discussion on the subject of burr and brace combs was renewed. Mr. Alpaugh, of Ontario, was one of those who held that a $\frac{1}{4}$ -inch horizontal bee-space, with a top-bar one inch wide, would largely do away with burr-combs; nothing would entirely prevent them. When the question was asked as to how far this opinion might be shared by others, 21 held up their hands. Others urged that exact spacing had largely to do with the matter. In response to the question as to what was the right distance for spacing, the general opinion seemed to be for $1\frac{1}{8}$ inches, although some preferred $1\frac{1}{4}$. President Miller called attention to the fact that but little had been said regarding *brace-combs*—those bits of wax between the top-bars. One thing he knew—that $\frac{1}{4}$ to $\frac{3}{8}$ space between the bars made all the difference from none to plenty of brace-combs. He had also found that a top-bar $\frac{3}{8}$ deep was essential in preventing both burr and brace combs. He had tried the thinner top-bars, but found them not as satisfactory.

We next listened to an address by T. G. Newman, on the subject of the scope and work of the National Bee-keepers' Union. At the last election of officers the constitution had been amended in such a way as to allow the Union to exert its influence and devote its resources for any purpose in the interest of the pursuit. Its powers were circumscribed only by its available funds, and it remained, therefore, with the Advisory Board to determine its legitimate work. Prominent among the later suggestions was, that the Union should assume the aggressive, and prosecute adulterators. Much as he approved of that sentiment, he was compelled to admit there were difficulties to be encountered, because of the diversity of laws in several States. What was needed was a general law, enacted by the general Congress, against the adulteration of all kinds of food, applicable to every State. Until this was done, he feared we should labor in vain. Another difficulty was, that the analysis of honey by chemists could not always be relied on. The reason of much of this confusion lay in the fact that honey from different localities varied. He was glad to notice, however, that the professors themselves were endeavoring to overcome all difficulties. Another phase of legitimate work for the Union was, to make its influence felt in legislative halls in preventing unjust enactments; and test cases in every State, where suits were begun against bee-keepers, were desirable. The moral effect of the Union was wonderful. Lawyers, judges, and juries, as well as quarrelsome neighbors, were all influenced by the fact that an organization stood ready to defend us. In an existence of only eight years the Union had won victories to be proud of. It has compelled the courts to render just and fair decisions, and has won valuable precedents.

Prof. H. W. Wiley, Chief Chemist of the Department of Agriculture, Washington, D. C., was present, and was called upon. He thanked the bee-keepers for the kindly interest they had taken in his work. He had recognized that there were two great points necessary for success; first, the production of something; and, second, a market. While a few may keep

bees for love and pleasure, the great majority kept them for profit; therefore the maintaining of a good market was of prime importance. While he could not do any thing in the way of helping the matter of production, he could assist in finding a market; that is, he could prevent, to some extent, competition, by pointing out the adulterated fabrications on the market, and warning consumers against their use. If bee-keepers knew how much they had been cheated by having these mixtures come in competition with their pure goods, they would be surprised. Three years ago he and his associates had purchased in the open market a variety of samples of liquid honey, and found 45 per cent of them glucosed. Glucose was the principal adulterant, and the detection of this article in honey was absolutely certain. Some kinds of plant-lice honey, and certain fabrications made up of sugar fed to bees, might not in all cases be recognized; but the chemists were working on this problem, and would have the matter settled soon. He did not regard sugar syrup fed to bees, and afterward taken as honey, as a pure article. He for one would call it adulterated. In conclusion, he begged to assure the bee-keepers that his scientific brethren would keep pace with the work. He for one would leave no stone unturned to detect every possible adulteration which could be practiced, and thus give to the bee-keepers a pure and open market.

Some little discussion followed the address of Prof. Wiley, in which the matter of Mr. Muth's honey being classed by the chemists as adulterated was brought up. Mr. Muth himself did not have much faith in the analyses of chemists. He had been in the honey business many years, and felt confident that he had never sold nor put up under his labels any thing but the pure honey. It was shown, however, that the samples of honey reputed to have come from Mr. Muth, and which was pronounced by the chemists adulterated, had a spurious label; and some held the view that, as Mr. Muth had established a reputation for honest goods, unprincipled glucose-mixers had counterfeited his label. The feeling in the convention seemed to be strong that, whatever the chemical analysis might show, Mr. Muth himself would put up and sell only the pure honey; and that, if the analysis were correct, Mr. Muth himself had been imposed on by unprincipled parties who had copied his label and name.

At this point the president did a very unexpected thing; but all is well that ends well. He said that, as Mr. Newman, formerly of the *American Bee Journal*, and Prof. Wiley also, were present, between whom differences had formerly existed, it was a grand time to effect a reconciliation in open convention; and thereupon he introduced Mr. Newman to Prof. Wiley. They shook hands amid the enthusiastic applause of the whole convention. Although antagonistic feelings may have existed between bee-keepers and Prof. Wiley, the last vestiges of them, I am happy to believe, had almost wholly vanished at this time. The professor feels that he made a mistake in starting the comb-honey canard, and gave expression to that sentiment at the meeting in Washington. The members of this convention, after having heard him, I think, begin to understand him a little better; and that, so far from being their arch-enemy, he is disposed to do all in his power to give every assistance possible, with all that his position signifies.

We next listened to a paper read by Sec. Benton, from Samuel Simmins, of Mapassa Villa, England, on the subject of "Swarming, and the Prevention of Swarms." First of all, the writer said, it is a natural instinct, whereby young

queens are secured, and new homes are formed. While locality had something to do, also, with the desire for swarming, he considered the general neglect of the apiarist in having poor and crooked combs, where cells could be easily started, had more to do with it. The usual plan for prevention, where comb honey was the object, was to put on the sections before the swarming season had been reached; but this was only partially successful. When running for extracted honey, the problem was far more simple, providing there were plenty of empty combs, and an extra set of brood-chambers; but, after all, prevention was not always secured by such unlimited space. One trouble was, that bee-keepers kept queens that were too old. Young queens should be given, and that during the fall, and not during the time that nature usually gives them at the time of natural increase, and when the bees can least afford to make the change. The plan that he advocated principally in connection with having young queens, was, to put an empty brood-chamber *under* the usual brood-chamber, before the latter became crowded. The frames in the lower chamber had only $\frac{1}{4}$ -inch guides, and surplus apartment was worked as usual above the brood-chamber. Anticipating that some would urge that they could not get the bees to work above with so much room below, he said he had never found the least difficulty.

Quite a little discussion followed the reading of this paper. H. R. Boardman asked the question whether it were really desirable to prevent swarming. In his opinion, it was not. The new swarms would gather enough more honey to make up for the slight annoyance, and the loss of time consequent upon getting ready, and starting a new home. He gave quite a number of instances to show that the new swarm would run away ahead of the parent colony. For instance, one old colony he had on the scales, gathered 5 lbs. a day before it cast a swarm, against 12 lbs. a day for the new swarm later on. Pres. Miller, to bring the matter before the convention, asked those to rise who believed that, for best results in *comb* honey, it was desirable to prevent swarming. Thirty-one rose to their feet.

When the converse of the question was stated, 52 arose. Then Pres. Miller asked those to rise who believed that, for the best results in *extracted* honey, it was desirable to prevent swarming. Two members signified that it was desirable, against 49 who thought not.

R. C. Aikin, of Colorado, favored some system to prevent swarming in the production of comb honey. He said that, in a term of five years, he would produce more comb honey, by running on the non-swarming plan, on the principle of dequeening, than the best man we could pick out in the convention, who would allow his bees to swarm. He would control swarms every time if he could, because, during the operation of swarming, valuable time was lost; but in going on the non-swarming plan we must know how to make the bees work.

C. F. Muth stated that the reason why the new swarm did better was because the old bees were the ones that gathered the honey, and that, as a rule, they went off with the swarm. It was urged, however, by others in the convention, that the whole question as to the desirability of preventing or allowing swarms depended largely on locality—one furnishing long-continued or one with short, heavy honey-flows. The plan that had worked the best in one locality would not necessarily do for another.

Mr. Alpaugh, of Canada, was then asked to give his method of preventing swarming. He smiled somewhat doubtfully, and said that, for comb honey, he did not know that he had any.

For extracted honey he would give an abundance of room and tier up. He did not indorse the idea of Mr. Simmins, that an empty hive placed *under* the brood-nest would prevent swarming. He had tried it, and found it would not work. If he put the empty chamber anywhere, he would put it above. He was then asked to give his system for producing comb honey, in response to which he said he preferred new swarms. He hived them on an extra brood-nest having only starters—starters attached to top-bars, a plump inch wide, and the frames themselves spaced close. Over this he put a queen-excluder and then sections. When he hived on starters there was much less liability of swarming.

As discussion up to this point had been largely on the matter of preventing swarms, some one asked the question as to what was the best method to secure increase, when increase alone was the object. Pres. Miller asked those who considered artificial swarming or dividing the most rapid means for accomplishing this end, to rise. Sixty-three responded.* Then he asked those to rise who preferred the natural-swarming method. No one got up.

EVENING SESSION.

The grading of honey was the first thing under discussion. The plan adopted at the Washington convention was then read. For some reason or other the members seemed to take very little interest, and finally it was voted to take no action one way or the other. This was, no doubt, somewhat of a surprise. Either the convention had got tired of the subject, or else it seemed impracticable to do any thing with it at all. A paper was then read from Mr. Muth, on the grading of honey. He took the ground that any scheme that might be proposed by any body of bee-keepers would not be accepted by honey-buyers and commission men generally. Their own markets required special grading, and they would adhere to whatever suited their purpose best. He gave some good suggestions on putting up extracted honey for market. It was surprising, the lack of knowledge that bee-keepers seem to show in putting up their honey. A short time before, a consignment of extracted honey had been shipped to him, put up in barrels that had previously been soaked with water to make them tight. This was the worst thing that could have been done, for it was a well-known fact that honey would absorb water. When the honey-buyer or commission man came to make out his report, that so many pounds had leaked out, the shipper would complain, and begin to doubt the statement of the consignee, and the result would be trouble all around. Barrels should be thoroughly dried, and the hoops driven down before putting honey into them.

QUEENS GETTING THROUGH PERFORATED ZINC.

DR. MILLER SAYS THAT THOSE QUEENS WHICH GOT THROUGH PERFORATIONS $\frac{1.65}{1000}$ WIDE WERE REARED DURING SWARMING TIME.

That letter of Dr. Tinker's, on page 829, together with the lengthy footnote, makes very interesting reading. According to the testimony there given, it appears that the best size for queen-excluding zinc is somewhere not less than $\frac{1.65}{1000}$ of an inch, and not more than $\frac{1.85}{1000}$, a range of $\frac{.20}{1000}$ of an inch to settle, or about $\frac{1}{50}$

$\frac{1}{50}$ of an inch. I would say that, if all my excluders had perforations of the same size as the sample sent, then I am of the opinion that $\frac{1.65}{1000}$ is not too small, for I had no evidence that the workers were hindered in passing through, unless possibly more loads of pollen were found lying loose than if no excluder had been there.

But after reading the conclusions reached—conclusions which seem to have been reached with care—and after comparing with them my own experience, I confess I am all in a muddle. Without further delay, however, I'll try to comply with your implied request, Mr. Editor, "to give a history of that queen which got through perforations only $\frac{1.65}{1000}$ inch wide." There were several of her—just how many I can not positively say. Dr. Tinker has given a diagnosis of the case, according to which the queens were abnormally small, raised in a time of dearth by removal of the queen from a strong colony. Couldn't have got much farther off, doctor, although your diagnosis may be perfectly justified by the data you had to work on. Instead of "a time during the season when little or no honey was coming in," the queens in question, at least those which were virgins, were raised during a flow of honey, never exceeded during my experience, if, indeed, it was ever equaled. Instead of the queen being removed, thus forcing the bees to rear another, in every case the queens were the result of natural swarming, pure and simple. As to their being undeveloped, and thus below the normal size, I can not speak minutely on that point, as I had no means of measuring their size, even if I had thought of such a thing; but measuring by the eye after seeing a good many queens, I should say they were fully up to the average size. One of them, at least, was an old laying queen, and one of the virgin queens was daughter of a queen sent me from Florida by Dr. J. P. Murdock, a queen remarkable for her large size.

Other queens tried, and tried repeatedly, to go through the excluders, and failed. Why that should be, or why queens of full size should go through when they ought to have stayed in, according to all measurements, are things I don't pretend to say. You, gentlemen, are the lawyers in the case, the judge and the jury, and I throw myself on the mercy of the court. I await with much interest your verdict, whether it be that there were some perforations larger than others, or that I was mistaken entirely in my observations, or that there is some other way of explaining what seems to be inexplicable. All that I know at present is, that swarms issued accompanied by these queens that went through the excluders, some of the swarms being hived and some of them escaping to parts unknown.

THAT SUGGESTED IMPROVEMENT IN FRAMES.

I'm glad to see full discussion as to what is best in a frame, and friend Scudder's letter on page 830 is quite interesting. If the extreme ends of the top bars do not touch each other, I see no reason why they may not just as well be narrowed down to $\frac{3}{8}$ as to be left wider. That will leave a space of $\frac{1}{8}$ between; but at that point there is not much likelihood that brace-combs will be built. But I believe I would rather have the ends $1\frac{1}{2}$ than $\frac{3}{8}$. Then there will be no need of the tin rabbit, and it may be a question whether there is need of more finger-room to handle the frames. Even if a space of $\frac{3}{8}$ be allowed to take hold of the frames, will it not be necessary to pry them loose before taking hold of them? and, while prying loose, may we not just as well pry them apart far enough to take hold of them readily? Is that open passage through the ends of the top-bars an advantage? Do the bees go directly up the

*As there was an attendance at most of the sessions of at least 200, it must not be understood that all voted on these questions.—Ed.

end of the hive to the super without going through the brood-nest?

Friend Scudder objects to a top-bar $\frac{7}{8}$ thick, because bees don't like to travel so far. I have had no difficulty in getting my bees to work through a greater space, making it worse by having two $\frac{3}{8}$ air spaces to cross. If the bees go up the end of the hive, then the thickness of the top-bar will not matter. There is surely a little more danger of sagging with $\frac{7}{8}$ than with $\frac{3}{8}$; and, as I have already said, if there were no need of thickness to prevent sagging or brace-combs, I should still want the greater thickness as security against darkening the sections by too great nearness to the brood-nest.

DRONE-CELLS FOR QUEEN-CUPS.

Friend Cormal, who gives the ingenious way of handling royal jelly on page 811, will hardly object to drone-cells in which to start young queens, when he remembers that just as large queens are started in worker-cells as in queen-cells. In neither case are the bees limited to the usual size of a worker or a drone cell, such cell not being really occupied by the young queen at the last, but only a prolongation of the cell. At least, I suppose the drone-cell would be used much as the worker-cell.

Doesn't friend Cormal make the diameters of cells too small? Ought not the worker to be $\frac{3}{16}$ instead of $\frac{5}{32}$, and the drone $\frac{7}{32}$ instead of $\frac{3}{16}$?
Marengo, Ill. C. C. MILLER.

[Well, now, doctor, we were in hopes you would say that those queens were reared under abnormal conditions, and would admit that they were abnormally small; but when you say they were reared under the swarming impulse, we are forced to the conclusion that a few good queens, even when reared under the swarming impulse, may be smaller than the average of their sisters. We have carefully measured with a micrometer every row of perforations in our zinc; the largest perforations are not as large as those of Dr. Tinker's lot; and the smallest perforations are about $\frac{15}{1000}$. But with only two exceptions do the holes vary in size from the 165 mark. In one, we believe the hole measured 169 and the other 164. The holes that your queen got through were $\frac{165}{1000}$; hence we must conclude that zinc can't be made to exclude all queens, but it does the great majority, there is no doubt.

We do not think so much of that Scudder top-bar as we did. The foreman of our wood-working building says it is a very expensive thing to make, because the last cuts—those which narrow up the ends of the top-bars to give the finger room, would have to be done one at a time, and, worse than all, each top-bar would have to be handled separately. This would make them so expensive that very few bee-keepers would want to buy them. We can narrow up the ends of the top-bars providing we do not have to have a different thickness—that is, any thing thicker than $\frac{3}{8}$ inch. Hello! here is an article from Dr. Tinker, on the zinc question:]

THE PERFORATED-ZINC QUESTION, AGAIN.

THE SLIGHT DIFFERENCE IN SIZE OF DIFFERENT VARIETIES OF BEES; THE EXACT RIGHT SIZE.

Friend Root:—I was greatly interested in your note to my article on page 830. I note the slight difference in our conclusions about the "exact right size" the perforations in queen-excluder zinc should be, and can account for the same only on the suggestion you have given; viz., that my Syrio-albinos may be a

little larger than the average Italian. There is certainly a small difference in the size of bees, not only in the same colony, but between different strains. I have had but one colony of Carniolans, and I am sure they were no larger than the bees of my strain. As my Syrio-albinos have been frequently crossed with drones from choice unrelated Italian queens, this will account for their large size and great working qualities. The most of my queens are directly descended from a pure Syrian mother, and I believe the stock to be invaluable. From the frequent crossing with Italian drones, the strain is practically Italian, although the bees still show their Syrian origin after some nine years of breeding. Thanks for your reference to them.

From 11 that has been said it appears that queen-excluder zinc may vary in size all the way from $\frac{15}{1000}$ to $\frac{17}{1000}$, and give good results. It only remains for bee-keepers to know that no really good and valuable queen can get through such zinc.
Dr. G. L. TINKER.
New Philadelphia, O., Nov. 14.

LADIES' CONVERSAZIONE.

SWARMING VERSUS NON-SWARMING.

A STRONG ARGUMENT IN FAVOR OF LETTING BEES SWARM.

Ed. Gleanings:—As I have seen no reports from this part of the world, I will send mine to swell the list of "Reports Encouraging." Last fall I had 49 colonies of Italians in eight-frame Dovetailed hives. We left them on their summer stands on Heddon hive-stands. We put a piece of heavy ducking cut to fit the hive over the frames, and then set on the empty super, and put in a chaff cushion big enough to fill it. The cover was then put on, and nothing more was done until about the middle of March, when we looked them over, and found that there had been no winter loss, and we had no weak colonies. We found two queenless ones, however, and doubled them up on others. The cloth was plastered down tight, and the hives were dry and lots of brood started. Some were short of feed, so we fed out about 300 lbs. of honey that we had stored away in brood-combs for that purpose. We put out four combs a day until we used them all, and then fed 150 lbs. of sugar.

Our first surplus honey came in on the 15th of June, and almost at once the bees made preparation for swarming. I set apart 25 colonies for comb honey, and ran the other 22 for extracted honey. I wanted honey more than bees, and determined to keep the comb-honey bees at work and not let them swarm. Every Monday I went through those 25 colonies and cut out all the queen-cells. I continued this treatment for four weeks. In the meantime the bees loafed and did but little except gnaw the foundation out of their sections. Finally I concluded that they could do no worse if I let them swarm, so I let them go and hived the swarms in eight frame hives on four frames with two-inch starters of foundation, and added four frames of honey from their old hive. I put on supers at once, and they began to carry the honey up and store it in sections. Before the season ended they had made me over 50 lbs. of beautiful honey to the hive. Henceforth my bees shall swarm as soon as I can get them to do so, unless GLEANINGS can tell me how to make them go to work.

My 22 colonies made 4640 lbs. of honey, as

nice as I ever extracted. I increased some by artificial swarming; but the extracted honey all came from the spring count of 22 colonies.

I have now to show, from my 47 colonies, spring count, 1300 lbs. of comb honey; 4640 lbs. of extracted honey and several pounds of wax, and 87 colonies of bees. I began four years ago with three colonies and Root's A B C, having never seen the inside of a hive before. Last year I had to treat for foul brood, which put me back; but by a close study of A B C and GLEANINGS, and a good deal of hard work, I am ready to handle my bees for profit.

What has become of the "Ladies' Conversation?" I am afraid the bee-keeping sisters are backward about giving reports. I hope we shall hear more from them.

Mancos, Col., Oct. 21. MRS. A. J. BARBER.

[Your experience is directly in line with what was said at the "Big Convention" at Chicago. The great majority agreed that much more honey would be secured by letting bees swarm; that it was bad policy, from a honey point of view, to try to prevent nature's way of increase. Non-swarming would be very nice; but so far it means, in most cases, little or no honey.]

A HOOSIER LADY MAKES INQUIRY FOR RAMBLER.

I had the pleasure of being at the grand beekeepers' convention at Chicago a part of the time, and learned a few of the leading beekeepers whom we have been reading about, and heard our brother from Australia, which was all very interesting indeed. But my curiosity was not quite satisfied, for I saw no one with an umbrella strapped across his back, who claimed to be the Rambler. Then I came to the conclusion he must look so much like other people I did not recognize him. So I have kept watching and watching through the paper to hear some one say they met Mr. J. H. M. at the convention, but have failed so far; so I should like to know what he was about, to let such a convention pass by without his being there. Surely Mr. Wilder has led him astray, or something terrible has happened to him.

A HOOSIER.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

PICKING UP ROYAL JELLY WITH A PIPETTE, OR DROPPER. NOT A NEW IDEA.

On page 811, in your footnote to Mr. Jas. Cormal, you say: "Our friend Mr. Cormal has struck a very ingenious way of extracting royal jelly from the cell-cups. We never before thought of the dropper (or, as it is sometimes called, pipette) for this purpose." In 1888 or '89 I wrote you an article for GLEANINGS in which I informed you of the success I had in the use of the dropper, such as is used for dropping medicines, in transferring queen-larvæ from queen-cells which I did not want, and substituting young larvæ just hatched. I also wrote to Dr. Tinker at the same time about my success with the dropper, as he and I were then experimenting. You thought so little of the article you did not publish it, but wrote me you did not understand what I meant, and, not having time to write again then, it passed off. Since then I have continued to use droppers of different sizes for removing larvæ I don't care for, and substituting such as I do want, in queen-cells, and also for transferring royal

jelly. If you are careful in transferring, with a suitable size of dropper, the royal jelly and larvæ just hatched to drone-cells, as with Mr. Fooshe, you will seldom fail in getting bees to accept them, and they produce large fine queens too.

ABBOTT L. SWINSON.

Goldsboro, N. C., Nov. 10.

[You are probably right, but we do not remember of your having written regarding the pipette; but it seems we must have published the article, from what follows below from Mr. H. L. Jeffrey:

On page 811 you say, "We never before thought of the dropper." At least four years ago, may be five, I tried the dropper. The idea I got out of GLEANINGS, and I found it good for thin jelly, also tiptop to mix warm water with the thick jelly to make it usable in cell-cups. I have seen Mrs. M. E. Tanner, North Woodbury, Ct., suck the jelly up with a pipette, as far back as 1890. She got it out of GLEANINGS. H. L. JEFFREY.

Woodbury Ct., Nov. 5.

This illustrates that, whatever wisdom or knowledge the editor may lack, the subscribers of GLEANINGS are fully capable of making up the deficit. We are always glad to be corrected. Both of the letters above testify to the value of the dropper, and there can be no doubt but that it is a good thing; and the queen-breeder who fails to give it at least a trial may be missing something of value.]

SHALL WE LET THE MOISTURE FROM A COLONY, PACKED IN SAWDUST, ESCAPE THROUGH A VENTILATOR?

I am but a beginner in the bee-keeping business, consequently I know but little about it. But the experience I have had has taught me that, in putting up bees for the winter, two things should be had in mind; first, keep the bees moderately warm; secondly, allow foul air and dampness to escape from the hive. Now, the question is, How shall we combine these two principles? My plan is as follows: I use the Hill device, burlap, 1 1/2 yards of cheese-cloth, and sawdust, the latter coming up to within an inch of the top of the super. I then place in one of the back corners of the super a ventilator, which is a block of wood 1 1/4 inches long, with a 3/8 hole through the center; wire cloth is tacked on one end, and four wire nails are driven in so they stand out 1/2 of an inch, to stand on the tin that holds the section-holder. Newton, Nov. 6. C. H. SHERWOOD.

[We are afraid your ventilator will sooner or later lead you into trouble. We have tried what amounted to practically the same thing, and have lost colonies. The difficulty seems to be that an open ventilator let the heat escape too rapidly. Better use chaff cushions, and then if, toward spring, they become damp, open up the hives on the first warm sunny day, and let the cushions dry out. The moisture will usually escape slowly through the cushions, but not fast enough to allow heat to escape—the very thing we must economize as much as possible.]

THE RAISING OF SWEET-CLOVER SEED; A FEW HINTS FROM H. R. BOARDMAN.

There is no reason why the raising of sweet-clover seed will not succeed if treated the same as other clovers and grasses should be treated to insure successful seeding. But don't be deluded into the general notion that a few seeds scattered carelessly over the field will be all that is needed to stock it, to the exclusion of every thing else, for you will be disappointed in getting a seeding unless you take as much pains with it as with any other clover; and I advise a liberal seeding, not less than 8 or 10 quarts per

acre. When once it gets possession it is a persistent stayer unless you feed or cultivate it out: but if let alone it will stay for years. Cutting it only seems to encourage its growth.

I have a good seeding now, sown during the late freezes in March, with winter rye. I think that as good as any way of seeding. It has made a good record with me this summer as a forage crop for pasture. But my stock have eaten it so closely that it will not reseed, and I shall probably lose the seeding for the future. I shall be pleased to answer any questions in regard to sweet clover, through GLEANINGS.

H. R. BOARDMAN.

East Townsend, O., Oct. 25.

BINDING ON THE SIDES INSTEAD OF ON THE ENDS OF ENAMELED CLOTHS.

It would be a great improvement to the enameled quilts if the metal bindings were put at the sides instead of the ends, so that the quilt could be rolled up over a portion of the frames in taking one out. As it is now made, the entire quilt has to be removed in order to take one frame out, exposing the tops of all the frames to robbers, when perhaps only one frame is required to be taken out.

W. B. McFARLANE.

Colyton, N. S. W., Australia, Sept. 14.

[The objection to having the binding at the sides was because there was trouble in lifting frames out of position. This was especially true of the old metal-cornered frames on the metal rabbets. With the new Hoffman or fixed frames there would be no trouble; but why have any enameled cloths at all? We do not use them on our new hives. The new top-bars and the small bee-spaces render any cloth or quilt unnecessary.]

PROF. COOK SOON TO BE A RESIDENT OF CALIFORNIA.

There is no longer any doubt in regard to Prof. Cook's coming to California. In a letter of recent date he states, "I shall be with you, body and heart, about Jan. 1." It is not necessary to tell Californians who Prof. Cook is, and the grand work he has accomplished in the field of science. Horticulturist and agriculturist, as well as apiculturist, will rejoice at his return to the Pacific coast, and all will join in giving him a right royal welcome.

GEO. W. BRODBECK.

Los Angeles, Cal., Oct. 21.

[We have known for some time that we of the East were about to lose one of our best and most valuable men in the personage of Prof. Cook. For various reasons the change has seemed necessary. He has been an exceedingly busy man, and overwork, we fear, has told too heavily upon his health, rendering a change of climate and a change of work necessary. What will be Michigan's loss will be California's gain.]

HOFFMAN FRAMES, NEW AND OLD STYLE. PROF. AGAINST BURR-COMBS: SELF SPACING SATISFACTORY, BUT BOTTOM-BARS TOO NARROW.

Friend Root:—I see you are wanting reports on self-spacing frames, so a faultless self-spacing frame will be found out; and I do hope you will succeed, and send out such a one in 1894. I will give you my experience on the Hoffman frames, as I have about 900 in use. I have about 200 of the old style, and the remainder are of the new style. The old style have given good satisfaction so far as brace and burr combs are concerned; but the end of the frames and the wood rabbets become so propolized in

time that they are hard to manipulate; however, with the tin rabbets it is not so bad. Now, with the new style Hoffmans they have also given good satisfaction in regard to brace-combs. Where they were used exclusively there were scarcely any braces visible; and what few there were, were so small that they were very little trouble.

Now I'm done with the top-bars. Next for the side-pieces. They are all right to suit me, with the exception of the parts running up on to the top of the top-bar. They are rather light, and are liable to split off.

Now as to the bottom-bar. To this I have the greatest objection concerning the new-style Hoffman frame. They are all right to use in the bottom part of the hive, or where queen-excluders are used; but here is the trouble: Excluders are too expensive for one to be used between each body, and, furthermore, there is no more use for a second or third excluder on one hive than there is use for a fifth wheel on a wagon; and if they are not used, the bees will build down against the bottoms. Hold on! that's just what we want them to do; but they will not hold on, and neither will they stop their work until they have it built down on the sides of the bottom-bars, and against the top-bar of the frame underneath.

Deer Plain, Ill., Oct. 25.

F. X. ARNOLD.

[This is in line with the other reports to the effect that the new-style Hoffman top-bars are an improvement over the old style with widened ends on wood rabbets. If our friend Dr. Miller, who seems to have a liking for the old style, will try the two kinds, we think he will come to the same conclusion as Mr. Arnold. Regarding the bottom-bars, that is a point upon which we should like to hear from others of our subscribers. So many have expressed themselves as satisfied with the $\frac{3}{8}$ -square bar, that, before making a change, we should like the counsel of others.]

BROOD-FRAMES—WHAT IS THE BEST STYLE FOR PREVENTING BURR-COMBS?

Mr. Root:—I should be glad to have you answer the following questions:

1. In using the eight-frame Dovetailed super for extracting—the same to be used for brood-chambers, interchangeably—what width and thickness of top-bar, and what width and thickness of bottom-bar, do you think would be best to prevent burr-combs between the two parts of the brood-chamber, or between two extracting supers—all of the frames to be self-spacing? (I have used and been in love with that principle too many years to drop it now, even in extracting-supers.) Have you tried bottom-bars for extracting-supers $\frac{3}{8}$ in. wide and $\frac{1}{2}$ in. thick?

2. Supposing the width of the top-bar to be $1\frac{1}{8}$ in., of what thickness must it be to be proof against sagging (in shallow frames)?

3. I can't see any advantage in having frames so that you can "throw them on the floor" without breaking. With shallow frames and heavy foundation, wouldn't one have combs practically just as good as though they were wired?

4. With the bee-space on top $\frac{1}{4}$ in., don't you sometimes have trouble with the bottoms of section-holders sagging, and so destroying the bee-space where no honey-board is used?

5. Is basswood the stiffest kind of wood that it would be practical to use for the bottoms of section-holders? Which should be the heart side—the bottom, the top, or the side of the bottom-bar?

JOHN S. CALLBREATH.

Rock Rift, N. Y., Aug. 30.

[1. The frame that we consider best for pre-

venting burr-combs is the self-spacing Hoffman. Top-bars are $1\frac{1}{8}$ in. wide and $\frac{1}{8}$ thick; bottom bars $\frac{5}{8}$ in. square.

2. Half an inch, probably; but that thickness, according to some reports, does not exclude burr and brace combs as well.

3. There is no need of making frames so that they can be thrown around. The thickness and width of top-bars is for other reasons.

4. One-fourth seems generally to hold up.

5. Basswood is the stiffest and the cheapest.]

AN OPEN LETTER TO DR. MILLER.

My Dear Doctor:—I see in your "Stray Straws" a "straw" that points this way. We are very glad to be remembered; but in the name of 85,000 inhabitants I want to protest against some of your spelling. You write St. Jo. Now, in the eyes of the thrifty people of this "Electric City," you have committed an almost unpardonable offense. To write St. Joe is bad enough; but to call this grand old St. Joseph "Jo" is a little too much. Just think of it, to call a thrifty city like this one "Jo"—a city whose jobbing trade reached 125 millions in 1892; a city with 329 factories; a city that makes more overalls than any other city in the U. S.; a city with 10 banks, representing millions of capital, none of which closed a door or caused the loss of a penny to a depositor during the late panic; a city with a clearing-house report of over 100 millions last year; a city with 30 miles of electric street-railway in operation; a city with 50 churches, and fine public schools—is it not a little too much to dub such a city "Jo"? Then, when you come to think of it, who would write, "Jo and Mary went up to Jerusalem"? Now, doctor, if you will not call us names any more, and will come out here next fall, we will try to "heap coals of fire" on your head by seeing how well we can treat you. We are sure you will never think of calling this city "Jo" again after you learn of its thrift, and become acquainted with some of the large-hearted people who make their homes in this fertile valley. Fraternally yours,

EMERSON T. ABBOTT.

St. Joseph, Mo., Nov. 15.

[Although friend Abbott treats this matter in a rather Jo-king style, we feel that his point of order is well taken, and that we ourselves are partly too blame. People are so familiar with "The Hannibal & St. Jo Railroad," etc., that the nickname is rather more familiar than the full name. But we'll not nickname you any more, Bro. Abbott—

"No, no, no—not for Jo,"
as the poet says.]

DOOLITTLE, DOOMUCH.

Doolittle is his name,
And widespread is his fame;
For as to bees, not one
Can beat what he has done.
So let us change the name
To which by birth he came;
Let's call—why, don't it fit?—
Doomuch him by merit!

C. N.

RELIGIOUS TRIUMPHS IN SUDDEN DEATH.

C. C. VAN DEUSEN, AND HIS SUDDEN DEATH.

The following further particulars in regard to the sad death of our friend and his wife are taken from the *Michigan Christian Advocate*:

If any one should ask, "Does the religion of Jesus meet every need of man?" I want to answer, yes, and stands every test of human experience. Never

was I more impressed with this blessed truth than when I stood by the side of Mr. C. C. Van Deussen, of Sprout Brook, N. Y., who was so terribly injured in the dire disaster on the Grand Trunk in this city on the morning of the 20th. I was at the scene very shortly after the collision. It was dark and raining; the light from the burning wreck, the moans from the wounded and the mangled ones here and there in buildings and in cars making a scene we can never forget. I entered a caboose; and as there were a great many wounded in it some one accosted me, asking me, asking, "Are you a surgeon?" to which I replied, "I am a Methodist minister." Instantly one wounded unto death said, "I want to see you; come here." At once I was by his side. He said: "My name is C. C. Van Deussen, of Sprout Brook, N. Y. I'm a Christian, and I'm nearing home. My wife has gone, and I'll soon be with her." (His wife thirty minutes before had gone up in a chariot of fire.) "She was a good woman, and a teacher of the infant-class in the Sabbath-school." As I inquired of him as to his personal salvation he replied: "I am in the hands of my Savior, and I'll soon be with him." A physician entering the car, I called him at once to this brother's side. After examination he calmly looked the doctor in the face and said: "How soon shall I be with Jesus?" He very deliberately talked of his affairs, the disposition to be made of his property, saying, "I should like to live for my children, but I must go. In my Father's house are many mansions." When he was told the remains of the precious Christian wife and mother were in the hands of the undertaker, he said, "Send us back together." Knowing he was among strangers, he said, "Dominie, don't leave me, and I promised he should not be left alone. We conveyed him to the Nichols Memorial home, a hospital of which Battle Creek may well feel proud, and arranged him as comfortably as possible under the circumstances. Soon the chill and darkness of death approached. Said he, "Dominie, is the sun shining?" "No, my brother, it is cloudy and raining." "I thought it was growing dark, and I don't breathe as easily as I did." It was death. A little longer, and husband and wife were re-united, while back in the home in New York there were two children bereaved of father and mother at once. I never saw such calmness and peaceful triumph in the presence of death in all my ministry of nearly twenty years.—REV. G. B. KULP.

OURSELVES AND OUR NEIGHBORS.

Are ye able to drink of the cup that I shall drink of, and to be baptized with the baptism that I am baptiz'd with? They say unto him, We are able.—MATT. 20 : 22.

In the *American Bee Journal* for Nov. 16, our good friend York, the editor, has seen fit to print a communication from one of our unbelieving friends. This communication was called forth because friend York mentioned editorially the way in which Mrs. C. C. Van Deussen met death with such Christian fortitude. Our good friend York evidently considered it not best to undertake to argue against this fling at the Christian religion; and, as a rule, I think it is not well. There is, however, one point in it to which I wish to call attention. Let me quote just four lines. The writer says:

"Did this poor woman's pitiful prayer drive God frantic as it did the crowd? Does this not prove that man is less cruel than God, or that God is a myth, and prayer futile?"

Perhaps I should not think so much of this were it not true that, years ago, I myself—yes, A. I. Root—used these same or similar arguments; and I took a certain kind of satisfaction in shocking Christians, and in laughing at those whose faith was weak, as I repeated something that I had heard or read, or quoted from prominent skeptical writers. This was toward twenty years ago, however. One reason for my sad blunder at that time of my life was because of a misapprehension. Perhaps Christian teachers were somewhat to blame for that misappre-

hension; but a great part, if not the greater part of the blame, lay on myself. I knew I was inconsistent. I knew in my heart that I demanded more of other people than I was willing to conform to myself. Twenty years ago we used to hear things preached from the pulpit that we do not hear now—at least, I do not hear them now. I think that some ministers of the gospel in those times needlessly and foolishly exposed themselves to charges of inconsistency, that unbelievers who possessed a pretty good share of common sense were not slow to take up. The mature Christians among our readers perhaps see, without telling, the fallacy in the above quotation; but I firmly believe there are many—yes, Christians—whose faith is weak, who may even yet be misled by such sophistry; and I am pretty sure, too, there are many boys and girls who do not stop to consider, or who have not been taught to consider, the great blunder our poor friend is making. Let us look into it a little.

Probably all of you have read the account, at least somewhere in print, of the wonderfully heroic way in which this good woman faced and met her death. The writer takes the ground that her prayers were unanswered; and he also takes it for granted that she prayed only that she might be delivered from the terrible scorching flames. If you will read the account again on page 829, Nov. 1, you will see that nothing of the kind is said. Very likely, at the *outset* she prayed for deliverance from that awful trial, just as our Savior prayed in the garden, before his coming crucifixion; but his prayer ended, as you remember, with the words, "*Thy will, not mine, be done.*" We know this woman was a Christian, and we have very good reason to believe that her prayer was of a similar nature. The Christian whose burden of prayer is, that God will spare his life, or give him long life, is no Christian at all; and the person who expects that, because he belongs to a church, he is to have a charmed life, and be spared from the accidents and emergencies that fall to the general lot of mankind, is worse than no Christian at all. He is a bundle of selfish bigotry. The whole Bible is full of warnings that he who takes up the cross must bear grievous trials. You remember Dr. Watts' little hymn—

Am I a soldier of the cross?

There is no Christianity at all without bearing crosses and trials—yes, terrible trials; and if a Christian is not a *soldier*, and a brave one at that, he is not a Christian. When the people were frantic because they began to see they were powerless to save her, she, like one of the martyrs of old, exhorted and encouraged them. She said to them, "I am a Christian." Suppose she had blamed them at this terrible moment, and thrown reproach back into their faces, that they were letting a woman die in that horrible manner. I beg pardon for suggesting such a thing; but I do it to show you what a glorious thing it is to have a Christian's hope, that goes not only through life, but carries us through death, and such a terrible death as that. We have every reason to believe she used common sense as well as faith in that supreme last moment. She recognized the fact that those brave men would have given their lives to save her, if it had been of any avail; but it would have done no good; it would only have made other victims for the devouring flames. As her lips were seen to move in prayer, there can hardly be a question but that it was for grace and strength to *go through* the terrible ordeal. Our Savior prayed in a similar way; and when his physical torture was at its greatest height, he gave voice to that plaintive wail, "My God! my God! why hast thou forsaken me?" We

read in the account, "Even the fury of the flames that wreathed her limbs and blistered and curled the white flesh of her arms was powerless to provoke a scream." Who shall say her prayer was unanswered? Why, it seems to me that it must be evident to every spectator that *grace from on high* was given her in a most wonderful manner to bear the trial and a degree of suffering that perhaps falls to the lot of not more than one in ten thousand or more of human beings. "A wild groan burst simultaneously from the lips of the spectators, and strong men wept;" but not a word was wrung from that brave woman. The closing messages to her husband and family were given quietly and with composure. Did her faith waver? Surely not. Who knows what precious passages came to her mind in those last moments? "Though he slay me, yet will I trust him." The account of this heroic way of meeting death speaks volumes to the world for the Christian religion. My good friend, how much would it be worth to *you* to be able to die in that way? Now, pardon me for just suggesting the effect on the world, or the effect on humanity, had she, in her last moments, taken up with the doctrine expressed by that unbeliever. He says, "Did God heed her cry?" And then he adds, "No, no! Has he ever heeded the cries of his children in their hour of need?" And, again, he takes the responsibility upon himself of saying, "No. The long record of horrible deaths which he has inflicted upon his 'children' by fire and flood and storm, by starvation and plague, answer, 'No, a thousand times no!'" Now, suppose this woman's faith had deserted her in her last moments; suppose that, under the agony of such a trial, she had been tempted to complain of God, and had said to that crowd that the Christian religion proved of no avail, and that, as our friend expressed it, prayer is futile. Would such a confession have been comforting to the men? Would it have made those strong men feel better? Would its tendency have been to decrease crime and selfishness and greed throughout our land? Why, the very worst one among you, I am sure, will say, to use the language of our friend, "No, a thousand times no." I think I can, without question, say the verdict of the crowd would have been, "We are glad she died a Christian. If Christianity helps one to pass bravely through an ordeal like that, let us have it, and let the world have it." Another thing, I hardly believe one individual in that crowd thought of blaming *God* for that accident, or even thought of saying that God inflicted these things upon us. We have read of martyrs dying at the stake for the cause of Christ. I feel sure this woman was a model Christian martyr up to the present day. She has been showing us how to live—especially that little Sunday-school class away off in her York State home; and when the time came she was able to show strong men how to die; and, if I am not mistaken, the great railroad companies are moved now as they have never been before, to consider this matter of banishing fire entirely—at least from passenger cars. The mechanical progress that has been made, and which was evidenced at the recent World's Fair, indicates that we as a people are equal to the task of having our cars warmed without fire. If by steam, some arrangements must be made like the automatic brakes, so that the steam is instantly shut off as soon as an accident occurs or is imminent. And electricity should come to the front and take the place of oil-lamps for lighting the cars. Mrs. Van Deusen has not died in vain. She died as did her Master, that we might live in both a physical and spiritual sense.

But let us take up again this foolish and preposterous idea that Christians are to be spared from physical pains and death. In one sense it is true that Christianity tends to relieve suffering—that is, common-sense Christianity. There is a whole string of the most terrible diseases that afflict humanity, caused directly by sin, and by breaking one particular commandment. If we read our Bibles, and practice its teachings, we as a people ought to be spared all of these terrible consequences. Again, Christian civilization tells us how to avoid being sick. When friend Terry came on to what was then a rundown farm, the doctor was called so constantly in that locality, and so many people had died right on that very farm, that the doctor was ashamed to be seen going in that direction. After Terry got his underdraining managed to his notion, and had taken care of his drinking-water, slops, stables, and all out-buildings, the locality became noted for the health of its occupants. Not one of his family has been sick for years past. Thus far we are all right; but to presume that a Christian, because he is a Christian, is to have an easy time all through life, to have the "softest jobs," to use a common expression, with the biggest pay, and to get clear of thunder and lightning, flood and storm, accidents on sea or land, etc., would be almost preposterous. It may be that there are many Christians who make the burden of their prayers that they may have such an easy life; but if there are such, it is time they got over it. A young man in our neighborhood once gave as a proof that God did not answer prayer, that, when their house took fire, all lost their lives except himself, while the others were professing Christians, and he alone was an unbeliever. He said, in fact, that they prayed every night that God would spare their lives and keep them from such disaster; whereas, although he did not pray at all, he was saved, and their prayers did not avail.

Ye ask, and receive not, because ye ask amiss, that ye may consume it upon your lusts.—JAMES 4:3.

It may be well for small children to ask God to keep them from harm while they sleep; but I do not believe it is well to pray very much that God may spare us especially from the disasters common to mankind; neither do I think it the thing for people to be continually thanking God because they did not happen to be in a railway accident or earthquake. It suggests to me a rather undignified couplet I heard years ago, and yet this couplet carries a moral with it.

O Lord, bless me and my wife; my son John and his wife;

Us four and no more.

Please let us be careful about getting into that fashion in our prayers.

This sort of misconception has been by no means confined to the present age or generation. Notwithstanding the Master's teachings—notwithstanding the hardships and privations he endured, his little band of followers would again and again get the idea that he was, sooner or later, to enter the arena of politics, and become an earthly king. In fact, the multitudes wanted to crown him king again and again; and even after he had been telling them that he must submit to persecution and death, two of them right away afterward begged the privilege of sitting, one on his right hand and the other on his left, when he should come into his kingdom. And their mother, too, joined in this request—or, rather, first made it. I have taken my text, as you notice, from this very incident. He, knowing the future, and knowing their awful misconception of what his kingdom was to be, replied, in these sad words: "Are ye

able to drink of the cup that I shall drink of, and to be baptized with the baptism wherewith I shall be baptized?" It seems almost pitiful to think that their request was in part granted when they had not even a faint comprehension of what it implied. But the poor fellows gained knowledge and wisdom before they died; and when the time came for them to die a martyr's death they realized what his words of long ago implied, and, like the Master, they were ready to give their lives, and undergo that terrible baptism.

Our devoted Christian friend on that fated railway train, with the spirit of the martyrs of old, faced the cruel death. When I read the account of it in the newspapers it occurred to me at once that she, like the martyrs of old, received her baptism, but it was indeed a baptism by fire. The Pharisees of olden time were, I know, fond of having the best places, and the highest seats in the synagogue.

The Pharisees love the uppermost rooms at feasts, and the chief seats in the synagogues.—MATT. 23:6.

But what did Jesus say of such a religion? Again, we have a glimpse of that same spirit in another Pharisee when he thanked God he was not as other men are, and especially singled out the poor publican. Did he have any ambition or any conception of the work of raising that poor publican to his own level? Why, not the slightest. He did not want the publican to be any different, because it would rob *him* of the privilege of thanking God for the difference in their respective stations. He would not have made a very good missionary, would he, friends? Some may urge that the prospect for the Christian is not a very inviting one. Well, it certainly is not; and no one should expect it to be inviting to the selfish or proud individual. There is, however, an encouraging side that I have hardly as yet touched upon. Amid all these trials, hardships, and persecutions, we have the promise of something better than all this world can furnish. The Master says, "Lo, I am with you always, even unto the end of the world." And he says, also, "He that loseth his life, for my sake, shall find it." And Christians away down through the ages have attested the wonderful truth of this promise. He also said, "My yoke is easy, and my burden is light." The great truth embodied here is that, when we once manfully shoulder the burden or the yoke—for it sometimes is a yoke—then we have grace and strength to bear it. Thousands of Christians have testified, during their last moments, that

Jesus can make a dying-bed
Feel soft as downy pillows are.

We must look out, however, right here, that we do not get the idea that our tasks and trials and burdens are *always* made easy. Many Christians have to endure suffering. I have sometimes thought that intense suffering is, very many times, the only thing that chastens and subdues a proud and haughty spirit. Oftentimes, when we think we have thrown our lives away for conscience' sake, or for Christ's sake, we find we have only entered on to a new life and have begun to live. How many, many have had this experience! "He that loseth his life shall find it." Oh, how true that is!

And now, as a final word of encouragement, I want to say that martyrs have, many of them, testified that their last sufferings, even when they perished by the flames, were not so hard to bear, after all. Like the Hebrew children in the fiery furnace, the angel of the Lord seems to come in at just the last moment, and give strength and grace to bear the tortures of the flesh. Who has not had experience in looking forward to some terrible hardship until the

anticipation was far worse than the realization? When we set about doing right for Christ's sake, even though it brought us away down into the valley of humiliation, we have found some pleasant and comforting things in the valley, after all. A year or two ago I wondered how people could bear it to be kept long weeks on beds of sickness; and yet, after chafing over it for a few days, after I had accepted the situation, and bowed my head in obedience to the hand that laid me low, five weeks on a sick-bed gave me a new experience of peace and tranquillity. In another column I have told you how I undertook a very disagreeable and difficult journey through the night, and I did it that I might remember the Sabbath day, to keep it holy. Very soon after undertaking the task a wonderful experience of peace and real enjoyment came to me, and stood by me the whole journey through.

Are there no foes for me to face?
Must I not stem the flood?
Is this vile world a friend to grace,
To help me on to God?

Since I must fight if I would reign,
Increase my courage, Lord;
I'll bear the toil, endure the pain,
Supported by thy word.

NOTES OF TRAVEL.

On Saturday, Nov. 11, I started on another trip for Summit Co. You may remember that, on page 534, I spoke of a commodious barn belonging to my cousin, D. E. Fenn, of Tallmadge, O. It was built even before Terry made his covered barnyard and large new barn. He is the one who decided he did not want his straw, his cattle, nor any thing else, out during winter. Well, a brief notice in the papers said this barn was burned. It was scarcely a week previous that I had looked over the barn, and had noticed how he had got every thing prudently put away, even to his Sunday buggy, which was neatly covered with canvas. By the way, I shall have to give you a hint of how he managed this. The canvas covering was supported by means of a frame just over the buggy, without touching it, the front side being loose so that the buggy could be backed right into its case, letting the curtain drop down again in front. In fact, one could put it in its shell again, and take it out so quickly, that it seemed almost like sleight of hand.

Well, a little before noon I came into the little village of Tallmadge. As I turned first this way and then that, hurrying to get around the hill so I could get a glimpse of the premises, hoping after all it was a newspaper blunder, and that the great barn would be seen just as it was the week before—if it were not for my Home talk on another page I might almost have wished it was the barn of somebody *else* that was burned rather than one belonging to my relative. It was but too true. The sight that met my eye was the smoking ruins and only a few pieces of old iron and a pile of ashes. The barn burned just about 12 o'clock, in the middle of the day. No one can tell just how it got on fire; but the most probable cause points a good moral to us all, and so I want to tell you about it.

Some weeks ago, two or three tramps or gipsies camped under a bridge in the neighborhood. The weather has been so dry that, under bridges of late, one often finds very comfortable quarters. Well, one morning cousin Fenn noticed bits of hay dragged along as though some-

body had scattered them in carrying hay out of his barn; but as well-to-do farmers do not usually make a fuss about an armful of hay, he let the matter pass. A day or two later, in walking across his barn floor he stepped on a match. Being in a hurry he thought he would go ahead and investigate in regard to the matches at some other time; but as he looked over his shoulder, lo and behold! the chaff and straw were burning already; and he said that, by the time he got there to stamp it out, there was a place burned nearly as large as his hat. As neither he nor his hired man, nor anybody else ever carries matches about the barn, they concluded they must have been dropped by these stragglers that came after the hay. A search among the straw revealed one more match. Well, even if matches were dropped on the barn floor, it is hard to tell what should have ignited one of them when both men and teams were off at work in the fields. We might suggest rats and mice; but neither Fenn, Terry, nor other people along that line, *have* rats and mice. Of course, the barn was not locked. Like most of us, Mr. Fenn has found it too much bother to fuss with padlocks and keys. His good wife, however, assured me that, after the *new* barn is built, it is going to be kept locked up nights any way. That new buggy and a scoop-shovel were all that was saved. Mrs. Fenn ran out and got hold of the buggy, and started to pull it out; but it was too much for her strength. Two neighbors undertook it; but not understanding the kink of the cloth cover, and the way in which the thills were held up out of the way, they also failed. Just at this time, however, the owner had got in from the field by running his horses at the top of their speed. He pulled the buggy out and saved it; but the iron work on the thills was so hot that the palms of both of his hands were blistered.

There have been a great many barns burned during the past dry season; and a good deal of the work, if I am correct, has come about, directly or indirectly from tramps. Just here I want to tell you of another little incident that does not belong to *wheel* experience, but it comes to my mind. Neighbor H. had some men thrashing clover for him. The machine got "out of kilter," and the men were poking their heads inside of the separator, prying out the trouble, and remedying it as best they could. While they were at dinner the clover-stack burned up, and several bags of high-priced seed, including the expensive machinery. The owners decided that some juveniles who were out in the woods after hickorynuts must have been the cause of the mischief, for the engine was located on the windward side, and such a distance away that sparks of fire from that was out of the question. Where is the point to this story? you may inquire. Well, my friend, I will tell you. These thrashing-men *all smoked pipes*; and when the machine broke down they needed their pipes if ever a man did—at least, so they thought; and while they investigated, with the dry clover chaff and dust all about them, each one *smoked his pipe*. When Neighbor H. told them it was not juveniles at all, who probably had not been within several rods of the stack, but their nasty old pipes and tobacco that did the mischief, they were offended.

Nov. 8 I received a brief note reading as follows:

Friend Root:—Can't you come over and see my two and a quarter miles of drainage while it is in progress? Write me what day, and I will be at home sure.

W. I. CHAMBERLAIN.

Hudson, O., Nov. 4.

So you see a part of my wheeling trip to-day

was planned so as to see the author of "Tile Drainage" lay the tiles himself. I wonder whether the men who make gravel roads know what a boon they are to wheel-riders. Whenever I strike that gravel road that leads into Hudson I always feel thankful. May be feeling thankful does not pay the bill for graveling the roads, but I guess it helps. Talking about gravel, I found Prof. Chamberlain and his son drawing gravel some two or three miles in order to fix nice walks around the house, out to and through the barnyard. Think of a barnyard with graveled walks! The old-fashioned barnyard, however, is a good deal done away with. It is a luxury (!) that a modern farmer, up to the times, can not well afford. Well, Prof. Chamberlain, with the help of his son, who is educated like his father (he has not had the same years of experience, however, mind you), has been laying the $2\frac{1}{4}$ miles of tilling. I expected some wise hints in the matter, and I was not disappointed. In the first place, the two tiling-spades they use were brighter, cleaner, and sharper than any we have on our premises. In fact, they had been used until they were worn down thin, something like the knife my wife uses to pare potatoes; and I tell you it was worth going a hundred miles to see a college professor digging ditches. Why, it was not work at all—it was just fun. A pretty deep furrow was first plowed out, throwing the earth either way. Then with the two spades the ditch was put right down where it ought to be. When I wondered to see the ditching-spades so sharp and perfect on the cutting edge, friend Chamberlain remarked:

"Why, you surely take a good file along with you when you dig ditches, do you not? See."

Then he picked up a file and showed me how they used it. I am ashamed to say that I never had a file out in the field where I was digging ditches. It is true we occasionally take the spades into the blacksmith-room and have them sharpened up; but we never have them in such perfect order as those I saw. Why, they looked like fine carpenter tools. The ground came right out in nice perfect slices, and slipped off the spade of its own accord, and there were but very few crumbs in the bottom of the ditch. The last cut left the ditch at the bottom just about the width of the tile. Oh how I do wish I could find men who would not persist in digging the bottom of the ditch wide enough so they can shovel it out with a barn-shovel! Why, sometimes I am almost tempted to think I shall feel glad when these old fellows die off, especially the ones who can *not* be taught any thing new. A few days ago I took a boy of 17, on an emergency, and started him ditching. Said I:

"Look here, Frank, if you do just as I tell you, you can dig ditches right along, and do it easily, and you can dig more than a great big stout man. The only thing is, you must do exactly as I tell you."

In a little time Frank smiled until his mouth stretched wide, to find that he could indeed walk right along through the stiff hard clay, and leave a nice finished ditch. It was not an hour, however, before he and his spade somehow got "rattled," and he could not for the life of him without help get the ditch back into shape so he could do nice clean work, and do it easily. Well, there was one more thing that I learned besides about the file. Our ditching has been mostly done with a long straight-edge. If the bottom of the ditch is uneven we have to lay a brick or tile under each end of the straight-edge, so as to get the general level. The straight-edge has got to be put in place in the bottom of a ditch, and a level must be hunted up, the dirt wiped off from the level and

straight-edge both, and somebody stands on the edge to see if it is just right, and coves in a lot of dirt on the level and straight-edge both. Well, our book on tile drainage has a picture of a common-sense leveling tool. The one I saw there was so light you could easily pick it up with one hand. This surprised me. I had an idea from the picture and description that it was nearly as heavy as the letter-A drag. On the cross-bar of the letter A, a spirit-level was securely screwed. Now, all you have to do is to stand on the edge of the ditch and set your letter A so it stands on both feet on the bottom of the ditch. The spirit-level is right up in plain sight, where you can see just what the general average of your work is going to be.

The following is what the book "Tile Drainage" has to say in regard to this span-level:

Mine is a home-made affair—simply a triangle, or Greek delta, $8\frac{1}{4}$ feet on each side, made of two-inch pine or poplar, plain battens, and has a spirit-level screwed accurately to the cross-batten that makes a capital letter A of the triangle. Care must be taken that the spirit-level be exactly parallel to the base of the triangle. For convenience in using, a short inch strip is tacked to each end of the bottom edge of the base. The level is graduated to show a grade of one, two, and three inches to the rod.



Friend Chamberlain, like myself, prefers to see water running down the ditch before the tiles are laid. There had just been rain enough during this beautiful month of November, so he had about all the water he needed to be sure that his tiles would all work right. You may wonder, perhaps, how a couple of college graduates could afford to dig ditches and lay tiles. My friend, the time is coming when college graduates can even dig ditches more profitably than men with abundance of muscle who are too ignorant to realize that they do *not* know too much to be taught by anybody.

It was Saturday afternoon, after 3 o'clock, and I was about 35 miles from home. At just 5 o'clock a train leaves Akron that passes through our own grounds. I stopped so long to look at the tile drainage, the wheat crop, and other things, that I knew it was going to be a hard pull to make Akron by 5. There was not any moon; and when I got to Cuyahoga Falls it was not light enough so I could keep out of the sand. I put in my best liks, however, and reached the depot just five minutes *after* the train had gone. There were particular reasons why I wanted to be in Medina over Sunday; but it was a good 20 miles, and a dark night. I began trying to reconcile myself to the prospect of spending Sunday away from home. But I did not enjoy it—that is, the prospect. I was tired out, and hungry, so I went for that well-known "city restaurant." As usual, the waiter gave me a plate of bread and a pitcher of milk, while he took my order for steak, etc. Why, it is just *fun* to live when you can enjoy bread and milk as I enjoyed it that evening. I do not know just why, but somehow or other I ate a great big supper before I left the table. Then I thought I would take my wheel and ride in the direction of home as far as the vitrified brick pavement and electric lights extended. I had no sort of idea what I should do when I should reach the end of the pavement. I knew from experience that there is a stretch of deep sand on the road, that bothers even an expert wheelman to get through by broad daylight. I somehow felt restless and uneasy, and wanted to be doing something. As I left the electric lights I saw a wayside watering-trough pouring out its liquid treasures by the side of the road. I drank so long and so heartily that a bystander whom I had not seen before in the gloom remarked:

"Well, stranger, I calculate you must be thirsty."

I pointed to my wheel. The nickel plating gleamed a little, even in the starlight.

"Oh! well, you are all right. So long as you do your hard drinking with nothing but water like that, I guess you are safe," continued he.

I thought I would go just a little way in the sand, to see what it was like; but common sense and reason soon said that it was entirely out of the question, to think of riding in such darkness on a road that was well nigh impassible by daylight. I even imagined I heard my good wife saying, in tones of expostulation, "Why, surely, husband, you are not so crazy as to think of *trying* to getting home to-night?"

I turned around and looked back at the electric lights, but I did not enjoy the prospect that way at all. I stood still and meditated. I might push on till I got real tired, and then get up and finish my trip by daybreak Sunday morning. But conscience stood in the way. I might possibly get home so early that few if any of the good people of Medina would be up; but it would be a new experience for me, since I became a Christian, to try to keep out of sight. I remember that once, years ago, I tried to get home with a bag of hickorynuts I had picked up on Sunday. I skulked along on the back streets and alleys; but the very people I did not want to see were sure to be in those back streets and alleys just then. I do not know but I said aloud, "No, sir; I am not going to do any thing, either in daylight or dark, that I am ashamed of. So long as I live, I expect to be able to say with a clear conscience to everybody I meet, 'I am A. I. Root—who are you?'"*

I think that, for about half a mile, I must have made quite a "circus," as the small boys would call it, wrestling with that sand. In a little time, however, it began to occur to me that I was learning by practice that it was possible to ride through sand, even in the dark. The rubber tire of my wheel began slowly to become sensitive, like one's fingers' ends. I could *feel* my way, and tell when I was in the track or out of it; and as skill gave me enthusiasm, that wonderful second wind began to come up as backing. Why, I thought I was thoroughly tired out and used up when I ate my supper; but now I was making fair speed in spite of the sand. When I came into the valleys, however, a new trouble met me. You may remember the heavy fogs in the middle of November. They became so dense that I could hardly see the stars, and I thought I should have to give it up. Pretty soon, however, I found that, when opposite the telephone-poles that hold a great mass of wires now running from New York to Chicago, these poles were visible. Judging from each pole as I passed it, where I should probably find the next one through the fog, and also feeling my way, as I said before, in a little time I was up to fair speed again. With the tremendous exertion required to ride in the dark, I began to get thirsty, and then I made a discovery. This heavy fog, so damp and wet that it was almost dripping, proved to be most delicious—not to

drink, but to breathe; and, to tell the truth, I never enjoyed much more in my life any thing than I did those great breaths of fog-laden air while groping through darkness and fog for each friendly telephone-pole. Talk about the danger of "damp night air." Stuff and nonsense! My strength seemed herculean. I never before in my life thought it was *possible* to climb over obstacles and plow through sand as I did it that night. Yes, I *had* been praying that God would help me in my efforts to "remember the Sabbath day, to keep it holy." When I first undertook it, it seemed a tremendously long and tiresome task; but to my great surprise it gave me a degree of enjoyment that I never before realized was possible for humanity. Within nine miles of home I passed another watering-trough. I had it in mind, but I passed it in the fog, and heard the gurgle of the water only after I had got by. I left my wheel standing in the road, and went back for a drink. Oh what a delicious liquid beverage! Did God indeed have in mind such enjoyment for his people when he planned this universe? I went back to the place where I left my wheel, but it was nowhere to be—not seen, for I could not see it a yard before me. Just as I began to be troubled, my hands struck the fog-laden nickel plating. Of course, I passed people on the way. Some of the time they could see me dimly, and some of the time they could not; but I did not feel like evading nor avoiding anybody. I gave every passer-by a pleasant "good-evening," and received one in return.

At half-past nine I was safe in my own home. Was I worn out and used up next day? Not a bit of it—quite the contrary. For three or four days afterward I enjoyed an unusual appetite, and more than ordinary vigor and energy for work or play. After that I began to settle down into my average health. Just this one thing I noticed: I could not sleep as usual that Saturday night. Sunday morning, however, just before church time, I slept about as usual; and the night after, I did some "tall" sleeping.

Dear friends, I have gone at length to tell you this experience, as it illustrates so vividly that we oftentimes reap our richest blessings when we undertake some fancied hardship in order that we may obey God's holy commands.

Prove me now herewith, saith the Lord of hosts, if I will not . . . pour you out a blessing that there shall not be room enough to receive it.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

PRIZETAKER ONIONS IN ARKANSAS.

I have grown Spanish King (Prizetaker) onions for three years. They are the finest ever grown here, and the most profitable. My last crop was nearly one-third mixtures. Have you any old seed that proved to be pure this year? If so, at what price can you furnish it? Do you think it will do to sow this fall, and transplant in February, when we sow oats? Our spring crop of onions ripening in June, or early in July, generally keeps only a month or so before they rot. Can you tell me how to prevent the rot? If planted the first of July will they ripen and dry out so as to keep if the fall weather is cold and wet? Nearly every thing grown in spring rots during our long hot summers. I think of preparing to irrigate, so as to plant late and mature my crops after the hot summer is past. I think of making a specialty of onions. Please tell me how to grow onion seed from those Spanish onions. I plant-

* Had it been necessary to ride my wheel on Sunday, to meet an appointment at a Sunday-school or other place where I was wanted, I should have had no hesitation whatever; for, in fact, I do use my wheel almost every Sunday in that way. But in this case, by my own want of forethought I had missed the train; and to be seen riding twenty miles on Sunday morning, with every evidence to passers-by that I did it simply to save time or to get home, was not an inviting prospect before me. If the Christian people of our land would do all they can consistently, and within the bounds of reason, to discourage Sunday travel of every sort, I am sure we should be a better people than we now are.

ed some in February, when we planted onion-sets, garden-seed, etc. They froze and rotted. As the new culture takes so little seed, it will pay me to have pure seed at \$20 per lb. Malvern, Ark., Nov. 8. P. C. SHOCKY.

[Friend S., we have some old seed left that we expect to sow in the greenhouse; but I can not recommend it as being *extra* first-class. It is, however, probably as good as any in the market. I agree with you, that you can afford to pay \$20.00 a pound for seed that would produce a good nice-shaped onion every time, all uniform. I fear the Prizetaker and other onions of that class will rot with you, any way; and may be even our Globe Danvers and Silverskin, noted especially for their good keeping qualities, would do the same. But I have had no experience in your locality. We have given through GLEANINGS our experience in growing seed from the Spanish King onions. We have had no trouble at all, and have quite a lot of very large fine onions that we are keeping for planting for growing seed next spring. I think you will have to put out the big onions after all danger of freezing is past, if you want to raise seed. Perhaps some of the readers of GLEANINGS can help you more than we can.]

OTHER USES FOR POTATO-BOXES.

Not only do we use these for storing all kinds of roots, potatoes, apples, etc., but while I am writing, Nov. 22, our hands have been packing our celery, as fast as it is dug, right into the potato-boxes. We lay the boxes on one end, then take up the celery, with a little earth adhering, and pack it tight and close in a box, till the box is full. After being filled, the boxes are turned over right side up. The celery can now be loaded into a wagon or other vehicle, without any extra handling, and without breaking and mashing the tops; and it is but a short job to lift it out and set the boxes tight up together, in a dark cool cellar or other repository. If the cellar seems to be too dry, and inclined to wilt, the whole floor of it may be flooded with water, letting it go through the bottom so as to dampen the roots, but without wetting the tops in the least. So far as I know, this is the first time celery was ever handled in this way. But please notice: While we were loading it up near the roadside, a man stopped his team and wanted to know why he could not take one of those boxes right along, put it into his cellar, and use the celery as they wanted it. I assured him it was exactly in the shape he wanted it for that purpose. Selecting one of the best boxes, when he found he could get box and all for a dollar he handed over the money, and the boxful of celery was in his wagon in a minute. You will notice this fixes it in nice shape to retail, so that people in the country or anywhere else can use it all along through the winter, just as they want it.

POTATO-BOXES FOR PURCHASERS OF POTATOES.

I have mentioned in the previous pages of purchasing a carload of Monroe Seedlings, just as they lay on the ground. The farm where they were grown is about 25 to 30 miles from our place. Four hundred and fifty empty potato-boxes were stored in the car, which was then sent to the nearest station to the grower. Although in the latter part of November, the grower loaded the boxes on to his wagon, took them to his cellar, filled them, and set them back on the wagon, then made a trip to the car, bringing another load of boxes. On Wednesday, the 22d of November, the Weather Bureau notified us by telegram that a cold wave and a blizzard would reach us Thursday night. The notice was given us about 36 hours ahead. The

railroad companies were notified that several hundred dollars were at stake; and the managers of our own railroad, the Pittsburg, Akron & Western, were considerate enough to hold the train half an hour so they could get the potatoes through and enable us to save them from the frost. The car was planted on our side-track at just 5 o'clock. We had notice of its coming, and eight of our men and boys were invited to go into the lunch-room and have a good supper, so that they might be ready to handle the potatoes before Jack Frost could nip them. The thermometer showed only 15 degrees above zero, and there was a brisk west wind. The boys, however, handled the potatoes so quickly that, within two hours, the whole carload was safely deposited in the cellar, and the doors and windows closed. You may be sure I drew a long breath of relief when the last box went away. I guess the boys drew some long breaths too. It was worth something to see the way those boxes full of potatoes moved into the place assigned them. Now, here is a little to the credit of our Weather Bureau. They have been criticised during our recent drouth because rains did not always come when they told us conditions were favorable; but as to the matter of temperature they made hardly a mistake; and I am glad to be able to say, also, that at least one railroad company in the United States was willing to hold a train half an hour for the sake of saving a carload of potatoes.

Suppose these potatoes had been picked up or shoveled up, poured into the car, picked up or shoveled up again, and poured into our cellar. Think of the bruising and injury, aside from the convenience and neatness in doing the work. Another thing, as a great part of these potatoes are to be sold at retail, many customers will pay 15 cents extra for the privilege of taking the nice new clean bushel boxes home with their potatoes, for almost every family will find these boxes, that hold an exact bushel when level full, exceedingly handy to have in the cellar, barn, or other out-buildings.

OUR HOMES.

SOMETHING ABOUT WARMING THEM.

You may think my experience with hot water and exhaust steam has little to do with you unless you also have exhaust steam near you that can be utilized. But, wait a bit. After we had carried the exhaust steam from our large engine through drain tile over to the house, we turned it into an iron pipe going up above the roof. This was to give it draft, and to make the steam pull through quickly. To my surprise, there was steam enough, and a surplus puffing out above the roof, almost every hour when the engine was running. Said I, "Look here, Mr. Exhaust Steam, we will cure you of that trick." So I went to work and carried a three-inch iron pipe under our floors, clear around the wall of our large cellar. The cellar goes under the whole house, and it takes 140 feet of piping to go clear around. Then we carried it over to one of the tallest chimneys, and 30 feet more of piping was used to go out of the top of the chimney. The steam crawled along through the pipe, seeming a little uncertain as to what it ought to do; and it was noon before it got quite around to the chimney. About 2 o'clock, however, enough heated vapor got into the upright pipe to make a draft, and then it pulled through beautifully. This long pipe, however, with its many turns and elbows, so effectually takes up the latent heat of the steam that it is about all gone when it comes

to the exit at the top of the chimney. The moisture is also condensed; and as the pipe through the cellar runs on an incline, the hot water all goes off through proper drainage. Now for the result. Almost the whole floor of our house is kept constantly so warm that you can get around in the morning barefooted on the painted floor of the kitchen, without giving you the toothache; and I tell you it is worth a big lot to feel even the carpets under your feet constantly warm. The moral you are to gather is this. The first thing toward warming your buildings should be to make the floors warm. If your house is not well banked or well protected all round, go at it and do it all at once. Make the cellar-windows so they can't rattle, or so you can't feel the breeze around the cracks; and I feel sure that double windows will soon pay for themselves in the one item of fuel; and for the outside entrance of your cellar, you want at least *two* well-fitting doors. We did not have two till last winter; and when we put in the extra one, and had it fit very closely, the change in the temperature of our floors was perceptible at once. Now, after you have done all this, if you will put a stove in your cellar, and make the cellar itself warm when the weather is very cold, I think you will find it not only a saving of fuel, but very likely a saving in doctor-bills; and it may save the life of some precious little one who is now spending the most of its time with its playthings on the floor. Dear father and mother, can't you afford to give this precious little chick a warm comfortable floor to play on? While you think of it, just catch him up and give him a kiss for his Uncle Amos. I forgot to say that, after the exhaust steam has passed through 400 feet of hot earth, it forgets to stop work when the engine stops; and even this *exhaust-steam* pipe is hot all night for fully half its length. This, of course, is in addition to the hot-water pipes. They are only 1½-inch iron pipe, and they, together with the radiators in the rooms above, keep hot all night, and remain hot over Sunday and tolerably hot even *Sunday* night.

TRADE NOTES.

SHALLOW HIVES AND FRAMES.

SOME STRONG POINTS IN THEIR FAVOR, AS SET FORTH BY ONE WHO IS USING THEM.

Mr. Heddon's item on p. 818 wakes me up a little; and as you invite further remarks from *somebody*, as I understood it, that may mean me, as I am more interested in the Bingham hive at present, probably, than any one else (the patent having expired). I still have about 80 colonies in the Bingham hive, and prefer it to any other for profit and convenience in handling, as I have used it for over 20 years with more or less success, and have tried others in my yard side by side, notably the ten and eight frame Langstroth hive, the square-framed hive (frames 10x13), the Shirley hive, and others.

COMPARATIVE TESTS BETWEEN SHALLOW AND DEEP FRAMES.

My first fair trial on their merits for surplus was with the ten-frame L. hive. I bought ten of them of Mr. House (then of Saugatuck, Mich.). All frames were well filled with clean comb. I increased by natural swarming at that time (16 or 18 years ago), so I put a first swarm in the L. hive, one in a Bingham hive, and one in an L. hive, etc., alternately. All of

these were put up in precisely the same manner as nearly as possible, with boxes for surplus, until the ten L. hives were full. At the end of the season I counted up boxes full of honey (as I had marked each with the hive number. We used the small 2-lb. glassed honey-boxes, thin), and I lost on an average \$1.00 and a few cents on each L. hive in use, merely in surplus honey, without any reference to prices of hives; that is, I mean I made \$1.00 surplus more on each Bingham hive in use in the experiment. I tried a part of the wintered-over colonies next season with nearly the same result, thinking that, perhaps, it would be a fairer trial—as the swarms in the Bingham hives had their surplus well under way before those in the L. hives had begun on surplus, or had the hive body all occupied. I also tried the same variety of hives in wintering, both outdoors and in the cellar, with results favorable to the Bingham hive generally—always so in a severe season out of doors. I used only the L. hives after that, for extracted honey, and I will say they came quite handy to "pile up" on top of the Bingham hives to "sling" honey from, as the L. cases are rabbeted to fit each other.

I next tried the eight-frame L. hive a few seasons (in 1880, '81, '82, I think), just after our big loss (I bought a few from Indiana to fill up). Well, they did some better than the ten-frame L.; but compared side by side with our old Bingham hives they were far behind for comb honey, especially in short honey-flows. So I traded them off when I could fairly; and, in fact, that was my object in trying to get started with the L. hive; viz., to have a hive I could sell bees in, as the L. hive is well known and popular. I have tried the eight-frame L. hive ever since with one or two hives, and find I generally get three cases of sections each of 24 on the L. hive, in nearly the same time that I get *two* cases each of 44 sections on the Bingham hive. But the second case on the Bingham hive is nearer finished than the third case on the L. hive at the end of the flow, generally, and especially in the time of a short flow, or a gradual closing-up of the honey season. Of course, there is a reason for these things. First, the surplus is so close to the brood in the Bingham hive that the bees carry nearly all (or in some cases *all*) of the honey into the surplus chambers, excepting that used for brood-rearing, which, by the way, is considerable, and is a very important factor in the problem. Toward the close of the honey-flow there can always be found sealed honey over the brood-nest, and this space of honey is always deeper in deeper frames. Sometimes it is only a thin line in these extra shallow frames; and the first tier of sections receives all or nearly all of that good honey. On the same principle as when tiering up, more honey is obtained if the first tier is raised up and a light case is put under it.

Now, the upper part of deep combs takes the place of the lower tier of sections as soon as the brood-nest is beginning to contract; and with the additional item that the combs are all built out to receive the honey. Of course, the Langstroth hive will have more honey in the brood-chamber—sometimes *too* much. On the other hand, the Bingham hive needs to be looked to in the fall, to see that there is honey enough for winter.

SHALLOW FRAMES FOR WINTERING, AND THEIR ADVANTAGES.

As to wintering, the problem may never be wholly settled, possibly, so we can all see it alike. The bees naturally cluster near the center of the frames, directly under the sealed honey, or the most of it; and if the frame is

deep, and a wide belt of honey over them, after they use this first supply they have farther to go to find more stores, as they often move in mild spells, as we say when the cold lets up. Hence dwindling in winter is the result, because the bees in search of food become chilled on the cold combs as night comes on, and drop; or after the first supply of honey over the brood-nest is exhausted, say toward spring, and the cluster, in trying to move back to more stores, or to one side in the L. hive, has to move up and over that thick top-bar, or under the comb. Being obliged to leave the center, the bees become chilled by sudden changes of temperature, especially if so near spring that a brood-nest has been started, and the cluster will not leave it for stores. This means spring dwindling, and sometimes starvation with plenty of honey in the hive—the more so if a cold snap sets in. The shallow frame is less subject to these conditions, because the bees cluster clear to the top and nearly to the bottom, and so do not have to leave the warmth of the brood-nest or cluster to go to the next frame, and the cluster gradually moves backward to more food toward spring. There is usually enough stored toward the ends of the frames, with what little is near the top to last through the first cold weather.

It is my habit to take out the light combs in front when I put the bees up for winter, and move some of the heavy combs at the back to their place, and close up the back board to 8 or 9 frames, say, instead of 10 or 11, as used in surplus time. This gives more room for packing, which is one more good feature for the Bingham hive.

The original Bingham hive of this style now in use was 10 frames, 20 inches in length by $6\frac{1}{2}$ in depth, from hive-bottom to the top of the wooden frame. This gave about 5 inches up and down of brood-comb, besides the short cells on the under part of the top-bar, which is a square bar set cornerwise. This was the size in the patent-papers, and the same as I use now, though Mr. Bingham used them 22 inches long in his own yard.

THE SHIRLEY SHALLOW HIVE AND FRAME.

The Shirley hive was invented and patented just before the new Heddon hive. The frame is $19\frac{1}{2}$ long by $5\frac{1}{2}$ high at the end of the frame, with both top and bottom bar, and is reversible. It has comb space only $4\frac{1}{2}$ inches deep, and was intended to winter by tiering up, half of the frames on top being reversed. This gives the bulk of honey near the center of the brood-chamber, with a bee-space through the center. This is the best arrangement yet known, for wintering outside, as the bees can pass freely from one side to the other without leaving the cluster. In fact, the cluster of bees can move gradually in very cold weather. I have wintered a few in this way as an experiment, and they did well. The new Heddon hive can be handled on the same principle, but it needs a packing-case for outdoor wintering, and is all right then. Both need looking to as to the winter supply of honey, all the same.

Now, Mr. Editor, I have no ax to grind in this matter; but I never could understand why a bee-keeper who is after surplus should use such deep frames as in the L. hive, after having tried shallow ones. J. O. SHEARMAN.

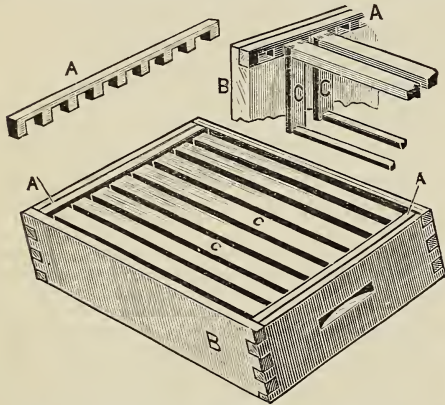
New Richmond, Mich., Nov. 4.

[You have given some strong points in favor of the shallow brood-nest and frame, and we must acknowledge that they do have some quite decided advantages. In your locality they may give better results, perhaps, than any thing else; but localities differ so much that

what will be just the thing in one is totally unsuited for another. The testimony as to the value of the various devices in the different localities, called forth at the last convention of the N. A. B. K. A. at Chicago, illustrates this very forcibly. For instance, the Dadants, J. M. Hambaugh, A. N. Draper, and other bee-keepers in that vicinity, furnish quite convincing arguments in proof of the statement that the large Quinby frame and hive give better results than the small brood-chambers. In most northern localities the eight-frame Langstroth capacity seems to give best results: but no one can assert positively, if he is unbiased, and has carefully read the reports from the South, that the ten and twelve frame Langstroth hive may be too large, especially where extracted honey is the object. Within the vicinity of our correspondent there is Mr. James Heddon, Mr. Bingham, Mr. W. H. Shirley, Mr. R. L. Taylor, and quite a number of others, who use shallow brood-chambers; and while we may admit that the large Dadant hive, for the locality of the Dadants, and the ten and twelve frame Langstroth for Texas and the South, seem to give the best results, we must not assert that the shallow hives are not the best for the localities in which they are used. Now, if we go east, into the locality of Hetherington and Elwood, we shall find thousands of colonies on the Hetherington-Quinby frame—a frame not quite as long as the original Quinby, but quite a little larger than the Langstroth. You could no more induce these York State bee-keepers, who have carefully tried large and small hives together, that the latter would give the better result, than you could convince them that the earth is square. We do not mean to say that those intelligent bee-keepers of the East are stubborn, and proof against any kind of argument, no matter how convincing; we simply mean to say that they have carefully tested their locality, and know pretty well what gives them the best results. The question, then, as to the best size of hive for any particular locality is largely dependent upon the fact of whether (1) the honey-flow is moderate and long-continued; whether (2) it is heavy, and lasts only a few days, or (3) whether it has only a few light spurts during the season. As supply-dealers we have endeavored to adopt that sort of hive and frame for the mass of bee-keepers that is a compromise between the very shallowest and the very deepest, and a brood-chamber that is a compromise between the very largest and the very smallest, and one, too, that best meets condition No. 2 above. Recognizing that there is a demand for a large hive, we make and keep in stock the eight and ten frame Dovetailed hive, and, upon order, the twelve-frame. We also make, and have made for the last ten or fifteen years, half-depth brood-frames and hives, because we find that there is a demand from some sources for hives and extracting-supers of this description. But it is safe to say, that nine-tenths of all the bee-keepers prefer and order the eight-frame Langstroth.

Now, we do not wish to throw cold water upon the very strong points in favor of the half-depth hives, referred to by our correspondent above. To be candid about it, we will say that the demand seems to be growing for these shallow hives; but the call has been more particularly for them as shallow extracting-supers than as shallow brood-nests. To show what we have been selling for a good many years back, and more particularly for the past year, we present below an engraving of our half-depth Dovetailed hive and frame. It is put in our catalogue as a shallow extracting-super, two of them being sold at the same price as one full-depth extracting-super with Hoff-

man frames. Believing that these shallow hives should have the frames secured, we have adopted the very simple arrangement shown in the cut. It consists of two notched sticks that slip into place in the rabbets in each end of the hive. The sticks are of such a width, and the notches are of such a depth, that they fill up entirely the space between the ends of the top-bars. The ends of the frames and the rabbit itself are thus entirely protected from propolis; and while the notched sticks can be secured by a couple of wire nails, buttons, or similar devices, there will usually be propolis enough to hold them in place; because, when the cover is set down on the hive, the sticks will be held



THE DOVETAILED SHALLOW EXTRACTING-SUPER.

firmly in place. As the bodies are just half the depth of the regular eight-frame Dovetailed bodies, the frames are only $4\frac{1}{2}$ inches deep, outside measure. Such shallow frames require no spacing-strips at the bottom to secure the frames, like ordinary full-depth frames.

As these small frames are secured, the extracting-supers can be shaken violently to get the bees out without disturbing the frames. The supers are intended to be handled without disturbing the frames until they arrive at the extracting-room. The spacing-sticks are then removed at each end, and the whole set of frames are loose, because propolis has no chance to make them stick. Being shallow they are easily uncapped, and two of them are put into the ordinary comb-pockets of an extractor at once. Thus an ordinary two-frame extractor will extract four of these at a time. These frames are then put back in the supers; notched sticks are replaced, and the whole set of frames, including the supers, are put on the hive at once. The point of economy in these shallow frames for extracting seems to be in handling whole supers at a time, leaving the question of individual frames largely out of account. But their advantage lies chiefly in the fact that half an ordinary extracting-super can be given at a time, on the principle that it is better in the production of comb honey to give only one tier of sections at a time than two. Then these shallow extracting-supers may be tiered up precisely like comb-honey supers, and manipulated largely in the same way. For instance, when the bees have got nicely started in one extracting-super it is raised up and another empty one is placed between it and the brood-nest.

The super-shells are precisely like the supers for comb honey, and can be used interchangeably for one or the other.

In setting forth the advantages of the shallow extracting-supers, please do not understand

that we are saying anything about their use as brood-chambers, although they may be used on exactly the same plan outlined by our correspondent at the head of this department.

The question may come up, whether, if such use is made of them, a royalty should not be paid to our Dowagiac bee-keeper. If we understand the matter, Mr. Heddon does not claim the *manner* of using brood-chambers as specified by our correspondent. All he claims is the peculiar construction of the brood-chamber as he makes them, with close-fitting closed-end frames and shallow brood-chambers.

Another question may be asked as to how generally these shallow extracting-frames are selected in the orders. Although we supply our customers with both the shallow extracting-supers and the full-depth extracting-supers, one pair of the frames at the price of one of the latter, very few, comparatively, have selected this sort of arrangement, although the number is now increasing somewhat.



The Son of man came not to be ministered unto, but to minister, and to give his life a ransom for many.—MATT. 20: 28.

PROF. COOK is now on his way to California, where he expects to make his permanent home. Further particulars will be found in another column.

MR. DOOLITTLE, in his article in this number, says old foundation is as good as new. If he is correct, and we hope he is, it will save some bee-keepers from melting up and making new. How is this, friends?

We have in hand some pretty convincing evidence convicting a prominent Western bee-keeper of adulterating honey. Manager Newman, of the Bee-keepers' Union, has the matter in hand, and will shortly make the matter public, probably.

A PROMINENT, interesting, and valuable feature of the last convention was the rising votes. While objection has been made to this way of getting an expression, it is, nevertheless, valuable because the reports can be taken from the whole convention without taking more than a minute's time. We are heartily in favor of the rising vote at conventions when properly managed by a good president.

It is just announced that Vermont is to have an Apicultural Experiment Station. The State Bee keepers' Association has been laboring for several years for the establishment of such a station, and has now attained success. No apiarist has been appointed yet, and there seems to be a little uncertainty as to who will be the best man. What is the matter with J. H. Larrabee? He is eminently qualified by experience in this very line.

MR. H. R. BOARDMAN, from the report which appears in another column, made quite an interesting statement, to the effect that a new swarm would gather twice as much honey as the new swarm and parent colony combined before swarming takes place. Mr. Boardman is a very careful bee-keeper, and the question may arise whether we are not indeed wasting too much time in discussing *prevention* when we ought to be discussing *controlling* swarms.

MR. HASTY, in commenting upon Taylor's tabular report showing results of the much or little use of foundation in the brood-chamber (noticed by us on page 795), says, in the *Review*, "And, don't you see? the experimenter draws conclusions favorable to foundation, and the editor draws conclusions favorable to starters, from the *same big table*." Italics ours. That's the way it struck us at the time. Bro. Hasty, the *best* of us are just a *lectle* prone to see through our own specs—what, what—we *want* to see.

BRO. YORK, of the *American Bee Journal*, referring to the time we sat in the same chair at the "Big Convention," and to the hope that we shortly after expressed on these pages, that these pleasant relations between the editors might never be *strained*, heartily indorses this sentiment, and adds that he hopes they will never be worse than *strained honey*. Dr. Miller also indorses the sentiment, but insists that the *chair* upon which we sat was strained.

WE recommend a careful reading of the proceedings of the "Big Convention" at Chicago. President Miller steered the discussion with wisdom and tact; and the result was, that only important questions were brought up and discussed. The fact that these discussions came before the largest and most intelligent body of bee-keepers that ever assembled at one time and place in this country should make the proceedings of more than ordinary value to the reader, even though he has to "see through a glass darkly."

"WORNOUTNESS" OF WINTERING.

PERHAPS some may have been wondering why we have had less in GLEANINGS on the subject of wintering of late. In the first place, we knew that our readers of the North were tired of it; in the second place, those in the South and the far West have no interest in it. For these reasons many of the articles on that subject have either been returned or turned over to the so-called "waste-basket." That this lack of interest is shared by some prominent writers is evidenced by the following from Mr. Hasty, who has been speaking of the wintering symposium in a late *Review*. He says, "No use of trying to deny that there is a certain air of wornoutness about the lucubrations on wintering. Although we winter our bees on honey, we winter our readers mainly on *chestnuts* [subdued applause]. But, brethren, when we get it all found out we won't give you any thing at all except chestnuts—then what will you do? Better winter on chestnuts, and save the bees, than on paradise nuts and lose 'em."

We don't mean to carry the impression that we shall reject all articles on wintering, for that would be shutting our eyes to real progress. We shall endeavor to use a wise discrimination. It had been better had we last year discriminated against the sealed-cover idea, or, at least, given only a small dose of it.

MRS. ATCHLEY'S NEW HOME.

MRS. ATCHLEY has moved from Greenville, in the northern part, to Beeville, in the extreme southern part of Texas. Few of us, when we saw the announcement, realized that she had moved so far south of her old home. Texas is a large State—in fact, the largest in the Union; and to have gone a similar distance in the North would have taken her, not only in most cases out of the State, but into another, and in some cases across three or four others, or as far as from Cleveland to Chicago. Mrs. Atchley is as far south as she can be, and yet be a resident of the United States. A glance at the map shows that she is but a few miles from the

Gulf, and further South than the generally inhabited portions of Florida. She can rear queens the year round; in fact, is better situated than any other queen-breeder in the United States. She is in the region of orange, bananas, and other tropical fruits, as samples of which she has kindly sent us fully testify. By the way, in that basket of fruit was a can of some of the finest honey we ever had in point of color and flavor. It tastes not unlike alfalfa, than which there is no finer honey in the world. Mrs. Atchley and her family are not only the largest queen-breeders in the world, but in the very best portions of it.

THOSE YELLOW CARNIOLANS, AGAIN.

AND now Mr. Alley has turned his gun from Dr. Miller to us. A short time ago, in answer to a correspondent on page 676, we said:

Frank Benton, who handled the bees for years in their native home, says that the typical Carniolan is a dark steel-gray bee. The so-called "golden" Carniolans seem to be nothing more nor less than Italians with, perhaps, a little Carniolan blood; for Mr. Alley admitted that his golden Carniolan queens were mated in an apiary but a little over a mile from a large apiary of Italians. Plenty of proof has been produced to show that queens will mate, not only a mile from the apiary, but sometimes three or four miles. The source of the yellow in Mr. Alley's Carniolans is plain. See J. A. Green's article in the *American Bee Journal*, page 467, vol. xxviii.

Mr. Alley denies this in toto; and strangely, enough, he proposes to put up money in support of his denial. Seriously, we do not believe in settling things in that way. No, Bro. Alley, to ignore the plain facts of experience—facts supported by all practical bee-keepers—that drones and queens will fly over a mile, and often much further at mating times, and to try to bolster up the statement in opposition to it by putting up money—well, let the reader draw his own conclusion.

Regarding the statement Mr. A. makes, that gray Carniolans will develop into yellow Carniolans in three or four generations, Mr. Lockhart, an extensive breeder of the former, says in a letter just received:

Mr. Alley is *away off* when he says that he can change the gray Carniolans to a yellow race of bees by breeding them to the fourth generation. I have bred the gray Carniolans long enough to know this; for the past four years I have not seen any yellow-banded bees from any *purely mated Carniolan* queen.

F. A. LOCKHART.

Lake George, N. Y., Nov. 23.

This is substantiated by other breeders of Carniolans, and ought to set aside Mr. Alley's position on that point.

POLLEN NOT THE CAUSE OF DYSENTERY.

S. CORNEIL, in the *Bee-keepers' Review*, says, "Not only is there nothing gained by the exclusion of pollen from winter stores, but its presence is essential for the bees," in support of which proposition he gives good substantial proof. Mr. Heddon has been advocating for several years back the entire exclusion of pollen. Commenting upon this, Mr. Hasty says elsewhere, "Heddon's no-pollen test, and 72 out of 73 O. K. in the same cellar, where two-thirds of those with natural stores died with dysentery, looks like knock-down evidence. It probably is conclusive as to such a wickedly cold cellar;" and he adds, that, even if the temperature of the cellar had been right, there is no proof that the pollen would have done any harm. Corneil and Hasty are probably not far from the truth. In later years we have paid no attention to pollen; and, with the exception of last winter, when we tried the sealed cover with such fatal work, no one can point to better results in win-

tering than we. Some of those who have been the most strenuous in the advocacy of no pollen, and have lived up to that advocacy, have lost the heaviest. In late years the questions of pollen or no pollen, poor or good stores, have had very little to do with the matter of wintering. As Mr. Hutchinson well says, we can't put our finger upon any one thing, and say positively that it causes dysentery. Bad stores that were supposed to have caused the disease one winter seemed to be perfectly wholesome the next, even though bees were put upon the same combs upon which colonies the previous winter died.

FRANCIS HUBER AND HIS ACCUSER.

BE sure to read the "Book Review" on p. 881 of this issue. While these reviews, as conducted by W. P. R., have contained far more interest than such reviews usually do, the one in this number is particularly rich. It shows that great and good men like Huber are not free from the lash of the tongue that delights more in destruction than construction. This review is interesting in another way: The light of the past and present vindicates Huber rather than his accuser. We see illustrated again how opponents in controversy will often pervert the statement of the criticised; for instance, Huber never said that queens would *talk* French, but perhaps said that they would "quahk"—a word resembling the French word *quoique* meaning *although*. Huber's opponent has all through attacked, not what Huber actually said, but what he makes him say. History repeats itself. While we hope mankind is better in this respect nowadays, there is still room for improvement.

By the way, our collection of ancient bee-books is nearly exhausted. We should like to continue these reviews further, and we should be glad to get track of any old books not noticed yet. If we can not secure the loan, perhaps we can purchase them; but don't send them on without first writing us, as we have a few books still left on hand unnoticed.

CAN A SALARIED STATE OFFICER SELL THE RESULTS OF HIS LABOR TO PRIVATE INDIVIDUALS?

A QUESTION has been raised by the editor of the *American Bee Journal* as to whether R. L. Taylor, a salaried officer of, and an experimenter for, the Apicultural Station of the State of Michigan, has a right to sell his reports to the editor of the *Bee-keepers' Review*. As a rather nice point is here involved, and upon which good men may differ, we had decided not to bring it up in our columns. We may say, however, that this same thing has been done for agricultural papers by experimenters at agricultural stations; but the wisdom of such a course has been seriously questioned. In the case of Mr. Taylor and the *Review*, it ought to be stated that Mr. Hutchinson spent no little time and money in getting this station started. He was also largely instrumental in establishing a valuable precedent by which other States are following suit.

The usual method of sending out reports from these stations is, to issue a bulletin a long time (usually a year) after the experiments were performed, and when interest has died out. A government bulletin, as a general rule, does not and can not dish out these reports in a form as popular and comprehensive as a real live journal, to say nothing of the fact that the bulletins are out of season. A report, to be valuable, should be given a mouthful at a time, periodically, and *fresh* from the field when the flavor is at its best.

So far all of us can join hands; but when it comes to the matter of giving these reports to

some particular journal for money or other considerations, there is a question. We may be wrong; but we are under the impression that, when Bro. Hutchinson and his associates went before the Board, asking for the establishment of an apicultural station, there was an understanding with the Board that Mr. Hutchinson, by reason of the time and pains he had taken in the matter, should have the right to have periodical reports, he to pay for the privilege of first publishing the same. Then, too, if any journal should have the first reports, naturally it would be the journal in the State of Michigan, because this station was a State affair.

If there was not this understanding with the Board, then there is a question whether Mr. Taylor can sell these reports, although he would have a right to give them outright, if the Board do not object; but if we are correct, they have not objected as it is. The whole question hinges on what understanding was had with the "powers that be."

THE ANNUAL PRODUCT OF COMB HONEY IN THE UNITED STATES.

A FEW months ago we hinted at the possibility of approximating very closely the number of pounds of comb honey from the number of sections sold during that year. It has now come to pass that three-fourths of all the sections made are turned out from not more than three factories. It will be a comparatively small matter for these factories to report the number of sections they have sold during that year. We estimated that, if we knew the number of sections sold, we could approximate the number of pounds of comb honey by deducting a certain amount for sections left over not filled, because most bee-keepers order in excess of what they think will be their actual needs for the season. There will be shrinkages from other sources, such as the fact that sections do not hold a full pound, all of which could be taken into consideration. While this might be, to a certain extent, guesswork, the results would be far more accurate than some of the ridiculous guesses founded on practically no data as to the number of pounds of comb honey produced annually in the United States.

As some of the manufacturers, especially some of the smaller ones, might hesitate to place their annual product of sections alongside of that of the large factories, we have thought we could obviate this difficulty by having the reports all sent to an individual who has no interest in supplies, and who would keep all such reports strictly to himself, not even letting us know, and who, after all reports had been received, would give the sum total to us as publishers. In looking about for the right man, our minds turn toward Dr. Miller, a fair man, and who knows how to keep things to himself. We therefore appoint Dr. Miller as a committee of one to collect reports from all section-makers as to their annual product of sections for the United States. After making up the sum total, he is to have full latitude to estimate various shrinkages, and from that compute the number of pounds of comb honey.

Now, to make this a success every manufacturer should report to Dr. C. C. Miller, Marengo, Ill., as soon as possible after Dec. 31 next. We do not expect the section-makers to do this service for nothing, and would, of course, be willing to pay a reasonable sum for the service. But, suppose manufacturers won't report. Well, then we are powerless to do any thing. We assume, however, that their loyalty to the pursuit, and a general desire to know how much comb honey is produced annually, will insure the reports. But will they be honest about it?