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Gleanings in Bee Culture



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VOL. XXXIX

DEC. 15, 1911

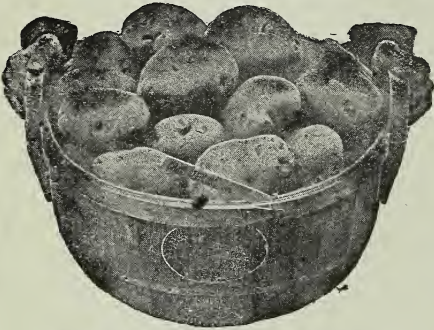
NO. 24

A BRAND-NEW REVISED EDITION

The ABC of POTATO CULTURE

By T. B. TERRY and A. I. ROOT

Tells how to grow successfully one of the greatest money-making crops



Forty Potatoes to the Bushel!

You can get them from your garden. This book tells you how.

Terry's Book on Potato-growing

In 1885 T. B. Terry gave an address to our Medina people on the subject of growing potatoes. I was astonished at the story he had to tell; and I predicted then and there that Mr. Terry was destined to be soon known, not only throughout Ohio but throughout the whole United States. As the years passed, my prediction has become verified, and I feel not a little gratified to know that once in my life, at least, I recognized genius when I came across it. I interviewed Mr. Terry, and told him he would have to put his talk into book form. He did so, and the book went all over the world, and was even translated into several foreign languages. In eight years the edition was exhausted, and a new one was called for; and in 1901 a third edition was called for; and now, after a lapse of ten

years, I have been exceedingly busy during the past few days in going over it carefully and preparing for a fourth edition of 10,000 copies. And while I have that experience in my mind, let me tell you it will pay almost every man, woman, and child to read Terry's potato-book, no matter whether you ever did or ever will grow any potatoes or not. If you have read Terry's recent book, "How to Keep Well and Live Long," you will know that he is a student of nature, and a delver after God's gifts and God's secrets; and this potato-book, on every page, shows his remarkable gift. He is a philosopher of modern date; and his love for God's gifts, as well as his love for his fellow-men, shines out on every page. Another thing, this book was written in the prime of his life. It was written with the enthusiasm, energy, and strength of youthful manhood. His studies of potatoes, it occurs to me, paved the way in his explorations in his later work in regard to how we should live, and keep our health. The new book will probably be ready soon after this meets your eye.—*Advance notice in Gleanings in Bee Culture by A. I. Root.*

This is the Standard Text-book on Potato-growing

Contains nearly 300 pages, well illustrated.
Paper bound, 50c each; cloth bound, 75c.

We offer one copy The ABC of Potato Culture, paper bound, and Gleanings in Bee Culture, one year, reg. price \$1.00

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\$1.00

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Editorial

WE have on hand at this time a large amount of copy which we hope to use later on. Some manuscript which we accepted over a year ago is just now appearing. This will explain why some matter in hand has not yet appeared.

THE printing-house of GLEANINGS is now being crowded to its utmost capacity. We have just installed a \$3600 typesetting machine (a Mergenthaler two-letter linotype) and a new printing-press. We shall have to run some of the presses night and day for a few months in order to catch up.

WE would call attention to the beautiful written article on flowers in this issue. Mr. Lovell is not only a scientist, but an enthusiastic bee-keeper as well. His contributions have appeared in a number of the scientific journals of the country. He has spent much time in the field, and, unlike many scientific men, he draws information and knowledge direct from old Dame Nature herself.

NEW ALFALFA TERRITORY.

NEW alfalfa country is being opened up by irrigation in the West. Possibly there are some bee-keepers who would like to change their locality. Instead of going to some place already overstocked, better write to the Secretary of Agriculture, Washington, and ask for information concerning new alfalfa territory being opened up by irrigation.

OUR INDEX FOR 1911.

THE index for this year will be sent out with the first issue of the coming year. It will be very complete, and we respectfully suggest that every reader of this journal carefully preserve it in order that he may be able to refer back to special articles that appeared during the previous year. A subscriber who does not bind his journals as he receives them will necessarily lose much of the benefit that he should receive from them.

HOLDING FANCY COMB HONEY FOR BETTER PRICES.

ONE large buyer of both comb and extracted honey has secured a lot of fancy comb honey. As prices on Western honey

have slumped a little he is holding these goods, being sure there will be an advance. If the honey is a strictly first-class article, or fancy, it may be safe to do this; but it would be bad policy to hold most Western alfalfa, on account of the danger of granulation. While, of course, a fancy article will not granulate more than a poorer quality of the same honey, there is still a danger that, by the time the price of fancy honey advances, enough of that on hand will have candied to cut down the profits considerably.

IS CELLAR WINTERING GRADUALLY GIVING WAY TO OUTDOOR WINTERING?

THERE is a slight tendency on the part of bee-keepers who have been cellaring their bees to winter outdoors. The most conspicuous example of this is Mr. R. F. Holtermann, who for years has wintered indoors, notwithstanding he was very successful and notwithstanding he has had most up-to-date repositories built on scientific lines. We should like to inquire whether other cellar-wintering people lean toward the outdoor plan. We know that it takes much less skill and time to winter outdoors. The average beginner will succeed much better by it.

A NEW BEE-JOURNAL FOR SOUTH AFRICA.

THE first issue of the *South African Beekeepers' Journal*, published at Johannesburg, Natal, South Africa, has just reached us. The editor, Mr. Geo. F. Oettle, realizing the fact that a bee-journal is needed for the special conditions in his part of the world, has undertaken to supply the demand. We wish the new paper success, and we see no reason why it should not have it, because there is a bright future for bees and bee-keeping in South Africa. It is a comparatively new country; and it occurred to us that, if some of the bee-keepers of the United States, instead of crowding into localities already overstocked, would find pasturage new in other parts of the world, it would be very much better all around.

A BULLETIN ON BEES BY THE TEXAS STATE ENTOMOLOGIST.

WE have before us Bulletin 142, entitled "Practical Information for Beginners in Bee-keeping," by Wilmon Newell, State

Entomologist, and Entomologist of the Experiment Station. From a hasty examination of this bulletin it appears to be one of the best treatises on bees for beginners that have been issued for a long time. Professor Newell is not only an entomologist but a bee-keeper. He has done much to advance the cause of apiculture in his State; and this bulletin, which we suppose is for free distribution to the bee-keepers of Texas, will do much to disseminate useful information. We presume that the bee-keepers of other States can obtain a copy by paying a small price—probably 10 cts. Address Prof. Wilmon Newell, College Station, Texas.

THE PHOTOS OF W. Z. HUTCHINSON ON THE COVER DURING THE COMING SEASON.

IT is well known to our readers that Mr. W. Z. Hutchinson was a genius at taking beautiful photos. He took many hundreds of them, but used only a part of them in his journal. A short time ago Mrs. Hutchinson inquired whether we could use any of these old negatives. We requested her to ship the entire collection, and we would decide whether there were any that would be suitable for our work. To make a long story short, we bought the entire collection, and from the number we expect to use a few photos, some of which have apparently never been used in any publication. These will be used on the cover of GLEANINGS from time to time. In most cases, as in the cover of this present issue, we shall not be able to identify the picture; but most pictures will contain a lesson that is worth putting before the readers to-day. So here again Mr. Hutchinson's works live after him.

THIS MONTH'S COVER PICTURE.

THE cover for this month's issue shows a photo taken by the late W. Z. Hutchinson, illustrating one of the methods of putting bees up for winter under a shed. We do not know whose bees these are; but no matter; it illustrates a method that is used in some localities. The shed shown is doubtless arranged to cut off the prevailing winds. Dry leaves are packed between the hives, which are single-walled, and otherwise the hives are much the same as they are in the summer. The only difficulty with the arrangement is getting at the hives and frames in summer. It is possible, however, that the owner uses this shed only in winter.

A few years ago Mr. G. C. Greiner, of New York State, showed how he packed his bees in this way. It was his practice, however, to move the bees from their several stands in the bee-yard to a new position under the shed. This was done late in the season, and all at once. Contrary to what many would suppose, the bees are not lost. When they find that the old location is entirely changed, they will find their new location under the shed. In doing this they may mingle somewhat, and it is possible that some of the stronger colonies will get

more than their fair share of bees; for the heaviest fliers—that is, those making the greatest showing in front of any particular entrance, will attract the most bees.

PRODUCING EXTRACTED RATHER THAN COMB HONEY; A CAUTION.

In the *Bee-keepers' Review* for December, Mr. P. C. Chadwick makes this observation:

I believe the money lost each year working for comb honey would be sufficient to equip every apiary in the United States fully for extracting—not money literally lost, but time and supplies, which we all know have a money value. To say nothing of flat failures in comb honey where enough extracted could have been secured to pay expenses at least.

This question of comb or extracted honey depends largely on locality and on the market. As there is already an exodus from comb to extracted honey, it will be well to remind a number of our friends that those who continue to produce comb will probably secure extra good prices for 1912. Just before he died, the late W. Z. Hutchinson, observing that many bee-keepers were going from comb to extracted, offered a caution, to the effect that he believed many would be making a mistake if they made this change too hastily. There is wisdom in his words. Let the wise consider. One who is already making a success of producing comb honey may not be equally successful in producing extracted, notwithstanding that the production of the latter is considered simpler. Those who stick to comb honey are going to share in the increased price by reason of the possible reduction in the ranks of the comb-honey producers.

A RETROSPECT FOR 1911.

THE year 1911 will go down in apicultural history as the poorest for honey production of any year we have ever known. While some bee-keepers were fortunate in securing good crops, there seems to have been a light yield or almost an entire failure all over the United States and Canada. The Western part of the country fared better than either the South or East.

Several additional States have passed foul-brood laws, and great progress has been made in other States looking toward the needed legislation. The following are the States that passed foul-brood laws in 1911: New Jersey, Vermont, Kansas, Pennsylvania, Tennessee, Minnesota, Illinois, and British Columbia for Canada.

The Bureau of Entomology has secured \$5000 additional to carry on apicultural work, or \$15,000 in all. Dr. E. F. Phillips and his corps of able assistants have recently been doing some splendid work in combating disease. A number of bulletins on bees have been sent out, and Dr. Phillips and his assistants have visited many localities. We are greatly indebted to the Bureau of Entomology for what it has done for the industry all over the country.

There has been a marked tendency to favor the ten-frame hive more strongly than ever, and a corresponding inclination to drop not

only the eight-frame Langstroth, but all other styles of hives, both shallower and deeper. In other words, the standard ten-frame Langstroth is coming to be more and more the prevailing standard throughout the United States. When Langstroth settled on the dimensions of this hive he builded better than he knew.

During 1911 there has been considerable awakening as to the importance of better shipping-cases, and saner and safer methods of putting up comb honey.

There has been more and more a tendency this year on the part of bee-keepers to drop the production of comb honey and confine their efforts to extracted. There is danger of overdoing this. See editorial elsewhere on the subject.

Great strides have certainly been made in perfecting the various methods for taking honey from the combs. The steam honey knife and the power-driven honey-extractor have come to be recognized as great labor-savers. The capping-melter has been further tested to some extent, but as yet its future is undetermined. The automobile is coming more and more to be a part of the out-apiary equipment. There has been a great increase in the bottled-honey trade. More and more bee-keepers are beginning to find it possible to cater to the local retail trade.

The demand for queens, in spite of the very poor season, was probably the greatest that was ever known to beedom. A large part of this increased demand, if not all of it, was due to the fact that bee-keepers and foul-brood inspectors everywhere have come to recognize that pure Italians are much more immune to disease, especially European foul brood, than either the blacks or hybrids. We know of a number of instances where extensive honey-producers, fearing European foul brood, have Italianized largely, to prevent its introduction among their bees. Even for American foul brood, good Italian stock is to be preferred.

The year 1911 has seen an unusually large number of articles on bees in our popular magazines and newspapers. The bee-sting cure for rheumatism especially has been exploited, both in cartoon and story, in all the papers. Not a little has been said about honey as a food for young and old, for the sick and the well. All these help to popularize honey. We hope our contemporaries of the general press will keep this up, for honey should be eaten more generally.

During the year we have lost at least four prominent bee-keepers. First there came the sad news of the death of W. Z. Hutchinson, one of the ablest writers on bees we have ever known. No one was more sincerely loved by his fellow bee-keepers, and no one has died recently whose loss will be more sincerely mourned. He left his deep impress on the bee world. His works and words will live long after him.

One of the best-known bee-keepers in all Michigan, one who had done much to advance the cause of apiculture in his State,

was Mr. Geo. E. Hilton. He was not only a big man among bee-keepers but a big man among his fellow-men generally. Twice he had been elected representative in the legislature of his State at Lansing; and while acting in that capacity was largely instrumental in bringing about two-cent railroad fare in Michigan. He was prominent in church affairs, and at the time of his death was postmaster at Fremont.

Mr. R. W. Herlong, details of whose death are announced elsewhere in this issue, made the most amazing progress in the bee business of any man we have ever known. He began with three colonies in 1898, and before he died he owned and operated in the neighborhood of 900 colonies in thirteen apiaries. He never wrote any thing for the bee-journals. Quiet and modest in his way, the bee-keeping world knew but little of the man until our special correspondent, E. G. Baldwin, told something of his capacities in a business way.

In Canada, no less a person than Mr. J. B. Hall, of Woodstock, died this year. Mr. Hall was the introducer of thick top-bars, both in Canada and the United States, and he was a prominent figure at Ontario conventions. He had a happy faculty of enlivening discussions; and while he rarely took much time on the floor, what he did say was to the point. He had a most delightful manner of expressing himself, and very often at the close of a few brief sentences he would bring down the house with heavy rounds of applause.

There has been no birth nor death among the bee-papers this year; but owing to the death of the editor and founder of the *Bee-keepers' Review*, that journal is now ably edited by Mr. E. B. Tyrrell. At the present time it gives every indication of being a force in the apicultural field.

The *American Bee Journal* is more than holding its own, and still holds the title of being the "Old Reliable." It is the oldest bee-paper in the United States.

The *Canadian Bee Journal* is ably edited by Mr. J. J. Hurley. The paper is well gotten up; and if it makes the progress next year that it has made this, it will crowd some of us old fellows who have been longer in the field.

Two notable bee-books have been largely rewritten and revised during the year—namely, "Advanced Bee Culture," by W. Z. Hutchinson, embodying all his late writings, and "Fifty Years Among the Bees," by Dr. C. C. Miller, covering the ripest experience of one who flourished in the days of Langstroth, Quinby, Wagner, Dadant, Alley, Cary, Grimm, Tupper, Gallup, and Hetherington, and who is still with us in the flesh. Dr. C. C. Miller, G. M. Doolittle, and A. I. Root are able to bridge the past and the present as almost no other living bee-keepers can. Of all those who helped to make the industry in the early '60's, they alone remain. We hope that the new year and many more will be as kind to them as the old year.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

L. B. SMITH reports, *American Bee Journal*, 303, that a live drone hatched out of a queen-cell. First case I ever heard of where the drone did not die in the cell.

WYOMING, Colorado, Utah, Idaho, Washington, California—six, count 'em. Six States in which a woman's vote is as good as a man's. Oh! the women are getting there.

BEE-STINGS were used by a prominent member of the faculty of the Vienna Hospital upon his own person for the relief of rheumatism, with excellent results.—*Ill. Monatsblatler*, 107.

KARL TREFIL, *Deutsche Imker*, 311, says water is better than smoke for cross bees. He uses a sprayer that can be worked with one hand, the water sweetened or perfumed. Isn't that harking back to Langstroth?

SYRUP for winter should have one part tartaric acid for every 1000 parts sugar ($\frac{1}{4}$ oz. acid for 16 lbs. sugar); then cook at least an hour on a slow fire. That will invert the cane sugar, and save the bees that work.—*Ill. Monatsblatler*, 101.

ROY TAIT "uses a carbolized cloth for removing his honey from the hives, and says he can drive the bees out of the supers on a warm day when bees are flying, as rapidly as he can carry the supers to the automobile and pile them on."—*American Bee Journal*, 300. It would seem there ought to be at least one advantage in the carbohc. When smoke is used, it may drive the bees up into one part of the super while it drives them down in another, and occasionally a queen is thus left in the super. This would not occur with the carbolized cloth.

OPONENTS of foul-brood laws take pleasure in pointing to the fact that foul brood still continues under foul-brood laws. Dr. G. Rohrer wisely answers, *American Bee Journal*, 306, "Why is it that we still have smallpox, in the presence of vaccination and quarantine work? All will answer without hesitation, that, in the absence of a quarantine law rigidly enforced, we should have much more of this dread disease, as well as many more deaths." [We may just as well say that our laws against murder and other crimes should be repealed because such crimes go on just the same. The same silly argument is used about liquor sold in dry territory.—ED.]

JUST 1543 POUNDS carried into the hive in a season. That's according to a statement in *L'Apiculteur* quoted in *Leipz. Bztg.*, 173. That's not the work of a special colony, but of any good colony in a good year. Not 1543 lbs. of honey, but of nectar, pollen, and water. Here are the figures:

For the development of a bee, from the egg to the perfect insect, it requires 122 milligrams of honey. During its life it consumes 225 mg., making 345 mg. in all (a lit-

tle discrepancy in those figures). The daily laying of 4000 eggs for 100 days will produce 400,000 bees. If each bee requires for its rearing and support 345 mg., 400,000 require 138 kg. But that 138 kg. of honey is brought into the hive in the form of nectar, 3 parts of nectar for each part of honey. So that 138 kg. of honey requires 414 kg. of nectar, which equals 913 lbs. of nectar. The bees also carry in about 110 lbs. of water and 110 lbs. of pollen. To produce 3.3 lbs. wax requires 80 lbs. of nectar; 110 lbs. of surplus honey requires 330 lbs. of nectar. Total weight carried into the hive, 1543 lbs.

I shouldn't want to swear to the correctness of those figures, but at any rate the total amount carried in by the bees must be away beyond any thing I had ever thought of. If each colony carries in 1543 lbs., then in an apiary of 100 colonies there must be carried into their 100 entrances by the laborious little creatures a weight of no less than 77 tons! [We can not refrain from putting a big question-mark before some of these figures. For example, 4000 eggs for 100 days producing 400,000 bees. Whewation! We doubt if there was ever any queen that would lay at such a rate as that. While we admit that a queen *may* lay 4000 eggs in a *single* day, she will not keep up that pace very long. In most localities the height of egg-laying would not extend beyond the period of one month at a time; and even then, if we are not mistaken, the queen might lay three or four thousand eggs in one day, and then loaf on her job the next day. We have raised many thousands of choice queens, but never had any that would come anywhere near laying 4000 eggs per day, even for one week; 1500 per day for 7 days is the best.]

We have carefully weighed some of the largest swarms that came out of two and three story colonies. The largest one weighed 9½ lbs. That would make 40,000 bees, or, we will say, 50,000, counting those left in the parent hive. Let us assume that the average bee, during the height of the season, will live only four weeks. Let us assume, also, that they are renewed every four weeks for three months. This would give us only 150,000 bees, or 250,000 short of the figures given in the estimate above. Again, that estimate of 110 lbs. of honey is too high. Then think of the estimate of 110 lbs. of pollen for one colony! A comb loaded down with pollen will weigh perhaps 3 or 4 lbs. when empty. If the bees brought in enough pollen to fill ten combs, the amount then could scarcely reach more than 30 or 40 lbs. But suppose we multiply it by two. We are then from 60 to 70 lbs. shy of the estimate. If all the other figures are exaggerated in the same proportion, the total aggregate of 1543 lbs. per hive must be very greatly exaggerated also.—ED.]

SIFTINGS

J. E. CRANE, Middlebury, Vt.

Mr. Foster's fall treatment for American foul brood is well worth trying. Something very similar was recommended by Moses Quinby nearly fifty years ago.

That is certainly an ingenious way of outwitting robber bees given by Dr. C. C. Miller on page 631, Oct. 15. Why could not such a device be attached to each nucleus as a permanent fixture when the nuclei are started?

Mr. Byer mentions, page 518, Sept. 1, the poor outlook for next year in his locality. Cheer up, my brother! You know it looked very promising a year ago, and we have met with failure. Possibly the dark clouds have a silver lining.

On page 587, Oct. 1, Mr. Macdonald gives some interesting facts in regard to the reasoning powers of bees. I believe two different persons have told me the past season that they have had colonies come out and leave at once for some distant place without even stopping to cluster.

On page 627, Oct. 15, Percy Orton describes his foot-power saw. These saws are a great convenience for small jobs; but for a large amount of sawing I think I would use power of some kind. I used a Barnes saw a good deal a few years ago, with the result that I have one bad leg that will bother me as long as I live.

Mr. W. C. Mollett calls attention, page 685, Oct. 15, to the use of brown sugar as food for wintering bees. Let me say that, a few years ago, we fed tons of brown sugar, or, more properly, raw sugar, for wintering our bees, without any serious harm to them; but the difference in price between raw and granulated sugar is so slight that it hardly pays.

Isn't Adrian Getaz' estimate of 200 lbs. consumption of honey per colony per year rather large? See page 581, Oct. 1. [We are inclined to think the figures are conservative rather than overdrawn. In warmer climates bees will necessarily consume much more than they would in a temperate or colder climate. Probably for your locality 200 lbs. would be large.—ED.]

Mr. Editor, you are right, p. 611, Oct. 15, in advising bee-keepers to feed and save their bees. I am neither a prophet nor the son of a prophet, yet I feel quite sure we shall have a fairly good season next year. I have observed during the past fifty years that a good season is almost sure to follow a very poor one, and also that, as a rule, a poor year is apt to follow an extra good one. Bees, too, often winter badly after a poor

season, and perhaps dwindle in the spring. Let us give them the best of care this winter.

How long after a swarm issues does the young queen come out of her cell? I have not observed any regular time. I have noticed young queens hatching when a colony swarmed; again, not a queen-cell started, and at other times cells in all stages between. I sometimes think that my bees have not been properly brought up.

I am sure the congratulations of the beekeepers of the whole country as well as those over the line to the north of us are due Mr. and Mrs. A. I. Root because of their fiftieth anniversary. After looking at their photographs as shown on pages 594 and 595, Oct. 1, one can not help thinking that the doctrines Mr. Root has so frankly taught these many years are good to live by.

Wesley Foster hits the nail on the head when he says, p. 593, Oct. 1, "The bee-keeper can learn more about the sale of honey from grocers than by any amount of thought or theory. Ask the man who sells it, and then go further and ask the man who eats it. In this way reliable pointers may be gained first hand, and they will prove profitable if followed."

Page 589, Oct. 1, C. W. Dayton speaks of the ripening ferment in bees. Can he tell just what this is? It is new to me. He closes his article as follows: "The most abundant honey-flows often follow directly after such conditions of weather as produce weakened colonies." That is a fact that Eastern bee-keepers will do well to remember next spring.

I am glad there is to be a buckwheat bulletin. Its value for bees can not be questioned; and here in the North it is about the only plant from which the bees reap a harvest that pays to raise for seed. When visiting a friend recently in a buckwheat section I found he had secured from buckwheat not only enough to winter his bees, but considerable surplus, while we were rolling in sugar by the ton to feed for winter stores.

A good deal has been written about winter nests. I find that, as a rule, in an eight-frame brood-chamber the bees cluster near the front end of the hive just below the honey, but in the center of the combs in late autumn. In the spring they cluster at the further end of the hive, away from the entrance. I do not share Mr. Hand's experience, page 135, March 1, that there must be a large amount of honey directly over the cluster, for I find that, when they consume that directly above them, they will move along toward the back of the hive, provided it is suitably protected.

I was much interested in Mr. R. D. Bradshaw's account on page 589, Oct. 1, of the number of colonies of bees kept on a restricted range of alfalfa. As nearly as I could figure, much of this territory has an average of 166 colonies per square mile. I would be interested in knowing whether the bees could get any honey outside the irrigated area, and whether Mr. Bradshaw could make an estimate of the average number of colonies per square mile over the whole section, and the amount of surplus secured. If a colony consumes 200 lbs., and a surplus is gathered of 50 lbs. per colony, it would make 65 lbs. per acre.

Right you are, Mr. Editor, Oct. 1, p. 582, in regard to the wax-moth larva developing wherever the moths can get at them, whether in a building or hive. But no amount of frost seems to kill those lesser moths that make their webs over the surface of combs. They are a nuisance. [As Dr. Miller made us eat humble pie, page 698, perhaps he will be willing to do the same stunt with all the evidence against his proposition on page 582. Dr. Phillips told us recently that he had a lot of slumgum sent to him that had been boiled and run through a wax-press. This was set aside in barrels, and not long after it was infested with the wax-worm. This is clear proof that the moth-miller visited this aggregation of wax and cocoons after it had come from the hive.—ED.]

DOES IT PAY TO BOTTLE HONEY?

On page 565, Sept. 15, Mr. Shiber asks if it pays to bottle honey. His experience seems to indicate that it does not pay him; and yet I think it may pay many other beekeepers to do so. Of course, it is not profitable to go out on the road to sell one's honey; but when a jobbing trade has once been secured, it can be kept with little trouble, and two or three cents a pound pays well for putting up, especially when it can be done during winter, when there is little else to do. As a matter of fact, however, we sell in all sorts of packages—pound, half, and quarter pound; glass bottles; quart, gallon, and five-gallon tin packages. It pays better to put it up in tin quarts than in pound bottles; but so long as honey is wanted in all sorts of ways and for all sorts of use we must try to suit, if possible, in order to get trade. The honey trade has changed much in recent years. The demand was formerly for comb honey during October and November, and little call at any season for extracted; but now comb honey is wanted from July till April, and extracted almost every month in the year, but, of course, more largely during the autumn and winter months. [The question whether it pays to bottle honey all depends on whether the bottler is a salesman, or in touch with some one who is.—ED.]

IS THE LIQUID DROPPED BY BEES IN FLIGHT WATER OR NECTAR?

Do bees have the power to separate water

from sweet substances as sugar or honey found in nectar, other than by the slow process of evaporation? Some facts given on page 515 would seem to show that they have. If bees can separate water from sugar, and squirt it from their bodies, why do weak nuclei allow honey to sour in the combs? and why do the bees become diseased in winter when fed on thin honey? I think I will scratch my head and cogitate awhile. I might say, however, that, if a solution of sugar is placed in a delicate membrane and suspended in water, the water will pass through the membrane into the sugar solution; but the water does not leave the solution, for it has a greater affinity for the dilute sugar solution than for itself. Another way of accounting for the apparent ejection of water by bees is that the chance to fill themselves with a thin syrup or very dilute solution of sugar is used by the bees to absorb more than they can carry; and when on the wing the exertion makes them eject some of the liquid for their own comfort. I have often seen bees when nectar was very abundant so full of it that, if disturbed, they would throw it off from their tongues so as to stick up sections considerably, while, if not disturbed, they did not eject it.

BULK COMB HONEY POSSIBLE IN THE NORTH.

Louis Scholl tells on pages 617 and 633, Oct. 15, of the comparative profit in producing comb (or section), bulk, and extracted honey. I have heretofore rather opposed bulk honey, especially for us in the North; but with some variations in methods of putting it up I am not sure but it might be preferable to section honey. I have a good friend in the northern part of our State whose hospitality I have enjoyed several times the past season, who is putting up more and more bulk honey; and, what is more, he says there is more profit in it at 12½ cents a pound than in section honey at 18 cts. I believe those were the figures he gave me. I could hardly believe him at first; but when I saw his neighbors coming for honey almost faster than he could fill their pails, I was convinced that bulk honey has a future here in the North. He uses shallow supers with a ¾-inch starter on the top-bar, allowing the bees to build the comb their own way, and then cutting out and packing the combs of honey in tin pails without any extracted honey with it, or only what run out of the combs. He had two main reasons for putting honey up in this way; one that it was less work; and the other, that the bees would store enough more honey this way to make up the difference in price. What is the difference whether one gets 12 pounds and sells it for 18 cents a pound, or 18 pounds and sells it for 12 cents a pound? Then there is a mighty sight of difference in the amount that people will buy when they pay 12 instead of 18 cents a pound. See? [We often advise a bee-keeper with only one or two hives to produce bulk honey, if he wants it only for his own family consumption.—ED.]

Bee-keeping in the Southwest

LOUIS SCHOLL, New Braunfels, Texas

HONEY VS. OTHER SWEETS.

One good argument in favor of honey as a food, which is not often emphasized enough, is that it goes further than other sweets, especially when compared with preserves or jellies. Has it ever occurred to you to ask the housewife to place upon the table two tumblers of the same size, one filled with honey and the other with preserves or jellies of any kind, and then notice how much further the honey goes? Or have you ever asked some one to observe how many more pieces of bread can be spread from a tumbler of honey than preserves or jelly? This applies to the many syrups on the market also. Almost all that the writer has had occasion to try require a larger quantity with a certain amount of bread to give it comparatively the same "amount of taste" than is required with honey. The result is that, in the end, the honey, while apparently the dearer in price at first, is cheaper in the long run.

But there is still another item of far greater importance than the price in favor of honey, and that is its healthfulness as compared with other sweets, especially with the adulterated stuff that is palmed off in this age in such a wholesale way. Of these, the many brands of syrups are the worst, and there are numerous makes of preserves and jellies that are almost as bad. Yet they are used the country over, to the detriment of the health of the people, when, instead of these, good healthful honey might be used. It is hoped that the time will come when this gospel of the truth about honey will be scattered far and wide over the land so that consumers may have their eyes opened and be educated to the use of something better than the stuff put out by "trusts" who think of nothing else than the shekels that they may be able to shell out of the pockets of the people. What care they about the health of the public? The bee-keeper, at least, looks at it in a different light, even if he also is after the money in return for his labors. But of him it may be said that he earns the money by producing a product which may be eaten safely.



"KEEPING MORE BEES."

There is more in the advice, "keep more bees," than is evident at first. Actual experience in carrying out this advice will testify to the extent of the value of keeping more bees. The writer followed this principle long before the late W. Z. Hutchinson made it his motto. It was brought about by a natural desire to increase the bee business as fast as experience permitted; and the consequence was the establishment of more apiaries every year, an increased output of the apiary products, and with it that advertisement that follows in the wake of extensive dealings of any well-established

business—a reputation that brings with it a larger demand for its products year after year. To meet this demand was the chief reason for keeping more bees, although the desire to number the colonies by so many hundreds, and later by so many thousands, lent its quota of influence in the increase.

But aside from the great advantages that are obtained in extensive bee-keeping, which enable the promoters to accomplish more with little more outlay of expense and labor, there is another side to the matter that has never come to the notice of the writer as forcibly as this year. This is the possibility of making at least a fair living during a very dry or unfavorable year with a large number of apiaries scattered far and wide, while the little fellows with only one or two apiaries in one locality go to the wall with a crop failure. We have seen just such an occurrence several times during our twenty years of bee-keeping; and we have apiaries ourselves almost every year that do not give us a crop of honey; and if all our yards were located similarly, disastrous results might have followed. We are saved from this danger, however, in that our apiaries are scattered so that we get some honey somewhere, and that is an advantage that is worth a great deal more in bee-keeping than might be imagined. We have been questioned several times regarding the enormous expense of managing apiaries scattered so extensively, and the advisability of concentrating them more in one locality, showing that the questioners did not think about the very reason why our apiaries are so scattered or the great advantages that are derived from this system. It is true that the running expenses are somewhat greater with such an arrangement; but, on the other hand, the advantages overbalance this item enormously.

The advantage we have found this year in keeping more bees is that, while the average yield per colony was only about half of what we generally obtain, resulting in a total of just about half a crop, the large number of colonies kept made up to a certain extent for this shortage in bringing the entire output up to 67,000 lbs. Thus the keeping of more bees brought us very fair returns, while a lesser number would have made very little more than enough to cover the running expenses. The additional cost of keeping a few hundred colonies more is comparatively small when colonies are numbered by hundreds. It pays to scatter apiaries far and wide.

An Apple-tree that Bore Both Apples and Honey.

I started the last of June this year to take a swarm of bees out of an old apple-tree. The swarm had been there about two years. The result of my effort is three hives of bees doing very well—two in ten-frame hives and one in an eight-frame hive.

Somerville, Mass., Sept. 9.

WM. PARKER.

BEE-KEEPING IN CALIFORNIA

P. C. CHADWICK, Redlands, Cal.

Bees in this locality are in much better condition, on an average, than they were a year ago.



The carpet of green vegetation caused by the early rains will add greatly in holding future rains until the soil can absorb it.



Page 616, the paragraph relative to the poisoning of skunks, I should have used the word strychnine instead of arsenic. The latter is too slow, while the former usually lets them get but a few feet from the bait.



I should like to have every California reader of GLEANINGS read at least the last five lines of column one and the first seven of the second column, page 615, Oct. 15. Mr. Crane has written the equal of an entire chapter in twelve lines.



DO BEES DESERT SUPERS TO KEEP THEMSELVES WARM?

Arthur C. Miller's "Bee Behavior," page 663, Nov. 1, is interesting reading. I am not ready to comment generally on his suggestions until I have experimented somewhat. During our frosty nights the past week I observed enough to reach the conclusion that his views in regard to bees not drawing down out of the supers to keep the brood warm, but to keep themselves warm, would be hard to prove either way—the fact being that they cluster for mutual protection, whether they have brood or not, but always around brood, if any, for its protection, and over great areas of eggs in the spring where there is little brood of an age that could possibly produce warmth. I doubt the "warming-pan" theory.



PROOF THAT BEES FLY LONG DISTANCES.

Our Tremont yard is located at an elevation of 600 ft., at a distance of three miles from the nearest orange-trees. About every other year the sage fails to yield, leaving us dependent on the orange alone for our crop, and there has not been a season in the 18 years the yard has been located at this place when it has not given a surplus, with only ten cases, 1904 being the nearest to a failure. I mention this more especially to call attention to the distance traveled, for there are many who do not believe a bee will fly so far for nectar. There can be absolutely no doubt in this case, for it has been proven year after year during this long period of time. I have proof, too, that bees sometimes travel seven miles to the orange; but I do not believe that such distances are common, being made only where the entire flight is directed to one source of special attraction. That good progress can be made at three miles is shown by the fact that this apiary gathers as much per colony as those two miles nearer the orange.

SAGE RANGES DOOMED.

If I should predict that thirty years hence the sage ranges of California would be almost a thing of the past there would doubtless be criticism of my views; but I firmly believe that, by that time, we shall face such a condition, for emigration to this part of California is increasing rapidly, and our State has recently voted a large sum to induce it. Hillsides are yielding to the plow where, twenty years ago, it would have been thought almost impossible. By that time most of the available water supply will have been developed. The small goat-ranches that are appearing will spread over our ranges. A generation yet unborn will be seeking a refuge from the less desirable climate of the East and North. They will all have to be cared for, and a way found by which they can help produce life-sustaining elements. Hundreds of acres now in sage will yield to spineless cactus or some other valuable plant of a semi-arid region of the world, that the Agricultural Department is now searching for, and, I am told, with some success.



QUEER THINGS ABOUT BEES.

In the December issue of *The Technical World* is an article entitled "Queer Things about Bees," by Edward F. Bigelow, accompanied by some of the finest engravings I have ever seen. Mr. Bigelow takes a broadside at the ignorance of the bee-keeping fraternity in general, and then shows a lack of knowledge on some points himself. He tells in the same article how the eggs of bees are deposited in the cells; how they hatch, and then says that bees in embryo are fed on "royal jelly." Imagine what a comb would look like if all larvæ were fed only on royal jelly! An instance is also cited where a bee carried a grain of sand, presumably for ballast. As a reason for the hexagonal shape of the comb cells, he says, "forced into hexagonal form by physical environment." The article will, no doubt, be read very widely, and it seems too bad that the writer had not been better informed, so that these misleading statements might have been avoided.

Many bee-keepers have been drawn into the business by their love of nature and the study of the bees as a part of nature's field, and this interest has developed into a never-ending love for the work as well as a practical and commercial knowledge. The writer is one such, and has been more or less of a close student of nature for a number of years.

[Some authorities have stated that worker larvæ are fed on royal jelly for the first three days, then on a coarser and less concentrated food, while the larvæ intended to produce queens are so fed right along. What the truth really is, we do not know.—Ed.]

Conversations with Doolittle

At Borodino, New York

REARING THE BEST OF QUEENS.

"How can the best queens be reared?"

"From many observations since I wrote 'Scientific Queen-rearing' I am led to believe that queens and workers are all reared from the same kind of eggs, no matter whether the egg from which that larva hatches is deposited in a worker or queen-cell, and that the change from a worker to a queen is made by the way the larva is treated and fed by the nurse bees. A worker larva, when from one to two days old, has hardly received other treatment than a queen-larva. Not until it is about 2½ days old can I notice that the food is more scantily supplied to the worker than to the queen larvæ. Because of this fact I claim that, after two days, the older the larva selected for a queen is at the time the change is made, the nearer the resulting queen will be like a worker. Even when a three-day-old worker larva is placed in a queen-cell full of royal food, its growth seems slower than that of one that has been in a queen-cell from the beginning, and some marks are noticeable when such emerge, distinguishing them from those which are reared from larvæ between 36 and 48 hours old."

"But I did not suppose that a mongrel stock could be changed to a thoroughbred simply by feeding."

"And it can not. You remind me of a physician whom I was telling, some years ago, that a larva which would produce only a worker bee under general conditions could be placed in a queen-cell cup and given food from a royal cell, and thereby become transformed into a queen. He said he would not believe it unless he could see it with his own eyes. As he was a very noted physician, I told him if he would come to my house every day I would show him all I knew about the matter. He jumped at the chance, and before he went away I had a stick of cell-cups all prepared and given to a colony above a queen-excluder, prepared as for raising queens with a laying queen in the brood-nest below. He was the most persistent pupil I ever had. He insisted that the frame from which I took the worker larva should be marked so he could note the progress as he came from day to day. In fact, his eyes would sparkle as he saw those larvæ growing in the queen-cells. At the end of the eleventh day the queens were emerging from their cells, and he took two of them and compared them with those bees which were emerging from the comb from which I had taken the little larva, and exclaimed, 'I must believe what my eyes see; but I do not understand.'"

"In reality, with the exception of bees and other related insects, as the hornets, wasps, etc., there is not an animal which combines the qualities of worker and queen. It is natural to think that there would be a distinctly defined line between the worker

and the queen, similar to that between the worker and the drone. I conclude that the manner in which the embryo larva is fed has all to do with it, and decides the direction in which the insect is to develop. One and the same egg may produce a worker or a queen according to the treatment the larva receives after it hatches. When the reproductive organs begin to develop in the larva, the faculties and organs peculiar to the worker remain dormant, and *vice versa*. A fully developed queen can not be produced with a strong worker tongue, pollen-baskets, and sting. Then by transferring a five-day worker larva to a royal cell, from which a royal larva has just been removed, we find that the faculties peculiar to the worker are so advanced that the resulting insect bears somewhat the appearance of a queen, but is small with miniature pollen-baskets and short tongue."

"But suppose you take a three-day-old larva. What then?"

"In such a case as that, probably a three-day worker larva has not yet been fed undigested pollen, as is the case later on in its larval life, so we might expect at this stage that the worker faculties had not commenced development at all; but it is well to remember that on the third day the worker larva is not as lavishly fed as a queen larva at this age. Then, as nature works when unmolested, before the cell in which the selected worker larva lies can be changed over and built out into a queen-cell, the fourth day will probably have come, and very poor queens will be the result. A close observation will reveal some of the worker characteristics, while such a queen will rarely live a year. No one should entertain the idea that a three-day-old worker larva is good enough for a queen. After the bees once begin to scrimp a larva as to its food, such a larva should never be used if the best queen is desired. A larva intended for a queen, from the time it hatches from the egg in a queen-cell, literally floats in a sea of royal jelly, which can not be said of any three-day-old larva in a worker-cell. But up to 36 hours old, nearly every larva as literally floats in a sea of food when in a worker cell as in a queen-cell; for when a colony is in a normal condition, such a 36-hour-old larva touches nothing but the chyle in the worker cell, and nothing more could be done for it were its cell an inch in diameter. Therefore, for the best queens larvæ from 24 to 36 hours old must be used, and these perfected into queens with a colony which will give them afterward all the care and nursing that a colony would bestow in the height of the swarming impulse."

[Mr. Doolittle, as he usually is, is entirely orthodox, and in line with our experience in the rearing of thousands and thousands of queens. We prefer not to have a larva older than 36 hours for grafting.—ED.]

General Correspondence

FLOWERS AND HUMANITY.

BY JOHN H. LOVELL.

[The following is the first of a very interesting series of articles on subjects directly and indirectly related to our industry. Mr. Lovell is a biologist, botanist, and bee-keeper. For these reasons he is in position to tell us some very interesting things about flowers and bees—things that every practical bee-keeper ought to know. We hope our readers will give them a careful reading.—ED.]

During the last half-century we have been learning, as never before in the history of the human race, the great importance of keeping in close contact with nature. Our future health and prosperity depend upon our love for the soil and its productions. The Greek fable, which tells how the giant Antaus, while wrestling with Hercules, never failed to renew his strength whenever he touched his mother earth, will always be true of man both physically and morally. Of all natural productions, there is none so well adapted for maintaining an intimate communion with nature as the cultivation and study of flowers. Whoever plants a flower-garden, benefits not only himself but his whole village. If the human brain is the most wonderful production of evolution, as Hæckel asserts, flowers are the most beautiful; and, says William Winter, the ministry of beauty is the important influence upon society that can never fail.

There is a fascination about an old garden, indeed, that few can resist. I am glad that the first botanical garden in America, which was planted by John Bartram, the first American botanist, is still preserved as a public park by the city of Philadelphia. It contained a great variety of shrubs and trees, as well as herbaceous plants, raised from seeds and roots collected during his numerous journeys, and received from his European correspondents. There was a greenhouse built by Bartram himself, over the door of which were inscribed the lines:

Slave to no sect, who takes no private road,
But looks through nature up to nature's God.

One of Bartram's correspondents was Peter Collinson, a London merchant who had a choice garden, the pride of his life, at Mill Hill, where he skillfully cultivated rare species of plants received from the colonies. In one of his letters to Bartram he exclaims, "O Botany! delightfulest of all the sciences! there is no end to thy gratifications." No one who has not experienced it can realize how intense is the enjoyment of watching the blooming of plants. A short time before his death, Keats told his friend Severn that he thought that his intensest pleasure in life had been to watch the growth of flowers.

Among children the love of flowers is universal. Says one writer, "I think I never knew a child that did not love flowers. Many children are passionately fond of them, but I never knew a child indifferent

to them." Children and flowers! Flowers and children! Surely they are the two chief sources of human happiness! Says Donald G. Mitchell, "Flowers and children are of near kin. I love to associate them, and to win the children to a love of the flowers." I know of a little lad to whom the succession of flowers brings one of the chief joys of the year. With what delight he watches for each blossom in spring, and how eagerly he tells of the treasure he has found! Here is a pleasure that is free to all, and yet is greater than any money can buy. When it is remembered that in many cities there are children who have never seen a dandelion or a buttercup, the value of maintaining flower-gardens in city squares and in every available spot can not be overestimated. Let us hope that the time will speedily come when every child, both at home and by means of the school-garden, will be taught the fundamental facts of plant-life, not alone for the practical advantages to be gained, great as these are, but that they may have through life a never-failing resource, in the pursuit of which they can always find happiness and contentment.

But great as is the pleasure flowers bestow, it is far from being the only benefit received from them. Says Bok, "Nothing teaches us so much in this world as flowers, if we will only watch them, understand the messages they exhale, and profit by them. Every lesson in life is taught by the flowers; every message to the human heart is carried in them." Nor is the time devoted by the professional or laboring man to the investigation of flowers wasted, even from a practical point of view. Charles Kingsley has forcibly described the helpfulness of such studies.

"I know of few studies to compare with natural history; with the search for the most beautiful and curious productions of Nature amid her loveliest scenery, and in her freshest atmosphere. I have known again and again workmen who, in the midst of smoky cities, have kept their bodies, their minds, and their hearts healthy and pure by going out into the country at odd hours and making collections of fossils, plants, insects, birds, or some other objects of natural history; and I doubt not that such will be the case with some of my readers."

"Supposing that any of you, learning a little sound natural history, should abide here in Britain to your life's end, and observe nothing but the hedge-row plants: he would find that there is much more to be seen in those mere hedge-row plants than he fancies now. . . . Suppose that he learnt something of this, but nothing of aught else. Would he have gained no solid wisdom? He would be a stupider man than I have a right to believe any of my readers to be, if he had not gained thereby somewhat of the most valuable of treasures, namely, that inductive habit of mind; that power of

judging fairly of facts, without which no good or lasting work will be done, whether in physical science, in politics, in philology, in philology, or in history."

"Take my advice for yourselves, dear readers, and for children after you; for, believe me, I am showing you the way to true and useful, and, therefore, to just and deserved power. I am showing you the way to become members of what I trust will be—what I am sure ought to be—the aristocracy of the future."

Undoubtedly the influence of flowers upon the mental and moral development of the human race has been both profound and far-reaching. So intimately do they enter into every phase of life, and so eloquently do they express every emotion, that it was long believed their bright colors, sweet odors, and varied forms were created solely for the benefit of man. We can not imagine what this world would have been without them, or estimate the enjoyment that would have been lost, or the power for good that would have been forever missing; but we know that humanity would have been less perfect than it is to-day. And such a loss is not inconceivable, for there are many thousands of flowers which are small and dull-colored; but, happily for us, the aesthetic tastes of bees and butterflies have been similar to our own.

That flowers act strongly upon the imagination is shown by the myths of the Greeks and the poetry of all nations. Even the ruder songs of the primitive northern nations, according to Humboldt, were influenced by the forms of plants. Of the relations of flowers to humanity, the poet is the true interpreter, not the man of science. He alone, as Longfellow has said, is qualified to unfold the bright and glorious revelations and the wondrous and manifold truths written in these stars of earth.

And the poet, faithful and far-seeing,
Sees, alike in stars and flowers, a part
Of the selfsame universal being
Which is throbbing in his brain and heart.

Brilliant hopes, all woven in gorgeous tissues
Flaunting early in the light,
Large desires, with most uncertain issues,
Tender wishes blossoming at night.

These in flowers and men are more than seeming;
Workings are they of the selfsame powers
Which the poet in no idle dreaming
Seeth in himself and in the flowers.

In all places, then, and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us by most persuasive reasons
How akin they are to human things.

While an examination of the poetry which has been written on flowers in all ages would teach many valuable lessons, we must be content to quote four verses from Leigh Hunt's "The Songs of Flowers," in which he surpasses all other poets in his description of the life of flowers and their relation to humanity. From the point of view of the naturalist this is the most remarkable poem on flowers in any language, "fathoming," says Hamilton W. Mabie, "the very soul of flowers." "No poet in

this nor in many a generation past has said a sweeter or more haunting word for the flowers."

We are the green flowers
Born of sunny showers;
Think, when'er thou see'st what beauty saith,
I utterance into air and bright
Of some unknown delight.
We fill the air with pleasure by our simple breath;
All who see us love us;
We befit all places
Unto sorrow we give smiles, and griefs unto grace.
See, and scorn not duller taste,
How Heaven loves color—
How great Nature clearly loves in red and green;
What sweet thoughts she thinks
Of violets and pinks.
And thousand flashing hues made only to be seen,
See like whiter lilies
Chill the silver showers.
And what red mouth hath her rose,
The woman of the flower!
Think of all these treasures,
Matchless works and pleasures,
Every one a marvel, more than thought can see,
Then think in your bright showers
We twicken fields and bowers.
And with what heaps of sweetness hath woman made
Think of the mossy forests
By the bee-birds haunted,
And all those Amazonian plains,
Long lying enchanted,
Who shall say that flowers
Dress not heaven's own bowers,
Who its love without them, call fancy—
Who shall ever dare
To say the stars are not there.
And came not down that love might bring
One piece of heaven to the mortal?
O! pray believe that angels
From these blue dominions
Brought us in their white robes down,
Between their golden girdles

Waldoboro, Me.

BEE-KEEPING ON THE APPALACHICOLA RIVER, FLORIDA.

Something about a Small Area in Northwestern Florida that has Produced as High as 1900 Barrels of Honey in One Season; a Visit to A. B. Marchant.

BY E. R. FOOT.

During the early part of last season I prepared two or three articles on Florida; but as it was nearing the time of year when most northern people were leaving the State, I decided to hold them over. To-day I propose to tell you the story of the wonderful tupelo regions along the Appalachian River, in Northwestern Florida. Wonderful to relate, there has actually been produced nearly 2000 barrels of honey, each containing from 400 to 500 lbs., along the shores of that remarkable river, covering a distance of not over 100 miles, and perhaps a mile or a mile and a half on each side of the stream.

One of the pioneer bee-keepers in that region is Mr. A. B. Marchant, of Sumatra, Fla. His postoffice was formerly Marchant's Landing, for be it known that Mr. Marchant's bee operations were so extensive that he has a landing on that river where boats stop; and if you will look on the map you will still see Marchant's Landing. You perhaps will understand why steamers stop here if you will look at a photo showing a

part of 1910 season's crop of honey of 100 barrels from a single apiary. Notice how the filled barrels are crowded together on the wharf, from the apiary clear up to the water's edge. It was not possible for the camera to take them all in for you can count only 42 barrels, for the yard is next to the river. During the same year, Mr. Marchant actually harvested from the two yards, of nearly 800 colonies of bees, 245 barrels. In 1904 he took 300 barrels from three apiaries, but from no more bees.

While our friend may not be known to a great extent to the bee-keeping world, he is well known to the New York honey merchants. Indeed, he has probably sold them more honey than any other one man in Florida, and that is saying a good deal.

But what about this honey? What is it? It comes mainly from the tupelo, both white and black. If you go into Southern Florida the local bee-keepers will tell you that "the palmetto is the finest honey produced in the State." In the other regions they will say that "mangrove carries off the palm;" but when you get into the northwestern country they will confidently assert that "a pure white tupelo without other honey excels them all." It is of heavy body, very light in color, and very mild in flavor. The claim is made for it that it rarely or never candies. Indeed, Mr. Marchant's son Ernest told me that they kept a barrel of it for *ten years* without its candying. Its mildness of flavor, and its non-candying quality, should make it an excellent honey for blending with a honey of more pronounced flavor, like basswood, alfalfa, or clover. The bottlers of the country have been using mountain sage because of the very qualities claimed for the tupelo. But if tupelo can be used for bottling purposes, sage will have a strong rival.

The next question that will be asked is, whether the regions round about the Appalachicola River, where so much honey is produced, are overstocked. I understand they are not. One reason for this is that much of the land along the Appalachicola is marshy, infested with mosquitoes and malaria; but Mr. Marchant lives on one of the very few points of land near the river that are above the high-water mark, or at least he is not compelled to put his bee-yard on high stakes to avoid water. Later on I will show views of bee-yards on the river, up on stilts.

Another difficulty encountered on the Appalachicola River is a lack of sufficient pollen some seasons to enable the bees to rear brood, so that there may be a strong force of bees when the tupelo honey comes on. But Mr. Marchant and his neighbors solved this problem by loading the bees on steamers, carrying them up the river about a hundred miles, and setting them off again. Freight rates on the river are comparatively low, and that makes it possible for the bee-keepers in that locality to practice migratory bee-keeping. Indeed, some of them use gasoline-launches with rafts. Mr. Marchant

finds it is more practicable, however, to hire the regular transportation company to carry the bees from point to point.

The whole country in Northwestern Florida was a revelation to me. It was so greatly different from any thing I had seen elsewhere in Florida that I imagine the bee-keepers of the East Coast or Southern Florida would have to reconstruct their methods of management to fit this particular territory, for I am satisfied that no one can succeed there unless he has a thorough knowledge of the country or unless he works with a partner who does have that knowledge.

Mr. Marchant knows his locality thoroughly. He has an accurate knowledge of all the various honey-plants and trees that grow along the river. He knows almost to a day when they will begin to yield honey. Indeed, he can tell almost to a certainty whether he is going to have a crop or not. Said he last spring when I visited him, "The indications this season are unfavorable for a honey-flow. Another thing, my bees are weak—too weak to get a crop even if there should be a flow.

The sequel showed that he was right. He got a small crop, but nothing like those shown in the picture.

In our next issue I will show you something of his method of management of his apiaries, and the scheme he has for weighing his honey. It is one of the simplest and most practicable I have ever seen.

In the mean time, if any one thinks I am booming that territory, I wish to tell him fairly and squarely that the average man, unless he spends years in learning the business, or connects up with some one who does have the necessary experience, can not make a success in keeping bees in the tupelo regions, especially if he has to locate his hives on stilts on marshy land. But Mr. Marchant is located on comparatively high ground where the conditions are much more favorable. More anon.

Removing Propolis from Section-holders.

Dr. C. C. Miller:—I take the liberty to ask about your method of removing propolis from section-holders and fences by means of hot water and lye. What are the proportions and general method of procedure?

Bridger, Montana, Nov. 16.

C. C. PIERCE.

[Dr. Miller replies:]

Fences that are glued could not be cleaned in this way at all. They would fall to pieces. For cleaning T tins, nothing can be better. I also cleaned a lot of brood-frames out of which the comb had been cut. It was very satisfactory. Wood separators are cleaned nicely; but unless they are weighted down while drying they will curl badly. Any thing of wood, nailed, can be cleaned with lye if one has a vessel large enough.

A large iron kettle has a fire built under it outdoors, the kettle fairly filled with water. When the water is boiling, empty into it two or three cans of concentrated lye. Put into the kettle the articles to be cleaned, and stir them about until clean of propolis. Then take them out and rinse in a tub of water. Keep replenishing the kettle with water as it becomes less, and from time to time add more lye whenever the solution does not take hold properly upon the propolis. For good work the water must be kept very hot. Of course, a number of pieces will be put into the kettle at a time. A pitchfork or a four-tined fork is used to stir the pieces and to lift them out. C. C. M.



A part of one season's crop of 100 barrels of honey on the wharf, ready to load on the steamer, from the home apiary of Mr. A. B. Marchant, located in the wonderful tupelo regions of the Apalachicola River, Florida. See page opposite.

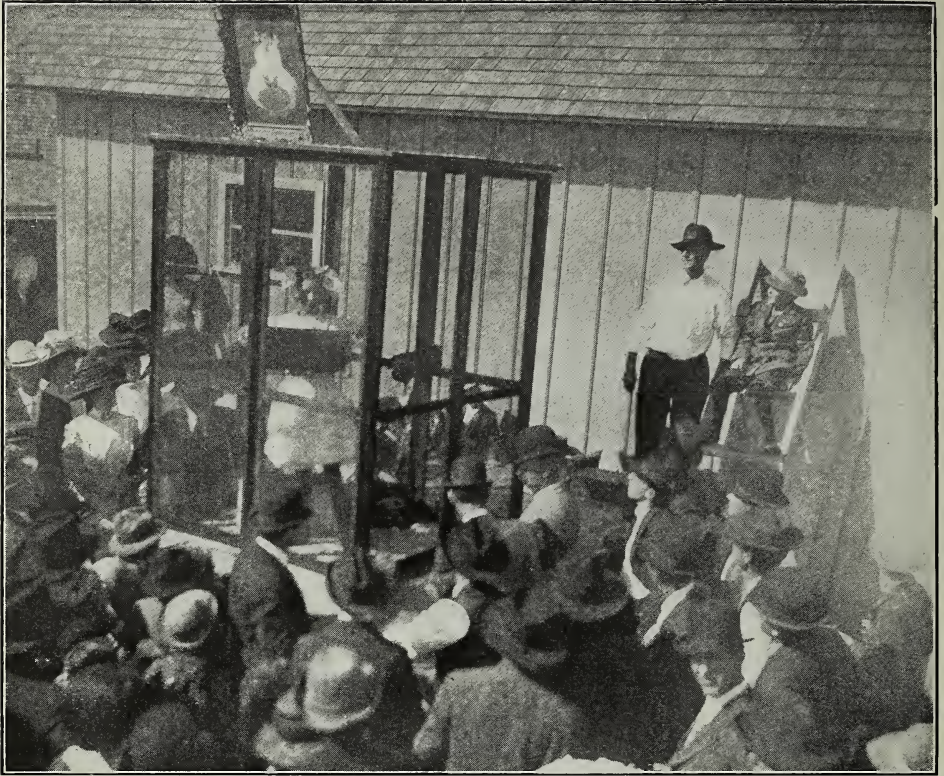


FIG. 1.—Miss Lucille Johnson demonstrating with bees at the fair at Williamsburg, Iowa.

HOW I DEMONSTRATED WITH BEES AT THE FAIRS.

BY LUCILLE JOHNSON.

I have just received a letter from papa, saying you wished me to tell you about my experience in demonstrating with bees. I must first tell you that I live in Ottumwa, with my married sister, my mamma having died seven years ago when I was four years old.

The first of June I go up home and stay until Sept. 1, through my vacation, and help papa with the housework and the bees. I put together all his sections last year. I can put up a whole box, 500, and not break one. He told me last year that, if I would help him real well, he would take me to the State Fair, and he did; and of all the fine things we saw there, the one that interested me most was the man in a cage with a hive of bees. I got up close so I could see him. I wanted to see how he did it. When he was through with his demonstration I went to papa and said, "We can do that." He said, "Don't you think you would be afraid?"

I told him that I wouldn't, and he said

there was to be a fair at Williamsburg the next week, and if I would go into a cage and do just what he told me he would build a cage. Of course I had helped papa with the bees, but had never tried to handle them in a cage; but Tuesday I was there and entered the cage before thousands of people. They were packed around the cage for six rods. I first took a frame, bees and all, and held them up to the wire so the people could see them, as shown in the first picture, then I shook the bees from three frames into a dishpan. I shook them up, then picked them up by the handful, as in the second picture. I filled my straw hat, put it on my head, and went on with the demonstration, and I did nearly as much as papa did. He put a great pile of bees in his shirt waist and in his mouth, but I didn't want to do that. But I gave a demonstration each day at the fairs for two weeks, and I was not stung once.

In the second demonstration the cage was full of flying bees around in the air, and people just begged papa not to let me go into the cage. They thought I would get stung to death; but I wasn't a bit afraid, and I guess that was the reason I did not get stung.

Ottumwa, Iowa, Oct. 1.

CLIPPED VERSUS UNCLIPPED QUEENS.

A Queen's Use of Her Wings.

BY ARTHUR C. MILLER.

Many bee-keepers have abandoned the very helpful practice of clipping their queens, and others have hesitated to adopt the practice, believing that clipped queens are generally superseded. Some attribute the supersedure to the mutilation of the queen, and others to injury to the queen by attacks of the bees after the queen is returned to them, said attacks being attributed to odor of the operator's fingers contaminating the queen.

Unquestionably, many queens *are* superseded soon after being clipped, and also many queens are not. Now, why the difference?

First, it is not due to odor acquired; for if the queen is not exceptionally timid, the mere handling of her will not be noticed by the bees. The writer has frequently anointed queens with perspiration, saliva, and sundry odorous substances, and has yet to find any evidence of its bringing harm to the queens. When sundry essential oils were tried on workers, it was found that these spread on them, and caused either great distress or death, so they were not tried on queens. By every test that could be thought of the odor factor was tried, and the conclusion reached was that odor did not enter into the problem.

Then queens, both clipped and unclipped, were watched in their work, and it was not long before a clue to the trouble was found, and a little experimenting soon showed the real cause. When a queen backs into a cell to lay, her wings slide out over the surface of the comb and balance her. As she starts out, the wings materially assist her. Cut her wings off close to the thorax, and still she will do pretty good work; but such close cutting seems in some cases to cause distress to the queen—at least sundry nervous movements indicate that she is not acting normally. I believe it is now determined that insects do not feel pain; but they do move away from pressure, pin-pricks, etc., probably an act of self-protection solely.

Cut one pair of wings off close to the thorax and leave the others undisturbed, and the queen works fairly well. The signs of "distress" are not so apparent. But cut one or both pairs of wings at about half their length, or a little less, and trouble quickly follows, though queens so clipped evince no sign of any injury. Now, why are such queens superseded? Because they are unable to fulfill their functions in a normal manner. First, they usually place eggs irregularly—that is, they are not uniformly centered in the cells, and in some instances are placed on the side of the cells. Second, they lay much more slowly than unclipped queens, and all the trouble is caused by the stubs of the wings. These hit the edge of the cell wall as the queen tries to back in, and they prevent her from



FIG. 2.—Shaking up the bees in a dishpan.

quickly and accurately placing herself as she normally does. She may try to enter several cells before she finally drops the oncoming egg anywhere, even on to the surface of the comb. Of course, the brood is irregular, and it is usually but a short time before preparations are made for raising a new queen.

If only one pair of wings are clipped, and these are cut only far enough up on the large wing to catch the tip of the small one, no trouble will be caused the queen. Thus clipped, she may fly a little but not far nor high.

Another and very excellent method of clipping is to cut lengthwise of the wings, taking off half the width of the lace-like part of one pair. This method of cutting calls for a little practice and skill, but is really worth the trouble. A queen so clipped lays as perfectly as usual, and, furthermore, looks prettier than a queen as ordinarily clipped—a matter of no small consequence to many persons, and often quite an item in exhibitions.

Providence, R. I.

[Clipping is practiced among many large producers. The usual custom is to clip both wings close on one side. While there have been stray reports questioning the advisability of clipping, the great mass of large producers practice it, and, if we are not mistaken, with very satisfactory results. We should be glad to get reports.—ED.]

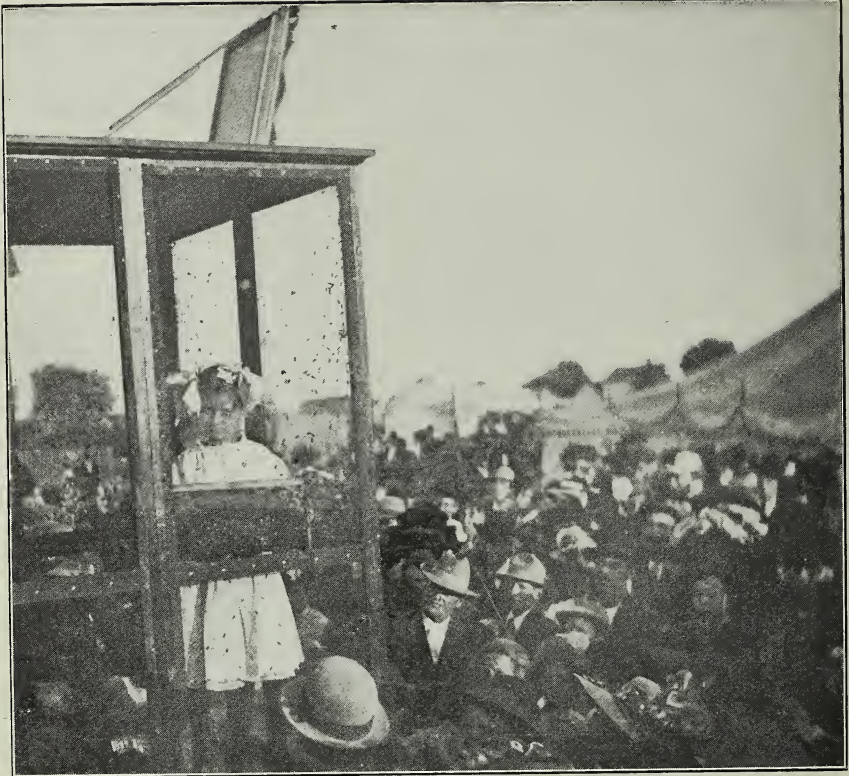


FIG. 3.—Demonstrations of this kind always draw a big crowd.

SEVERIN'S HONEY AND WAX SEPARATOR.

BY F. J. SEVERIN.

Fig. 1 shows my separator just as it appears ready for use, except that it is tipped up to show the interior. In Fig. 2 the separator stands in its regular position.

In brief, the principle of the operation of this separator is as follows: The melted wax, honey, and slumgum from the melter fall into the screen shown in the right-hand compartment, Fig. 1. The partition separating the right-hand compartment and the left-hand compartment does not go quite to the bottom, there being a quarter-inch space; and since there is always supposed to be some cold honey in the separator, the wax can not get under this partition, for it floats on the top of the honey. When the liquid in the separator reaches the spout at the left-hand side of the left compartment the honey runs out in the trough which extends around that end of the separator, down the long side in front, and back to the three-inch pipe that conveys the honey from the extractor to the storage-tank. When the work has been kept up long enough so that the liquid reaches the height of the spout (that connects the right-hand compartment

with the left, the wax flows over into the left-hand compartment and is caught in the wax-pan placed there to receive it; and since it is surrounded by hot honey, it does not chill. The wax-pan holds enough wax for a whole day's work—about 23 pounds in all when full. The slumgum is kept back by the wire-cloth basket in the right-hand compartment.

These separators can be made of any size desired. The one shown is 20 inches long, 11 inches deep, and 11 inches wide, outside measurements. The partition separating the right-hand compartment from the left is five inches from the right-hand end of the separator, and extends to within $\frac{1}{4}$ inch of the bottom. The slumgum-basket is four inches wide, ten long, and ten deep. Five or six inches is deep enough, as slumgum acts like wax; that is, before it will sink very far it will rise and go over the top; therefore there is no need of having so deep a basket.

The wax-pan is fourteen inches long, ten wide, and nine deep. The bottom is $1\frac{1}{2}$ inches smaller each way all around. This pan is held up from the bottom of the outside tank by means of ribs.

The spout for wax in the upper part of the partition is three inches long and one inch

deep, the wax-pan just fitting under it. The honey-spout at the left-hand end of the separator is three inches long and $1\frac{3}{4}$ inches deep, so that it is $\frac{3}{4}$ inch below the top of the wax-can.

All of our extracting was done in a screened honey-house with a shield at the South; and if a sand-storm or big wind came up, the wax chilled on top and formed layers; but the honey and wax in the slumgum-basket never chilled, as they were too hot. At one time I had to quit work on account of the wind blowing out the fire under the capping-melter. But later in the summer the wind does not blow so often, and the wax is then solid, for the new wax that keeps coming in always fills up the holes or crevices so that the whole chunk, when it is removed, is all together in one piece. If the machine were used in a honey-house having solid walls where no wind could strike the separator, solid wax would be the result every time. Out in the open a piece of burlap is thrown over the top, and a board placed over it. The pile of cakes at the left of Fig. 2 shows what can be done, even in this windy country. The largest cake in the middle of the pile weighs $19\frac{1}{2}$ lbs. If the wax-pan shown on top of the pile had been full, the cake would have weighed 23 lbs.

The proportions of this separator were decided on after taking into consideration that, if one man does the work, much time is consumed when he is out in the yard brushing the bees off combs and bringing in the honey, and the melter, of course, is idle while he is gone. There is an advantage, therefore, in having the separator hold a good deal of honey so as to retain as much heat as possible while the operator is otherwise engaged. If a smaller amount of honey were retained in the separator, the wax would become cold during the interval, and there would be separate chunks which would make extra work in melting them over. If there are two operators on hand, or if

the bee-escape is used and enough honey taken off for the whole day, there is not so much need of a great amount of honey in the separator. The separator shown holds about two-thirds of a can of honey before it begins to run out of the honey-spout at the left end.

The wax-pan has two handles as shown. An iron rod runs through these and through the outside walls of the separator, thus keeping the wax-pan in place. It can be seen that, as soon as the honey commences to run, the tendency of the wax-pan would be to float on top, so that it has to be held down in some such way to keep it from floating like a boat. The idea, of course, in having the warm honey surround this pan is to keep the wax melted. When the work is finished, or at any time, for that matter, the wax-pan may be slipped slightly so as to clear the spout, and then lifted out after the honey has been drawn out away from it by means of the screw-cap opening at the bottom of the separator. After standing over night every thing will be cold, and all the honey may be drawn off except about half an inch. This amount, however, does no harm, even though the first wax that runs in is chilled. By the time very much work is done it is all melted again.

The slumgum-basket is made of $\frac{1}{8}$ -inch-mesh galvanized wire cloth. I have used a cheese-cloth inside the basket, but it makes slower work and is a great deal of inconvenience. The cheese-cloth is really unnecessary, any way, for the wire cloth gets nearly all the slumgum, the rest remaining with the wax, in the right-hand compartment. This small layer of wax, together with a little slumgum, is melted over again the next day.

When the work is done for the day, the slumgum-basket should always be emptied and kept outside and not put back, because the wax and fine slumgum that drains through the strainer will become cold over

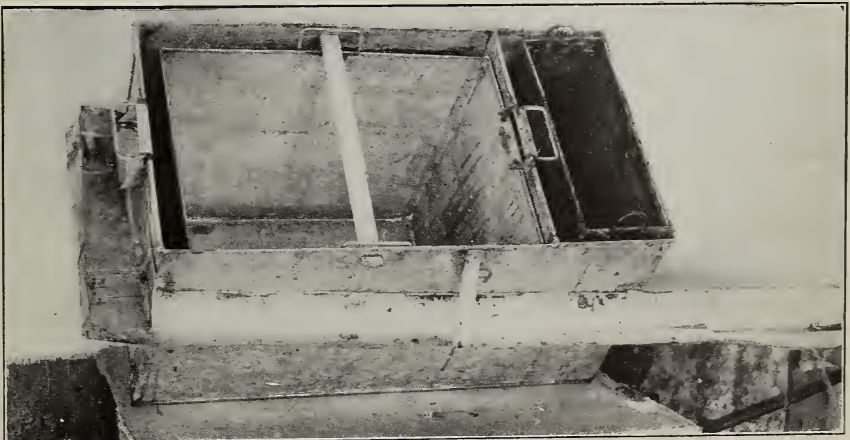


FIG. 1.—Severin's improved honey and wax separator. The compartment at the right is the slumgum strainer or basket; that at the left is the wax-pan, the space around it, being for honey.

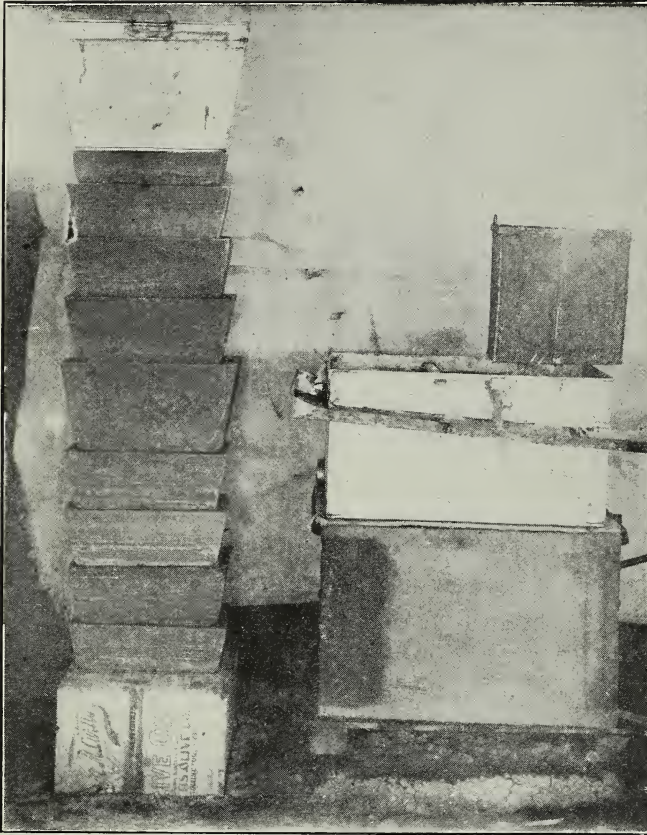


FIG. 2.—The separator in position on the stove. The trough shown is to convey the honey to the tank. The pile of wax at the left shows that the cakes as they come from the separator are solid, and ready for market.

night, leaving a $\frac{3}{4}$ -inch chunk, probably one-fourth of which is slumgum. It is easy to force one side of this down, take out the cake, and melt it over again the next day.

If it becomes necessary to clean the basket during the day, all that is necessary is to lift the handle, slide the basket over out of the way of the capping-melter spout, lift it out slowly, and drain it. Then dump the slumgum out, set it back, and turn down the handle on the partition which helps to hold it in place.

San Diego, Cal.

BEE NOTES FROM CONTINENTAL EUROPE.

BY R. LINDE.

In having a past in bee-keeping, Europe has an advantage over America. Is it an advantage, really? I do not know. Perhaps it is not. But surely it can not be an obstacle.

While European apiculture has a past, young pushing America has a big and real

present. Whenever you meet an old bee-keeper on this side of the sea he will tell of the past—wonderful tales of the past—honey was so plentiful that even the fence-posts yielded it profusely. He will tell you that many a time he could not help himself otherwise than to dig holes in the ground under his skeps to afford his bees the room necessary for storing all the honey coming in. His whole memory is soaked with reminiscences of this kind; and he has only a pitiful smile for modern methods of bee-keeping. As a matter of course, there is a younger generation of bee-keepers, differently disposed and with different interests; of these I shall have to say more in future contributions.

VARIETY OF METHODS

In this part of the world there are more different methods of and means for bee-keeping in vogue than differences of races, states, languages, climates, and bee pastures can possibly account for. This variety

is bewildering to any one on this continent; then how much more so must it be to the bee-keeping fraternity beyond the sea! I can quite understand the difficulties your reviewers encounter in their endeavor to glean useful and interesting items from European bee-journals.

It will be my privilege, in the course of time, to give descriptions of the more important systems and means in vogue over here, and, incidentally, to show whether and to what extent American ideas are penetrating apiculture in Europe; and does it mean taking too big a bite if I give way to the hope that now and then something not entirely useless to practical apiculture on your continent might possibly be found in these articles, although coming from Europe?

THE MODERN STUDENTS OF ANATOMY.

When I read that severely critical article on the anatomy of the honey-bee by Mr. Snodgrass, in GLEANINGS for March 15 (and I did read it several times), I became convinced that, happily, modern investigators

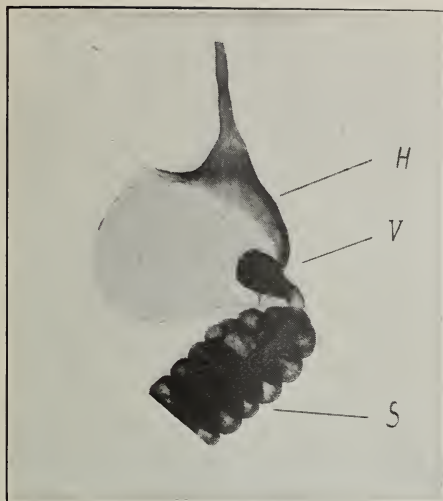


FIG. 1.—Honey-sac, H; stomach-mouth, V, and chyle-stomach, S, of the bee in the natural position. Photographed from a microscopical preparation, ten times enlarged.

in bee science have got on a new track which in time, and by perseverance, will lead them to quite different results than most previous students of the bee arrived at.

What these new bee scientists distinguish seems to be their extreme seriousness and their sober self-limitation. And not only in this respect are the modern investigators of America and Europe in complete accord, but in their aim too; and in their results so far they are coming to similar conclusions.



FIG. 3.—The position of the honey-sac, H, and the chyle-stomach, S, in the abdomen of the bee.

That is a happy omen for the future of bee science.

Right here I want to draw the attention of American bee-keepers to the work carried on at the Royal Apicultural Institute at Erlangen, Germany. The head of this institute is Mr. Enoch Zander, Dr. Phil., Professor of Zoology, who is at present publishing the results of his 15 years' study in his "Handbook of Bee Science." The third part, on the anatomy of the bee, means a new departure in this line. A truly scientific endeavor, and a readiness at all times rather to prefer to confess to being an ignoramus than to enter into bottomless theoretical speculation — that is the spirit the whole work breathes. Another feature that lifts this work above similar previous publications is that, though the honey-bee is the object of the study, the relations of the honey-bee are never lost sight of. This study of comparison of analogous parts of the bee with those of its relations opens an interesting and wide aspect, and will prove more fruitful than the isolated speculation upon the bee as a singular wonder instead of a part of a wonderful creation — a practice hitherto so much indulged in.

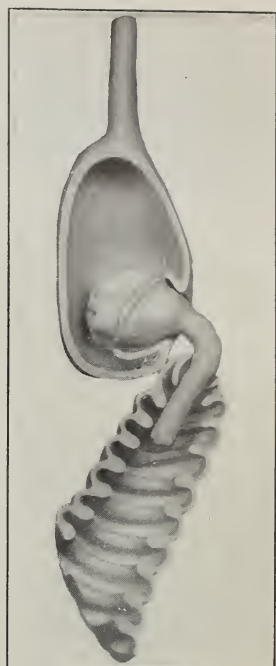


FIG. 2.—The connection of the honey-sac and chyle-stomach. Sectional view of a model at Erlangen University, Germany.

SOME BEE MODELS.

Through the kindness of Prof. Zander

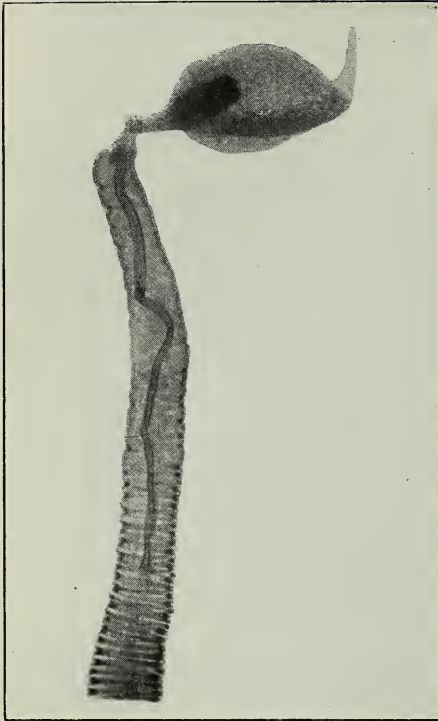


FIG. 4.—Crop, stomach-mouth, and ventriculus of wasp, enlarged ten times.

I am able to reproduce a few microscopical photographs which those who have studied the bulletin, No. 18, by R. E. Snodgrass, on the anatomy of the honey-bee, will especially appreciate.

Fig. 1 is a photo of a microscopical preparation of the honey-stomach, the proventriculus (stomach-mouth), and the true ventriculus, or chyle-stomach. This preparation clearly shows the natural position of the so-called stomach-mouth with its cross-slits to where the oesophagus discharges into the honey-sac. A clear conception of the structure of these parts of the elementary canal may be gathered from the sectional view of a model at Erlangen, reproduced in Fig. 2. This illustration shows especially well the way in which the honey-sac is connected with the true stomach by means of the neck-like organ, the proventriculus.

The position these parts assume in the abdomen of the bee may be seen in Fig. 3.

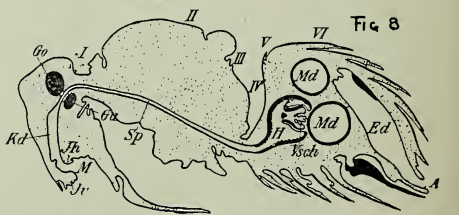
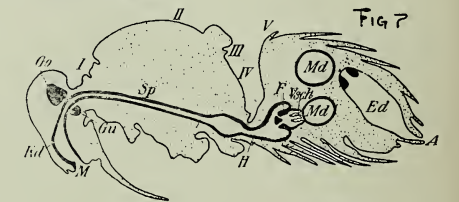
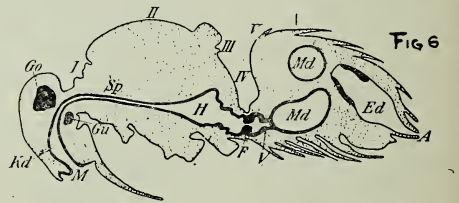
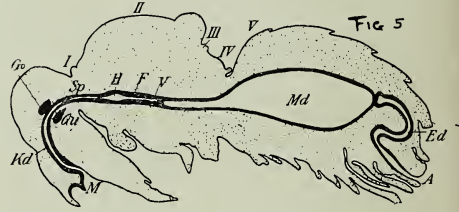
Fig. 4 being a microphoto of the crop, the proventriculus, and the ventriculus of a wasp (*Vespa cabcia*) afford an interesting comparison with the analogous organs of the honey-bee as reproduced in the same enlargement in Fig. 1.

A pupil of Prof. Zander, Dr. Metzger, who devoted himself to a study of the proventriculus of the honey-bee, brought to light a very interesting fact about the development

of the honey-sac and the stomach-mouth. While in the full-grown insect these organs occupy their place in the abdomen, their development ensued almost entirely in the thorax. In the earlier stages of the pupa, both these organs form but slight enlargements of the alimentary tube. Just before the division between thorax and abdomen becomes complete, the honey-sac recedes into the fore part of the abdomen. The drawings in Figs. 5 to 8 will help to make this development clear.

Another pupil of Prof. Zander made a special study of the construction and mechanism of the apparatus of flight. He discovered a wonderful apparatus that leaves the complicated mechanism actuating the sting far behind.

The sting itself received a special study by Prof. Zander, and here, too, the comparative study of the analogous apparatus of other members of the hymenoptera furnished interesting and instructive matter; and



The development of the honey-sac and stomach-mouth in the pupa stage. H, honey-sac; V, proventriculus (stomach-mouth); Md, ventriculus.

tracing the development of the apparatus of the sting throws light on the disappearance of the 11th and 12th dorsal and ventral plates of the abdomen in the full-grown worker bee.

The few examples given will justify my devoting so much space to this subject that surely ought to claim the attention of all progressive bee-keepers—not alone those of the two continents that this department is trying to bridge.

Wendhausen, Hildeshain, Germany.

THE PRESS-IN-COMB CAGE FOR INTRODUCING.

A Scheme for Giving the Option of Either the Candy or the Press-in-comb-cage Plan of Introducing; a Few Cautions.

BY F. W. L. SLADEN.

Years ago I sent out all my queens accompanied by a wire-cloth cage for pressing into the comb, and I still do so in the early spring. I am mailing you a sample of the package. You will see that the wire-cloth cage covers one end, but not the top, of the Benton cage, and is, therefore, much smaller than the cage you illustrate. This I consider an advantage, not only because less wire cloth is used, but because it is often difficult to find a sufficiently large area of comb free from brood, or much honey to receive a large cage. Those who have introduced many queens by the plan of pressing a cage into the comb know how important it is to select a portion of comb that is empty with the exception of only one or two unsealed cells of honey; for if the cage be pressed into much honey the honey may trickle out of the wound and drown the queen; while if it encloses larvæ these are injured, and starve, or at least undergo a long fast, although this does not matter so much if the area is small. It is also advantageous, and in the early spring and autumn necessary, to cage the queen in the center of the hive; and tough comb that has been bred in is better than new comb, which the bees sometimes nibble away. All these requirements restrict the available space for the cage. My cage, as you will see, measures only $\frac{3}{4}$ inch by $1\frac{3}{8}$; and I find this is quite large enough to hold the queen and also a just-hatched worker from the hive to which she is being introduced, which I always prefer to place with her.

You will see that the wire cloth of my cage is made of comparatively stout wire, and has a close mesh. This is an advantage, because the cage then keeps its shape well. I pull out a strand of wire all around

the edge, which makes it easy to press the cage into the comb.

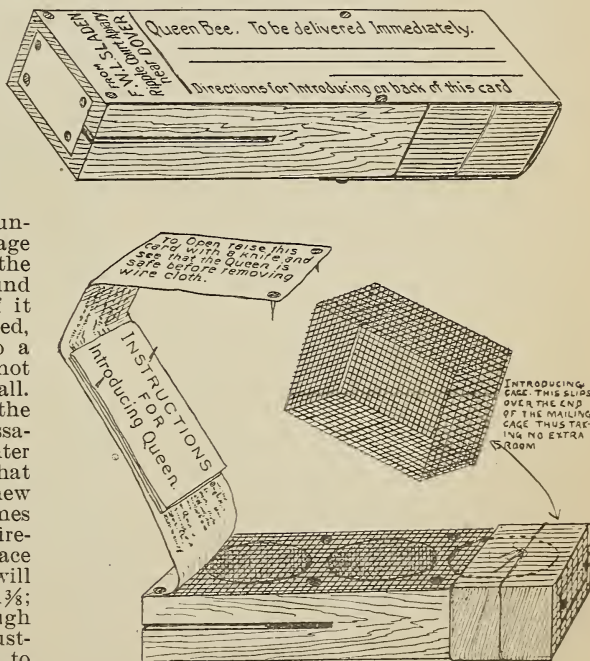
It is necessary to warn queen-breeders not to make the cage of tinned or galvanized wire. The action of the metals causes salts to form in time; and, although these salts are produced in minute quantities only, there is often enough to poison a queen confined alone in the cage. The wire cloth I use is made of ordinary iron wire, and I paint it over with varnish to prevent it from rusting.

You will see that, to prevent the edges of the wire cage from becoming entangled in any thing in the mails, a band of stout cartridge paper is tied around it with a piece of fine string; and to prevent the wire cage from dropping off the end of the Benton cage, the address label is brought over the end of the latter and nailed down on its under side. This entails a slightly longer address-label than would otherwise be used; but this is an advantage, because it gives more room for printing the directions for introduction on the back of the label.

I do not, however, think that long directions are necessary; and from many years' experience I have found the following short statement to be sufficient:

DIRECTIONS FOR INTRODUCING THE QUEEN.

First make sure that the colony to which you



wish to introduce this queen is without a queen already. A colony is in the most favorable condition for the introduction of a strange queen when it has been queenless for about 24 hours. A square wire-cloth cage will be found covering one end of this box. Press this cage, with the queen alone inside it, into a tough portion of one of the middle combs, and see that there is a little unsealed honey

in two of the cells enclosed by the cage. After a lapse of 48 hours the queen may be set free among the bees provided they are not clustering closely around the cage. The bees should be disturbed as little as possible during this operation. The hive should not be examined again for some days.

If the queen be found dead on arrival, and is sent back in the *unopened box* by return post, another queen of the same description will be forwarded free of charge. Sale introduction is not insured.

I have found the method of introducing a queen in a cage, pressed into the comb as described, to be, on the whole, safer than the ordinary method of introducing in the mailing-cage; and, as the editor points out, it is especially useful as a safeguard against the introduction of disease. At the same time, it requires more work and skill on the part of the bee-keeper; and its greatest drawback is the necessity of disturbing the bees to release the queen. Possibly some device might be invented to remove the necessity for this. Meanwhile it seems best to give the customer the option of employing either method of introduction, as you will see is done with the cage illustrated. Directions are given for both methods.

The wire-cloth introducing-cages are much appreciated by customers, as they can be used over and over; yet they cost very little to make, and I believe that the queen-breeder who has the generosity to supply them will be well paid.

Ripple Court Apiary, Dover, Eng.

[There are two excellent features in the cage here illustrated. First, it will allow the use of a regular Benton mailing-cage without modification. Second, the push-in-the-comb cage plan may be used, or the candy plan of introducing. Some beginners are very timid, and possibly might lose a queen in transferring her from the cage to the comb. The more expert bee-keepers can use the push-in-the-comb-cage plan.]

Mr. Sladen uses the two schemes of introducing only in the spring. If it is a good thing then, why should it not be good during the entire season? The cost of the extra feature is merely nominal.

The directions that Mr. Sladen sends out make it necessary for the owner of the bees to release the bees in from 24 to 48 hours. This we consider decidedly objectionable. The very act of opening the hive disturbs the normal condition of the colony. Experience shows that, when the queen is released without this disturbance, the chances of her acceptance are much better. From the experiments that we have conducted here at Medina, it would seem to us that, unless the push-in-the-comb-cage plan is arranged so that the bees can tunnel under and release the queen themselves, we should lose half of the advantage secured by this plan. To our way of thinking, the push-in-the-comb-cage plan allows the queen to come into direct contact with the comb and the cells of honey. This very contact with the comb itself gives her more nearly the colony odor than if she is kept in a cage on top of the frames for 24 hours away from the brood-comb.

Mr. Sladen recommends pushing the cage

into a *tough* part of the comb. Why do this? Why not recommend pushing the cage into comparatively soft comb, and only just deep enough so that the cage will not fall away by its own gravity? When so placed, bees will release the queen in from 24 to 48 hours themselves. We introduced hundreds of queens this way the past season, without the loss of one. We believe it is an advantage to have the cage a little larger than the one here shown so that it can cover a little hatching brood if possible, and some empty cells as well as a few cells of honey. If any young bees should hatch, she will come in direct contact with her own subjects; and, of course, they would be kindly disposed toward her. But suppose the bees did not release her in 48 hours, no harm would be done, because she would have the range of enough comb to begin laying before she were released, and a fresh *laying* queen will be well received if any queen will.

We see no reason why our plan of having a large cage telescope above the top of a regular Benton cage as illustrated on page 554 of our Sept. 15th issue could not be used and still allow the feature of introducing by the candy plan also, if the recipient feels hardly competent to make the transfer of her majesty from the cage to the comb. In any case, if the work is done in a room, before a window, the queen can not possibly get away. The only difficulty then that arises is whether the beginner, if the queen should fly to the window, would be able to catch her without killing or maiming her. On account of this possibility we have about come to the conclusion that the two plans of introducing, giving the recipient the option of using one or the other, should be adopted.

We should say at least ten per cent of the queens introduced by the public by the candy method are lost in introducing. The results the past season showed that there was not even one per cent lost when the push-in-the-comb-cage plan was used.

Mr. Sladen prefers to have a hive queenless 24 hours before introducing another. Present practice in this country seems to favor removing the old queen and giving the new one at the same opening of the hive. This is the practice in our apiaries.

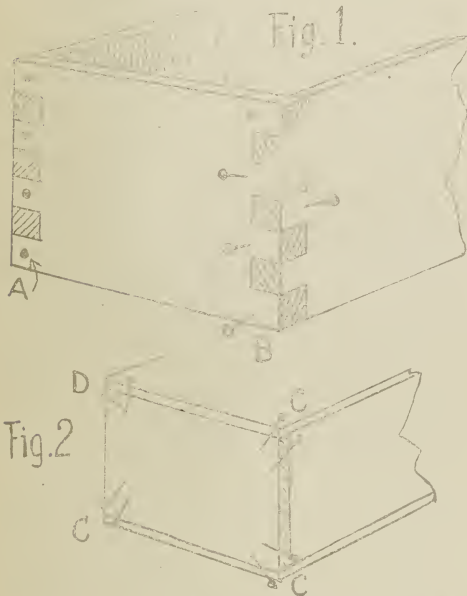
We shall be glad to get further suggestions from any of our friends who may have tried this wire-cloth-cage method of introducing. We omitted to mention that Mr. Geo. H. Rea, of Reynoldsville, Pa., suggested pushing a leadpencil through the comb from the side opposite where the cage is located, at the end of 48 hours. This leaves a hole through which the queen can pass, even if the bees do not release her. If the comb with the cage is now put back carefully in the hive she may not and probably will not emerge till long after the hive has settled down to its normal condition again. If Mr. Sladen were to add this suggestion to his directions he would eliminate the disturbing feature.—ED.]

THE RIGHT AND WRONG WAY TO NAIL HIVES AND BOXES.

BY WM. C. BROWN.

It is hard to conceive of a successful bee-keeper unable to use the common handi-craft tools fairly well, or ignorant of the proper manipulation of the materials used in the apiary. It is pleasing to find such articles as those by F. Dundas Todd and others on this subject. Mr. A. I. Root, in the early days, did much toward my knowl-edge of the use of tools and material in the minute attention he gave to details, and his insistence on accuracy and the shunning of careless work.

I have long purposed writing on the sub-ject of nailing hives, cases, and boxes. On page 90 of *GLEANINGS*, Feb. 15, 1911, is an



article by Louis Scholl which reminds me of my procrastination. I agree with him that the nails should be driven on the skew, as he describes; but in practice I go further; for, instead of driving the nails within, say, half an inch of the edge of the stuff, as at A, Fig. 1, which ninety-nine in a hundred will do, I insert the nails back in the body of the stuff as at B, at such an angle that the points will not protrude when driven home. This insures solid work—a tenacious hold—and, not least, an almost entire ab-sence of splitting.

Bee-keepers often have to nail up ordina-ry cases and boxes. In my business many thousands pass under my inspection annu-ally. In using timber that is hard or easily split, the outer nails should be driven slant-ing toward the center as at C, Fig. 2. If driven in as in the usual manner, a cover nail often strikes and deflects the other, splitting the end, and so spoiling the work.

Then as to gauge and length of nail, nev-er use a larger size than the nature of the work and timber requires. To nail on half-inch boards with $2\frac{1}{2}$ -inch nails is not good workmanship. By the way, when telling the size of nails to use, the gauge and length should be mentioned. "Two penny" or "ten penny" conveys no information to many of your readers.

THE GRAVITY METHOD OF CLARIFYING.

I am pleased to note that many of your correspondents are using the law of gravita-tion to attain this object in preference to the messy and laborious method of straining, which is necessary only when the fore-ign matter is of the same specific gravity as the honey, which is seldom. It said, by accident, should get in, it will sink; air wax, etc., will rise from over or under which the clear honey may be drawn; but if for some reason straining must be done, use the coarser strainer *above* the finer, put the cheese-cloth *over* the wire strainer, as some advocate. In my business I have to strain thousands of gallons of liquids, and always utilize gra vitation in preference where possible.

Mosgiel, Otago, New Zealand.

R. W. HERLONG AS A MAN AND BEE-KEEPER.

He Made a Success in Having Others Work His Bees on Shares.

BY J. J. WILDER.

The South has sustained a great loss in the death of Mr. R. W. Herlong, of Fort White, Fla., which occurred on the evening of October 11. We deeply mourn his death, for he was one of those big open-hearted men whom every one loved. No one could be more devoted to his family than he was. I am sure all of the bee-keepers in the Southeast deeply sympathize with them in their sad and lonely hours. Indeed, Mr. Herlong was a true man in every respect. He had been an active member of the Meth-odist Church of his town for a number of years, and held offices of responsibility in it up to the time of his death.

As a bee-keeper he was foremost in the ranks, having accomplished much during the twelve years he had been engaged in this kind of work; for he was always full of enthusiasm, and possessed the energy so es-sential to success.

Mr. Herlong was born and reared in South Carolina. He married Miss Loula Mitchell, and they moved to Columbia Co., Fla., in which county he lived until his death. As soon as he arrived he secured employment at a sawmill, and later purchased some land out in the pine forest. He soon had it well improved, and was prospering, raising grain and long staple cotton. About twelve years ago a neighbor "gave" him three colonies of bees for merely a trifle, as he claimed, for he had not realized anything from them since they had been in his possession. Mr.

Herlong told me that it was on a moonlight night in May when he went for them, and during the drive home he caught the inspiration of bee-keeping and partly planned his career, which Mr. E. G. Baldwin has so well outlined, p. 461, Aug. 1. Mr. Herlong's photo will be seen on the same page, and also a picture of one of his apiaries.

His face is a clear index of his energetic and generous life, and his apiary shows that he was a thoughtful keeper.

When he had all the bees that he and his son could care for he did not stop. He had taught his neighbors by example that bee-keeping is not a mere pastime, but a good business, and he induced them to take some of his bees on shares, which they did, some taking one apiary each, some two, and one as high as four. All worked under his instruction. As time would permit he visited them during the season. He had been letting out bees in this way for five or six years, and he and his "renters" worked in perfect harmony, and all were well satisfied.

He had some apiaries thirty or forty miles away which he was operating successfully, and was always planning to enlarge his bee business.

Death came in the prime of life in his career as a bee-keeper; and the loss we have sustained can not be estimated. His place in our ranks can never be filled.

Cordele, Ga.

CREOSOTE OIL AS A SUBSTITUTE FOR PAINT.

BY F. L. HIGGINS.

Mr. R. F. Holtermann says, p. 289, March 1, 1906, "The foolish thought that one should keep an idea (in one's own estimation good) to himself is often suicidal, and many a one would have saved himself from expensive mistakes had he ventilated his pet notion."

Following the above advice I beg to present to my fellow bee-keepers a plan I have successfully used to preserve my hives; and any criticisms will be thankfully received.

CREOSOTE OILS FROM GAS-TAR UNSUITABLE.

There are two distinctly different oils called creosote, both being used in the preservation of wood. I call particular attention to this because the one that is better known would be entirely useless for this work. This is the oil that is made from gas-house tar (known as dead oil), and is much used by railroads for creosoting cross-ties and bridge-timbers. As it contains carbolic acid it is unfitted for work around bees, for it is well known that the odor of this acid has about the same effect on bees as smoke.

The oil I used is a product of the long-leaf pine, which is exclusively a Southern tree. When I first conceived the idea of treating hives with this oil I was afraid of two things; first, that the bees would object to the odor; second, that the honey would taste of the

oil. Experience has shown that my fears in both instances were groundless. At first I tried the experiment on a top and bottom board; and finding that the bees took kindly to them I tried it on a super filled with Danzenbaker shallow extracting-frames. It was with real concern that I took my first taste of honey from this super. As there was no trace of the oil I concluded that I had succeeded in finding a substitute for paint on hives, and one, too, that would prevent warp, split, or rot, and would make a hive last a lifetime.

METHOD OF CREOSOTING HIVES.

To make the experiment a success, this work must be thoroughly done; and simply putting it on with a brush as one does paint is simply time thrown away. The common method of creosoting timber is to put it into a cylinder, fill the cylinder completely with oil, and continue forcing the oil in until a pressure of from 50 to 75 lbs. per square inch is secured. But for small pieces, and especially such soft wood as is generally used in hive construction, the open-tank method will be found sufficient. To creosote by this method, two tanks are necessary, one of which must be of iron. The other may be of wood. If new hives are to be treated it can be better done before nailing, and in this case a good-sized iron pot would suffice. Place the article to be treated in the iron tank (or pot), and pour in enough oil to cover. As the oil is much heavier than water the wood must be weighted down or it will not be covered by the oil. Raise the temperature to 275° F., and keep it so for about an hour. Remove the wood and place it in the second tank, which should contain oil at the temperature of the air. In the first treatment the moisture and air contained in the wood are expelled, and in the second the oil is sucked in as the wood cools down. An Excelsior cover or Danzenbaker bottom-board will take up about one quart of oil. This method of treating hives is rather expensive, and has considerable work attached to it; but no paint will have to be used, nor will the hive ever have to be replaced, unless it burns up.

Another advantage is that the larvæ of the bee-moth will not burrow into wood treated with this oil; neither will rats or mice gnaw it.

The main objection to the idea is that it leaves the hives a dark walnut color.

I hope this plan will prove of some benefit to bee-keepers, especially those in damp hot climates where hives do not last very long.

Wilmington, N. C.

[It is probable that Northern bee-keepers would have some difficulty in obtaining the real oil made from the pine unless it were ordered in quantity direct from some dealer in the South. We should be glad to have reports from any who may be able to give this oil a good test in other parts of the country, so that it may be compared with paint.—ED.]

Heads of Grain from Different Fields

Success.

BY IRMA TRUE SOPER.

And what is success? do you say?
 You workers who toil and who plod—
 Whose muscles have often grown weary
 In plowing and tilling the sod.
 You look at the "great men" around you,
 And envy them too, you confess:
 Dame Fortune has never yet found you,
 Yet money has brought them "success."
 But look at the workers around you—
 The bees that store sweets in the hive;
 The blessings of nature surround you—
 Breathe deep, and be glad you're alive.
 Your smile is so cheery! you're healthy—
 You vote with the heart of a man;
 And, better than being so wealthy,
 You're doing the best that you can.
 So, say not that Fortune has missed you,
 You men who are honest and poor;
 With all of her best gifts she's blest you—
 Her treasures she lays at your door.
 Success is not hoarding of money,
 You workers who toil and who plod;
 'Tis being so helpful and sunny,
 Content in the love of your God.

Jackson, Mich.

Langstroth versus the Jumbo Depth; Two-banded Italians.

What would be the result if I use a ten-frame dovetailed hive-body as an extracted-honey super on a ten-frame hive, using the regular Hoffman brood-frames with frames all metal-spaced, and with full sheets of medium-brood wired foundation? All the frames would thus be interchangeable so they could be used below in the hive-body as well as above for storing honey.

How would a ten-frame Jumbo hive be for fancy comb honey? Would a hive like this one reduce swarming? How would this hive be for producing extracted honey, using one hive-body above the other?

Are there any two-banded golden Italian queens? or are three bands the least all Italian bees have? Are the two or three banded bees better than the other bees that have more bands? If so, how?

Will any honey-extractor take a Jumbo frame?
 Avon, S. D., Nov. 21. F. C. SAXER.

[There is no objection to using a full-depth super fitted with metal-spaced Hoffman frames for extracting. The largest producers, however (at least the majority of them), use unspaced frames in the super, putting eight in a ten-frame super so that the comb being bulged will contain more honey, and will be easier to uncap, etc. Such combs, until uncapped, however, would not fit in the brood-chamber on account of being too thick; but if you uncap down to the thickness of the frame, according to the general practice, you may then place the empty comb in the brood-chamber if you wish to. There is no question but that it is easier to uncap thick combs than combs in frames that are self-spaced.]

We would not advise you to adopt the Jumbo-depth hive; for in our opinion the deeper combs provide only a larger space above the brood for storing honey, and this means that the best honey will be stored in the brood-combs rather than in the super. Furthermore, when the bees get into the habit of storing in the brood-comb it is more difficult to get them into the super. A few prefer the Jumbo hive, but only a very few.

When running for extracted honey, the ten-frame hive is ample in size, so that swarm prevention is not difficult. In extracted-honey production the swarming problem is not nearly as serious, any way, as in comb-honey production.

Italian bees are distinguished from mixed bees, or hybrids, as they are called, by the characteristic three bands. If bees have only two bands they are likely to be crossed with black bees, and to be known as hybrids. Quite a good many prefer the three-banded bees to the five-banded, owing to the fact that the five-banded bees, being bred chiefly

for color, are apt to be more irritable, and perhaps a little less hardy.

The extractors having extra-wide baskets will take Jumbo frames or two shallow extracting-frames. We may say that the tendency seems to be toward shallower frames for extracting purposes than the Hoffman, rather than wider, like the Jumbo.—ED.]

Wintering Colonies Light in Stores.

I have five colonies of bees which I should like to winter. These are all new stands that came out between May 18 and June 10. One colony is quite heavy, and I think it is all right for stores. The other four are very light. Possibly one month ago they had 12 or 16 lbs. of sealed stores and plenty of comb. Then I commenced to feed them. I made a syrup of equal parts of sugar and water for about two weeks. I then made a thicker syrup which I am still using. In all, I have fed the four colonies about 40 lbs. up to the present time. I have a dry, well-ventilated, concrete-bottom cellar. Do you think the bees would winter under these conditions? Would you still feed as long as they will take the syrup?

Ellsworth Falls, Me., Nov. 8. T. E. MOULTON.

[We are not sure that these colonies that were so light in weight have enough stores now. Forty pounds of syrup distributed among four colonies does not give each colony very much, for the bees consume so much in the process. In fact, the colonies would have stood a better chance of having enough if you had fed forty pounds of syrup to each one. The temperature of your cellar should be uniform (between 40 and 50 degrees) to get the best results, and you should darken the room and see that there is plenty of ventilation.—ED.]

Are American and European Foul Brood the Same?

Dr. C. C. Milley:—I have been watching your work with what you call European foul brood. Now, is this any thing more than American starved brood? Considering the time when it appears, and the cure, leads me to think there might be something in this idea.

Emerson, Ill., Oct. 21.

W. H. H. STEWART.

[Dr. Miller replies:]

The notion is hardly tenable. If European foul brood were merely starved brood it would appear only where there is starved brood; whereas it has appeared where there was no shortage of stores, and where there was abundance of food for the babies. As a matter of fact, the large frames of the Dadants, with their abundant stores, did not save them.

Another thing, for more than 45 years I got along without foul brood. During that time there were not wanting cases of starved brood, worse than any thing since. If starved brood were sufficient to start the disease, surely during all those years it would have made its appearance. Then along came the infection, nearer and nearer, and finally I was in for it; and whether "in for lie" remains to be seen. While plenty of good food and vigorous physical condition will help in resisting disease, and while the opposite will aggravate the case if the disease appears, the fact remains that European foul brood, as well as American, is "catching," and you must have the seed before the plant can grow. C. C. M.

Honey Used Freely in Cooking.

I do not like sweet things—never touch sugar, and do not like honey. I have to live at a small apiary away from home, sometimes three days out of a week, cooking on a small oil-stove. Little by little I found that adding a little honey to any kind of food, just enough to make it smooth, but not in the least sweet, did not disagree with me, and also made the food more pleasant. An old camp cook (and a camp cook has to be a cook) came to me for some honey. This being an off part of the season I had only some that had been heated, and told him so. He did not care—wanted it for cooking only—never ate honey. Then seeing I knew all about it he told me his experience, hitherto with him a secret. He said he would not boil potatoes nor cook a stew nor bake bread, nor even make tea or coffee,

without honey, but in quantities so small as not to allow the sweet to come out, as it were. He said that often people asked him what made the food prepared by him taste so smooth and so rich.

STEPHEN ANTHONY.

Waitete, Auckland, New Zealand, Oct. 13.

Hard Candy for Cold-weather Feeding.

Where can I buy the prepared rock candy that is used to feed bees in midwinter? In packing my bees for winter I found three colonies short of stores, caused by the long warm fall, with no honey coming in, as they were heavy with stores when bought the last of August. I am afraid I can not make it myself without burning it.

HOME-MADE WINTER CASES.

This is the way I made my winter cases: A loose bottom-board was made. The two cleats that the boards were nailed to extended out 5 in. on either side. The case rested on these projections while the bottom-board extended up one inch inside the case. This made it moisture-proof from below. The case proper was a little over 2 feet square, consisting of a skeleton framework on which I nailed boards extending up and down—thin boards that came from the refuse boxes procured at the grocery store— $\frac{3}{8}$ and $\frac{1}{4}$ inch stuff. These boards were only from 2 to 3 or 4 inches apart, as they were only to keep the packing from pressing against the tarred felt. An entrance 2 in. deep by 14 long was made and bridged over. This case was covered with tarred felt bought of Sears, Roebuck & Co. A telescope cover was made, and covered with tarred felt. The hive was placed on a prepared bottom-board bridge, put in place to protect the entrance, the open spaces at the bottom of the case being covered over with some thin $\frac{1}{8}$ -in. boards, and a little straw put in at the bottom of the case. Then I filled it up with clover chaff level with the top of the case. It gave me 2 in. of packing on the front of the hive, from 5 to 10 in. on the back and sides, and 12 inches on top. The telescope cover must be weighted down or it will blow off. The felt, being black, absorbs the heat and turns water like a duck's back. I give them a tilt of about an inch or two to run the water off the top. These cases cost me only 15 cents each.

Jonesboro, Ind., Nov. 25.

C. A. NEAL.

[We do not believe you can buy the rock candy that you refer to, for it would cost too much to ship it, and most bee-keepers, therefore, prefer to make their own. You would not have any trouble in preventing it from scorching if you follow the directions given in the A B C and X Y Z of Bee Culture. Boil the syrup until a drop of it, when allowed to fall into cold water, will become brittle and hard. You can try a little of the syrup first; and then if it has no scorched taste, nor dark color when cold, you can be pretty sure it is all right.]

If you prefer, you can make the soft candy by mixing pure pulverized sugar in good honey that you know is free from disease, until you have a stiff dough. Then place cakes of this in shallow wooden butter-dishes or pie-plates over the brood-frames in empty supers. It is pretty hard work to mix this dough in great quantities; but for only three colonies it would, perhaps, be the easier method, all things considered.—ED.]

An Unhappy Experience with Bees.

I have been much interested in GLEANINGS; but as I have given up bees for ever I shall not need it any more. I went into bee-keeping enthusiastically, and the bees occasionally went into me in the same way. There seemed to be almost no limit to the swelling one sting could raise, and the swelling was not content to remain in one spot, but was a movable affair. For example, when I had a sting on the top of my head (which, by the way, is not bald, but plentifully supplied with woman's crowning glory, without the aid of "rats" too), the swelling moved in ridges down my face, each successive day appearing in a new place.

I also had the experience, with some variation, which is mentioned in the A B C book, where it says, "Not one person in ten thousand is affected in this way"—burning and itching intolerably from head to foot, covered with great red blotches, accompanied by the most intense nervousness, which lasted all night. That experience was the result of two stings—one on the face and one on the

neck. Notwithstanding all the stings and discomfort I finished the season; but—no more.

While I appreciated GLEANINGS for a bee-keeper, I am not a bee-keeper. I have sold my entire apiary, and do not even care for honey to eat.

I know of nothing in the world that can upset one's calculations better than a bee. Mrs. Comstock says, "You always have the fascination of an unsolved problem." She might have added, "You always have before you something that is 'boss' of the situation besides yourself."

Of course I know that, to a great extent, it is possible to control bees, and make them do as you want them to; but while you may control their work largely, you never can muzzle the angry bee. To illustrate, we had an experience last summer which I do not care to repeat. Our horse had just been so badly injured by being kicked by another horse that it was nearly impossible for it to walk a step. It was necessary for it to get to the stable, about a quarter of a mile away. While we were trying to get it along slowly, a meddlesome bee from an apiary in the neighborhood, some hundred feet away, came buzzing and circling around the horse, evidently bent on stinging, and it finally did all the horse a glancing sting, and made it kick in spite of its injured shoulder. The result for me was an attack of nervousness that necessitated a call on the doctor.

Nobody had been near the hives nor done any thing to anger the bees. That bee was hatched depraved.

I said then that, if the Lord would forgive me for keeping bees that time, I would never repeat the offense; so I have sold out; and if I ever do dabble in any branch of apiculture again it will be to write an article entitled "Why Women should Not Keep Bees." But, of course, nobody would publish it.

You would find it hard to believe, from my present position, what almost boundless enthusiasm I once had on the subject of bees. I think now it was due to the fact that I am a woman, and bees are a mystery; and woman and mystery, you well know, are said to be synonymous terms.

However, in spite of my lack of enthusiasm I wish you success.

MRS. HENRY A. GOOCH.

Batavia, N. Y., April 20.

[Lest we might be accused of giving undue prominence to the rosy side of bee-keeping, we are publishing this letter, believing that it will serve to show that even bee-keeping has its drawbacks. There are some persons so constituted that even an occasional sting may bring serious distress; and we frankly advise all such to leave bees alone. In all fairness, however, we must add that, in all our experience of over forty years, we could almost count on our fingers the cases like the above that have come under our observation. In most instances the amateur can so protect himself that it is practically impossible to be stung. Then, any way, the system soon becomes immune to the effects, so that no discomfort at all is experienced.]

We feel certain, after reading this letter, that the bees kept were of a very irritable strain, and that they were probably allowed to rob during periods of honey death, so that they were vindictive, when ordinarily they would have been quiet. In this connection see the editorial on p. 580, Oct. 1.—ED.]

Fastening Foundation with a Pyrographic Outfit.

Did you ever fasten foundation in brood-frames by pyrography? My daughter has a pyrographic outfit, and for two seasons we have used it, and like it very much better than the wedge or hot wax. My frames are all wired, and have a board to fit inside. Lay a full sheet on a board, letting it extend about $\frac{1}{8}$ inch over the side. Turn this down; lay on the frame; run the Imbedder over the wire; then set the frame on the top-bar; put the board on the other side; press down the edge against the top-bar with the thumb; run the heated platinum point along, and you will have a fine fastening.

Chapman, Kan., Oct. 4.

H. A. KOOGLE.

[We have never tried a pyrographic tool for fastening foundation, but we can see that it would answer the purpose very well. A light soldering-copper with a sharp point might do, although there will be more or less smoke owing to the burning wax when the copper is put back to heat for the next frame.—ED.]

Our Homes

A. I. ROOT

My house shall be called the house of prayer; but ye have made it a den of thieves.—MATT. 21:13.

Pure religion and undefiled before our God and Father is this, to visit the fatherless and widows in their affliction, and to keep himself unspotted from the world.—JAMES 1:27.

I suppose it is natural for old people to speak about the "good old-fashioned times." I do not know but it is natural for them to think of the world as degenerating; that the old-fashioned religion that includes loving your neighbor as yourself has been crowded out and trampled under foot in the rush and scramble for new things and for glittering gold. May God in his infinite mercy help me, even though I am growing old, to take a fair and unbiased view of spiritual matters in particular; and of the whole wide world in general. While I feel sad to think that many good old-fashioned customs are being laid aside, I hope I have grace enough to recognize the *progress* that is being made, even in honesty and truth, at the same time; and that, while wickedness *is* growing and developing, as it seems to us sometimes at a terrible rate, righteousness is *also* being exalted, and souls are being gathered into the kingdom.

I suppose it is true that there is a scarcity of able and efficient ministers in almost all denominations—especially a difficulty in finding clergymen with clean and unspotted records. This Home paper has been prompted by a fear that many who prepare for the ministry fail to recognize the sacred and solemn responsibilities resting on the one who stands behind the sacred desk and breaks the bread of life to a hungry world. While I have been feeling for some time that there were here and there men proclaiming the gospel, more or less, in all denominations, who ought not to stand behind the sacred desk, I did not think so much about it until I saw in the papers the sad record of a young minister in New England. He was called on to preach in a little town, and in the evidence brought forward we are told he said, on preaching his first sermon, that he saw a very pretty young woman in his audience. He tells this himself, if I am correct. He said that, from the moment his eye alighted on her bright face, he was preaching to her and to her only. Now, to my mind this young preacher had no business in the pulpit if he had no more sense of the sacredness of his position than to fix his eyes (and his mind) on a good-looking girl or woman. I realize, when I say this, that one of Satan's strongest holds on humanity is right along this line. God knows that I have had some experience in this very matter.

This young preacher very soon found that the good-looking girl was the daughter of a widow. She had no big brother nor a father to look after her; and I suppose that most of the big brothers and fathers would have

taken it for granted that the girl was perfectly safe, as a matter of course, even if the young preacher *did* have a good deal to say to her. We are told that at an early date he assured the anxious mother that they two were engaged to be married. Of course this young girl, whom the world had probably never noticed very much, felt flattered by the attentions that the handsome and gifted young pastor of their church bestowed on her. She made preparations as well as she could with her humble means for the coming wedding. She and some of her girl friends, with childish simplicity, planned for a rainbow wedding. The different girls to act as bridesmaids were to be arrayed, each one in a costume of a color different from the others, so as to represent the colors of the rainbow. This young minister may have had honest intentions. He may have expected to marry the girl and to be a faithful pastor over the people in that little town. Even if it were true that he had not yet been "born again" (in the good *old-fashioned* way), he was smart and bright, and perhaps eloquent in oratory, and preached good sermons. Satan saw his chance, however. A church in a neighboring city was looking about for somebody to fill a vacant pulpit. They got their eyes on this young Baptist preacher. He had been working on the humble salary of \$800 a year. A *millionaire* in that city—one who had furnished the greater part of the money for building the new church—got his eye on the young preacher, and made him an offer of \$2000. A little back I spoke of the temptations that often assail young ministers—for instance, a girl with a pretty face.

Well, now, this young pastor had a trial in another way. Here was a chance to step from poverty to comparative affluence, and to go among a richer class of people. Although I do not like the idea of a minister being on the lookout for a bigger church and for more pay, there may be nothing particularly wrong in his accepting the new pastorate. This young minister probably planned, as a matter of course, to take along the young wife to be. But besides the \$2000 something else came across his pathway. The millionaire had a good-looking daughter—perhaps as bright and interesting as "the girl I left behind me;" and she being, as a matter of course, much interested in the young pastor the father had gotten hold of, they *too* became quite intimate. We suppose, of course, that the millionaire's daughter knew nothing of the minister's previous engagement. Like a silly fool, this young preacher kept on going with *both* young ladies, and was finally engaged to both, to be married. When the widow and her daughter saw it announced in the papers that the girl's betrothed was to be married to the young heiress, he took the paper down to the widow's home and explained

to the mother and child that it was another man, but having the same name, assuring them he was to marry the daughter as agreed. They accepted his explanation.

Now, this young hypocrite, while all this was going on, was preaching good sermons—perhaps eloquent ones, as the world would call them. May God have mercy on such creatures and the people who listen to them. Time moved on. Pretty soon he would have to be married to one or the other of these two women—or both, perhaps, if he *could* so manage it. What I have related is bad enough, is it not, dear reader? But it is not all. His first betrothed was soon to become a mother; and *this*, too, had been going on while that miserable wretch was standing in the pulpit denouncing sin in every form. Something had to be done.

This story illustrates in a remarkable way the manner in which Satan leads his dupes on and on until they become idiots under his tutelage. This preacher went into a drugstore where he was known, and asked them if they could give him some poison that would kill a litter of unborn puppies without harming the mother. The druggist did not know of any such compound. "Well, then," said the preacher, "give me something that will kill both. We can not have the dog around with a litter of puppies."

He procured the desired poison and went to the widow's daughter—the beautiful young girl whom he, a minister of the gospel, had sworn to love and protect—and handed that girl the poison, assuring her it would get her out of her unpleasant predicament before the eyes of the world. Of course, she died in a few minutes, and then he tried to make believe she had committed suicide. As I dictate these words I feel like saying, may God be praised that this wretch in human form has been indicted for murder in the first degree, and will be punished if his millionaire prospective father-in-law does not succeed by the aid of his money in getting him off scot free.

The above is an extreme case, dear friends. It is the worst record of a minister of the gospel that I ever knew or heard of; and I hope and pray that it may be a warning to the ministry in general throughout our land and throughout the whole wide world. I expect—that is, I am led to believe from past experience—that some of my friends will advise me to stop right here. Short sermons are the fashion now, you know. I *myself* have several times remarked that certain sermons would have had a better effect if the preacher had stopped when he was half or two-thirds through. Notwithstanding, I want to make some general remarks further.

It has come to my knowledge recently that some preachers are not careful to pay their debts. They go to other towns, leaving bills unpaid; and, worse still, some of them are guilty of opening new accounts when they know or should know there is little probability that such debts will ever

be paid, unless, indeed, some kind friend, for the honor of the church, steps up and foots the bill.* I am not hitting at any particular denomination, mind you. These sad cases occur more or less in all denominations. It seems to me, however, that the young ministers are more likely to be guilty. The young preacher I have often mentioned, A. T. Reed, who first led me to the Lord Jesus Christ, was exceedingly careful about paying every copper everywhere. Not only that, when some merchant or grocer offered to put down the price because he was a "preacher" he would say, "No, no, my friends. Preachers get enough nowadays so they can pay the same price that other people do." Another good friend of my early days, Rev. C. J. Ryder, was once sorely provoked. I watched to see him show anger; and I afterward asked him how it was that ministers never "got mad." He replied something like this:

"Why, brother Root, we are made of the same kind of stuff that other men are. We feel the same temptation to become impatient and to speak hastily; but we *dare not* give way. We *can* not give way to such human impulses. The sacredness of our calling does not permit it. How can we lead souls 'out of darkness into the light' when we ourselves are stumbling in darkness?"

The above are not his exact words, but they implied what I have tried to say. A certain evangelist who preached some excellent sermons, before he got through became very much interested in regard to the pay he was "going to get" for said sermons. The agreement was, he was to be satisfied with a voluntary offering. He, however, demanded considerably more, and I was called on to adjust matters. When I brought him face to face with an untruth, or, rather, several of them, I denounced him in terms by no means mild; and I furthermore insisted that he should not be allowed to go on getting money in the way he had been doing among our people. I was persuaded, however, to let the matter drop, because I might do more harm than good by holding him up in the limelight (pulling up the "tares" and injuring the wheat in so doing). Perhaps I may add that not a single conversion resulted from his eloquent sermons;

* In speaking with our attorney about the unbusinesslike way of some ministers he smilingly asked me if I ever knew a minister who was a real good business man. I replied, "Oh, yes! I know a great many of them. Why, the Rev. Mr. ———, whom we all know so well, is surely a splendid business man, is he not?"

He replied, "Mr. Root, if you mean the minister's wife I heartily agree with you; for I think she was the one who kept his finances in such excellent shape."

And that reminds me that I wish to take the opportunity here to express my hearty admiration for the ministers' wives I have known. They are examples of the most noble and self-sacrificing and devoted women that I have known in the whole wide world. May God be praised for the good women who have labored, perhaps often out of sight, for the upbuilding of God's kingdom, and for helping a good husband in his efforts to raise up and enlighten a benighted world.

and when he asked for somebody to arise at the close of his meetings, not a person arose. He seemed to wonder why, and many people wondered that the Holy Spirit did not seem to be present or follow after such eloquent preaching. "By their fruits ye shall know them."

Now just a word in regard to our second text. If I understand it, this applied more to the laymen than to the pastors. James and John, and every follower of the Lord Jesus Christ, enjoin us to visit the fatherless and the widows in their affliction, and to keep ourselves unspotted from the world. If this is true of laymen, how much more should it be true of him who stands behind the sacred desk? This poor unfortunate preacher of whom I have spoken in the fore part of this talk *did* visit the *fatherless* and the *widow*; but, oh dear me! what an awful contrast compared with what James had in mind! Instead of keeping in the straight and narrow path, and "unspotted from the world," think of what he *did* do. Think of the remorse that must be just now gnawing at his vitals while he is shut up in prison, even if he did *not* actually poison the girl. May God grant that this sad ending may be a caution, not only to the ministry but to all who profess to be followers of the Lamb of God that taketh away the sin of the world.

THE TRUTH ABOUT REDBUGS.

Mr. Root.—Redbugs are not by any means confined to Florida nor to Paduch for that matter. In Texas there are thousands—yea, billions and trillions of them everywhere in the spring, summer, and early fall. In Spanish they are called *arradores*, the literal translation of which is "plowers," or those who plow. It seems remarkable to me that the entomologists have not been able to tell us that redbugs do most certainly bury themselves under the skin. The tiny insect travels over one's body until it finds an ideal hunting-place, and then promptly burrows its head in an open pore and draws a little blood, which causes a slight swelling, and the little insect is almost hidden. When it needs another meal it partakes of a little more blood, and then there is, of course, a little more swelling, and the insect is covered up entirely, and after each meal it is further and further under the skin, and so it goes on for at least two weeks. By that time the insect is dead; but there remains a great sore there, and in that sore, no doubt, there are numerous offspring, and the itching is intense. The more one scratches, from the time of the first meal until all the young disappear, the more itching there will be, and, consequently, the larger the sore becomes. With the scratching, the blood becomes heated and the flesh irritated—two ideal factors for Mrs. Redbug; and every part of the body where others have found a dining-room seems to be in need of agitation.

If you so choose, you can have them burrow where you please. Just irritate a certain place—on your arm, for instance; and if there is a stray redbug that has not already located itself, and is anywhere close to the irritated place, it will very promptly take up its abode there.

I infer from what you have written at various times about redbugs, that you have never seen one, so I will tell you just how you can get to see one if you so desire. When you itch in a spot that never itched before, don't scratch or touch it in the least, but go to a strong light and examine the spot. There you will find a minute white-looking bump, or whelp, and in the center a tiny scarlet dot. The dot is the redbug. Take a sharp-pointed No. 8 needle and pick it out and lay it in the palm of your hand and you can see it crawl about in a short time if you have not killed it in the opera-

tion. After you have examined it you can dispose of it any way you wish; but by popping it between the thumb nails, and smashing it flat, you can see its tiny legs, finer than a fiber of silk.

The insect is white, and undiscernible to the naked eye until it has partaken of its first meal on one's blood, so if at first you do not see it, when going to the light, wait a few minutes and bear the frightful itching awhile. If you scratch you only drive the insect further in, and enlarge the bump and inflame the flesh to such an extent that the scarlet dot will not be seen; whereas if you give it time it will gorge itself, and the blood may be easily seen through its thin body.

The way I get rid of them is to dab a little oil of any kind—lard, sewing-machine oil, axle grease, vaseline, or any thing greasy—on the itching spot, and in a little while the insect will surely "crawl out ob dar." They can not live where grease is; for one thing, they drown; and for another, they can not burrow over a greasy spot, because, to burrow, they must needs push and shove with their feet, and the oil is to them what ice it is to us.

It is evident that the newly arrived ones are the easier killed, because they are on the surface; while those that have been scratched in are deeper in and harder to get.

Eola, Texas, March 25. MADELEINE E. PRUITT.

Many thanks, my good friend, for your full and complete description of this little pest. During the past winter we scarcely saw or felt a redbug until the severe drouth came on, say along in January and February. As the drouth became more prolonged, the redbugs seemed to get in more of their work. After our good rains, along about the first of April, they rather let up; but all together I consider the redbugs the most objectionable feature of Southern Florida, especially to newcomers. By the way, in the life history of the insect our good friend does not mention or explain why people who live there the year round gradually become immune to the attacks of this insect. Bare-footed boys go all over through the woods and everywhere else with their trousers rolled up, and yet they are not touched by the redbugs at all, when we tenderfeet of the North are scratching and groaning. I had not thought of the sewing-machine oil-can as a handy and ready "weapon;" but I do know that grease or oil of any sort is death to most if not all of these insect pests. From what experience I have had, I am sure the above letter is substantially correct in every particular.

A HUGE "GOAK."

We copy the following from the *People's Pulpit*. Read it, and laugh as I did. And, by the way, it is quite a gem in the way of combining truth with sarcasm:

WHY THE SALOON SHOULD LIVE?

The *Gideon* answers:

- (?) 1. Because of its moral uplift in the community.
- (?) 2. Because of its purifying effect on politics. (?)
3. Because it is such a law-abiding institution. (?)
4. Because its patrons get so much value for their money. (?)
5. Because drinking helps one to get a good job and keep it. (?)
6. Because it makes business—for the courts and the county agent. (?)
7. Because drunkards—the saloon's finished product—make such good husbands and loving fathers. (?)
8. Because saloons always make cities safer and better places for boys and girls to grow up in. (?)
9. Because all right-minded fathers and mothers pray that their boys may become saloon-keepers. (?)

Health Notes

BY A. I. ROOT.

ROBBING SICK PEOPLE.

There has been quite a little protest about the position our good friend T. B. Terry takes in his book in regard to surgery and surgical operations. I think he says in one place that most of the people in his neighborhood who have gone to have operations performed have come back in a box. He has also something to say in regard to the exorbitant charges for said operations, and that the charge seems to be about the same whether the patient lives or dies. The *Ohio Farmer* for Oct. 28 has taken up the same subject. See the following:

SURGICAL EXTORTION.

The sumptuary basis of surgical operations is generally regarded as unjust—an imposition upon afflicted humanity. There is no legal restriction or regulation in regard to the charges for surgical operations. It is entirely controlled by the experienced and skillful surgeons. We are told that they co-operate, the country over, in regard to charges, which are quite uniform in the hospitals and sanitariums. We have been informed of one noted surgeon who secured one hundred dollars a day, average, the year through. The advantage secured by the skillful surgeons is not so bad as the misfortune to average patients. It may be true that the charges are variable in relation to financial ability; but so far as our information extends, the average ability of patients to pay is much below the charges made. Recently, a farmer's wife underwent an operation that cost her four hundred dollars, and money had to be borrowed to meet the expense. Yet the operation did no good, except temporarily. She died within six months. A physician recently stated to us that serious surgical operations destroy more than they save. We know of one instance in which a leg was amputated at a cost of \$100 for the operation and \$100 for subsequent attendance because of suppuration which resulted from ignorance or neglect of the surgeon. A physician declared that the leg should have been amputated at a cost not exceeding \$25, and all pus trouble have been easily prevented. We could refer to many other cases that reveal the fact that operation charges are too excessive. We believe that State laws should regulate both medical and surgical charges. A large proportion of our surgeons and physicians are educated at State expense in State educational institutions. Why should they not be subject to State laws when applying the education and skill acquired at State expense? Legislative investigation would furnish suitable information in regard to the proper limit of charges for medical attendance and surgical operations. The upper limit is all that is needed to prevent afflicted people from extortion. The treatment of human ailments has always been the vehicle for more or less extortion. But the worst feature is the lack of genuine responsibility and healthy interest on the part of some surgeons. A great many operations are "successful," but the patient will die as a result.

Now, this last, coming from the *Ohio Farmer*, prompts me to tell a little of my own experience. Something over a year ago I went with a friend to the office of a celebrated surgeon. While there I asked him in regard to the trouble I then had with one of my nostrils. While it let the air out quite freely, when I came to draw my breath in through said nostril it seemed to close up, something like a valve. Now, I am a fresh-air crank, as you may recall, and I want to get the air in and out of my lungs through my nostrils without any hindrance or impediment as far as possible.

He made an examination, and said the trouble was very plain—in fact, almost at the exterior of the opening of the nostril was a growth of bony cartilage. I knew of this, but did not think it caused the trouble. He was not only positive the trouble was right there, but he said something like this: "Mr. Root, I am happy to tell you I can remove that growth without the loss of a drop of blood, and without causing you any pain worth mentioning."

That seemed such a wonderful feat in science and surgery that I decided to have it done. He first made a very thorough application of cocaine, then attended to another patient for about fifteen minutes. At the end of that time, with a redhot electric wire he did burn out the growth, and it did not cause any pain nor inconvenience and no flow of blood. He told me beforehand that I must not be frightened if I saw quite a little smoke, and smelled the burning of the frying meat and bone. When the operation was finished I took out some money to pay him. But he refused it, and said I would have to come in again in about ten days so he could see how it was healing up. Once more I offered to pay, but he said I should come in still later. Now, it did heal, and with remarkable quickness; but the valve operation was just the same. What he did, did not hit the spot where the trouble was at all. I declined to go back the third time, but insisted on knowing what my bill was. Imagine my surprise and disgust to see a bill for \$63.00 for perhaps five minutes' work. I do not think I have ever before made objection to a doctor's bill. But I wrote him courteously, asking him if there was not some mistake for such a bill for so brief a treatment that really did no good at all so far as I could discover. He replied as follows:

Mr. A. I. Root:—I am very sorry that you are still having difficulty in breathing through one nostril. I am also sorry that you will not have time to come and see me before you go south. What I want you to do when you return is to come and see me so I may be able to make another thorough examination.

As to the charges, I regret that you think they are a little excessive. I made you my regular charge for the work done; but my aim has always been to have a patient feel that he has received the full value for his money; and when you return I shall be pleased to take care of you and give you more breathing space if it be necessary, and will not charge you any thing further.

I have never been there since then. I concluded I had had enough of that kind of surgery. Perhaps in justice I should say that I also consulted him about my hearing. He made an examination by different tests as to my deafness, and took down notes in regard to the same; but he never gave me any treatment whatever for my ears. He never gave me any instructions in regard to what to do for my hearing. I took it, although he did not exactly say so, that my trouble was the natural conse-

quence of old age. Had he said \$3.00 for three minutes' work I should have thought it quite reasonable; and even if he had added \$10.00 to it and made the bill \$13.00 I would have paid it without protest; but I can not, for the life of me, imagine what the other \$50.00 was for. Can you?

It has been suggested to me that this surgeon (and I see the statement in the papers), who has a prominent connection with one of the great hospitals, put on the \$50 extra because he thought the A. I. Root Co. was good for it—that "the traffic would bear it." But how about the case mentioned by the *Ohio Farmer*? A poor farmer, as I understand it, had to borrow \$400; and the result, as I am informed, was that this poor man's wife was hurried to her grave earlier, perhaps, than if she had done nothing. If I were in that kind of business, and the woman died so soon afterward, I think I would give back at least a part of the \$400 to help bury my mistakes, and thus go to bed at night with a cleaner conscience.

VEGETABLE AND MEAT DIET CONTRASTED: AN IMPORTANT TEST.

Prof. Dudley A. Sargent, of Harvard University, assisted by the Cambridge institution, and partly by *Physical Culture* magazine, have been making a test of a vegetable diet contrasted with a meat diet, by sending two brothers, Jesse and Warren Buffum, across the continent on foot. The *Denver Post* of Nov. 3 gives an excellent picture of the brothers as they passed through Denver. The vegetarian is away ahead, not only in physical appearance, but in endurance—the brothers agree to it. In fact, you can see the difference by taking a look at the two from a distance.

I presume this can hardly be considered as conclusive, because something besides the diet may have influenced one or both, although they seemed alike in physical health at the start. The vegetarian is not so from choice. He is looking forward to a "turkey dinner" when his long tramp is over. He is not walking on an exclusively vegetarian diet. He uses some bread and vegetables and a few eggs, which he had at that time partaken of but three times. When asked if they had had any kind of liquor to drink they said that all intoxicants were forbidden as one of the conditions; but they added that they would not have used any, even if permitted to do so, as they were total abstainers.

I confess I am rather glad of the results so far. It agrees with what Terry has been teaching so vehemently, and it relieves us also from the revolting necessity of taking animal life to sustain human life. I presume the *Physical Culture* magazine will give us the details of the long trip on foot. These boys also sleep outdoors wherever they may be, rain or shine. They have what they call a water-proof "sleeping-bag," and declare that bedrooms, outdoor porches, etc., are not to be compared with being

right out under the sky. The patter of the rain on their water-proof covering apparently lulls them to sleep; and a snowstorm is of no interest at all. It just enables them to sleep all the better. I presume they have, of course, plenty of warm blankets. Their bedding, sleeping-bags, etc., are carried in a cart which they push along before them.

PHYSICAL CULTURE FROM A COMMON-SENSE STANDPOINT.

Several years ago, while growing potatoes up near our "cabin in the woods," we were short of help; and as we wanted the potatoes put under cover as fast as dug, I decided to manage the thing. After I got my potatoes harvested, and had them loaded on the steamer, and got back home to Medina, I found the young folks all greatly engaged in "physical culture" under the instruction of a hired professor. I tried to explain to them that the physical culture that I had just been having not only cost me nothing, but I earned very good wages while taking it. My physical culture consisted in lifting a box of potatoes high enough to pour them into a sack, and picking up such boxes all day long. It was one of my happy surprises to find my strength was increasing day by day; and after the potatoes were all put up I had gained ten or fifteen pounds in weight. There are two pictures in the new potato-book illustrating my apparatus for harvesting and sacking potatoes; and if you should catch the fever for my kind of physical culture, and decide to grow a few potatoes yourself about the time they are 75 cts. a peck next year, I shall be glad to know it. It is cheaper, surer, and *infinitely* better than any medicine you can get in the drugstore.

RABIES OR HYDROPHOBIA; A NEW BULLETIN FROM THE DEPARTMENT OF AGRICULTURE.

I am very glad to notice that our government has seen fit to issue a bulletin (May 12, 1911), giving us the exact truth of the matter in regard to mad dogs. Let me quote a little from the introductory chapter:

The disease known as rabies in animals and hydrophobia in man is one of the most terrible maladies known to medical science. Although some skepticism as to this disease persists and is industriously fostered by the publication of erroneous views, the reality and the infectious nature of the malady have been abundantly established and confirmed by the work of numerous competent scientific investigators, and there is no more reason for doubting the existence of rabies than for questioning the actuality of other specific and well-recognized contagious diseases.

Rabies is prevalent among dogs in various parts of the United States, and the presence of infected animals is a constant menace to human life. Under this condition the relative infrequency of deaths among people who have been bitten by rabid dogs is due to the protection afforded by the Pasteur treatment.

I am glad to get this, because there are a few prominent professional men who have claimed that this whole matter was a freak of the imagination, forgetting (it would seem) that the children and domestic ani-

mals can not well be called victims of the imagination. Careful statistics have been collected regarding the disease throughout the United States. While it is true there are some cases where people *imagined* they were victims of rabies, it is pretty certain that such cases are not very common. In methods for prevention and eradication, they lay particular stress on the necessity of getting rid of dogs that have no owners, or dogs that are of no use to anybody. Let me quote again:

The only measures necessary to obtain the desired result are (1) a tax or license for all dogs, with a fee of \$2 for males and \$5 for females, and the destruction of homeless or vagrant dogs; (2) restraint of all dogs which appear in public places, either by the use of a leash or an efficient muzzle.

There is no doubt that neglect has allowed the accumulation of ownerless dogs in this country to

an extent that renders our large cities frequently liable to incursions of rabid animals. Just to mention muzzling, however, is sufficient to bring tirades of abuse upon the head of the sanitarian, and dog sentimentalists are immediately up in arms, using time, influence, and money to prevent such an ordinance. In spite of the obloquy with which it is received by a certain mistaken class of the community, the results of muzzling amply justify its recommendation, and its rigid enforcement without any additional requirement will exterminate rabies in a district in a shorter time than any other known method.

I want to add to the above, that, besides preventing rabies, getting rid of dogs that are of no value to anybody would be a boon in other ways to a great part of the people everywhere, especially in towns and cities.

The above bulletin will be sent free to anybody on application to the Department of Agriculture, Washington, D. C.

Poultry Department

CAN A MAN WITH A "LARGE FAMILY" KEEP CHICKENS, ETC.?

I understand the one great desire of our Pennsylvania friend, p. 639, Oct. 15, is for just enough money to start him in the poultry business. Given the full amount he desired, without experience, he would last just as long as his money held out. Six years ago I started on a rented place, with poultry as a side line. Away from home from 6 A.M. to 6 P.M., working at my trade as engineer, with no help whatever except about fifteen minutes a day by Mrs. T., who emptied the pails of feed to the hens, to-day I own land, and have built a house and buildings for 1000 head of stock. I never had over \$25.00 in the business that the birds did not earn, and probably would have done as well with only \$5.00; so you see it does not take much capital to get into the poultry business; but it takes work, thought, experience, and good judgment to *stay* in.

Living within thirty miles of New York, right near the Corning poultry-farm, I see the land agents work the poultry-farm game for all it is worth. I venture to say that not one in a hundred who, without experience, buys these farms and jumps into poultry makes a success of it. If W. S. C. will start with a few hens and give them the thought and care necessary to success the money will come about as fast as he can use it intelligently; and with those ten children as helpers he should, in a few years, be making a barrel of money.

Somerville, N. J., Oct. 24. L. B. THATCHER.

CHICKENS, HOW MUCH DOES IT COST TO KEEP THEM?

Perhaps the following may be some help. They are recent figures from a place in Jersey; but be it clearly understood that they were made by a man with many years' experience in poultry, who gave the utmost labor and attention to his fowls.

There were 300 fowls, partly light and partly heavy breeds. Every thing had to be purchased, as the ground produced practically nothing for poultry use. During the six summer months each fowl was kept in food for 31 cents for the six months; and during the six winter months each fowl was kept in food for 45 cents for the six months. This gives a total of 76 cents per fowl per year. There was no hopper feeding; the birds were fed three times every day, the feed being carefully handled. In winter some birds had a free run.

With regard to potatoes for chickens, they do all right for a change, or to supplement the regular ration, but do not count for much as a regular diet. They are best for winter use, and, if fed in quantity, should be used along with wheat or oats, not with corn.

FREDERICH MARTIN.

PULLETS: GETTING MORE OF THEM, ETC.

In crossing Battered Plymouth Rock hens with Brown Leghorn males the early chicks were more cockerels than pullets. It has always been my experience, that, among the earliest broods, I have so few pullets. It seems to me, though, that the late-hatched pullets commence laying younger than

the early ones. In fall-hatched broods there seem to be more pullets than males. My objection to raising them in the fall is, they do not seem to grow so large as the early ones; but perhaps they would if they could be entirely removed from the larger chickens and given as good care.

My chufas are coming up, planted ten days ago. I soaked the seed about 24 hours.

Doniphan, Mo., June 11. L. D. S. BEAUCHAMP.

DUCKS MATING IN SHALLOW WATER.

Water for ducks, page 578, Sept. 15, seems to me to be most interesting and valuable. This is a great discovery. Thousands of years ducks have been raised without knowing this secret. In 1877 and '78 I worked for a poultryman who kept, besides many varieties of chickens, three kinds of ducks, but I never saw them mate on land, and only in shallow water.

Two years ago we bought Indian Runner duck eggs for hatching. We put some of them under hens, and some into the incubator, but not half of them came to life. The woman of whom we bought the eggs lived on a dry little farm with hardly enough water to drink for man and beast. The mating of the ducks in water is not the whole secret of success. The eggs of ducks, at least, must be put near wet ground for hatching. Nature made it so. The wild duck is doing her hatching in the swamp; hence the great number of ducklings in the nests of the wild duck.

El Monte, Cal., Sept. 30.

A. RINGELE.

INDIAN RUNNER DUCKS, ETC.

I notice something you say about ducks needing water, that their eggs may be fertile. I haven't had much experience myself, but I know a party who had two ducks and a drake to start with this spring, and he has a pen of 53 nice Indian Runners now on hand. He furnished them just a slosh place for watering.

I notice my Indian Runner ducks do their mating around their slosh place. I am of the opinion that, if mating takes place with two normal fowls, the result is the same anywhere or place.

We had two settings of Indian Runner eggs this spring. I sent one setting to my farm, and kept one setting in town. Those at the farm did well. Those in town we kept *too* well, and only one survived. We raised it a pet. It was the largest and strongest, and had big clumsy yellow feet and bill. We were sure it was a drake, and named it Mike; but it turned out a duck. But we still called her Mike. I brought Mike a fine drake for a partner, and named him Fawney.

Mike and Fawney are fine specimen of birds. They are naturally wild, but we can pick them up almost any time. I wanted them tame to use for decoys; but our legislature passed a law prohibiting live decoys. They notice birds in the air quicker. They see hawks further than any other fowl I know of.

Galena, Kan., Oct. 20.

J. P. BRUMFIELD.

