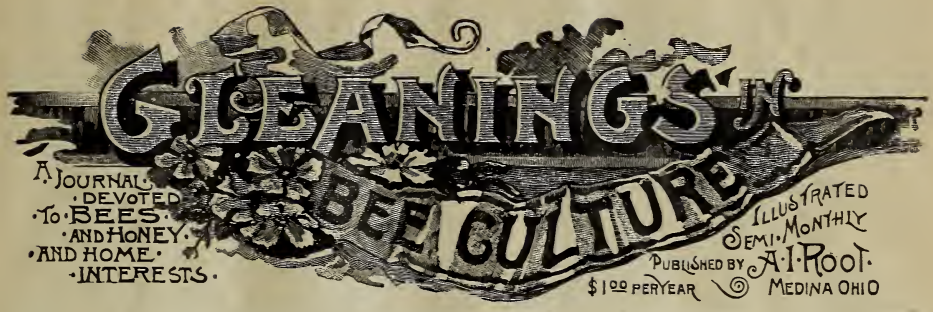


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Vol. XXI.

JAN. 15, 1893.

No. 2.

STRAY STRAWS

FROM DR. C. C. MILLER.

DADANT first gave the idea of soaking combs before melting.

I STAND UP to be counted with W. C. Frazier as strong for the top-bar $\frac{1}{8}$ thick.

AND NOW the question in England is, whether a pound bottle shall hold 14 or 16 ounces.

THE LAST *Review* is unusually good, having a short but delightful autobiography of the editor.

THAT PLAN of sulphuring through a pipe in the cellar, as given by friend France, on p. 19, is capital.

"I FIRMLY BELIEVE that the house-apiry is to be the Mecca in the new dispensation in bee-keeping," says B. Taylor, in *Review*.

DID YOU HEAR the screaming at our house two weeks ago? It wasn't any one being killed; it was only the folks laughing at Wilder's plaint.

CONDUITE DU RUCHER, the excellent French book of M. Bertrand, has been published in German, and a Flemish edition is now in press, as also one in Russian.

ILL HEALTH is given as the reason for giving up bees in two separate instances in *A. B. J.* Why, friends, bee-keeping is just the thing "for invalids and women."

HUTCHINSON says the last few years have been trying ones to bee-keeping, and that he has been surprised to learn of so many who have gone out of the business.

AN HISTORICAL ALBUM is what the *American Bee Journal* proposes to be the present year, by publishing each week "a biographical sketch, with portrait, of some prominent bee-keeper."

IT LOOKS STRANGE to see in the *British Bee Journal* instructions given for making the old-fashioned straw skeps. I doubt whether one in twenty of the readers of *GLEANINGS* ever saw one.

DOOLITTLE's a philosopher. In *Review* he says, "Would you deprive your children of the keen enjoyment you have experienced in building up a home of your own, by giving them one already built?" His philosophy is good too.

A SECOND SWARM is mentioned in a foreign journal, in which, upon hiving, the queen showed the usual signs of fecundation, and the assurance is given that no mistake could be made, as though such a thing was very unusual. I had supposed it of frequent occurrence. How is it?

THE FRENCH have heretofore imported their sections from this country; and they now announce, as a great step forward, that they have sections made in France, of French wood, equal to the American product. M. Daujat, Montagna, is the manufacturer.

"OWNING UP when I see that I am wrong," Hutchinson counts among his sweetest pleasures; and I believe Hutch is that sort of man. "Owning up" is a rather bitter pill for most of us, but it leaves a sweet taste in the mouth afterward.

HEDDON THINKS adulteration has done beekeepers no harm, but the talk about it has done harm, and Hutchinson agrees in the latter part. Possibly some day it may be said that sugar honey never did any harm, but the talk about it did.

"BEES STORE far more rapidly when not divided off into small clusters as they are in sections," says B. B. J. I think that is the general belief, but some think differently, and some definite experiments to settle the matter positively would be a good thing.

DOOLITTLE has just let it leak out in *Review*, that he has been running an out-apiry for three years. Bad Doolittle to keep us so long in the dark. He favors comb honey in the home apiry, and extracted in out-apiries, leaving the honey all on at the out-apiries till the season is over.

WHEN PIPING is heard in a hive, it is the free queen that pipes, and the queen or queens in the cells quawk. Lately I have seen it stated that the queen in the cell calls first, and the free queen pipes in reply. I had supposed, from the few cases I have heard, that the piping comes first, and then the queens in the cells quawk in reply. Which way is correct?

A GOOD DEAL depends on the manner of putting things. When Editor York says the *A. B. J.* is \$1.00 a year, it doesn't seem any thing so very remarkable; but when he says that each number of "the old reliable" costs less than two cents, it looks like a pretty good bargain. Come to think of it, isn't there a good bit of reading in this number of *GLEANINGS*, for only four cents?

A WRITER in the *British Horticultural Times* goes a little further than our friend across the line, and says that not only is the sting used as a trowel, but, through the sting, formic acid gives to honey its peculiar flavor. Presumably a different amount of formic acid is used when bees work on different flowers. Oh, yes! we're getting on in our knowledge of how bees do business.

REV. W. F. CLARKE, in *Review*, tells me that Herr K. Mullenhoff teaches that formic acid is added to honey from the bees' stings, and says,

"I am, therefore, in the good company of an eminent German scientist." It will be next in order for Rev. Mr. Clarke to quote the name of the eminent scientist in whose company he is when he says that the sting is a "trowel with which the bee finishes off and seals the cells."

LE RUCHER, a French bee-journal, with commendable enterprise, is publishing a series of articles giving the most complete history of the section that I have ever seen. Commencing with the crude beginnings of a quarter of a century ago, the various improvements are given, ending with a detailed account of the manufacture as carried on at Medina. The series has now reached that part where the management of sections by the bee-keeper is fully discussed.

LANGSTROTH'S REMINISCENCES.

SLAVERY; A REMINISCENCE OF DR. LYMAN BEECHER.

A brother of my grandmother lived in Petersburg, Va., and, like his sister, cherished in his heart a deep hatred of the institution of slavery. One night the city was alarmed by a man riding on horseback, almost naked, and crying out that the slaves had risen, and were burning and killing all before them. Rising up hastily from his bed, my uncle was preparing himself for resistance when he sank powerless upon the floor. "O my God!" he cried out, "how can I raise my hands to kill those whom I have seen treated worse than the brutes?" As soon as he recovered himself he resolved to kill no one unless in defense of his family. It proved to be only a false alarm, given by a man crazed by drink.

A neighbor of my grandmother, an old maid, slept in a bed on rockers, and had a slave woman to rock her while she slept. The woman became so accustomed to this that she could usually rock quite well, even when asleep; but if the rocking ceased for a moment, her mistress would wake up and lash her with a whip which she kept lying by her side. This woman put her stamp upon the sugar in the bowl, as it went from the table, so that her servants might not help themselves without being detected. A servant, waiting on the table, almost always dodged when approaching her, expecting a blow, just a horse cruelly treated starts when any motion suggests that a blow may be coming.

A neighbor was annoyed by a slave who had several times run away. At last he swore a fearful oath, that, if he ran away again, and was caught, he would chop off his hands. He did run away again, and was caught; and if his master had actually intended to carry out his awful threats, he was deterred from doing so by the agonized apprehensions of his wife. A daughter was afterward born to them, entirely destitute of hands.

For many years I have been painfully sensible that there was too much law and too little gospel in many of the sermons of my Andover ministry. One day a college classmate who was then in the Theological Seminary came to talk with me on this feature of so many of my discourses. He had been talking with one of my oldest deacons, who had sorrowfully recognized this great defect in the sermons of his beloved pastor. I was not offended by the plain talk, but I could not then be made to feel that it was just.

It has always seemed to me, that to no man so much as to Henry Ward Beecher was owing the great change which has taken place in our preaching. When the great Jonathan Edwards was preaching from the text, "Sinners in the

hands of an angry God," we are told that one of the preachers who was in the pulpit with him pulled his garment, and said, in a low voice of remonstrance, "O Mr. Edwards! remember that God is a merciful God."

It is written, "Like as a father pitieth his children, so the Lord pitieth them that fear him. For he knoweth our frame; he remembereth that we are dust." These words seem to me to open a window into the very heart of God, so that every father and mother may know from experience how God feels toward his erring children. Is there one child more easily tempted than the others, more ready to fall? Does the parent's heart go out against that child? Does he know it, in all its weaknesses, only to lay more aggravating burdens upon it? No! a thousand times no! Let us never forget how beautifully the Savior illustrates God's love and pity in the parable of the prodigal son.

I once preached from the text, "Not knowing that the goodness of God leadeth thee to repentance." I have no doubt that the tenor of this discourse was molded largely by my recollection of a discourse preached so often in revivals of religion by Dr. Nathaniel Taylor. The good old deacon, in speaking of this sermon, could hardly find words strong enough to express his delight as he opened his whole heart to me and tried to make me see how much more I could do to lead sinners to Christ by preaching oftener on the love and goodness of the heavenly Father.

In the summer of 1836, shortly after my settlement as pastor in the old South Church of Andover, Mass., Dr. Lyman Beecher, in company with the late Thomas Brainard, D. D., so well known as pastor of the old Pine Street Church, Philadelphia, made a visit to Andover to interest the theological students in the religious needs of the great West. As Dr. Brainard was a relative of mine by marriage, they stopped with me at the house of Deacon Amos Blanchard, where I was boarding.

It was soon extensively made known that Dr. Beecher would preach in the old South Church, at an evening service. Some time in the afternoon he called for pen and paper, and desired to be left alone in my study. Teatime arrived, and he was hardly willing to be disturbed long enough to take his supper. The time for the service arrived and he was not ready for it, but told Dr. Brainard and myself to go to the church, which was only a short distance off, and he would join us before the preliminary services were over. Only a verse or two of the hymn before the service remained unsung; the large building was crowded, and I began to be quite nervous, and was just about sending a messenger after the good old father when he made his appearance. Mounting the steps of the pulpit with rapid strides, he was all ready for the sermon. His manuscript was so small as to suggest the times when paper in this country was so costly that economy in its use was practiced, even at the price of precious eyesight.

His text was, "Seek ye first the kingdom of God, and his righteousness." It was a grand sermon, crowded with thought, severe in logic, and fairly blazing with his wonderful illustrations. He swayed his hearers at his will, and it seemed to me I never heard a discourse which appeared to stir more deeply the hearts and consciences of an audience.

When we returned home the doctor said to me, "Now, young man, you know the circumstances under which I wrote the outline of that sermon. Don't for a moment—trusting to what you can do offhand—neglect the time for study and thorough preparation. *In that discourse I boiled down the studies of years.*"

I expressed a great desire to keep the manu-

script as a memorial of his visit, and of his kind and fatherly advice.

"No," he said, "I want that sermon for my own use."

After he left his room the next morning I was lying upon the floor a sheet of common writing-paper, folded so as to be hardly larger than the palm of my hand, the leaves being fastened together with a crooked pin. Showing it to Dr. Brainard I said, "I feel strongly tempted to secrete this paper, but I suppose it must be returned to Mr. Beecher."

"Not at all," he replied. "Dr. Beecher will never think of it again. Of course, if he asks you for it you must give it up."

He never inquired for it; and, with its old pin undisturbed, it was in my possession over 42 years, until, at the earnest request of one of the professors, I presented it to the library of Wabash College, Indiana. Few indeed are the persons who could make much, that would resemble the original, out of the scrawled manuscript of that wonderful discourse.

I can not resist the temptation to give a short description of a laughable interlude which took place the next morning, in the lecture-room of the Theological Seminary. An appointment had been made for Dr. Beecher, who was then Professor of Theology in Lane Seminary, Ohio, to address the students on the religious wants of the West. After a stirring appeal to the young men to "go West," the doctor asked Mr. Brainard to make some further remarks, and resumed his chair upon the platform. For a while he listened with fixed attention; and then, apparently forgetting every thing else, he took from one of his pockets a penknife. He first tried its edge on one of his fingers, and then, propping one of his legs upon the other, he began very vigorously to give his knife the desired edge by using the sole of his boot as a whetstone. Several times he tried the edge again upon his finger, until at last he seemed satisfied with his job, and returned the knife to his pocket. His attitude, after this performance, was just the same as before, and no doubt he himself was unconscious of this curious display.

L. L. LANGSTROTH.

Dayton, Ohio.

Continued.

THE NEVER-FAILING (?) BASSWOOD.

HOW A WISCONSIN BEE-KEEPER SPLICED OUT A POOR SEASON; NOTES ON RAMBLER.

Editor Gleanings:—Having been taught a never-to-be-forgotten lesson on the instability of worldly things (this year), and having personally visited a large number of the apiaries of Grant, Crawford, and Vernon Counties, during the past autumn, I think I may be able to place a few ideas in readable shape before your readers.

You see, after 16 years of experience in these basswood forests, and only one partial failure in the honey-flow from that source. I naturally became conceited that my locality, at least, was infallible. So last spring when we set out our 200 colonies in good condition, I said, "Now I will put out two acres of raspberries and blackberries, and begin the construction of a large and commodious house there. After the honey season I will complete it through the aid of my little workers." I accomplished my part all right; but the bees failed to connect—not only failed to finish my house, but failed to give surplus enough to eat on one mess of biscuit; but, instead, drew on us for 5 bbls. of McKinley sugar to complete their winter stores. The season left me in possession of one

fact; namely, that it is possible for the honey crop to fail, even in Southwestern Wisconsin.

When speculating as to the cause of the dearth of honey I should like to borrow Dr. Miller's term, "I don't know." The basswood bloom was fresh and luxuriant in the valleys, and all the conditions seemed normal during basswood bloom, for the

Rain had ceased to pour
About a week before;
And the days and nights were hot,
But the nectar, it was naught,
The electric feeling, it was there,
But honey here is very rare.

There, I never knew till this minute that I was a poet.

I suppose the excessive rains had something to do with it. I heard one discomfited farmer say that it rained 40 days in May and 45 in June; but I have since thought he must have meant times instead of days. After meeting with this complete failure in my honey crop I was confronted with the fact that the house would have to be finished next season, and that five healthy and vigorous children would need considerable to eat and wear, besides a lot of schoolbooks, before another season. So, guided by the axiom that "a man is not always licked when he is down," I took an agency from the old reliable Richland Co. Nursery and commenced work two months ago. I have not only earned \$100 per month for myself, but have greatly enlarged my circle of acquaintance; seen the ruins of scores of small apiaries, but found out that my own locations were among the poorest for this season. Out of some 1500 colonies that I visited, only four had taken any surplus. My friend (and neighbor) Mr. A. G. Wilson, had taken a small surplus from 50 colonies he had moved down the Kickapoo River to Wooster, in Crawford Co. Mr. J. W. Van Allen, of Haney, had also taken a little; also friend Dexter, of Boscobel, had a small quantity. But Mr. A. A. Armes, of Hurlbut, Crawford Co., had done the best of any one I have heard from in this part of the State. He secured some 45 lbs. per colony.

I found the conditions much the same in all the apiaries I visited. The stores showed that the bees had worked diligently all summer, for their stores were made up of a small mixture each of every thing, from apple bloom to aster; although the best yield being in the fall, it makes the honey average dark. It is a novel sight for me to look into the brood-nest and see nearly all of the winter stores dark honey. I never saw it before in this section of the country.

Adjacent to the above-named apiaries I saw considerable of the so-called fireweed growing where fire had run over the ground last spring. This, too, is something new for this country, and I suppose partly accounts for their small surplus. Many more bees will die this winter, which will nearly rid the country of imitators, who declare they intend to keep bees enough for their own use only, but still keep from 20 to 30 colonies in the field, and all they accomplish is to use up the pasture and produce, and get a few small dauby lots of honey, which they use to spoil prices with instead of using it up in their families, and giving it away to their neighbors, which is all it is fit for. The painstaking bee-keepers have their bees equalized, fed (if necessary), and snugged away for winter, and we have again pinned our faith to them, hoping they will do better next season than the last.

I wish to say here, that my experience with the score or more of men who keep bees that I have visited in the last two months is very

flattering to our craft. I find them men with broad and liberal views on all questions of interest, nearly all men of temperate habits, and a large per cent truly Christian gentlemen.

ANOTHER GENTLE HINT FOR RAMBLER.

I hope the Rambler will visit the World's Fair. You know that Cupid is quite a tactician, and has been known to be successful in some cases by blazing away at the stomach instead of the heart; and as the Rambler has been eating his own cooking for the past year, he may be more tender—well, you see the possibilities. I was thinking of Rambler the other night. You see, the young people here insist on having my wife for superintendent of the Y. P. S. C. E. I do not belong myself, but I want my children to, so I sometimes take care of the baby, and my wife takes the older children and goes, while I spend my time entertaining the baby and meditating what I should do were I deprived of these blessings. I guess it does me good, too, for I know I more fully appreciate my family after one of these evening's lonesome meditation. I think the whole fraternity will join me in saying that it were better for the Rambler to be seen up nights hunting over his cupboard for paragoric or some other soothing-syrup to quiet the little Rambler, while the mother gracefully looked on and criticised, than to see him as he is, dressed with a look of rage mingled with fright, hunting for a stick of greasewood to throw at those pesky polecats. I think if your artist would picture a little Rambler sitting up in his little trundlebed in that lonely cabin, and crying with his father's persistence, he would see all those pests that live under the floor leaving for more comfortable quarters.

M. A. GILL.

Viola, Wis., Dec. 13.

MANUM IN THE APIARY.

FEEDING BACK; EXPERIMENTS IN SUGAR HONEY.

"Have you commenced feeding your bees so soon?" asks Charles, as he enters the honey-house, just as Manum is going out with a pail of extracted honey.

"Yes, Charles, I am feeding back some of my honey that I have extracted from the unfinished sections, to have some of my best unfinished ones completed."

"Do you find that it pays to feed back?"

"Yes, it does in my case, for the reason that I have but very little call for extracted honey; and this year I have got so many unfinished sections that, if I did not extract from a portion of them to get the remainder finished, I should have more extracted honey than I can dispose of in my home market; and, furthermore, when I get this honey into the sections again, and nicely sealed over, it is worth more than it is now."

"Don't you find there is a shrinkage in this honey by feeding it back?"

"Yes, there is some shrinkage, but not in proportion to the difference in the price between comb and extracted honey, inasmuch as the combs are already drawn out."

"What makes your extracted honey so thin? Mine is thick and heavy."

"Well, Charles, in order to get the bees to take it from the feeders rapidly I find it necessary to add one-third warm water; by so doing I find that they do much better in finishing up their work than where it is fed to them too thick. Just step out here and I will show you. There, you see this hive has on 80 sections that were given them day before yesterday; and, as

you see, they are nearly finished. I think by to-morrow night they will do to take off and more put on."

"My! they are working in the boxes as busily as I ever saw bees work during a good basswood flow. How many colonies are you feeding in this way?"

"Only 15. These 15 colonies will do all my finishing up."

"How much do you feed at a time, to each colony?"

"About 15 lbs. These new feeders, you know, hold 16 lbs. of thick syrup, such as we feed in the fall for winter stores; but this diluted honey is not as heavy as our syrup is, and I calculate that a feeder full will weigh only about 15 lbs., though I have never weighed any to ascertain."

"Have you ever tried feeding sugar syrup for the same purpose that you are feeding this honey?"

"Yes; and right here are two colonies that I am experimenting with in feeding sugar syrup. Now, I want to show you the difference between the two kinds of honey. This sugar honey, you will see, looks differently where it is capped over; the cappings look watery, or icy, as though the honey were frozen in the comb. I don't know why it should be so; but there it is; it shows for itself. I thought, when I examined the honey on the first hive I opened, that it was the nature of the bees of this colony; but when I found that both colonies capped their honey in the same way, I thought that it might be owing to the sugar syrup fed them; however, that may not be the case. Two colonies are hardly enough to prove the matter for a certainty."

"Well, now, Manum, to be honest, do you think that feeding sugar syrup for the purpose of having it stored in sections to sell as honey will pay us in dollars and cents, laying aside all conscientious scruples as to the dishonesty of the practice? Have you tried it thoroughly enough so that you are satisfied regarding the matter?"

"Well, Charles, you have asked a difficult question for me to answer. I wish you would try to confine yourself to easy questions. In the first place, you ask whether feeding sugar for the purpose of making honey will pay. I will answer that by showing you what these two colonies did last week. Here are the figures. The two finished up 320 sections, two sets each, of 80 to the set; 320 sections (partly filled), weighing 150 lbs., at 15 cts. per lb., would be \$22.50 for the honey given them in the sections; 300 lbs. of sugar fed them, at 5 cts., \$15.00, making \$37.50 worth of sugar and honey given them. The 320 sections, when removed from the hives, weighed 302 lbs.; and, at 15 cts. per lb., would be \$45.30. Now we will deduct the \$37.50 worth given them, and we have \$7.80 for the trouble of mixing sugar, feeding, etc., which is fairly good wages. Therefore, if sugar can be bought at 5 cts. per lb., and we can sell our honey at 15 cts., as it comes from the hive, there is profit in feeding sugar."

"Well, Manum, but what has become of all the sugar you gave the bees? You fed nearly as much dry sugar as you have taken off in the sections, including the 150 lbs. of honey that was already in the sections. Surely it could not have evaporated that much."

"No, Charles; not all this waste went up in vapor, but a good portion of it went to support the bees and in comb-building, and some of it was stored in the hive; perhaps 15 lbs. of it is still in the hive; and as I am following up the experiment with these same two colonies, I am of the opinion that the gain will be more in favor of the sugar this time, because the combs in the brood-chamber are so well filled that a

greater per cent of the syrup fed will go into the sections. But you see, Charles, that, if I had figured the sugar at 7 or 8 cts. per lb., and the sugar-honey, as it comes from the hive, at only 11 cts. per lb., the margin in favor of feeding sugar would be very small. Hence, taking the labor of feeding, preparing the syrup, and the liability of the 'stuff' selling at a lower price than real honey brings, it is quite strong proof—enough, I think, to prevent a majority of bee-keepers from trying to get rich by feeding sugar to be stored in sections. Of course, my experiment has been with only two colonies. It may be, that, with a more extensive trial, and with more experience, the result might be more favorable to the sugar feeding; but I hardly think it would pay us to keep bees for the purpose of producing an article of honey made wholly of sugar and water."

"Manum, judging from present indications, do you think there will be much sugar honey put on the market very soon?"

"Dear me, Charles! this is another of your difficult questions, and one which I wish I might answer with a decisive *no!* but I fear some, if not many bee-keepers will try their skill at feeding sugar, especially in poor seasons. I judge not only by what I read in our bee-papers, but also by the numerous letters I have received from bee-keepers, who ask many questions regarding the matter, such as to the amount of water required for 100 lbs. of sugar; 'When is the best time to feed?'; 'How much shall we feed at one time?'; 'How often?'; 'How many sections shall we put on at one time?'; 'Would sugar honey, so called, be (according to Prof. Cook's idea, that it is really honey) a violation of our State law regarding the adulteration of honey and maple sugar?'; 'Can I practice it and recommend it?'; 'Is my new feeder rightly adapted to the purpose?'; etc."

"Well, well! Did you answer all these questions?"

"No, I did not, for I was disgusted with some of them. There was so much selfishness exhibited in some of these letters that I would not gratify such selfish motives as I thought I saw in them; and, there not being even a postage-stamp inclosed to pay the postage on an answer, they therefore found a lodging-place in the waste-basket. As regards the reference to postage-stamps, I am accustomed to such neglect on the part of the writer, for not one letter of *inquiry* in 50 contains a stamp. However, if the tone of the letter indicates an honest purpose on the part of the writer, I never hesitate to answer. I am always ready and willing to impart to others the *little* that I know about bees; but, at the same time, I like to feel that the inquirers are sincere, and will appreciate what is given them, inasmuch as it is of their own seeking."

A. E. MANUM.

Bristol, Vt., Dec. 26.

EXCEPTIONS TO ALL RULES IN BEE-KEEPING.

DR. MILLER RECONSIDERS SOME OF THE STATEMENTS IN GRAHAME'S ARTICLE.

On page 916 Mr. Wilder Grahame very justly says that more light is needed as to the matter of reproduction in the bee; and in his attempt to throw light upon it, as it seems to me, he illustrates the fact that we are likely to follow traditions and jump at conclusions without sufficient knowledge. I hope he will take it kindly if I try to show some of the things of that kind in his article.

He says, "Everybody, perhaps, knows the queen-cell . . . opens downward." If you

cut out a queen-cell and put it in a horizontal position it will hatch all right. More than that, I have seen queen-cells placed horizontally by the bees between the lower edge of the comb and the bottom-bar. So there are exceptions to that rule.

Again, "If all things are favorable, the larva becomes a queen in 16 days." That's according to the books, but I am somewhat of the opinion that careful observation under the usual conditions in which bees raise queens, when left to their own sweet wills, will establish the fact that often, if not generally, queens hatch more nearly 15 than 16 days from the laying of the egg. Thirty years ago, sixteen days was not the orthodox time. It was 17 or 18. The Baron von Berlepsch says (*A. B. J.*, Vol. I., p. 199) his "experiments show that the opinion generally entertained, that the queens emerge between the seventeenth and eighteenth day after the eggs are laid, is correct."

In the same volume, p. 143, father Langstroth reports a case in which the queen was 21 days in coming to maturity; and it will be noted that it was started in a nucleus, presumably without a laying queen. So I do not dispute that it may take, and perhaps generally does take, 26 full days for a queen to mature in the cases that have been generally observed; yet in a number of cases my plans have come to grief by trusting to 16 days; and I think it quite likely that if, instead of taking nuclei, or colonies in any way out of their normal conditions, a series of careful observations were made upon full colonies when preparing at the usual time for swarming, some deduction would be made from the 16 days.

Again, it is stated that "after the old queen leads a portion of the swarm"—by the way, it would be better not to say the queen *leads*, but *accompanies* the *whole* rather than a *portion* of the swarm—that "if the young queen hatches before the colony is ready for her, the workers confine her in her cell, and care for her there until the conditions are more favorable." Probably "matures" is meant instead of "hatches," for the bees would hardly confine a queen to a cell after she had hatched out of it. But even with that correction, is the statement true? Do the bees ever confine a queen in her cell because of the presence of a *laying* queen in the hive? Is it not rather the case that, when a prime swarm is delayed until the young queen is fully mature, the young queen is allowed to emerge and to kill the old queen, or else that the workers themselves kill the old queen?

Next, the statement is made, that, if all the other young queens are not destroyed when the first one hatches out, a second swarm will result. Isn't that putting the "cart before the horse"? Isn't the preserving of the young queens a result, rather than a cause, of the determination to swarm?

When a queen is lost, Mr. Grahame says, "If the colony is healthy, and there is brood in the hive not over three days old, worker larvæ are removed to queen-cells," etc. That is certainly something new, but is it true? In the hundreds of cases that have come under my observation, where queen-cells were started after the removal of the queen, I do not remember to have seen a case which lent any color to such a belief. In every case the bottom of the queen-cell had the hexagonal form, showing that the bees had left the larva in the original worker-cell. Has Mr. Grahame any proof for his statement?

The bridal trip of the queen, according to Mr. Grahame's statement, is made, "if the weather is favorable, the third day after hatching." I think the books of the present day will not support this. Dadant, in the revised Langstroth,

p. 51, says, "The shortest time we have ever noticed between the birth of a queen and her bridal flight was five days, and in this we are in accord with Mr. Alley, one of the most extensive queen-breeders in the world. The average time is six or seven days." I think those who believe fertilization sometimes occurs at three days consider this very exceptional.

Mr. Grahame says fertilization "must be within 21 days or she will be barren." Huber taught this a hundred years ago; but it was shown to be an error many years since. On page 104 of *American Bee Journal* for 1861 appears the statement that the Baron of Berlepsch had several queens fecundated when thirty days old, and one at thirty-three, that were yet fully fertile. Also that Mr. Hemman, in 1860, had a queen that was not fertilized until 46 days old, and yet produced worker brood. If my memory serves me, I saw, not long ago, in a French bee-journal, a report from no less authority than Chas. Dadant of a case of successful impregnation at 40 days old. So the statement is too sweeping, that fertilization must take place within 21 days of birth or barrenness will result.

But an interesting question is still left open: At what age, as a general rule, does a queen become incapable of impregnation? It is just possible that 21 days may be the answer to this, and on some accounts it may be an important question. There is room for experiment here; and if there are many cases in which the limit runs to 30 or 40 days, then I would hardly expect the average to fall as low as 21.

Marengo, Ill., Dec. 20.

C. C. MILLER.

RAMBLE NO 76.

THE CARRILLO CELEBRATION.

My travels now lead me due south from Los Angeles, my objective point being San Diego. The train runs inland about half the distance, then it comes in view of the ocean at San Juan. Now, please don't pronounce that Jewan; simply say *San Juan*. and you have it. Here our train runs near the San Juan Capistrano Mission, an old adobe structure partly in ruins, and a hundred and twenty years old. It is one of the old landmarks of a former civilization, and a movement is in progress to repair many of these historic relics. From this town we follow the seashore and catch many grand views of the ocean. A ride of 127 miles lands us in San Diego, noted chiefly for a glorious climate and a beautiful bay, which, with the addition of a cloudless sky, reminds the foreign traveler of the bay of Naples, in Italy. The narrow entrance to the bay, away out at Point Loma, is fittingly named the Silver Gate.

The city has passed through its boom period, and the evidences of it are still visible in vacant houses. Still, San Diego is a lively town, and is looking forward to a more permanent period of growth and prosperity. From the animate appearance of the streets upon our arrival, one would suppose that there was now a mighty boom on; but the happy-appearing crowd were here to take part in the 350th anniversary of the discovery of San Diego harbor, and of California, by that bold Portuguese explorer Juan Rodriguez Cabrillo. It was, therefore, called the Cabrillo celebration, and brought within the gates of San Diego 20,000 people, and of such a variety as can seldom be seen. Soon after arrival I fell in with a tall gentlemanly appearing fellow, and he proposed a trip across the bay and a visit to the famous Coronado Hotel. I agreed immediately, and off we started on a double-decked electric street-car for the ferry.

"Well," says I all to myself, "this fine fellow may be a bunco man, but I don't care ducats. I'm loaded for him." Then says I out loud, "Isn't this just fine! Why, it reminds me of the words of the immortal Shakespeare, where he says, 'What's the hods as long as yer 'appy?'"

He looked sort of solemn, and didn't say a word about Shakespeare, and I knew he was not a bunco man, for that class of people can quote the Bible, Shakespeare, or Bill Nye, correct at the word go. We viewed the exterior beauties of the hotel, and patronized the interior by each taking a toothpick as we sauntered through to the seaside veranda; and while reclining in easy-chairs, with our feet on the railing, with the foaming breakers dashing below us, my friend remarked, "Well, I don't know but I feel as well as though I owned a million."

"Yes," says I, "or five. Ain't we having a ripe time?" I slapped him on the knee, and beamingly remarked, "What's the hods as long as yer 'appy?" But such a state of enjoyment



"WHAT'S THE HODS AS LONG AS YER 'APPY?'"

couldn't last long, and we returned to the city, and were lost to each other in our respective lodgings.

As the celebration was in honor of an ancient Portuguese navigator, but sailing under the flag of Spain, the Mexican government was invited to participate, and Governor-General Torres, with a brilliant staff, and the Mexican military band of thirty musicians, were among the honored guests. The celebration covered a period of three days, and was divided into a grand parade, Indian fiesta, and vaquero (vah-ka-ro) tournament.

The grand parade started upon its line of march after receiving from two ancient-looking ships several Portuguese dressed in the style of the 16th century, representing Cabrillo and his followers. The Mexican Band was given the post of honor, and led the procession. The Governor of the State, his staff, invited guests, officers of the army and navy; two tribes of Indians in primitive costume, armed with bows and arrows; 150 vaqueros, many from Mexico, with tall decorated hats and richly embroidered serapes over their shoulders. Their high-pommed saddles glistened with silver ornaments, bearing the ever present lariat and revolver. Various civic and military organizations took part, and, lastly, several floats of an historic and local nature. The one causing the most comment and mirth was a covered wagon, of emi-

grant days, and upon the canvas appeared the words "Pike's Peak or Bust."

In the evening the Mexican Band discoursed sweet music to thousands of people in the Plaza, and, unlike the blare and noise of our bands, suggestive of war and turmoil, the Mexican music was of a softer nature, and calculated to lead you into the realms of dreamland.

rattle of gourds.' The scene was of a weird and wild nature, and the spectators were very quiet and attentive during the performance. In some of the tule lodges in the encampment were very aged Indians. One squaw was said to be 128 years old. Her hands and feet had a scaly, unwashed appearance, and her ensemble was as uncanny as a very witch.



SUISANIO INDIAN PROCESSION IN NATIVE COSTUMES.

"With half-shut eyes, ever to seem
Falling to sleep in a half-dream."

This band was a prominent feature through all of the exercises, and won many an encore and unstinted praise from thousands.

The second day of the celebration, the Indian fiesta drew an enormous crowd. The Indians were dressed as they were the day previous, in

In another tepe was an aged chief, 108 years old. The great age of these worthies shows the healthful effect of simple diet and open-air living. The beef that was issued to them during the encampment was considered not fit to cook until it had hung in the sun half a day, and had been well covered with innumerable flies. This was also, probably, conducive to



short skirts and breech-clouts, and their naked bodies were decorated with many-colored paints. In these grotesque costumes they performed their war-dances and the witch-dance. Fierce yells and whoops came from the men, while the squaws sat in a semicircle at one side and kept up a monotonous chant, accompanied by the

good digestion and long life. The Indians, and especially these rare specimens of old people, were targets at which were leveled dozens of cameras, both professional and amateur. They were superstitiously averse to facing the instrument; but there were so many cameras that poor Lo finally had to surrender

his scruples, for it was a hopeless idea to get away from the Kodak.

The last day of the celebration was given to a tournament by a band of 150 vaqueros. This also drew an immense crowd; and when a score of wild steers, with long sharp horns and wicked eyes, came dashing into the arena, followed by fifty mounted vaqueros, all on a dead run, the scene was exciting enough. The steers were skillfully run into a corral, from which they were let out one at a time; and as the lone



“LO! THE POOR INDIAN” CONQUERED AT LAST.

steer entered the arena on a mad rush for liberty, a vaquero on his well-trained pony gave chase. The slender-looking rawhide lariat, after a whirl or two around the head, was thrown out in a large loop, which settled over the horns of the steer. The pony settled back, and, just as soon as he felt the rope tighten, and the steer halt, he then rapidly made a circuit around the dismayed bovine. The lariat began to tighten around the steer's feet, and the pony braced himself for the shock, which came when the steer tumbled in the dust. The vaquero then leaped from the saddle, and, with a hair rope, securely tied the hind legs of the steer, and the capture is complete. A cash prize was offered to the vaquero who would rope and tie a steer in the shortest time. This was accomplished in one instance in 58 seconds, which, I was informed, broke the Pacific Coast record.

During the competition, many exciting incidents occurred. A lariat broke after it had encircled the horns of a steer; many of the crowd, and especially camerists and notably the Rambler, had scaled the fence and entered the arena to get a better view and a favorable position for a snap shot. The steer, finding himself at liberty, recklessly made a dash for the crowd; and such a scrambling to get out of the arena, man never saw. While many shinned up the fence, others, notably the Rambler, went under on all fours. A professional, with his big camera and tripod, got the latter mixed up with his legs, and he went under the fence also, with a two-forty lunge. The steer, however, changed his mind and ran off in another direction. The crowd laughed and shouted, and evidently thought it didn't "make any hods as long as yer 'appy."

The youngest-appearing vaquero of all, roped a vicious-looking steer; and, as he tightened up suddenly on the rope, it was jerked from the saddle, and the steer ran like a deer up the track. The little pony bounded rapidly in pursuit, and, as he drew alongside the rope rapidly trailing in the dust, the young vaquero swung down head first from the saddle, grasped the rope, and resumed his position in the saddle without slackening the speed of his horse. This feat brought down the crowd, with several

rounds of deafening cheers, during which the steer was thrown and tied.

As I had experienced the delights secured only on the back of a bucking broncho, I was deeply interested in the skill displayed by vaqueros in their endeavors to mount and ride the wildest specimens of kicking and bucking bronchos that could be found, and a few won my hearty applause by sticking to the saddle.

During the celebration, two of the U. S. warships, the celebrated Baltimore and the Charleston, were in the harbor, and were visited by thousands of people who had never before been on board a man-of-war. The big guns, the Gatling guns, and death-dealing instruments of all kinds; the electric search-lights that can focus the rays of light on an object at night ten miles away; the scrupulous neatness of ship and implements, and the neat appearance of the crew in their spotless white uniforms, all gave the visitor new ideas and lasting impressions of the power of the White Squadron.

All together, the three days of festivities were filled with pleasant, unique, and exciting scenes; and from it we obtained a good idea of far Western life in its various phases, and long to be remembered by thousands, including the RAMBLER.

WIRING FRAMES.

PRIORITY OF LOCATION, ETC.

As I have sat at my bench on rainy days, wiring frames, I have sometimes wondered how many of my fellow bee-keepers practice that method of strengthening their foundation comb, and Dec. 1st GLEANINGS answers the thought by telling me that enough of them do so to use up, even in a poor season like the last, two tons of wire. This wiring of frames is a little tedious, but I wish that all the work I do paid me as well for the trouble as it does. Some years, owing to laziness, or a like inexcusable cause, I put a good deal of foundation in frames that are not wired, and always regret it afterward, when, on initiating them to the extractor, I see many combs fall from the frames, and pile up in a sticky mass on the bottom of the can. Besides giving strength to the combs, wiring makes them more shapely and better, yet prevents sagging and the consequent two-inch strip of drone comb along the top of the frame. The limitation of drone comb in my hives is a hobby with me, and I would wire my frames were its restriction the only thing gained. I can not see what objection some have to wiring frames. The satisfaction of knowing that good combs will result, when giving a swarm on wired foundation, is of itself worth more than the cost of the wire, while the work entailed by wiring is not so great as that which is required to look after unwired foundation to see that it has not fallen down, nor is being drawn out wavy with kinks and curls.

Comb foundation is used very extensively in California, but I believe only a comparatively small proportion is fastened to wired frames. The practice most in vogue here is to use strips of foundation only about half the depth of the frame. This is not so apt to break down or to sag; but of that last it matters not, for, though the upper half of the comb may have cells of worker size, the addition put on by the bees is most apt to be of drone size, especially if honey is coming in fast when the comb is built. In every apiary, I suppose, there is some natural comb built, and much of this will be drone. I make it a point to watch for all such combs; and where the drone-cells are only in patches I cut them out and fit worker comb in the place;

or, if honey is coming in, and comb-building going on, put the pruned frames in some hive which will patch them up with worker comb. Hives having young queens but recently commenced laying will always do this if the comb to be worked upon is placed in the center of the brood-nest; so, too, will any weak stock having a vigorous queen. But hives with old played-out queens, or colonies on the point of swarming, will generally build drone comb.

I want to call Dr. Miller's attention to the top of page 837, where he says I am talking rather at random when I say (page 802), "An inexperienced person generally manages so badly that what little honey he gets makes no difference in the other's crop;" and where he *certainly* talks at random when he suggests that Mr. Laziuss, who managed so badly as to get but two tons of honey in a twenty-ton locality, will continue to get that amount, even when he has Mr. Upandatit in competition. Now, you know, Dr. M., and every practical bee-keeper knows, that, when there are bees enough on a range to lick up all the honey, each hive will not get as much as when there is ten times more honey on a range than the bees can gather. The practical result of this competition to Mr. Laziuss would be his extinguishment. As for his moral right to possess the location, it is on a par with that of the Indian to this continent. The one needs a twenty-ton range that he may get two tons of honey; the other, a continent capable of supporting toiling millions, that he may live by hunting deer and buffalo. I can think of but one consideration which would make me respect Mr. Laziuss' claim to the range; and that is, when his apiary is rotten with foul brood.

There are a few more of the doctor's views on this subject which I should like to discuss, but I have to pay my respects to the proof-reader, who criticises me for wishing to anglicize Spanish names, and then straightway proceeds to use anglicized words himself. To be consistent, instead of the anglicized word "Spanish" he should say "Español;" and for "Mexican," "Mejicano." I did not suggest that the names be translated, but spelt so as to conform to the sounds of our English letters; therefore the Indian names referred to are not a parallel case, as the Indians had no alphabet, and no particular way of spelling their names; so when the Americans undertook to write them they naturally used that combination of English letters which would come nearest to making the sound intended. Among our Indian names you will be told to spell the word "Chi-hua-hua," and to pronounce it "Che-wah-wah." The Spanish accent is so alien to the English tongue that not one American in ten thousand ever uses it in pronouncing those names. On page 890 A. I. R. uses the word "dobe," and tells us it is pronounced "do-by." So it is, Mr. Root, when anglicized; but the Spaniard spells it "a-do-be," and makes three syllables out of it. This shortening of these names is right in line with A. I. R.'s talk in a recent paper where he calls attention to how the bicycle is usually called a "wheel," and "telegraphic dispatch" has gravitated down to "wire." The Mexican has plenty of time on his hands, and believes the principal object of life is to dance, and smoke cigarritos. Such a people can afford to use long words, and do sometimes give even whole sentences to a town for a name. Los Angeles, for instance, was originally known as "Nuestra Señora, la Reina de los Angeles." As for our "villes," "centers," and "burroughs," they are three, while the Spanish have only their eternal (I had almost said infernal) "Saint" to stick on to every thing. If Spanish names are pretty, the best way to retain that

beauty is by using that combination of English letters which will spell them as they should be pronounced. Don't stick an H in the middle of a word, as in Cah-uen-ga, and tell Americans to pronounce it as W. for they won't do it, as the people who live here know.

Newhall, Cal., Dec. 15.

WM. G. HEWES.

THOMAS WILLIAM COWAN.

HIS EXTENSIVE LIBRARY ON BEES; HIS MICROSCOPE-SLIDES, ETC.

Friend Root:—Thinking perhaps you would like to have the inclosed letter to publish in GLEANINGS, I send it. H. TOWNSEND.
Philadelphia, Pa.

[It is with pleasure that we give place to the letter.]

Dear Dr. Townsend:—How I wish I could be at the meeting of the Philadelphia Bee-keepers' Association at your house Monday evening next! I should like to tell the members something of my experiences and observations in my long journey through Russia, Germany, France, Switzerland, and Great Britain last summer, and of my visits to the beautiful home of Mr. Thos. William Cowan, editor of the *British Bee Journal*, in London. It is the home of a typical man of letters, a lover of books, a seeker



THOS. WILLIAM COWAN.

after the truths of science. He has a library of about 10,000 volumes, containing many rare and valuable books. That part of it relating to the honey-bee is especially interesting to the student in apiculture. It is probably the largest collection of the kind in the world. In it are full and complete sets of most of the bee-journals of the world published in Europe and America, in various languages. Some of these sets are the only ones known to be in existence. Many of the separate volumes are of extreme antiquity; they are grouped according to age, many of them showing the advance in the science in the different editions issued at intervals of many years. They are also classified according to their respective language—German, French, English, Latin, etc. Many of Mr. Cowan's own books have been published in nearly all these languages.

It is really very impressive, and seems to dignify the subject we are striving to advance, to see how much has been written about it by many of the soundest thinkers and clearest writers of the world.

Next in interest to the books was a collection of microscope drawings and plates, and papier-mache medals of the bee and kindred objects. I was made very happy by a gift of a photographic representation of foul brood, which I will try to have reach you in time for the meeting. As a study of the true disease and its dire results, it is most valuable.

There was also a collection of sample bottles of honey—tiny bottles they were for the most part, from a quarter-pound to a pound each, carefully labeled to show the place of production—some from Africa, from Palestine, Italy, and from different parts of Great Britain.

We spent an hour or so in tasting and discussing the relative merits of each, and the development of the industry in the various countries of the world.

Mr. Cowan spent a number of years in Africa, and in Asia and Russia, and is wonderfully well versed in the subject in all its bearings.

[Perhaps we should explain that the writer of the letter above, Mrs. M. Louisa Thomas, is ex-treasurer of the National Council of Women. She is a member of the Russian Famine Relief Committee of the United States, and her name appears alongside of that of senators of the United States, and the governors of the various States. We infer that she has been on an inspection-tour in Russia, and if so she can speak from actual observation. We hope we may be favored with her letter on Russian bees and bee-keeping.

We have long known that Mr. Cowan had a most extensive library; and it is a gratification to us that we are able to give our readers an inside glimpse into it as it were. It will be remembered he honored us with a visit in 1887, at which time he exhibited one of the finest microscopes in the world, together with a valuable collection of microscope-slides relating to api-



NORTH AFRICAN BEE-KEEPERS MANIPULATING A HIVE OF PUNIC BEES. PHOTOGRAPHED BY MR. COWAN DURING HIS VISIT TO TUNIS IN 1892.

While in every room of his charming house I saw evidences of his earnestness in his life pursuit. I found one large room specially set apart, filled with tools of every description, all so orderly and so carefully arranged as to seem like a poem in machinery.

I was sorry not to be able to accept his kind invitation to visit some of the large apiaries in Great Britain, but was obliged to defer the pleasure to some future visit.

Mr. Cowan hopes that the bee-keepers of America will not fail to improve the great opportunity of making an exhibit at the Columbian Exposition in Chicago next year. I also join in this hope. The science as an industrial pursuit never seemed to me so important as it does to-day, and no part of the world presents so many favorable conditions as does the United States of America. We must not let the opportunity pass.

I will reserve my report of the Russian bee and bee-keepers for another time.

M. LOUISA THOMAS.

New York, 453 W. 144th St., Dec. 10.

culture. These latter were of Mr. Cowan's own preparation, many of the specimens being rare and valuable; and the instrument, while made entirely by its owner (presumably in that unique workshop), would fully rival in beauty of finish and workmanship that turned out by any maker of optical goods. While he was here, we were impressed with the fact that the editor of the *British Bee Journal* was not only a scholar and a scientist, but an extraordinarily fine mechanic.

Some days ago we received a photograph, illustrating the temper of Tunisians (Punics) taken by Mr. Cowan himself while in Tunis. As it was taken by the instantaneous process, the shadows were a little too deep to be illustrated by the half-tone process. Nearly all photographs, unless they are extraordinarily clear in detail, lose something by this process of reproduction. We accordingly instructed

our engravers to make an etching representing all the details as accurately and faithfully as possible. They have succeeded perfectly, as a comparison with the original shows.

Comment by us on the picture is unnecessary, further than to note how the natives "prepare for war" when handling Tunisians. It seems they have to handle the frames with frame-tongs. It speaks volumes, representing as it does an actual occurrence in an apiary where Punic bees are kept in their native clime, and will lend additional interest to friend Baldensperger's letter just below.]

FROM PH. J. BALDENSPERGER.

A REVIEW OF BACK NUMBERS OF GLEANINGS.

Mr. Langstroth's article on the "so-called Punic," as well as the editor's footnote, p. 492, July 1, 1892, clearly shows that the bees were not pure North Africans. Of the latter I have seen and handled many colonies, both at my brothers' apiaries, near Algiers, as well as some others. The people there have never attempted to introduce a foreign race, so their bees are all pure North Africans. The bees show a very slight yellowish coloring on the under side of the abdomen. When young, like all bees they are covered with gray fuzz, which with age and long-continued robbing disappears, leaving the bees shiny black. They are smaller than the ordinary French bees down here on the coast. The queens are very difficult to find. They manage to get out of the way as soon as the bees are disturbed by smoke or by jarring the frames. The hind legs of the queen are less yellow-colored; the drones are black, and destitute of the large brush of hair so peculiar to Palestines. The bees adhere to the comb when taken out, but are easily jarred from it. Except their being easily irritated, I think the one great drawback might be considered their robbing propensity. My brothers, who had several poor seasons in North Africa, say the bees did not stop robbing, even during a small honey-flow, at which time they tried to get into the extracting-tent so much that, weeks afterward, they still remembered the place where they had been robbing. In Palestine they do not act so badly, for during a honey-flow we can extract in the open air. The North Africans did not act differently from their Palestine "fellow-insects." Here they seem to do well up to date. Occasionally I open the hives in the morning with the temperature at 5 Celsius (Centigrade) outside (41° Fahrenheit), to try the central heat of a colony, which I found to be between 26 and 33° Celsius, or about 91° Fahrenheit. The following are the different degrees marked in and out of three hives, Fahrenheit scale.

NORTH AFRICANS.

Gal. temperature at 9:30 A.M.,	- - - - -	47°
Near hive,	- - - - -	50
In hive, out of reach of bees,	- - - - -	61
Midst of cluster, 16 frames of brood,	- - - - -	91

CYPRIONS.

Gal. temperature at 8 A.M.,	- - - - -	39°
Near hive,	- - - - -	41
In hive, off bees,	- - - - -	45
Above the cluster,	- - - - -	57
1/2 top of frames, not quite in center, 1 fr. brood,	- - - - -	75

* To reduce the Centigrade (Celsius) scale to Fahrenheit, the one in common use in this country, multiply the number of degrees by 9/5 and add 32. Thus, if you have a temperature of 5 Celsius, multiply this by 9/5, which will give 9, and add 32, making 41. Where great accuracy is not necessary, it is better to use 5, or a multiple of it, in order that it may the more readily be divided by 5 and multiplied by 9.—ED.

PALESTINES.

Gal. temperature at 7:30 A.M.,	- - - - -	43°
Near hive, in a cave,	- - - - -	47
In hive, out of bees,	- - - - -	50
Below the cluster,	- - - - -	64
Middle of cluster,	- - - - -	88

In making these experiments I found the bees forming a globe; but they become lively as soon as the thermometer is plunged in between them; and all of them—Africans, Cyprians, and Palestines—would even attack me and fly back to their hives, with the mercury at 39° Fahrenheit; but it does not follow that they really fly out with snow on the ground, if left to themselves. I have seen them flying here with the mercury at 45° in the shade. Such colonies as are exposed to the sun fly out and gather pollen; but they have then at least 50° Fahrenheit.

RECORDS OF WEDDING-FLIGHTS OF QUEENS.

It amused us to read, on page 502, that our regretted friend P. Benson was Dr. Miller, still giving us his good and humorous suggestions in Stray Straws. Discussing wedding-flights of young queens, the same writer says it occurs about the third or sixth day after leaving the cell. I have a close record of 102 queens fertilized in 1891, and I find the wedding-flights have been between one and thirty days. I divided them into four lists; namely, middling, well, pretty well, and very well, as to prolificness. I find ten middling, fertilized the 8th, 13th, 14th, 15th, 16th, 17th, and 23d days.

Eight did well fertilized the 2d, 4th, 12th, and 21st days.

Fifty-six did pretty well fertilized 1st, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 21st, 22d, 26th, 27th, and 30th days.

Twenty-eight did very well fertilized the 2d, 3d, 5th, 6th, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 17th, 18th, 21st, 22d, 26th, and 27th days.

From the above we can see that dates did them no harm, for they changed, being mated promiscuously; and, what is still better, we have 92 that did satisfactorily. I do not know what makes the queens go out for mating, nor what keeps them at home so long, when, apparently, every thing is right, drones plentiful, and weather warm; but very often I found many queens fertilized on one particular day, while, the day following, no movement was made. It is often very vexing to find day after day and week after week passing, and the right day not coming. Our Palestines, which have been described as fearful "fertile worker" producers, would have been destroyed. Think of the number of queens fertilized after two weeks of virgin-queen making!—at least one month laying queenless. Of course, I very often help them, giving them eggs; but very often I do not.

PUNICS FOR HONEY.

On p. 559, July 15, you seem to doubt whether your Punic will do as well as the average Italians. I have given those last-named bees no fair trial, but I expect them to do wonders, if they work even as well as the Punic, for I have obtained 120 lbs. of extracted honey in a honey-flow of about 25 days, from the North Africans; but, of course, we had to fly from their stings. These bees, as well as Easterns, need a good deal of smoke; and let them be well filled before you work with them. They show the regular characteristics of other bees, and why should they not?

FECUNDITY OF QUEENS — DURATION OF.

Mr. Ch. Dadant thinks, page 643, Sept. 1, that the fecundity of a queen generally diminishes only at the end of the third year; but we do not know which queens he means. Certainly it is none of our Easterns. In a big colony, as a rule, 18 months will do for them, and certainly our Palestines supersede their queens when be-

tween a year and a half and two years of age. I know of only a single queen that I tried to keep that arrived at the age of three years. She was a great drone-layer, and in a very short time the colony was reduced to a mere nucleus. Since that time (1886) I have never left the queens more than two years, but have followed the bees' example and changed them at the end of three seasons; that is, 18 months, if I do not find the bees have done so already.

T. F. Bingham may be right about inventions; but where will the matter end? Every one changes a feature of a hive, smoker, extractor, etc., and calls it his own. When in Algeria, some months ago, the inventor of a grape-squeezer was attacked by a similar but previous inventor. The Algerine, in self-defense, said we should have to go back to Archimedes to settle the screw question. Unfortunately, that gentleman died 2000 years ago.

PH. J. BALDENSPERGER.

Nice, France, Dec., 1892.

Continued.

THE NORTH AMERICAN BEE-KEEPERS' ASSOCIATION.

A BRIEF REPORT OF THE PROCEEDINGS, BY ERNEST.

The train being behind time, we were not able to attend the evening session of the first day. As it was, we arrived in time to see the convention adjourn, and to have a friendly exchange of hand-shaking with the bee-keepers. The attendance was not large; but, as we stated in our last issue, it was made up of some of the very best representatives of the various departments of the industry. The evening had been profitably spent in discussing the question of grading honey. Dr. Miller having been put on for a paper on grading, offered the one he wrote for GLEANINGS on page 454. The subject was then fresh to him, and he had carefully considered all the points. This article was read; and the result was, that the system of grading which he proposed was simplified somewhat. We failed to get a copy of the grading that was adopted at the Washington convention, but will endeavor to give it in our next.

MORNING SESSION, SECOND DAY.—SELF-HIVERS.

The first thing on the program was a paper by your humble servant, on self-hivers. As we have already covered pretty much the same ground, at the time we were experimenting, on pp. 318, 521, 568, 593, we will not reproduce the paper here. It will be sufficient to state that our preference was for the Pratt automatic hiver. It had been a perfect success. The only thing we feared was that it might be too expensive. Mr. Frank Benton, who, it will be remembered, has traveled over Europe, Africa, and the East, felt that we should not consider the expense, providing it accomplished the result sought. For instance, if the hiver costs 50 cents, and it saved a swarm worth \$5.00, it paid for itself several times over. Considerable discussion followed, showing that, if the hiver should prove to be a success, its universal adoption would follow in spite of the expense. We held the ground, however, that it *might* be cheaper to hire a man to take care of the swarms, and do other work in an out-apiary, than to depend solely on self-hivers at 50 cents per colony.

We next listened to an exceedingly interesting and valuable address from Frank Benton, on the subject of

VARIETIES OF BEES AND THEIR CHARACTERISTICS.

Although long, it was the most entertaining

talk that we believe we ever listened to at any convention. Mr. Benton began his address by giving a description of the general characteristics of black bees; but as these bees are so well known, we will not reproduce his remarks here.

Next he took up the Italians. These were introduced into the United States in 1860 by Mr. S. P. Parsons, acting for the Department of Agriculture, as the government records showed. It was generally stated in the text-books, that Italian bees were first introduced into the United States by Wagner and Mahan; but this was a mistake. They did import the bees, but not until after Mr. Parsons had done so. Then turning to the general characteristics and markings of the Italians, Mr. Benton gave a very fair description, which I also omit. Italians were, he said, to be found in their greatest purity in the regions round about the cities of Modena, Parma, and Venice. Perhaps it may be interesting to note right here, that the Italians which we have been importing to this country for many years have been coming from the vicinity of Bologna, which is right in the midst of the region above mentioned by Mr. Benton.

CARNIOLAN BEES.

Of these Mr. Benton had the most to say. They were black in color, somewhat of a steel gray, but quite different from the black bees. As to size, they were a little larger than the Italians; were excellent honey-gatherers, sealed their honey white, good wax-producers, and collect little or no propolis. They were very prolific, but not so much so as the Eastern races, and the gentlest bees in the world; in fact, no other bees could be compared with them. During the whole four years that he worked with them in their native country, he wore no veil, and yet handled hundreds of colonies. Carniolans could be readily shaken from the combs, and this feature made it possible to find the queens very readily by shaking all the bees out of the shallow brood-chambers such as were used and had been used for a century or more in Carniola.* In fact, it is the way the natives usually find the queens. Carniolans could be shaken from their combs, and not fly up and resent it as Italians would sometimes do. They were not lacking in courage, but the loss of a queen affected them greatly. At first Mr. Benton thought they were rather given to robbing; but later he found they were no worse than other bees. On account of their capping honey so white, and their gentleness, Mr. Benton felt that the Carniolans were the best bees for comb honey.

Referring to their demerits, he acknowledged that they were rather inclined to swarm; but this trait had been encouraged in them for centuries. The native bee-keepers in Carniola practice a method where excessive swarming seems desirable. The swarming mania is simply a trait that has been bred into them; and Mr. Benton thought that the same trait could be bred out, or at least held in subjection, here in America. It would be foolish for Americans to reject them solely on this ground; and while the Carniolans have many valuable traits, he did not think that they would replace the Italians.

DALMATIAN BEES.

These bees were found on the east coast of the Adriatic Sea. Their bodies are rather slender, and are shiny blue-black in color, with lightish

*This is interesting in that it proves the possibility of finding queens in this way in connection with shallow brood-chambers. We do not know whether Mr. Heddon claims the priority in this point or not; at all events, it is rather old—older than any of our bee-keepers of the present generation.—ED.

fuzz. In qualities they are similar to Carniolans, though not quite so gentle as the latter.

THE ATTIC, OR BEES OF HYMETTUS,

were found in the plains of Attica—probably the same race of bees that gathered honey for the gods. They no doubt now gathered the same honey, of the same quality that they were reputed to have done in ancient times; but as the native bee-keepers put the honey in goat-skins, Mr. Benton did not think he would like to be one of the "gods." The Hymettus bees look very much like Carniolans, and their movements are the same; but they are very cross, notwithstanding they are good honey-gatherers. They used more propolis, and were great breeders. Mr. Benton here related an incident of a case where he had the Attic, or bees of Hymettus, in an apiary alongside of Carniolans. He had been handling Carniolans, and by mistake opened a hive of the Hymettus bees. The result was, that they poured out in such numbers that he was driven precipitately from the apiary. These and many other bad qualities would make them rather undesirable for importation to this country.

CYPRIAN BEES

were raised on the island of Cyprus, and were peculiar on account of their isolation. They were kept in mud-cylinder hives; movements were very quick—so quick, indeed, that they might flit on the nose. As to their honey-gathering qualities, they exceed all other known races; will often gather honey when others are doing nothing. The cappings of their comb honey have a rather water-soaked appearance, and therefore were not suited for *comb* honey. They were prolific—more so than the Carniolans. Right at this point Mr. Benton wished to emphasize the fact that it was not a bad thing to have bees extra prolific, because an intelligent bee-keeper—one who knows how—could turn it to good account. As to the temper of Cyprians, they feared nothing. Much smoke would not subdue them; in fact, the more they were smoked, the worse they became. They were very sensitive to light; and hence on opening a hive it must be done gradually. By working cautiously, of course using a veil, and a slight amount of smoke, he could get along with them very well. They winter better than Syrians and Palestines. For *extracted* honey, he believed they were the best bees in the world. If honey were to be extracted it would make no difference whether the cappings were water-soaked or otherwise. As the swarming mania has been bred into the Carniolans, so vindictiveness has been bred into the Cyprians on account of their natural environments. Wasps were their natural enemies on the island of Cyprus, and Mr. Benton had known them to pounce upon the weakest of the colonies, and so decimate their number as to finally cause their utter annihilation. Mr. Benton regretted that the Cyprians were not now to be had in this country, and thought they had been discarded prematurely. He believed that they should be kept in their purity, as their crosses were undesirable.

TUNISIANS, OR, AS SOME HAVE CALLED THEM, PUNICS.

These, Mr. Benton said, were found from Tripoli, Africa, westward. He had reason for thinking they were the same bees that were to be found on the island of Minorca. They had been originally imported to France and all that region; and on the island of Minorca they had been isolated. The Tunisians resembled most our black bees. They were much darker, however, and smaller, than the Italians. They fly quick, are excellent honey-gatherers, active,

good comb-builders, and cap their honey fairly well; but they were the worst gatherers of propolis of any bees known, and would sometimes close up their entrances to narrow passages with propolis, leaving little pillars between the holes. Indeed, the amount of propolis they will gather is so much that they are unsuited for comb honey, because they daub the cappings with it so much.* They were vindictive, and probably for the same reason that Cyprians are so; namely, on account of their inveterate enemies the wasps. The Tunisians, when aroused, are ten times worse than Cyprians—far worse than the Orientals, and Mr. Benton thought the introduction of them into this country was detrimental to the best interests of bee-keeping. As Mr. Benton has thoroughly and carefully studied their habits in their native clime, and sent some of the queens to friends in Europe, these statements may be taken with some degree of authority.

APIS FLOREA.

These bees build in the open air, their comb being attached to the limbs of trees. There can be nothing expected from them, as they are quite disposed to migrate.

APIS INDICA.

These were very small and pretty five-banded bees; and as they could be kept in hives, he thought they might be worthy of a trial. They were so small they might be well adapted to the small flora of our country, without detriment to our other bees, since they would gather honey from some blossoms which the ordinary-sized bees might not.

APIS DORSATA.

This was a very large bee; lower part of the body smoky; wings blue-black, and shone in the sunlight; workers were about the size of our queen-bees. Their movements were very different from that of the ordinary bees, and, if disturbed, would whizz from the combs like hornets. They were excellent gatherers of honey, and of good quality, and their wax was produced in such quantities as to make an important article of merchandise. The combs, usually only one, were about 5 feet long, and hang from the limbs of trees. If they have more than one comb it is attached to the central or main comb, one on either side, and not as commonly illustrated in one of the bee-journals, showing several combs attached to one limb. The worker-cells of the *Apis dorsata* were about the size of the drone-cells of our bees, and the drones of *Apis dorsata* were raised in the same cells as the workers. They looked like drones, having a blunt appearance, but differ after all from our drones. The vindictive propensity of the bees had been much exaggerated. They were not particularly cross, and could be handled and kept in hives. Mr. Benton secured some of the bees and found they could be successfully kept in hives. Circumstances were such that he could not make the observation of their general characteristics that he desired, but he found that they were slow to repair combs that were broken. So awkward were they in stinging, that, by a quick brushing movement, the sting could easily be averted; and, even when they were successful in accomplishing their object, the wound was not as painful as from other bees.

Some little discussion followed Mr. Benton's paper. The fact was brought out, that, in California, the crosses of the Cyprians with black bees were so *terribly* cross that those having

*This, our readers will remember, is exactly our experience. The little comb honey we received from them was almost red with propolis.

such bees were getting rid of them as fast as possible. It was also urged, that it was very difficult to get Cyprian blood out of other races, as very little of that blood would show quite decidedly the bad characteristics of the Cyprians, with few or none of the good ones, for generations. Mr. Benton explained that his remarks had reference to the pure races only. With regard to the *Apis dorsata*, discussion arose as to whether they might not be crossed with other races. Dr. Riley, the entomologist, thought that it would be impossible.

AFTERNOON SESSION, SECOND DAY.

We had the pleasure of listening to a short address from Assistant Secretary of Agriculture, the Hon. Edwin S. Willits. He came to present the compliments of the Secretary of Agriculture, and was authorized to say that the Secretary bid the convention Godspeed, and that it had his full sympathy. As for himself, he was very desirous of doing something for apiculture; but just what to do, he could not fully decide. So far as the Department which he represented was concerned in helping on the cause of apiculture, it met with many difficulties. The appropriations had been cut off during the past season, and they were obliged to suspend the special work at Lansing Apicultural Station. It was difficult to get the money, and also difficult to get the ear of Congress; and Congressmen themselves were ignorant of the thing they desired to foster. The Department had no thought of abandoning the effort of doing something for apiculture. The most it could do the past season was in the way of a compromise. The Department desired to contribute, in a small measure, to the support of apiculture, and it was for the *convention* to say what should be done.

DETECTING THE ADULTERATION OF HONEY.

We next listened to a paper by Prof. A. J. Cook, that set forth fully the difficulties, as well as what had been accomplished so far, regarding the methods for detecting adulteration. As the substance of this paper appeared in GLEANINGS, page 688, 1892, and again in Prof. Cook's article in our issue for Jan. 1, it will hardly be necessary to reproduce it here. Following Prof. Cook's paper was an address, or, rather, a sort of lecture, by Prof. H. W. Wiley, Chief Chemist. The professor explained very fully, with apparatus, just how honey was analyzed. As a brief digest would give no adequate comprehension of the subject, we asked the professor to let us have a written copy, which he has kindly done. The address is as follows:

ADDRESS BEFORE THE NATIONAL BEE-KEEPERS' ASSOCIATION HELD AT WASHINGTON, D. C., DEC. 28, 1892, BY H. W. WILEY, CHEMIST U. S. DEPT. OF AGRICULTURE.

Mr. President, Ladies, and Gentlemen:—

I have been much interested in Prof. Cook's paper on the subject of adulteration of honey, and am glad to have this privilege of complying with your request to add something more in the same direction.

After the publication of the results on the analysis of honey, contained in Part Six of Bulletin No. 13, the question was raised in some quarters, whether or not chemists were able to distinguish between a pure and an adulterated honey. Some of the samples which we examined, and which were purchased in open market in different cities of the country, were found to be adulterated with glucose; and it was claimed that such an adulteration was unlikely, and that the chemists had been mistaken. Prof. Cook took a great deal of interest in this matter, and asked permission to send a number

of samples of honey and honey substitutes, designated only by number, to the laboratory of the Department of Agriculture, for examination. He also sent similar samples to the laboratory of Prof. Kedzie, of the Michigan Agricultural Experiment Station, and to Prof. Scovill, of Kentucky Agricultural Experiment Station. In all, 53 samples of honey were received at our laboratory from Prof. Cook, and these have been analyzed and the data transmitted to him. We have not yet been informed by Prof. Cook of the nature and origin of the samples, and therefore can not tell, as far as that is concerned, what success we have met with in distinguishing between the good and the bad; yet Prof. Cook has already published the fact that all three of the chemists engaged in this work have detected every spurious or adulterated honey which was contained in the lot. On the other hand, a few samples which were of known purity have been classed as suspicious, but not condemned as adulterated. The general result is, that the chemist, working with ordinary care, and with well-known processes, is able to detect all ordinary adulterations of honey, but at the same time he may include among the suspicious articles some samples which are genuine.

The special form of adulteration which we were expected to determine were glucose and cane sugar. Both of these adulterations are very easily determined.

Some samples of the honey received were obtained by feeding directly to the bees cane-sugar syrup, which was stored rapidly, and at once extracted. Other samples were obtained from bees which were storing honey very rapidly from a known source, and this honey was taken as soon as deposited. These general items of information I have gleaned from the article Prof. Cook has already published in regard to that examination.

I am sorry not to be able to entirely agree with Prof. Cook in his definition of honey. A few years ago I defined honey as the saccharine exudation of flowers, gathered and stored by bees. This definition may properly be applied to any saccharine exudation of flowers or plants gathered and stored by bees, provided they are not aided in this matter by any artificial means. In other words, cane sugar which a bee would of itself extract from a *plant* would very properly be classed as pure honey when stored by the bees in the hive; but cane sugar *fed* to the bees in the form of syrup, and simply stored by the bees in the hive, could hardly be deemed a pure honey. This is a matter, however, which it is not within my power to determine, and I shall be much interested in knowing the result of the discussion now going on among your own members on what constitutes pure honey.

The problem of the adulteration of honey has been somewhat complicated within a few years by the discovery that certain honeys or saccharine exudations gathered by bees show at ordinary temperatures a right-handed rotation. Such honey was formerly supposed to be of coniferous origin, that is, gathered exclusively from pine-trees. Later it has been shown that such honeys are probably derived from exudations produced by the aphid, or plant-louse, either directly from the trees, through the influence of the louse, or through the organism of the louse itself. This exudation is commonly known as "honey-dew," and entomologists are undecided whether or not the honey-dew passes through the organism of the louse, or is the result of the attack of the louse upon the plant. At any rate, such exudations show peculiar properties; and it is doubtful whether, under the definition given above, they could be classed as genuine honeys. It is said by Prof. Cook,

that a number of the samples of honey sent by him were of plant-louse origin; but the numbers representing these samples are not yet known to me. I have, however, found in the number sent by him, six which are peculiar in their optical properties, showing a slight right-handed rotation not due to cane sugar, and which I would class as suspicious honeys. It is more than probable that it will be found that these honeys are of plant-louse origin.

Prof. Cook doubts whether or not a honey made from pure cane sugar, which has been stored for some time in the hives, can be detected from a genuine floral honey gathered and stored by bees. In the present state of our chemical knowledge, the doubt of Prof. Cook is well founded. I am confident that it will not be long before we shall be able to discriminate definitely between such articles of artificial honey and genuine honeys as those above mentioned. Investigations in this line have not gone far enough to enable any definite statement to be made now; but I can only say that the results are very hopeful, and lead to the just expectation of soon formulating a method of discriminating between the honeys mentioned.

One property of pure invert sugar will be found very valuable in such an investigation; viz., the fact that pure invert sugar, made from cane sugar, when examined in a polariscope at a temperature of about 88° C., is optically neutral—that is, neither deflecting the plane of polarized light to the right nor to the left. In every case of a pure floral honey which has come under my observation so far, it was found that, at the temperature mentioned, it showed a right-handed polarization. In two of the samples sent by Prof. Cook it was found that the honey examined at 88° showed a left-handed polarization. Now, this is due probably to the fact that the honey was partially crystallized, and the samples sent were the liquid portion, consisting almost exclusively of levulose, while the solid portion not sent would consist almost exclusively of dextrose. This is only a supposition on my part, as I have not yet learned from Prof. Cook the nature and origin of the samples mentioned. But every one will agree that a honey obtained by drawing off the liquid portion from a partially granulated honey would not in any sense of the word be a pure normal honey, any more than the residue would be. It is possible, however, and that must be mentioned here, that the nectar of some flowers contains naturally an excess of levulose, in which case the honey gathered therefrom, although left-handed at 88°, must be considered pure. These are matters which subsequent investigations will make clear.

Another important factor in the examination of honey is in the amount of reducing sugar, so-called, which it contains; that is, the quantity of sugar in it which is capable of reducing a copper salt to the condition of a sub-oxid. In all pure floral honeys it has been observed that the percentage of reducing sugar in the dry substance does not fall in any case below 85, while in general it reaches nearly to 90 or above. When, therefore, a honey is examined in which the reducing sugar is decidedly less in quantity than 85 per cent of the dry substance, it must at once be regarded as suspicious.

The percentage of ash is also a matter of some importance. It has been found so far, that, in the suspicious honeys in the samples sent by Prof. Cook, the percentage of ash is greater than in the honey which seems to be pure. Further investigations, however, will be necessary to determine whether this is a general rule or not.

Strange as it may seem, one of the most diffi-

cult things in the analysis of honey is to determine the amount of water which it contains. One of the simplest methods consists in drying a small portion of the honey in a flat-bottom platinum dish for about fifteen hours at the temperature of boiling water. Determined in this way, the average percentage of water in the samples of honey examined was found to be about 18. The lowest percentage found was 13.76 in a clearly adulterated sample, and the highest percentage found was 22.75 per cent in one of the samples which was abnormal in having still at 88° a left-handed polarization.

In general it may be said that it is possible for any one, who is disposed, to make a mixture of pure honey with a small quantity of certain adulterants in such a way that the chemist would be unable to detect the fraud; but such a method of adulteration would never be practiced commercially, because it would not be profitable. On the other hand, we may boldly say that, in all commercial adulteration, the chemist will be able to find the fraud, and that the skill of the chemist will doubtless keep pace with or excel the skill of the adulterator.

In the general examination made by the Department which has been referred to above, two particular samples of honey deserve a special word. In almost every market of the United States were found samples of honey labeled "Pure Old Virginia Honey," manufactured by Geo. K. McMechen & Son. In no instance was a sample of this honey found to be pure. All samples purchased in the open market were adulterated. Another peculiar sample of honey was labeled "Hoge's Horehound Honey," good for coughs and colds, and said to be gathered from a certain region in California. This sample was accompanied with the most enthusiastic testimonials, and also had a certificate of a justice of the peace in regard to the nature of the locality where it was supposed to be gathered. Several samples of this honey were obtained, and they were found to be pure fabrications, consisting of cane-sugar syrup with about 3 per cent of alcohol. They contained no honey whatever.

I have thought the members of the association might be interested in seeing some of the apparatus and reagents which are employed in the analysis of honey, and in looking at some of the operations of a chemical nature. I have on the table here the principal apparatus and reagents employed in such examinations, and which I shall take pleasure in showing the members.

(The polariscopes and chemical apparatus used in honey analyses were exhibited and explained to the audience).

In conclusion, permit me to say that the work of the Department has shown that, of the liquid honeys on sale, bought in open market, nearly 45 per cent are adulterated. Every bee-keeper can see at once how greatly enhanced in price the product of his industry would be should such adulteration be prohibited and prevented. It is necessary that all should work together in harmony and in earnest to secure this result. The bee-keepers will find the Department of Agriculture hereafter as heretofore doing every thing in its power to detect and prevent the adulteration of honey.

To be concluded Feb. 1.

MOVING HIVES TO STRENGTHEN WEAK COLONIES, ETC.

DR. MILLER AND MANUM CRITICISED.

In "Stray Straws," found in the December 15th issue of GLEANINGS for 1892, I find this:

"A common error is to suppose that, in setting a weak colony in place of a strong one in order to strengthen it, it is important that the change be made when the largest number of bees are out. There will be just as much gain if the change is made at midnight." Usually we find Dr. Miller saying "I guess so," or "I shouldn't wonder," or "I don't know;" but here is a positive statement, made under his name, and, strange to say, that, in dropping his usual discreetness, he has fallen into an error which he would not have fallen into had he been so discreet as to say, "I don't know." But I imagine I hear him saying, "That is all right; let Doolittle prove wherein I am wrong." Well, that is just what I am going to try to do, doctor.

When a colony is in a normal condition, the young bees go out to take their first airing at the age of six days, if the weather is favorable; and in doing this they mark their location to a certain extent, but not to an extent great enough so that subsequent flights have a greater impression on their memory, for we find them taking these markings anew at every flight till they are sixteen days old, when they leave the hive for gathering supplies for the first time, after which they take no more markings during the working season, unless it be in the case of a swarm, or some rude disturbance of their home. If the hive is moved at midnight, as Dr. Miller suggests, then, on the coming morning, all the bees over sixteen days old, upon going to the field, leave in a straight line, and, having the old location established in their memory, and not taking any markings that morning, come back to the spot where the old entrance used to be; consequently they go into the hive having the weak colony, if such has been placed on the old stand, or are lost, if no such provision has been made. But let us wait till about 2 o'clock P. M., at which time all of the bees under sixteen days old, and over six days old, will fly, if the weather is fine, and we shall find that these young fellows head toward the hive the same as they did the last time they were out before, hence notice the change which has been made, and, instead of going to strengthen the weak colony which has been placed on the old stand, they return to the spot last marked, hence do nothing toward the desired strengthening. Now, had Dr. M. waited about his changing till these young bees were in full flight, and moved the hives when the most of these young bees were in the air, he would have caught these also, in addition to all those which were over sixteen days old. Then, 100 of these young bees are worth fully 300 of the older ones, for strengthening weak colonies, inasmuch as they are just commencing life, instead of being near its close, as many of the field-bees are. While I had known that bees less than sixteen days old would not return to the old stand, if a colony in normal condition were removed at any time other than when they were flying, yet it was not fully forced upon me till I tried preventing after-swarms by the Heddon plan. In trying this I found that, if I moved the parent colony at any time I was ready, it would more often than otherwise swarm again; but if I moved it when the young bees were out to play I had a sure thing of it, for the colony was then so depopulated that it never undertook to swarm again that season.

LOADED FIELD-BEES IN THE SECTIONS.

On page 915 of the same issue of GLEANINGS I find an error in Bro. Manum's article, which error is also sanctioned by the one who wrote the footnote to the same. Near the close of the article, Bro. M. tells of introducing queens by letting them run down into the sections, and says that, in this way, "she is first introduced

to loaded bees just from the field, or quite young bees, both of which," etc.; while the editor says, "Mr. Manum's idea of having a queen pass down through the sections among young bees and loaded field-bees is excellent." If loaded field-bees ever visit the sections to any great extent, all of my hours and days of watching to discover the inside workings of a bee-hive, when a colony was in it, have been in vain. I claim that not one bee in one thousand that returns from the field with a load of honey ever enters the sections till after it has disgorged that load. I have watched hundreds of bees come into an observatory hive whose colony was at work in sections, and never saw a *single* loaded bee offer to go up to those sections. On the contrary, the bee generally gave its load of honey to a young bee that was anywhere from one inch to six inches from the entrance through which it came in, and that young bee carried the load to the cell in which it was deposited, or held it for a while till it was evaporated, as the case might be, being governed by the number of loads coming in. Again, I have many times changed black or hybrid colonies to Italian, by changing the queen during the working season; and on the sixteenth day after the last black bee hatched, I have seen only black bees going in at the entrance with their loads of honey, while a look at the sections revealed scarcely any but Italians there at work, all of which were apparently as full of honey as they could hold. No, gentlemen, the field-bee gives her load to a young bee, and this young bee carries it to the sections. While this does not affect the plan of introduction in the least, yet a knowledge of these things can be of much help to us in many of the manipulations of the apiary. G. M. DOOLITTLE.

Borodino, N. Y., Dec. 26.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

In a casual reading, or, rather, hurried scanning, of Cowan's "The Honey-bee" last spring, I thought it contained nothing but what was in my book, and said so in GLEANINGS. I find, upon closer study, that I did the work and its most able author injustice, which I hasten to correct. It is very full and accurate, and contains much that is new to English readers. It should be in every bee-keeper's library. Mr. Cowan gives the fullest credit, and has given us a work that is an honor to him and to bee-keeping. A. J. COOK.

Agricultural College, Mich., Dec. 19.

THE HEWES BEE-ESCAPE.

Friend Ernest:—After reading your description of Mr. Hewes' bee-escape, I thought, "Another step in the right direction, for I have been looking for some genius to invent a bee-escape that would be less complicated than the Porter, and answer every purpose." As you were stumbling over those irregular awl-holes, did it not occur to you that machinery made for the purpose would punch the cone-shaped perforations just as accurately for a bee-escape as any designed to make the queen-excluders? I hope you are not guilty of making fun of inventions simply because the name of some leading light does not accompany the model.

Belle Vernon, Pa., Dec. 20. A. B. BAIRD.

[We are not sure that certain fixed machinery in the shape of punches and dies would make the *ragged* holes that the common bradawl

does. However, we will try and test the matter next summer, when our machine-shop is not so rushed with orders for Cowan extractors, foundation-mills, etc. No, no! We do not make fun of models when not fathered by some leading bee-keeper; but when an insignificant device comes from such a one we have respect for it at once. See what Dr. Miller says of the Hewes escape on p. 7.]

FIRE INSURANCE ON BEES.

Tell Dr. Miller I have my bees insured in the "London Mutual Fire Insurance Co. of Canada," \$5.00 on each hive, A. I. Root's chaff hives, and it costs me only 4½ cents per hive for a three-year risk. I have them insured along with my other property. I LA MICHENER.

Low Banks, Ont., Dec. 26.

Dr. Miller asks in one of his last Straws what insurance company insures bees against fire. The last clause of our Farm Property form reads as follows: "\$600 on bees, bee-hives, and honey, on or in same premises." We are insured in the New York Bowery Co. Number of colonies covered by this clause is 100. H. P. LANGDON.

East Constable, N. Y., Dec. 24.

OURSELVES AND OUR NEIGHBORS.

HOW TO BE WELL; WHAT DID GOD INTEND WE SHOULD DO TO PREVENT AND CURE DISEASE?

Bless the Lord, O my soul, and forget not all his benefits; who forgiveth all thine iniquities; who healeth all thy diseases.—PSALM 103:2, 3.

You know already this is a subject that has been much on my mind. Is it according to the will of God, and did he intend in the beginning, that we should dose ourselves and physic ourselves with powerful drugs, both vegetable and mineral? Now, please do not think that I am going to commence a tirade against doctors and druggists. I certainly am not, for they are my personal friends, and I know that at least many of them are seeking for light, just as I am seeking for it; therefore my prayer in the outset of this article is, that God may not only give me *wisdom*, but *charity* for my fellow-men while I write. Perhaps one thing more I should say in the outset. I propose to use some very plain language this morning, and some of the friends may possibly feel that I am outstepping the limits of good breeding and decency. Therefore, dear friend, if you do not like my very plain health-talks, may be you had better commence right here to skip this article. I have decided to talk plainly, that I may be plainly understood, and that I may help a world of people in avoiding and getting rid entirely of some of these things that are almost disgusting to talk about in a home periodical. "Forewarned is forearmed;" and so if you read any further you must not find any fault. Perhaps I should add, no one has found fault yet, that I know of, because of my plain speaking; but some of the good friends in our home have felt greatly troubled for fear somebody would take exceptions to my plain language.

I have told you how I have been recently praying for light in this matter. I have told you, too, of that wonderful answer to prayer that still animates and inspires me when I think of it; namely, that, by the use of the wheel, I could perform muscular feats that might astonish even the athletes of a few years ago; and that, in so doing, I have found vigorous, robust health and physical enjoyment,

such as I had never known before. It was to me almost a miraculous transformation, from a feeble, suffering invalid, to an individual who could travel by his own strength, unaided, forty or fifty miles a day, and *rejoice* in his strength like the horse that "paweth in the valley" and "rejoiceth in his strength." Of course, I am not riding the wheel now as I did in the summer time. The state of the roads will not permit it. Besides, such a course of exercise is hardly possible for *everybody* even in the summer, and possibly to only a few in the winter. Let me say, however, that I am still riding my wheel two or three miles every day. Yesterday the thermometer was down to only 15 above zero, but I rode several miles in perfect comfort, and kept warm without any trouble. Now, while I felt perfectly well during this excessive riding, there was a good deal of the time when there was manifestly more or less derangement of my digestive organs; and if I omitted my rides for two or three days, the old troubles were sure to come back. I wanted *more* light on the subject. I prayed that God would show me more: that he would enable me to discover what laws we were transgressing, and where we were blundering. During months back, different friends have been sending me, or suggesting, remedies, and I have been strongly urged to try various patent medicines. I have not tried any of them, however. I do not believe this is the way to do when we are sick—that is, generally speaking; and I never intend nor wish to come out in these Home talks, and tell you that "Dr. Blank's wonderful medical discovery" is the thing for sick people to take, especially if I am going to end my exhortations by saying, "Thus saith the Lord." Does that latter expression startle you? I hope it does. He who stands up in the pulpit, or he who stands anywhere else, and says to his listeners, "Thus saith the Lord," had better be very careful what he says. Yes, indeed should he be careful.

Now, if we shall not cure our ills by "taking something," what shall we do? What does the Lord tell us to do? Let me frankly confess, that, although I have studied the Scriptures considerably with this matter in view, I can not find that they tell us very much about it. The closing sentence of our text tells us very plainly that it is the Lord who does the healing. The Bible was not given us to teach astronomy nor any other science, nor even physiology, except that bodily health is so very closely connected with spiritual health that one, to a certain extent, follows the other. The Bible teaches, however, *very plainly* and clearly that we should avoid gluttony, and beware how we give loose rein to sensual appetites and feelings. No other book in the wide world has ever presumed to prescribe such a course of purity, self-control, and abstemiousness, as God's holy word. And I think I may say right here, that the "thus saith the Lord" is very plain and clear in this whole matter. We should eat to be strong and well, and not because it gratifies our appetites and taste. Enjoyment in eating is very well to a certain extent, providing we eat to live and not live to eat. A few days ago I had occasion to ask a man what his business was. His reply has been in my mind a good deal. It was something like this:

"All the business I have is to eat, and therefore I am out this morning hunting up something good to eat. What have you in your garden that will probably fill the bill?"

He did not say any thing more, but simply made his purchases and went away. I like the business of market-gardening and fruit-raising, because it furnishes the world with good and wholesome articles of diet—that is, generally

speaking; but if all my customers were like this man, I should lose my energy and enthusiasm pretty quickly.

Let us now consider why it is that our food so often seems to do so little good. Years ago, while in the city of Boston, a vender on the street was selling some sort of refreshing drink to crowds of thirsty people. He had a lot of glass jars placed right in the sunlight on a hot summer day. These jars were filled with pure water, to all appearance. In the water was something that looked like miniature white fleecy clouds. These little flocky clouds were alternately rising to the surface and dropping to the bottom, in a queer sort of way that attracted the attention of passerby. In answer to their inquiries he said, "It is the South American beer-plant. Won't you have a glass of beer? only three cents." Some pounded ice was stirred into the liquid, which was already foaming with particles of carbonic acid. The gas came up out of the liquid, much as it does from sweet cider, when it is just working briskly, and the beer tasted much like sweet cider. It was sweetened, and flavored with sarsaparilla, or something of that sort. The white particles that rose and fell resembled the mother plant in vinegar; and the operation would keep on indefinitely, provided the liquid was kept warm, and sugar or sweetened water was added as fast as the plant used it up. We afterward had some of the beer-plant in our house, and I studied the habits of it. I think what is called the vinegar-plant is closely allied to it—may be it is the same thing, for the product in every case becomes vinegar, if it is not used up as beer.

Some may ask whether this is a temperance drink. It is just as much a temperance drink as all home-made root-beers. Hires' root-beer, that is advertised so extensively in our agricultural and religious papers, is a fair type of them all. There are two things about these home-made root-beers that make them called for. One is the carbonic acid, the same as we get from soda water. This, I believe, is wholesome—at least, a moderate use of it seems to assist digestion and refresh one who is thirsty. The other element is alcohol. All beers made by fermentation, whether we use yeast or whether it is fermented, like sweet cider, contains a small percentage of alcohol. The more the cider has worked, the more alcohol it contains, and the same with the root-beer. I have seen home-made root-beer that was at least slightly intoxicating. As for lager beer, see what Dr. Miller says in *Stray Straws* in the previous number. Perhaps the good housewife who made it did not intend it should be so, but nevertheless it was. I need not stop here to tell you what the effect of alcohol is—at least, its ultimate effect. I do not believe we need it, in large doses or small doses, or in *any sort* of doses. That is my own private opinion. I am not yet ready to give it as a "thus saith the Lord." It *may* be useful as a medicine, but I very much doubt it. I have spoken of this beer-plant because it puts before our eyes this matter of fermentation. The beer-plant wants sugar, water, and warmth. It wants *warm, sweetened water*. The warmer the water, the better it suits the plant until you get to the point where it might be scalded. If you scald it, it is killed like any other plant. If it does not have sugar or starch in some form, to work on or *feed* on, it dies of starvation, like any other plant or animal.

When I was a small boy, part of my duties was to feed the pigs. I used to dip their feed out of a barrel—the old-time swill-barrel of our childhood days. In order to make it better we stirred in bran every day. Then the barrel was placed in the sun; and the bran, slops, and dish-

water soon produced fermentation. I remember on coming near it on a hot day, that I could hear a peculiar snapping and foaming sound in the barrel, and bubbles were rising rapidly to the surface. You have all seen such things, I presume, in very hot weather. In the process of fermentation, carbonic acid was liberated in considerable quantities, and this made the snapping noise. The operation went on most rapidly during very hot weather. Well, since my poor health, when I felt distressed after eating there has seemed to be a sort of foaming and snapping sound in my bowels. It reminded me of the swill-barrel, and I felt sure the very same operation was going on in my intestines or bowels, or somewhere in that region, as used to be going on in that swill-barrel. Pretty soon there would be colicky pains—a general uneasiness, and a peculiar sort of headache. I craved something, I did not know what. Sometimes I wanted beer, as I have told you about; then I wanted fruit; but every thing I ate seemed to feed the trouble. Even a drink of water would very often give me more distress. Perhaps many of you are familiar with all this.

Toward 25 years ago my health failed, and I consulted Dr. Salisbury, of Cleveland, O. I remember of asking him if he did not think beer would be good for me, or Kennett ale, or something of that sort. He replied, "Why, bless your heart, my dear Mr. Root, you have got a beer-brewery inside of you already, and yet you would suggest *more* beer. Although you are not a beer-drinker, it is the beer-business that is killing you, and will kill you unless you stop it." Dr. Salisbury did stop the beer-business. I think I have told you about his remedy. In the first place, he turned me out of doors. He told me to buy a colt and break him myself, and learn to ride him. This I did. You see, the treatment was very much in line with the wheel of a few days past. I did not mind the colt very much—in fact, I rather *liked* the medicine. I would rather take a colt and break it than to take physic any time; so that part of the prescription did very well. It gave me a *love* for horses that I had never had before, and it will last me as long as I live. But the celebrated doctor said, furthermore, that I must stop swallowing *any thing* that would make beer or fermentation; nothing sweet or sour; but, above all things, not a particle of sugar; no fruit. As I did not get on to suit him, he finally cut off all the grains, and, as a last extremity, I was forbidden even graham bread. It was a scientific experiment with me, however, and I entered into it with my characteristic energy and zeal. For *eighteen weeks* I lived entirely on lean meat; and together with the colt and other outdoor exercise, I came out well and strong. That was the time I planted the bass-wood orchard. The doctor said my ranch must be at least a mile or two from the office, so I should not be worried too much with the cares of business. I got entirely rid of the "beer-brewery" in my bowels and intestines.

You may inquire why, then, I am not a follower of Dr. Salisbury at present, with his beefsteak diet. Well, it did not work with many other people as it did with me. A good friend of mine went down to his grave right before my eyes, in spite of beef diet. He had consumption, however, and could not stand horse-back riding as I could. The lean meat was, no doubt, one factor in my recovery; but I think the colt was a greater factor. Again, I can not believe that God intended we should be restricted to animal food. I believe the fruits, grains, and vegetables have their places. Well, so did Dr. Salisbury. He believed that well people, who worked outdoors especially, should use all these things as a diet; but, of course, we

must beware of using them to excess. During the eighteen weeks that I lived almost entirely on lean beef, I became so tired of it that I ate just enough to give me strength to do my outdoor work and no more. It has many times occurred to me that moderate eating, even of other kinds of food, might answer almost as well. There is a trouble, however. The juices of fruits and most vegetables ferment quite rapidly. You can not get up a fermentation with just lean meat and water. There has got to be some sugar, or something containing sugar. While with Dr. Salisbury I was permitted to drink coffee without a particle of sugar or milk in it. Either one would start fermentation, or keep that beer-plant growing, to express it in another way. He said I might drink new milk, right from the cow; but I tried it and did not like it. I thought it would do well enough for babies, but I did not propose to be a baby. Does it begin to occur to you that hot tea and coffee, with plenty of milk and sugar, are just about the best things in this world to feed a beer-plant? * I use the word "plant" in two senses. A boy heard some men talking about an "electric plant" recently. He asked his father what kind of *fruit* grew on electric plants. The reply was, "currents" (currants). Now, many of us have—not an electric plant, but a beer-plant inside of our bodies. It is sometimes a pretty big plant, too, I am inclined to think, for it has been years in getting under way. It was probably started by *eating* too much; and I think I may say right here, without making a mistake, "Thus saith the Lord, 'Eat less.'"

I have been getting some good points from a dentist lately. He dropped a remark, something to the effect that many people are dyspeptic because their teeth are too poor to chew their food properly. Is it not better to pay a dentist's bill and be well, than be sick and pay a doctor's bill too? In making nice maple syrup, it has been recently discovered the one *great* secret of success consists in boiling the sap just as soon as possible after it runs out of the tree. Fermentation commences more or less, even in cool weather, within an hour or two after the tree yields its saccharine treasure. All agree to this. Well, after we take the food into the stomach, if we are inclined to dyspepsia, it is of the utmost importance that the gastric juice proceed to digest it before it can ferment in the least. If the machinery is all in trim, nature does the work. But, my dear friend, the food should be *thoroughly masticated*. It should be chewed up and mixed with the saliva of the mouth until it is a sort of creamy paste. If you want to see how quickly the digestion of even a dyspeptic can work, if it has the right material, just have some graham gems for breakfast, then eat slowly and chew every mouthful until it is like cream, before you swallow it. The gastric juice will then take hold and make food and strength for your disordered nerves, in no time. It is just like taking the maple syrup and boiling it before it can spoil. Just try it and see. Many kinds of

food will answer just as well as the gems; but I think they show the truth of what I am trying to teach, the plainest of any thing. While in Portland, Oregon, last winter, in such a fearfully disordered state, with nervous fever and indigestion, that high-priced doctor, you remember, cut off grapes, oranges, lemonade, and every thing of that sort, with a sharp veto. He said, "Not even a bit of meat nor any solid food." When I looked up at him appealingly he said, "My friend, you just drink for the present—straight milk; not another thing until I see you." I did not crave it, and I did not drink very much of it; but it began at once to fetch me out of my troubles. Dr. Salisbury recommended new milk quite vehemently, years ago, but I thought I could not drink it. Well, within the last few days I find I *can* drink it. Now listen: The milk right from the cow is like the maple sap when it first comes from the tree. There is no fermentation about it; and the quicker you get the milk from the cow, and into your stomach, the quicker can the gastric juice take hold of it; and, better still, if you are dyspeptic. Why, just now I *love* new milk, just as it comes from the cow! I suspect cows will be my next field of investigation. *Every family* should have a *cow*. Please notice how long I have been in learning this thing. Why, it took me 20 years to learn that I must have sleep more than once in 24 hours. Then it took me almost 25 years to be taught that I *could* drink new milk, and would like it, if I only got in the habit of drinking it. Why! one so stupid and slow, and dull of understanding, does not deserve good health.

I am now going to say something that may not be in the Bible, and yet it *may* be there, in a little different wording, after all. It is this: Thus saith the Lord, "When you feel sick or run down, or out of sorts, do not try beer or alcoholic tonics or health invigorators; but at least make a good thorough trial of new milk, just as it comes from the cow." Like spring water from the hills, it is a beverage of God's own furnishing; and it contains just exactly the elements that are needed for the nutrition of a weak stomach, better than any thing that man has been able to fabricate, for it is *God's own gift*, provided by his merciful love and providence, for a sick and suffering world. When you eat your graham gems, chew them up to a creamy mixture, and then take a sup of new milk. If two teacupfuls distress you, take one cupful, a little at a time, while you are chewing your food. I think you can take two cupfuls or more after a while. You won't be likely to take too much. A word more about chewing your food fine. For some time back I have noticed that I can not eat apples without their giving me much distress. I said something of the kind to the dentist. He told me that, if I would take a knife and scrape the apple up very fine, as we sometimes do for babies, it would not distress me, and I found it true. On the same principle, one can eat a baked apple where he can not eat raw apples. But baked apples are a little more trouble than nice apple sauce. Select some apples that will cook up very fine; leave out the sugar, and you can eat quite a dishful with your gems and new milk, and not feel distressed.

*The following fact was given me by a former president of the Cleveland & Pittsburg Railroad. He drank his coffee without either sugar or milk, and gave this as an explanation: "When I was a young man I had a queer sort of headache that at times disabled me from work. The doctors tried different remedies, without avail. Finally some one said, 'Stop using sugar and milk in your coffee.' I told him that it was the sugar and milk mostly that I drank it for, and that I would almost as soon give up the coffee entirely. I tried it, however, and my headaches disappeared, and even to this day I can not drink coffee well sugared and creamed, as I used to have it, without a recurrence of those same headaches."

It is of the utmost importance that a dyspeptic have plenty of sleep. This "beer-plant" will be very apt to keep you awake nights. It is very desirable to have the work of digesting your food done before you go to bed; therefore you should have an early supper. If five o'clock does not answer, have your supper at four; or, better still, do not have any supper at all. If you can have your dinner at two or one, it will be very much better. Be patient, and wait

until nature gets accustomed to the new fashion, and it will work all right. If you feel weak and faint, with a gnawing and craving for something, which you think is caused by not having had your accustomed supper, in place of eating, take a nap. After you wake up you will be surprised to find that you are not hungry at all. It was habit only; it was nervous exhaustion; and although food might have given temporary relief, sleep is *ever so much* better. Make yourself comfortable before you try to go to sleep. If your feet are cold, warm them up well. When I am in a hurry I wrap up a hot soapstone, and lay my feet on top of it. Keep your body warm with a blanket, or in some other way. But the room you sleep in, even in day time, should be moderately cool. There should be plenty of fresh air; and, if you sleep on your side you had better double up your pillow, or support your head so there will be plenty of space all around your nostrils. Breathe through the nostrils when you can.

How about the new water cure? My friend, I am almost ready to say, that, if you eat and sleep and live as you should, you do not need the water cure *at all*. Nature will take care of that part of the business, and do it right. If, however, you are and have been running a beer-plant for years, the new water cure will prove a Godsend to you. A peculiar kind of headache that I have mentioned may be removed in a few minutes by getting this fermenting matter entirely out of the system, out of the way, even if digestion is not completed, and you lose the benefit of a great deal of your food. It is better wasted and thrown away than to have it distressing you and poisoning your system.

Now a word about your urinary and kidney troubles. Come to think of it, however, if you attend to the things mentioned above, these troubles will, I firmly believe, *also* take care of themselves. Let me tell you some of my experience. Ever since I have been using my brains to the extent I have been obliged to use them while attending to our business, and especially the office work, I have had what I have called urinary trouble. When called upon to do hard mental work there is a pain in the organs; and unless I urinate quite often—sometimes as often as once an hour—I suffer great pain and distress. Oftentimes it has seemed to me as though the refuse matter that should go off in the urine was getting into the circulation and poisoning me. Since we have had the Smead closet system in our factory I have got along very well in the daytime; but the trouble has been in the night. When I woke up, of course I got up and relieved myself. A great many times, however, especially of late, instead of waking up I would have distressing dreams and nightmare; and when I *did* get up, it was with the feeling that my whole system was poisoned. If I slept that troubled sort of sleep until almost morning, the difficulty did not pass away immediately. You can now readily imagine how I am thanking God this morning, when I tell you that, for almost a week past, I have not been up in the night at all, nor have I suffered any inconvenience. The relief was brought about in less than a week's time. First, I began chewing my food *very thoroughly*, as I have told you.* Then I substituted

milk in place of my coffee. Finally I came down to just new milk. Last Sunday I had my dinner at two o'clock; and for an experiment I omitted my supper. I did not get up that night, and yet I suffered no inconvenience. On Monday I omitted supper again, and abstained from eating any thing, or drinking any liquid after twelve o'clock at noon. The result was just the same. Then I tried drinking just new milk at supper. It was so quickly digested and out of the way that it answered just as well as omitting the last meal entirely. Then I tried the new milk and gems; and I am at present satisfied that deliverance has come. I would have paid a doctor quite a sum of money who could have given such perfect immunity from all these troubles; and yet here it is, without money and without price. Perhaps I am stupid and dull. My friend, I fear there is a *world* of people who are stupid and dull. And then I am afraid, again, there are others who would rather *be sick* than to go without their supper and their tea, and their *hot sweetened coffee*. May be, however, when it is too late they may change their minds.

The above was dictated for our issue of Jan. 1, but was crowded out. Since then I have made some more discoveries. By the way, the matter of investigation in regard to the subject of food for nourishing our bodies reminds me strongly of my investigations with the hot-water pipes over in the greenhouse.† Some of our readers may, perhaps, think I am not conversant with our various health-books and health-journals. Almost every one published—at least in this country—is laid on my table; but I regret that so many of them—in fact, the most of them—seem to be in the line of vegetarian diet. Yes, our new books, even the one I have recently quoted from, strongly urges vegetarian diet. A good many go so far as to object to butter, milk, and eggs. My opinion is, they are all making a sad blunder. When Fowler & Wells came out so strongly with vegetarian teaching, years ago, I was a boy in my teens. I followed their teachings, and became an ardent disciple. For *four years* I ate no animal food of any sort, unless it was butter, milk, and eggs, and those I ate sparingly. When I went visiting, or even stopped at hotels, I annoyed and pained the good people in a way that I shall always regret, by my stupid and stubborn way of insisting that I was right and everybody else was wrong. The experience I had, however, in learning self-control, was worth much to me in after-life. Had I not learned to govern my appetite in early youth, it would have been very much harder for me when I lived eighteen weeks on lean beef; and it would have been much harder, too, when it became necessary for me to say, with the help of Christ Jesus, "Get thee behind me, Satan," in later life. Very likely there are people who are benefited by pure, strict vegetarian diet, and I would not say a word against it to such; but I would urge them to lay their notions aside sufficiently so as to do as others do when they go visiting. In the first place, the Bible

to break up the particles into a condition in which the digestive juices can be brought into immediate contact with them.

It has been stated that Mr. Gladstone is so impressed with the importance of perfect mastication that he makes a practice himself, and has taught his family to do the same, of giving each mouthful thirty-two bites—one for each tooth in a perfect mouth. It is no wonder that he is able to perform such an amount of intellectual labor.

†They have been running now since before Christmas, through the coldest winter weather, and not a valve has been turned, nor any thing touched, but the contents of the house are unharmed—*Jan. 9th.*

* From a new book just laid on my table, "Eating for Strength," I copy the following:

The conditions of perfect digestion are several, and may be mentioned here. The first is perfect mastication. If this is not accomplished, much of the food is not brought under the influence of the digestive juices and so is lost. Count Rumford calculated that one-fourth less food is required if it be perfectly masticated. The object of mastication is

teaches most plainly that it was God's intention that we should get our food from both the animal and vegetable kingdom. Let any one of good sense and fairness examine the Bible with this thought in view.

Again, after having discovered what articles of food, if properly chewed, could be eaten without starting the beer-plant, I began to make some experiments. If you stir the mud in the bottom of a stagnant pool, a peculiar gas will arise. By inverting a fruit-jar, filled with water, right over the gas, where it is coming up, you can easily get the jar full and examine it. It is inflammable, and, if burned in the night time, it makes a very pretty experiment. Set your jar right side up; and while you hold a lighted match over its mouth, as soon as it is uncovered make the gas come out, and strike the flame by filling the jar with water from a picher. This gas is carburetted hydrogen, and is similar to common illuminating gas. There is another gas, a little different, but much more poisonous, called *sulphuretted* hydrogen. This comes from decaying vegetable and animal substances. It has so much the smell of rotten eggs that it is usually recognized by its odor. This latter gas is often produced in considerable quantities in the human body when the digestion is disordered. It is the product of fermentation. It is usually the gas that gives us distress and the colicky pains. I believe it is generally in consequence of overloading the stomach and bowels. The disagreeable smell that usually attends it will indicate the source whence it comes. Pumpkin pie has always been a favorite dish with me. In fact, it is a sort of traditional dish with our friends in the Eastern States. I presume it is healthful enough for most people; but I have noticed that it disturbs my digestion more than almost any thing else. I feel sure that I am not mistaken, because, when the gas comes up into my mouth, the odor of rotten pumpkins is most plainly and sometimes painfully apparent. I told you that I was going to talk plainly, so you must bear with me a little.

Another "Down East" article of diet is baked beans. I think this upsets me perhaps even worse than the pumpkin pie. Turnips, squashes, and quite a variety of garden vegetables, seem to be, at least for the present, forbidden to me—that is, if I want to be well and strong. I have consulted physicians in regard to the matter. They simply tell me that I had better avoid articles of diet that I find do not agree with me, or suggest that I might try soda, ammonia, pepsin, etc.; but I believe that all agree that it is just as well, or *better*, to be careful of one's diet. Another thing, I can not with safety eat any thing between meals—not even a little fruit. I mean, of course, when I am confined to the office, as I am for the greater part of the time now in mid-winter. When I was taking those vigorous rides I ate any thing that other people did, and at any time of day when I felt like it. Well, the testimony I have just given is certainly not much in favor of a vegetable diet, especially for invalids and dyspeptics. No kind of animal food ever distresses me as do the vegetables I have mentioned.

□ I once heard a very wise man say that, when he wanted light in regard to God's commands or wishes on any subject, we should consult *first* the word of God thoroughly. If that does not give us light, we may rest assured that help will come by making the matter a subject of prayer. Now, then, what does the Bible say in regard to *what* we should eat? In the fore part of the Old Testament there is considerable said about keeping flocks and using animal food. Pretty soon milk begins to assume a very prominent place; and by and by there are many

passages referring to the use of honey. When God made promises to the faithful, ones, of a land of their own, where they could be free from oppression, milk and honey are mentioned together; and one can hardly resist the conviction, when he reads there of a land *flowing* with milk and honey, that the expression was used as a sort of summing-up of the best things that could be desired. While I was praying over the matter, it came to me all at once with considerable force, that the next thing to go with milk, right from the cow, was honey. I told you before, that new milk is pure concentrated food from God's own hand. Let us look at honey. The nectar is secreted by the flowers just as the maple sap is by the trees; but instead of waiting for a painful, or even half a painful, the bees gather the nectar from some plants as often as every few minutes. Note what I have said in regard to the figwort. Then the bees seem to be God's trained workmen. They gather the nectar and boil it down, give it one step in the way of digestion, perhaps (as our good friend Prof. Cook insists); then they seal it up with more care and nicety and cleanliness than any good housewife or any canning-factory ever put up choice articles of food since the world began. Milk soon spoils; but bees have been doing a line of work in *preserving* one of the purest products of the plant, since the world began. And they do it with a skill that is absolutely perfect. I selected some nice comb honey, and ate it with my gems and new milk. No sort of disturbance resulted at all. Although sugar, and especially yellow sugar, and cheap syrups, are about the worst thing a dyspeptic can eat, I discovered that I could eat good *honey* with my new milk, for supper, breakfast, or dinner, and in almost any quantity, with perfect impunity. The result to me was astonishing; and this corroborates what good father Langstroth has told us about taking lots of milk with honey whenever we eat it. The Bible has coupled them together, and they seem to belong together. If you eat sugar or candies, and then drink milk, the milk has a sort of sour taste in the mouth afterward; but after eating honey, most people can take milk with a peculiar relish. No matter how much honey you eat, it does not make the milk lose its richness nor sweetness. In fact, it is just the *other way*.* Now, I have many times decided that honey was not good for me, as you may remember; and it would not be good now if I ate largely of other things with it, perhaps only half chewing any of them, and then washing it down with strong coffee and milk. No doubt there is a long list of pure foods which will be as safe as milk and honey—strawberries and other fresh fruits, for instance. Out of deference to Dr. Salisbury, I must not omit to say that home-made beef tea, and the juices of good meat, seem to answer almost or quite as well as new milk; but I think it is better for me to have my *solid* meat for breakfast or dinner, or just before I take vigorous exercise, making a supper of gems, honey, and new milk.

* Sugar is not honey, and honey is not sugar. The test I have given above would of itself decide which was a syrup made of granulated sugar and which was honey. Of course, refined sugar is very much better for weak stomachs than cheap sugar or cheap molasses; and on this account they use the best refined loaf sugar for feeding babies that can not have the mother's milk; but I am much inclined to believe that real nice well-ripened honey would be much better for babies than the best refined loaf sugar in the world. Before adding honey to my gems and new milk I used to get faint before the next meal. After the honey was added, however, my strength held out full and strong. You see, I have got on to what our agricultural writers call a "well-balanced ration," and one that does not feed fermentation in the least.

and making it a light meal at that. And I would earnestly advise omitting supper entirely where it interferes with perfect rest at night. The modern fashion of having *dinner*, as they call it, after dark, is a fearful innovation. Why! it makes me almost furious when I think of the wholesale way in which the senseless tyrant Fashion presumes to undermine and break down the health of the coming generation. If the old sinners and devotees of fashion want to kill themselves off in that way, let them do it, and be out of the way of setting such a bad example for people of sense. But I for one feel like thanking God that it is in the bounds of reason to expect to live 80 or 100 years—yes, and keep strength, enjoyment, and happiness.* When I come around to see *you*, my friend, riding one of the modern wheels, even at 75 years old, then you will believe what I say, and may be you will believe me also, when I tell you the rules of health, and the food God has provided for us to eat, are plainly described and pointed out in his Holy Book.

NOTES OF TRAVEL

FROM A. I. ROOT.

WASHINGTON, D. C.

Very reluctantly we decided to omit the proceedings of the first day of the national convention, as we could not well arrange it without at least a little Sunday travel. Another thing, I was very anxious to see Pennsylvania by daylight. By taking a sleeper at Cleveland on Monday night, we should be ready for the morning train that leaves Pittsburg a little after daylight; and, at the same time, if the train reached Washington on time we should be able to take in at least a part of the evening session. It so happened, however, that the train was late, so we missed the first day entirely. Tuesday morning, as soon as it was light enough to see, my face was close to the window, watching for a glimpse of the beautiful Ohio River; and I was rewarded by getting quite a view just before we came into Pittsburg. As there was but a short time between the arrival of our train and the departure of the next, we breakfasted at the lunch counter in the Union Depot; and it is not a very bad place to breakfast, after all. Excellent appetizing dishes in great variety, and at a moderate price, were smoking hot for the throngs of hungry travelers. In Pittsburg they have a waiting-room for ladies, where no men are admitted under any circumstances; at least, the notice says "positively;" and I believe it is rather the nicest waiting-room for ladies that I have seen anywhere. This fact seems to reflect a little on the lords of creation. A glass of excellent milk cost only a nickel, and the dimensions of the glass were so great that it held pretty nearly a small pitcherful. Good for Pittsburg! By the way, I found excellent milk everywhere, at a nickel a glass. Why in the world should anybody want beer, or even tea and coffee, when they can get both food and drink at such an insignificant price?

I for one am very sorry that the natural gas has failed in Pittsburg to such an extent that they have been obliged to go back to coal and its attendant soot. In fact, the morning sun had a tough job of lighting up the city, even

in broad daylight. Why didn't somebody ever tell me of the wonderful number of manufactures of different kinds lining the railroads for miles out of Pittsburg? We used to think that "Down East" was the place for machinery, and for manufacturing establishments by the acre; but I very much doubt whether there is another spot on earth where immense factories are scattered over the landscape so thickly as they are for forty or fifty miles out of Pittsburg. I suppose one reason is, that Pittsburg has unlimited material, such as coal, gas, iron, stone, slate, oil, and ever so many other things, without end; and the way the towns are growing up, it looks to me as if Pennsylvania were soon to have *boys and girls* without number, to take care of these beautiful factories and railroad enterprises. It is true, Pennsylvania has not many prairies and level plains—at least, I did not see them; but she has grand hills and beautiful rivers. I was very much interested when I found our route lay along the Cone-maugh Valley, and right through the little city of Johnstown, that has become so celebrated all over the world. God grant that she may never have cause for such notoriety again in *that* line. But enterprise and industry have so built up the place that there are now very few traces of the flood. Great buildings, bright and beautiful in their newness, have taken the place of those destroyed by the flood; and were it not for the fearful loss of life, one might be tempted to think that the flood was not such a very bad thing after all.

Even though every thing was covered with snow, the landscape was full of interest to me. Although we did not go through the oil part of the State, strictly speaking, yet the derricks at some points were pretty thickly scattered over the landscape. The mountains are not as lofty as those in California, as a matter of course; but some of them are very pretty; and as only a few of them are too high to admit of agriculture, it looked pleasant to me to see good fences, cultivated fields, etc., for the most part, even through the mining districts.

Toward eleven o'clock I felt a strong tendency to take my accustomed nap before dinner; but there was so much to see that I feared I might lose much of importance. Ernest and Mrs. Root, however, promised to awaken me if we should pass any thing of very great interest. I had been watching for the Horseshoe Curve, and making a great many inquiries in regard to it. When I did wake up and take a look across the great valley it reminded me very strongly of the California views, and I began to scold because they came so near letting me go through it asleep. Just then Ernest declared he could see a locomotive and accompanying train away off in the distance, at the further end of the valley. Sure enough, there was another railroad, away off there on the mountain-side. The train was coming right toward us too. Then we came to a jumping-off place, as it seemed; but the locomotive decided not to jump off—at least, not that day; so it began circling around the mountain. Pretty soon I ejaculated, "Why, that other railroad comes right up and crosses this one. See! over there it is, close by us." In just a few minutes more I went on: "Why, what a stupid lot we are! *This* is the Horseshoe, and that is our own road over there. We are just going back into the mountains around a curve, and then we are coming out right across the valley." My companions thought it could not be; but so it was, sure enough. Even had the company decided to put in an immense bridge across this valley, it would have been going down hill too fast, and so they made that circle out on the mountains in order that they might get down a little

* Yes, and to "smell good" too. A baby, when it isn't overfed, is as sweet as a violet; some of them keep that way until old enough to hear their husbands tell them so, and I verily believe it is possible for both husband and wife to keep that way all the time.

more leisurely. Taking it all together, this Horseshoe device, with the wonderful scenery across and down the valley, is one of the finest pieces of scenery I ever met on any railroad; and I am determined, Providence permitting, to have a view of it some time in summer. There are many beautiful rivers along this route—the Susquehanna, for instance. As we reach Baltimore it widens out into beautiful little lakes in many places. I can not tell you about the scenery as we got into Delaware, as it was after dark. As they were behind time, they hustled us into Washington at a pretty lively rate, and for the first time in years I had a little touch of car-sickness. Ernest thought it was owing to the rapid running; but I insisted that it was because I drank a cup of coffee along in the afternoon. I did not particularly want the coffee, but they called out only so many minutes for lunch, and I didn't see any milk handy, so I took the coffee. Unless I change my mind, I do not believe I shall drink any more coffee, at least hot coffee—come to think of it, I am not going to say "as long as I live," after all, for I believe it will be much better to take coffee, and say nothing, than to annoy the very kind friends I always meet when traveling, and make them think I am full of whims and notions. No, I do not mean that I will take a glass of beer, just because the crowd does; but beer and coffee are very different things. When I can have my choice I am going to take milk; and when I can not have my choice I am beginning to think I won't take any drink at all when I am eating.

In all my travels I do not think I ever stopped at a hotel more comfortable, and more complete in its arrangements, than the Randall House, in Washington. I have put up at hotels where they charged more money, but there was something lacking. At the Grand Hotel, in San Francisco, we paid large prices, and things generally were fine; yet we were kept awake at night—at least Mrs. Root was—by the rats frolicking all over the premises. Just think of it, friends! rats in one of the finest hotels in San Francisco. Other great hotels do not have rats, but they almost always have something. The Randall House did not have *any thing* but comfort and peace. Very few waiters were needed, for every thing went by machinery. The house was warmed by steam, and it was a very easy matter for the occupant of the room to have exactly the temperature desired. When they get our railway coaches up to that notch of civilization, they will be far ahead of what they are now. The water-closets at the Randall house were especially to my liking. Every facility for keeping yourself clean and sweet, even including a nice new modern bathtub, was close by the door of every sleeping-room.

Just about as soon as I could get my head on the pillow, the car-sickness and every thing else, so far as I was concerned, vanished. As soon as it was daylight next morning, the first thing that met my eye as I looked from the window of our room was a sign, "Columbia Bicycles to Let." Mrs. Root and I went out for a walk first; but she knew how I was longing for a wheel to try those beautiful paved streets, and so she soon excused herself. I had pictured to myself the enjoyment of having a wheel with a pneumatic tire like my own; but when the man in the store said there was not a pneumatic tire in the whole city of Washington, for *rent*, my hopes took a fall. He added, however, that the cushion tires were just as good. I did not tell him so to his face, but I will tell you, dear reader, that he is a naughty, wicked man. He gave me a wheel that he called a Columbia; but it was so shabby-look-

ing I at first refused it, and accepted it only when he said it was the best they had. It was stiff-necked, and hard on the bit; and I had had been so accustomed to twisting and turning everywhere with my own wheel that this thing came pretty near getting me into several scrapes. It ran before the street-cars, and would not turn until I "yanked it" with all my strength. Never mind; I enjoyed it notwithstanding. As soon as I got it tolerably under my thumb, I hied me away to the Washington Monument. It looked very tame at a distance. Why! when a mile away you might almost call it a whitewashed smokehouse. It is much like the mountains in California. When you have traveled right toward it for half a mile, it is further off than when you started; but it keeps looming up, and increasing in size. When I reached its base I got off my wheel and tried to look up; and then I began to realize that it was in truth the tallest piece of masonry on the face of the globe. More of this anon.

It was getting to be almost time to open the convention, and I wanted to see the Capitol. It was about a mile away; but I had got the hang of my wheel well enough so that I made the mile pretty quickly. First I circled around it on the beautiful walks, admiring the statuary, etc. Then I brought up before the entrance. I do not know that I have ever felt much impressed by statuary; at least, I have not of late years been much attracted by the nude figures we see in art-galleries; but as I stood before the entrance of the Capitol of our nation, a group of figures in white marble took hold of my whole being as no work of art has ever done before. I forgot my wheel; I forgot the frosty air, and every thing else. The figure I am going to describe stands at the right of the entrance. A sturdy wood-chopper in his shirt-sleeves, with his hat thrown off and his shirt-collar turned back, holds in his muscular and sinewy grasp a savage of the forest. The scene probably refers to earlier days. The savage has in one hand a tomahawk, and in the other a scalping-knife. The wood-chopper stands a little at his back. He has grasped the savage by the wrists, and holds him with such an iron grasp that his captive can scarcely move. The face of the latter shows a fury of hate and rage. He looks like a baffled demon. Then as the eye rises to the manly face above him, beaming with kindness, intelligence, and love—yes, there is even love for his enemy depicted in that face—the expression that shines forth from the still cold marble speaks more eloquently than words. As I gazed on it I was so much overcome with emotion that I could not speak. I almost panted for breath. The marble seemed to say to me, in words more eloquent than those of the most finished orator, something like this: "My friend, I am more than a match for your savage strength and fury; but please believe me when I try to assure you that I would not willingly be your enemy. We come here to these new shores, not to fight you and plunder you of your possessions. We come to teach you better things than skill in using warlike weapons such as you hold in your hands. We come to bring you the glad message of peace on earth and good will toward men." Dear friends, what can be more appropriate than this wonderful piece of statuary for such a place as this, the emblem and motto of the work the United States hopes to do with the rest of the world? It is our mission and our work to conquer and control sin and wickedness. Our laws are good and wise, and it behooves us to enforce them. But may God help us to enforce them with kindness and love.

While we take the revolvers and bowie-knives out of the hands and pockets of the out-

law—while we fetter him hand and foot, so long as his purpose is evil, may God help us to do it as does the man in that marble picture. He is using the bones and muscles that God gave him, to conquer the brute nature of the savage; and then he looks into the face of the poor ignorant, untutored child of the forest, and teaches him that wonderful truth, with all its grandeur and beauty, "Love ye your enemies; do good to them that hate you."



Butter and honey shall he eat, that he may know to refuse the evil, and choose the good.—ISAIAH 7: 15.

ON account of our trip to Washington, the promised additional notes from New Orleans will have to be omitted for the present.

WE would call especial attention to the valuable article by Mr. P. J. Baldensperger, on page 53. It will be followed by several others equally good.

GOOD FOR FARMERS.

YOU know that I am always glad to see the prices of any thing that farmers produce go up. Just now I am glad because pork has gone up to 7½ cts. Some may urge that it may come hard on many poor people because they have to pay more. Yes, that is true; but when farm products get so high that poor people find it hard to pay for these things, then they can go out into the country, and occupy some of these deserted farms and raise their own pork. See?

THE WEATHER UP TO JAN. 12.

FOR the past few days we have had the coldest weather we have had in several years; and should it continue many more days, we fear the little pets outdoors will not have a chance to turn over and get to a fresh supply of honey; for we have observed that, sometimes during a long stretch of cold weather, a few clusters will eat away the honey all around them, and finally starve because they do not or can not move to where the honey is. But there is one encouraging feature: The hives are nearly buried under the snow.

DR. MILLER PRESIDENT OF THE NORTH AMERICAN FOR 1893.

AT the last two conventions of the North American, we have heard expressions on every side from members, to the effect that Dr. Miller should be the presiding officer when the meeting assemblies in Chicago at the World's Fair. Almost every one acknowledges that he makes the best presiding officer of any of the beekeepers; and there has been a feeling for three or four years back, that the meeting at Chicago would be the greatest and most important of any convention in the history of the association; and, of course, it was nothing more than natural that those present at the Washington meeting should elect Dr. Miller as president for 1893. Mr. Frank Benton was put in as secretary; Mr. J. E. Crane as vice-president, and Mr. G. W. York as treasurer. With such a quartette we may hope for great things at the convention which is to be held some time near the middle of October, this year, at Chicago. Some may think that we should divide the honors, and that, as Dr. Miller has been president for two or three

years, some one else should have a chance. It is not a question of conferring honors, but it is a question of getting the best man in order that the best kind of convention may be assured, especially this year.

A SCHEME FOR IMPORTING APIS DORSATA AND APIS INDICA.

IT will be noticed in another column, that Mr. Benton says that the *Apis Indica* are very small bees—so small, indeed, that they might be adapted to the small flora of our country, without detriment to other bees. We saw some dried specimens that were very beautiful; and those who have a liking for five-banded bees will take a great fancy to them. But we were not interested particularly in their markings, but in their adaptability to small flora; and we have been wondering whether we did not have some subscriber in India who could procure for us these bees. We could furnish mailing-cages that we feel sure would deliver the bees to us alive and in good order; and it not barely possible that there are some among our subscribers, especially among the missionaries, who could in a similar way, deliver to us the *Apis dorsata*? We feel quite sanguine that, if bees can be secured by some subscriber in their native land, we could send such cages as would bring them safely to us. We are willing to pay quite liberally for the bees, and therefore solicit correspondence; and while we do not anticipate that either the *Apis Indica* or *Apis dorsata* would be any great acquisition from a practical standpoint, yet there are many in this country who would like to study them on account of their physiological differences. □

AMOUNT OF ADULTERATION, ACCORDING TO THE CHEMISTS.

ELSEWHERE in this issue, Prof. Wiley says that nearly 45 per cent of the liquid honey on the market was found to be adulterated; and while we will admit that, under our silence, adulteration has grown, yet it is very hard for us to believe that so large a per cent of the liquid honey found on the market has been mixed with inferior ingredients. Mr. Muth's honey was classed as adulterated. If, indeed, it was, Mr. Muth was an innocent party. In fact, he has been one of the most aggressive, in the matter of fighting adulteration, of any beekeeper in our ranks. Being a honey-buyer and a honey-seller, he has felt the evils of it, perhaps, more than any one else; and while we now give the chemists credit for competency and honesty of purpose, yet it is very possible that their methods will cause them to call a few honeys impure that are really pure. For instance, we know that, of the 53 samples submitted by Prof. Cook for analysis, at least three pure honeys of extra fine quality were classed with honey mixed with cane sugar. See Prof. Cook's article, page 688, Sept. 15, 1892. We also know (see Prof. Wiley's address, this issue) that plant-louse nectar offers certain complications; and we think, therefore, that a little of this louse secretion in pure honey *might* throw them off the track. But it should be observed, that the chemists picked out all the *glucose* mixtures that Prof. Cook sent them, without a single mistake. This is encouraging.

THE WASHINGTON CONVENTION ON INCORPORATION.

OUR readers will remember that a few of our Canadian friends took umbrage because the bee-keepers on this side of the line thought it good to have the N. A. B. K. A. incorporated under the laws of the State of Illinois. One of the prime movers in this protest was Mr. W. F. Clarke, and in accordance with his former pub-

lished determination he sent in a paper protesting, and asking the association to rescind the articles. On the principle that, "if meat maketh my brother to offend," etc., we moved (a motion that was carried) that the matter be laid on the table, with a recommendation that it be favorably considered at the meeting at Chicago. As we were the only member present of the original committee who proposed the feature of incorporation, and as the attendance at Washington was small, it did not seem to us that it would be fair to the other members of the committee, as well as to the greater number of those who usually attend, and who were not present, to go ahead and rescind. But it may be asked, "Why should we consider the matter at all?" Simply this: As a few of the Canadians seem determined not to understand properly our motives, it is possible that we may set aside incorporation without detriment to the association; and particularly so as the Beekeepers' Union *now* promises to do just exactly what the North American was expected to do under incorporation. If another year will prove this, then we could drop the articles of incorporation, and thus establish friendly feelings all around. We should not be surprised if the Chicago convention would vote to retain incorporation, because, as it is, it does no harm, and *may* do good.

THE COLD PROCESS OF MAKING SYRUP. PROF. COOK'S EXPERIENCE WITH SUGAR HONEY THEN AND NOW.

Just after our general department of contributed articles had been closed up, the following article came in. As we propose to have no further discussion on the sugar-honey matter after this issue, we give place to the article here. It will be found to contain some excellent suggestions.

To what Mr. Ch. S. Haas has said on page 24 about the cold process of making sugar syrup, I would add that, according to Ure, one pound of cold water will dissolve two pounds of sugar, making a syrup the specific gravity of which is 1.326. This is a little over 13¼ lbs. to the imperial gallon, or a little over 11 lbs. to the wine gallon, used in the United States. If this syrup is fed to bees cold, they will take it slowly; but slow feeding has an advantage in the fact that the bees have time to secrete and add to the syrup the ferment which prevents it from crystallizing in the combs, and which, Prof. Cook says, changes it into honey; but to secrete this ferment in sufficient quantity the bees must have access to pollen. A few years ago, when the pollen theory was up for discussion, Mr. Heddon fed his bees hot syrup in his rapid feeders, at a season when there was little or no pollen to be gathered. The syrup was stored in the combs as free as possible from pollen; but in the winter the bees died, from the effects of cold, as was said by Mr. Heddon, and no doubt he was correct, because it is known to physiologists that, in order to assimilate the carbohydrates and get their full heat-producing effects, nitrogenous food is necessary to start and keep the assimilative changes in motion. Mr. Heddon sent some of those dead bees to Prof. Cook, who, assisted by Prof. Kedzie, examined the contents of their stomachs and viscera. They found no pollen, but the bees were loaded with syrup. The furnace charged with fuel, so to speak, was ready, but it lacked the nitrogenous element to start the fire and keep it burning. On tasting the contents of the honey-stomach, Prof. Kedzie said, "Why, that's sugar." This was a case in which the same sugar syrup fed to bees in the fall, and sealed over, and taken by the bees again as food in winter, remained sugar syrup still. I place this case in evidence in opposition to the verdict of Prof. Cook's forty students. The account of the matter was given in GLEANINGS, by Prof. Cook himself.

To liquefy sugar by the cold process, on a large scale, I would suggest the use of the extractor-can, or a large honey-tank, in which several barrels could be treated at a time. Simply put the sponge in the honey-gate, and, after filling up with sugar,

pour in not more than half as many pounds of water as there are pounds of sugar; let it stand till the water becomes saturated, then open the tap and let it drip. At my out-apiary I intend to try this plan next fall.

S. CORNELL.

Lindsay, Canada, Jan. 8, 1893.

It is strange we did not think of inserting the sponge into the gate of the honey-extractor. We believe it will work just as well as the arrangement we described in the last GLEANINGS, and be far less trouble to put into application.

THE GLUCOSING OF DARK HONEYS; THE POSITION TAKEN BY MR. JAMES HEDDON.

By the report of the proceedings of the Michigan State Bee-keepers' Association, Mr. Heddon offers quite a lengthy argument in defense of adulterating, saying that it helps the sale of the poor dark honeys, because they will stand a large quantity of glucose. He says truthfully, that, "there is no trouble about enforcing the law against murder, because people dislike to be murdered;" but when he says that enforcing laws against adulteration is impracticable because the public care very little about the matter, he is surely mistaken. The public does care. Again, he says broadly, "I think the adulteration of honey has never injured bee-keeping: that it has, rather, been a benefit." And, again, quoting, "If we are going to fight adulteration, let us decide *why* we fight it. If it does not injure us, then why fight it?" And, once more, "All this talk about adulteration is the height of folly." We regret exceedingly that any one in our ranks should take such grounds as these; and we are sorry that even Prof. Cook should go so far as to say that, *if* the addition of glucose "to some grades of honey really improves them, and aids in their sale, I have said my last word against adulteration." Replying to Mr. Heddon, we will say that we know positively that the adulteration of honey by glucose has injured the bee-keeping interests, else why is it, in this year of great scarcity of honey, the extracted article fails to go up in price? In fact, it rules just about the same as it does in years of plenty. There was a time, and not more than three or four years ago, when very little honey was adulterated; but now things have changed; and if the continual *harping* on the subject is bad, that *silence* which lets the evil go on unrestrained and unchecked is *tenfold* worse. If circumstances were only such that we dared reveal some things that we know—well, we won't make any threats. Referring to the quotation from Prof. Cook, does he not see what a fearful flood of fraud and adulteration the admission of his argument would bring upon the country? Does he suppose for a moment that adulterators are going to stop at dark grades of honey and glucose in order to give the dear people something better than real floral honey? A little stream of water over the edge of Conemaugh dam "improved," perhaps, the water below; but it did more than that: it let loose death and destruction in its wake. Now, it is possible that neither of the gentlemen above named have been correctly reported; but as Mr. Hutchinson acted as reporter, and is unusually careful and accurate, we presume the quotations are not far from correct. To have such "heresies" advanced by the president of the Union, now on the very eve of starting a well-organized effort to suppress adulteration of honey, is too bad. If bee-keepers should *not* be unanimous in this fight, if some of them should propose sugar comb honey, and others countenance adding glucose to dark honeys, where would we be coming to? Verily, the foundations of the bee-keeping industry would be threatened. Such a

state of affairs must not come, and will not, because we believe that neither Mr. Heddon nor Prof. Cook would be willing to hazard the industry or even run the risk of doing so. Surely Prof. Cook and Mr. Heddon will reconsider.

THE SUGAR-HONEY DISCUSSION; THE FINAL STATEMENT OF THE CASE SO FAR AS GLEANINGS IS CONCERNED.

We have received hundreds of letters protesting against the proposed practice of feeding bees sugar to produce comb honey, and they are still coming in. The Illinois State Bee-keepers' Association condemned it; the Michigan State Bee-keepers' Association, as we infer from the report, did not favor it; the Washington convention said as little about the subject as possible; and when it did, it put it in such a form that the reporters could not get hold of it. Nearly all the bee-papers have entered a decided protest, and now the matter is getting into the agricultural periodicals, and is being roundly condemned there—particularly in the *Ohio Farmer*. We are glad that there is a universal sentiment against it, and we are sure that our friend W. Z. Hutchinson has no inclination to bring it up again; and that neither he nor Prof. Cook, knowing the facts, would care to run counter to the great mass of bee-keepers, the bee-journals, and the agricultural press—not because they would be afraid to express their honest opinions and convictions, but because they would not willingly further countenance something that manifestly would work injury to the industry. And now, as a closing sentiment, we wish to make a brief quotation from an editorial in the *American Bee Journal*, which we most heartily indorse:

Nearly all agree, that, even if it might prove profitable to thus feed sugar, it would almost certainly be too dangerous and risky a thing to do for the good of the pursuit of bee-keeping. There is no need of trying to walk safely over quicksands, when we know there is a pathway where safety is unquestioned.

Later.—Since the above was in type, the following editorial, which will appear in the next *Bee-keepers' Review*, entirely justifies the good opinion we have all along held of Bro. Hutchinson, and that he would drop the matter if he were shown that the discussion was unwise. It is indeed true, that "an editor has an opportunity that is accorded to no other, to place his finger upon the public pulse;" and Mr. Hutchinson, with his usual editorial sagacity, is not slow to interpret it.

THE SUGAR-HONEY DISCUSSION HAS GONE FAR ENOUGH AT PRESENT.

I said I had more articles on sugar honey that would be published in due time. Perhaps their authors are wondering why they are not. The reason is, that the bee-keeping public is opposed to the discussion. An editor has an opportunity that is accorded to no other, to place his finger upon the public pulse. In the hundreds and hundreds of letters that have come to me in the past month, and from the bee-keepers that I have met at three conventions of a national character, I have learned that there is a strong opposition against even the discussion of the raising of honey by feeding sugar to bees. In some instances this opposition amounts to a bitter rage. Some of you may remember the pains that I have taken in the past to learn what course in the getting-up of the *Review* would be the most acceptable. Well, when it has been shown to me so clearly that this discussion is distasteful to the majority, what folly to force it upon these unwilling readers! I have several most excellent articles upon this subject. One is from Mr. Daggitt, in which he calls attention to the fact that it is the floral flavor of honey that gives it its chief value. Illustrations and evidence are given at length. Again, this very morning, I have received from Frank S. Aby, Director of the Histological Laboratory of the Iowa State University, a most able paper discussing the question most thoroughly from sci-

entific, ethical, and economic standpoints. He supports Prof. Cook, and says that the opposition comes from the ignorance of bee-keepers on chemical and physiological points. It seems a pity that this subject can not be thoroughly and calmly discussed in all of its bearings; but with the present feeling, its continuance would only stir up bitterness, and I think the best thing that can be done is to drop it right where it is, at least for the present.

We hope no one will berate or feel unkindly toward Bro. Hutchinson. His course all along (as was also Prof. Cook's) on the sugar-honey matter was actuated by the best of motives. Prof. Cook, by a letter just at hand, shows that he is in entire harmony with the sentiments expressed by Mr. Hutchinson above.

Still later.—After having received the proof of the editorial that will appear in the *Bee-keepers' Review*, another letter comes from Professor Cook. It reads as follows:

RIGHT ABOUT, FACE!

Dear Mr. Editor:—In studying the development of nature we find that there are retracings as well as advancement; retrograde as well as progressive development; such retrograde movements being, for the time at least, for the best. Hence if I call to myself for a halt, or even a wheel-about, I shall not be a single exception.

SOME HISTORY.

Until the past summer I have never regarded sugar syrup, transformed and stored by the bees, as honey. I knew it was transformed, but I did not think it honey. The serious nectar-dearth for the past three years, which I saw drive many bee-keepers from the ranks, so that, where we used to have large and enthusiastic associations, we now have a mere baker's dozen interested, or often none at all, made me very solicitous to find a cure for this terrible evil. I hoped, though faintly, for some relief by special planting of most promising honey-plants. I entered energetically into the experiment of such planting on a large scale, only to prove conclusively, as I think, that there is no solution of the trouble in that direction.

Last year, when Messrs. Hasty and Hutchinson discussed sugar-syrup honey, I had no sympathy with the move. I thought of it in the light of adulteration, and felt that all such discussion was a mistake. This summer I tasted of sugar-syrup honey, and, to my surprise, it was not sugar syrup. It seemed not only honey, but first-class honey. I have been engaged in testing honey for years, and think I am somewhat keen in that direction. This syrup was from pure granulated sugar; was stored at night very rapidly, and extracted the next day. The bees were not gathering at all, so there was no admixture—could be no admixture of honey from flowers. Some of this honey was capped over in a few days, and was still most delicious honey, or so it seemed to my experienced taste. I got a large number to taste of this, and all pronounced it A. No. 1 honey. Some experts, whom I told what it was, said, "Why! I am surprised; that is as nice honey as I ever ate." Do you wonder, Mr. Editor, that I was led to wonder if here were not a solution to the impediment of years with no honey? I said not a word, but awaited the decision of the chemists, three of the best in the country; and when I found they placed this in company with some of the best floral honey—basswood, clover, etc., that I ever tasted of, and which was of undoubted character, I thought I saw still more hope in this direction. I then commenced studying the objections. If its character is such that I can not distinguish it from first-class honey from flowers; if the chemists can not do so, where is the objection to its production? I decided at once that it would be, in the public view, as Mr. Bingham says: "There is a mystery in the honey from the flowers that pleases people, and this sentiment is too valuable to lose." I asked myself and family; and we all said that, if it is as wholesome, looks as nice, and tastes as well, we make no objection. I then asked the honey-lovers immediately about me, if, with these conditions true, they would object. Every one said no. Thus it seemed to me that I had a case, and so wrote the articles for the *Review*.

But, Mr. Editor, may be I was hasty, and that the article was unwise. Prof. Wiley writes me that he thinks he can distinguish between sugar syrup transformed and stored by the bees, and floral



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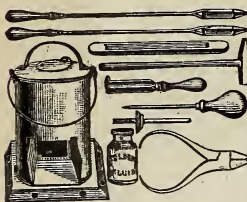
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