The progressive bee keeper. Vol. 4, No. 3 March 1, 1894

Higginsville, Mo.: Leahy Manufacturing Company, March 1, 1894

MARCH 1, 1894.

Entered at the postoffice, Higginsville, Mo., as second class matter.

Advertising Rates.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion; 12 lines of Nonpareil space make 1 inch, Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent: 9 times, 30 per cent; 12 times, 40 per cent,

On 30 lines and upwards, 3 times, 20 per cent: 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

We reserve the right to refuse all advertisements that we consider of a questionable character.

SPECIAL NOTICE.

THE SIMPLEX TYPEWRITER.

We have for a long time been trying to obtain some useful article—an article that every man, woman and child could make use of with pleasure and profit to themselves; and yet one that we could offer for a club of ten subscribers for the PROGRESSIVE BEE KEEPER. We believe we have found such an article in the Simplex Typewriter This Typewriter seems to be a whirlwind within itself. To see it is but to fall in love with it; and there is nothing that we know of that a parent could purchase that would afford their children more delight and benefit than one of these little wonders. The Simplex Typewriter Company informs us that they have sold 300,000 of these Typewriters in the first ten months of their manufacture, and we do not wonder at this when we consider the price and the excellence of the machine. Although our first shipment was very large, it is about exhausted, and we are compelled to make an order of another hundred.

To show our faith in this machine, we will say that, should you purchase one of us, and do not like it, you may return it to us, postpaid, and we will refund your money. By buying in very large quantities, we are enabled to offer this Typewriter at $2.50; or we will club it with the PROGRESSIVE BEE KEEPER for $2.75; or for ten new subscriptions accompanied by $5, we will send the Typewriter free. If you are not able to get this number of subscripers, then send us five subscriptions and $1.25 extra, and we will send you a Simplex Typewriter. In all cases when it is clubbed with the PROGRESSIVE BEE KEEPER, the Typewriter will be sent postpaid, free, unless you should order other goods from us at the same time, in which case we will send it by freight or express. See description of typewriter elsewhere in these columns.

SECTIONS AT COST.

We have an over stock of sections of the following size: $4\frac{1}{4}$x$4\frac{1}{4}$x$1\frac{5}{16}$, and $4\frac{1}{4}$x-$4\frac{1}{4}$x2-inch, and to reduce the stock we will sell these sizes at $2.25 per 1000 for No. 1 white, and $2.00 per 1000 for No. 1 Cream.

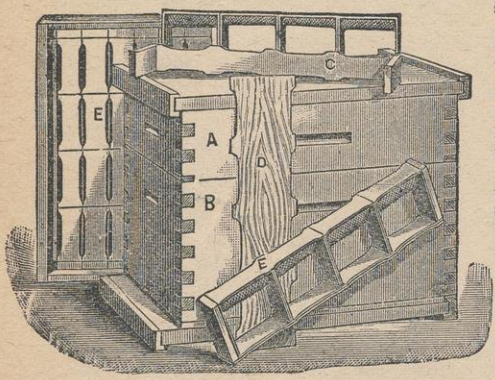
3000 CLOSE END FRAMES.

We have 3000 close end frames, size $18\frac{1}{8}$x$9\frac{1}{8}$ outside measure, just the right size for the dovetailed hive. We will sell them at $1.20 per 100, as long as they last.

A TEN-INCH FOUNDATION MILL FOR SALE CHEAP.

For the first time, we have a second-hand, ten-inch foundation mill, for sale cheap. This is one of the celebrated Vandevert mills—no better mill made. The price of this mill new is $20. but as we have two other brood mills, we will offer this one at the low price of $12 cash; or we will exchange it for fifty pounds of good beeswax delivered at our railroad station. To parties who mean business, we would prefer to send a full sheet of foundation made on this mill, or in other words, we prefer to let its work speak for itself.

500 BEE HIVES AT COST.



We have about 500 bee hives (as shown in the above cut) packed ready for shipment. These were left over from last year. You will notice that these are flat cover bee hives and while all the other maufacturers sell them, we are unable to make them go when we offer hives with the Higginsville cover at the same price. Therefore, we have concluded to close these out at the following prices:

Dovetailed hives,	No. 1,	each	$ .80
" "	No. 1E,	"	62
" "	No. 2,	"	1 05
" "	No. 2E,	"	80
" "	No. 5,	"	80

Ten frame hives, 10 cts. per hive extra.

For description of these hives, see our catalogue, which will be furnished on application if you do not already have one.

HIVE COVERS.

As some may not be familiar with the term "Higginsville hive cover," we will here explain that it is a hive cover as shown in the accompanying cut, of which we are the sole manufacturers. While it will tier up like a regular flat cover and as conveniently as a flat cover, it sheds water like a sloping cover, which it is, but the cleats on the ends are raised high enough above the eaves so that they are convenient to stack up one upon the other, which overcomes the objectionable feature of the former gable covers. Again the end cleats of these covers are so made that they are nailed to the cover proper from two ways, making a double preventative of the boards getting loose from the end cleats and warping: See what prominent bee keepers say of the Higginsville hive cover:

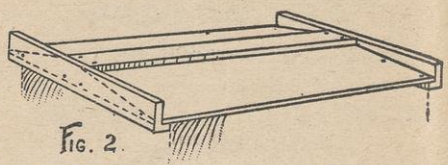


FIG. 2.

That's a good cover of yours. I like better to have a cover perfectly flat on the under side, with no downward projection at the end, but your plan has the advantage of strength. I suspect you've struck a good thing in making the boards thinner at the outer edge than in the middle. It makes a better rain shedder and I don't believe it will be so likely to warp. Success to you. DR. C. C. MILLER.

My customers all want the "Higginsville cover." E. T FLANAGAN.

The "Higginsville Hive Cover" is a daisy. SOMNAMBULIST.

The "Higginsville Hive Cover" is way ahead of the old flat cover. MILLER BROS.

Your hive cover has true novelty. A. I. ROOT.

I am glad to fine a good hive cover at last, and that is the "Higginsville Hive Cover." It is far ahead of the old cover used on the dovetailed hive.—MARION MILLER.—(Page 79 PROGRESSIVE BEE KEEPER.

CLUBBING LIST.

We will send the Progressive Bee Keeper with

The Review	($1.00)	$1 30
Gleanings	1 00	1 30
American Bee Journal	1 00	1 30
Canadian Bee Journal	50	80
Apiculturist	.75	1 05
American Bee Keeper	.50	80
Success in Bee Culture	.50	80

Colman's Rural World	1.00	1.30
Journal of Agriculture	1.00	1.30
Kansas Farmer	1.00	1.30

The Progressive Bee Keeper.

A Journal Devoted to Bees, Honey and Kindred Industries

FIFTY CENTS A YEAR.

Published Monthly by Leahy Manufacturing Company

VOL. 4. HIGGINSVILLE, MO., MARCH 1, 1894. No. 3

MARCH.

BY WILL WARD MITCHELL.

UNDER the snow the flowers lie,
Safe from the gaze of the passer-by,
On earth's warm breast they're sleeping;
Soon they will leave their rest below,
When the winds of March have ceased to blow,
Nod and beck in the sunshine's glow,
While the lilies of spring are peeping.

In the cozy hives are the little bees,
Quiet and snug on days like these,
When the winter storms are wailing;
But when April, the spring-born, arrives,
They will emerge from the homelike hives,
Garner and labor while bee-dom thrives,
And flowers their scents are exhaling.

From the sunny south the birds will come,
Back to their well-loved northern home,
The air will resound with their singing;
Building their nests in the season of love,
'Neath sheltering eaves; in the field or grove,
Bluebird, swallow, martin and dove,
With the earth below and the sky above,
As thro' the soft air they are winging.

Winter will yield to the springtime's glow.
Fresh grasses replace the feathery snow,
Joy treads in the near wake of sadness;
So with the song of the bird and the bee,
While the leaves bud on each plant and tree;
Here is a lesson for you and me, —
The present is full of gladness.

Higginsville, Mo., February 22, 1894.

NOTES FROM THE STAR APIARY.

BY S. E. MILLER.

FEBRUARY 20th, 7 p. m.; thermometer at seventeen degrees and prospects of it going down near zero by morning! How is that, after the pleasant weather the forepart of January? How about your bees? We would not object if each one of our colonies had about ten pounds more honey than they have, at least, a few of them in particular.

Are bees necessary in the fertilization of fruit bloom? is the main topic in the latest Gleanings. Some few of the writers who claim to be posted on the subject, have taken the negative side, but it looks as if they would soon be *snowed under.*

I notice that a recent number of a certain bee journal is given mainly to reports of various bee keepers' associations, but please, Mr. Editor, do not think that I am hinting at the PROGRESSIVE. What I wish to say is this: I do not know how interesting these reports are to others, but to me a greater part is very dry reading. If there is anything that is new and worthy of consideration brought out at a convention, editors should let the readers have it, but it is not very interesting to learn that Mr. A prefers the frames hanging crosswise of the hive, while Mr. B prefers them hanging the other way; and that C recommends putting the empty super under the one nearly finished, while D says it should be put on top; that Mr. Smart Aleck uses shade boards, while Mr. Know-it-all prefers trees or vines for shade, etc.; for in all probability the individual who reads it will fix things according to his own notion and according to circumstances A bee journal (or any other journal) should be something like a fanning mill, and its editor a good operator of the same, capable of sifting out the chaff and tares, and giving its readers the plump, round grains.

Have you made that hot bed yet? I havn't. A few loads of stable manure, some coarse straw or cornstalks, some rich soil, a frame made of rough board, and two hot bed sash, will make one

large enough to start your early cabbage, tomatoes, onions, etc., besides a small bed each of early lettuce and radishes. Try it.

Bluffton, Mo.

WAYSIDE FRAGMENTS.

BY SOMNAMBULIST.

WHOEVER had the job of naming foundation certainly understood their business, for is it not well named? Modern bee keepers consider it a necessity and a sure rock on which to build. By its use, the finest of combs for either the brood or surplus department are the most rapidly and satisfactorily obtained. He who extracts, counts surplus combs as capital The possession of an abundance of combs and supers renders one correspondingly less dependent on hired help, as how easily one can add a super and thereby give needed room without being compelled to extract; besides, it is by many claimed that the flavor of the honey is improved by being thoroughly ripened on the hive. And is it not a fact that some of the best and most careful bee keepers in the push of swarming and with a limited supply of combs, have occasionally found to their chagrin that they had some sour honey on their hands? For lack of capital (combs) they had been cornered. These rushing times occur at a season of the year, too, when good help is everywhere in demand, and, consequently, somewhat like the Irishman's flea, "When you've your finger on him, he's just gone." Even with a large stock of combs the great honey flows make us hustle in a manner not to be forgotten, so that I cannot help but dread them at times, when friends will laughingly say: "You're just too contrary for any use—while we dread the poor seasons, you dread the "fat" ones;" and the same people call an extra thick comb a "fat" one.

All right! Let him laugh who may, I am here to testify that it is no laughing matter to take care of the great flows and do two days' work in one for a period of perhaps three or four weeks. However, as we have had three successive poor seasons, I feel pretty well rested up, and am perfectly willing for a great flow in '94. It is barely possible I've rested so long I've forgotten some of the terrors attendant on great rushes, but one thing can be depended on, and that is if one is not on hand promptly to give room for the teeming millions to store their loads, they will stand on no ceremony, but forthwith seek other storehouses, and with swarms settling on trees, swarms in mid air, and still others issueing here, there, and everywhere, and perchance, an amused spectator looking on and volunteering advice—well! if a man has, or ever had, any profanity laid aside for emergencies, surely the occasion offers a grand opportunity for airing the whole stock, even if some of it be shelf-worn from long disuse. Now don't understand me to favor profanity. Far from it! Aside from its being immoral, I have always regarded it much in the same light as "Stinger" seems to consider my articles—wasted energies. By the way, I learn that at Armour's packing establishment in Kansas City the employes are fined ten cents for each oath, the accounts being closely kept and fines as closely collected by a young lady employed for that purpose.

I have not wandered too far to get back, have I? Aside from the assistance obtained from the use of foundation in securing surplus combs, every bee keeper is certainly cognizant of the fact that brood combs built on foundation are more perfect in several ways, that we can much more easily control the amount of drone comb; that they will be free from the numerous passage ways so often found in transferred and other combs, and which prove so vexatious whilst searching for the queen, beside being so much brood space lost. Their neat appearance almost always repays for the trouble of furnishing foundation.

A friend when questioned as to why he paid a fancy price for a certain lot of bees, replied:

"The hives were nicely painted, bees in good condition, and then, too, the combs were all built from foundation. You know they belonged to a lady."

"Oh, yes; perhaps the last sentence was the key to the whole transaction."

"If you mean the key to the whole apiary and everything appertaining thereto being in prime condition, you are probably correct, but, truly, the perfect combs decided my purchase."

So much for the use of foundation in the building of brood and surplus combs. Now as to its use in the sections. The man who fails to use it there might be likened unto the man

who "without a foundation built a house, and the ruin of that house was great," but not greater than the ruin that meets the eyes of the discomfited bee keeper who is so close or careless as to fail to aid his bees by furnishing guides in the shape of foundation in the sections. In the suppression of foul brood the use of foundation becomes almost a necessity. Who does not love to handle the beautiful foundation? Even the children delight in assisting in its manufacture. Dear reader, do not imagine I am in any way interested in the sale of foundation, for in that event you would lose your reputation as a diviner. I beg leave to wind this subject up as many do at the conventions: "I think I have said enough to start discussion," etc., etc., and by your permission will slightly review the American Bee Journal of February 15th, '94, which in my humble opinion is an extra good number. The question is asked: "As it is hard to find a black queen, can you give me any ways and means to find her quickest?" Answer by Dr. Miller:

"Strain the bees through a queen excluder; the straining process makes a sure thing of it."

In answer to another question, the nature of which can be easily seen by the answer, he says:

"Suppose A has an Italian queen, and B, C, and D have queens that you want to kill. Encourage A to swarm first, by giving it brood or by early stimulative feeding, although the brood may be best, and it doesn't matter if the brood is black. When A swarms, hive the swarm on the old stand, and put A in place of B, setting B on a new stand. The flying forces of B will join A, making it again strong, and in a week or so from the time the first swarm issued, it will send out a strong second swarm; hive this on the stand from which it issued, and set A on C s stand, setting C in a new place. In a day or two, another swarm will issue, when the process will be repeated, and A set on D's stand, and this may continue as long as swarms issue. Thus all swarms have queens from A."

Good plan that, but if kept up through all time would we not still have B, C D colonies with objectionable queens, unless annihilated by some other procedure?

While I am penning this question, a young lady sitting beside me asks, "How is it this book starts out with the heroine 17 years old, and after the lapse of several years she is but 18?"

But to return to the American Bee Journal. On page 207 we find:

"The gossip resembles the bee, in that she is always busy and carries a sting in her tale."

Granting the premises, "she is always busy, and she carries a sting in her tale," would it be logical to conclude that the "Stinger" was a gossip?

Hurrah for the clippers! In answer to the question, "Do you clip your queens' wings?" fourteen answered in favor of clipping, and twelve against. Bro. York, why didn't you let me know that vote was to be polled? "Sommy's" name wouldn't have disgraced the balance, would it? and that fourteen would have stood fifteen. The twelve were Dadant & Son, J. P. H. Brown, J. H. Larrabee, J. M. Hambaugh, Mrs. L. Harrison, G. L. Tinker, J. E. Pond, H. D. Cutting, Emerson T. Abbott, Mrs. Jennie Atchley, C. H. Dibbern, Mrs. J. N. Heater. Three out of the twelve use drone and queen traps, instead of clipping. The fourteen were A. J. Cook, M. Mahin, A. B. Mason, P. H. Elwood, Eugene Secor, G. M. Doolittle, R. L. Taylor, C. C. Miller, F. France, S. I. Freeborn, James A. Green, W. M. Barnum, James A. Stone, G. W. Demaree. Good enough men for me.

No, thank you, I don't wish to swap places with the Mr. Melbee whom Dr. Miller is now making famous by his pertinent questions. I think I should prefer retirement to having the Dr. after me in such red-hot style, yet if we can learn through Mr. Melbee how to sell our honey at advanced prices, the Dr. can consider himself beaten for once, and *then* we will all help the said Melbee to crow.

The development of the home market as the salvation of prices, is now being preached. It is claimed that "nearly all rush their honey to some great city market, thus, even in a year of poor crops, centralizing the surplus, overstocking their markets, and lowering prices." Doesn't the giant Glucose cut a considerable figure in lowering the prices of extracted honey?

Dr. Oren recommends fumigating the cellar with sulphur.

"It is well known that the sulphurous acid formed by burning sulphur is death to vegetation. Hence, all the spores of the mold plant lodged in the cellar floor are destroyed, and cannot vegetate. It is found that the ground absorbs this sulphurous acid and retains it for many days, thus destroying disease-generating germs which may prostrate the family with fever, diphtheria," etc.

This man has not told the half he knows. I wish he would speak up more often. I am sure the bee keeping public would be the gainer; and, Mr. Editor, could we not have R. McKnight's address to the Ontario bee keepers, as given in the Review, in full?

Naptown, Dreamland.

WORK AT MICHIGAN'S EXPERIMENTAL APIARY.

R. L. TAYLOR, APIARIST.

Bee Keepers' Review.

BEST FOUNDATION FOR USE IN SECTIONS

EVER since I first began to use it extensively, now fifteen years ago, comb foundation has been to me a matter of much interest and thought. I have often noticed that much interest is taken in the best methods of extracting the wax from old combs, and in machines that will make the thinnest foundation, but that little care has been exercised with regard to the best methods of manipulating wax to be used in making foundation, so as to secure the readiest acceptance and the most thorough manipulation on the part of the bees, and that to the interrogatory: Does the thinness of foundation bear any relation to the thinness of the septum of the comb made from it? I have heard hardly an inquiring answer; nevertheless I have all along felt a great interest on these points which experiments conducted in a small way had served greatly to increase, so it was but natural that when I found myself in a position where I could afford to do it somewhat extensively, I became interested in the formation of plans calculated to bring out, if possible, the truth on these and kindred points.

The plan adopted was to procure a conveniently large variety of foundations made for use in sections, by procuring from several makers samples of each kind made, and comparing them by putting them into cases alternately with no separators, and giving them as thus arranged to the bees to work out and fill. It was thought that results might be obtained in two ways: First, it seemed reasonable to suppose that those sorts that were most acceptable to the bees would be drawn out first and most rapidly, and consequently when capped would contain the most honey, and that the preference of the bees could easily be detected by weighing the finished sections; secondly, by measuring the thickness of the bases of the cells of the comb produced, it seemed clear that if any sort were to any considerable extent better adapted to its purpose than the others, that fact would be clearly revealed.

For the purposes of the latter case I have so far been unable to see that the plan pursued could have been improved, but in the former case there is some degree of disappointment from the fact that it gradually became evident that the plan pursued was defective so far as the purpose sought was concerned, in at least two particulars, viz.: In attempting to compare too many kinds at once in one and the same case, for it is evident if three sections containing foundation equally good were placed side by side, and the trio was flanked on either side by sections with inferior foundation, the two exterior ones of the trio would derive an advantage on the side of the inferior ones, which the central one containing equally good foundation would be deprived of, and then sections of the usual width, seven to the foot, were employed in the experiment, which it became evident in the progress of the experiment were too wide to yield to the full the natural effect of differences in the foundation, for I saw in several cases that the bees worked out some kinds of foundation sooner and more rapidly than others at first, but when these reached about the thickness required for brood, they were delayed to some extent, and more force was put on the kinds that lagged to bring them up, so that in this way the results sought, which would perhaps be abundantly revealed by the use of thinner sections, were to a large extent concealed.

The remedy which should be applied in further experiments of this character seems to me to be evident; each sort of foundation which it is deemed desirable to compare with others, should be compared with each of them separately, and the sections should be so thin that the usual thickness of comb desired by the bees would a little more than fill the section's proportionate amount of space.

I have been asked whether in publishing the results of these experiments I should give the names of the manufacturers of the different foundations used. The object of the experiments is to obtain for the use of bee keepers generally, as much new and valuable knowledge with regard to their tools and business, as possible, and it is evident that in the particular experiments of which I now write, the value of the results depends almost entirely upon a knowledge of the names of the makers of the several varieties of foundation used, and I believe I should be doing injustice to any maker of foundation to suppose that he desired his name withheld, for are we not bound to believe

that each one desires and is endeavoring to make foundation that shall yield the greatest possible profit to the user and that if he fails in any respect, he desires to know it that he may apply the remedy? So I think I cannot do otherwise than give all the knowledge I possess in the matter. Not that I think there is anything so far that can very injuriously affect any manufacturer, but I hope there is what may prove an entering wedge to make a way of escape from the domain of theory and an entrance to the domain of fact in this matter of foundation, and lead to an effort to make it to please the mandibles of the bee instead of the eye of the purchaser. There may be something to learn yet about the manipulation of wax, as well as about the peculiarities of foundation machines.

In the experiments now under consideration, eight varieties of foundation were employed, of which the sources and other distinguishing peculiarities are sufficiently indicated in the following table:

A Dadant's Thin, Sheets 12x4 in., 15 to ½ lb—10 ft. to the lb.
B Dadant's Extra Thin, Sheets 12x4 in., 18 to ½ lb—12 ft. to the lb.
C. Van Deusen's Flat-bottom, [procured of A. I. Root] Sheets 16½x3¾ in., 16 to ½ lb.,—13.75 ft. to the lb.
D. Root's Thin, Sheets 16½x3¾ in., 12 to ½ lb—10.31 ft. to the lb.
E. Root's Extra Thin, Sheets 16½x3¾ in., 14 to ½ lb.,—12.03 ft. to the lb.
F. Foundation made on Given Press, Sheets 15x3 13-16 in., 12¾ to 1-2 lb.—10.09 ft. to the lb
G. Foundation made on Given Press, Sheets 15x3 13-16 in., 12 to 1-2 lb.—9.37 ft. to the lb.
H. Foundation three years old, made on Given Press, about 9 ft. to the lb.

Each variety of the foundation was designated by a letter of the alphabet as indicated, and the letters were used for marking the sections to indicate the sort of foundation each contained, and also as labels to distinguish the septa of combs made from the foundation when they (the septa) were cut out and sent away for the measurements hereinafter explained.

The foundation was cut to the same size (3¾x3¾ inches) and after being fastened in sections were placed in Heddon cases alternately, as already stated, so that each kind appeared seven times in each pair of cases. In all, eight cases were thus prepared, but misfortune attended them in other ways than indicated in the foregoing; some were not well filled, two contained more bee bread than I ever found I think in any other two cases, and there was only one pair that was filled to my entire satisfaction so that the material that could be fairly used for comparison by weighing was comparatively meagre, and consisted of five of each sort from the two cases that were well filled, four of each from two other cases, and three of each from still another pair. The cases were selected with a view to their giving an opportunity of selecting well filled sections of each sort from the same relative positions in the cases and the sections compared were so selected. The following figures give the results in pounds and ounces:

	A	B	C	D	E	F	G	H
5 of each sort	4-13.5	4-11.5	4-13.5	5	4-15	4-15.5	4-14.5	4-15
4 of each sort	3-13.5	3-12.5	3-13.5	3-15	3-15	4	3-15.5	3-15.5
3 of each sort	2-14	2-14.5	2-14.5	2-15.5	2-15	3-00.5	2-15.5	2-15.5
Total	11.9	11-6.5	11-11 5	11-14 5	11-13	12	11-13 5	11-14

This indicates pretty clearly what I have been aiming at as well as the course with the modifications already suggested which I think should be pursued in making further investigations in this line. Of course it would be rash to claim any very definite result from the experiment so far but the totals here given will be found very interesting

matter for comparison with the weights and measurements given further on which were procured with the expectation of evolving something that would assist in the solution of the general problem under consideration.

I suppose it would not be denied by any one that so far as the amount of wax contained in comb honey is concerned we must take the amount of wax contained in natural comb when used as the receptacle of honey as the standard of perfection. How near does comb produced from foundation prepared for use in sections approach that standard? And do combs produced from all sorts of such foundation approach equally near to that standard? It was with the purpose of making a beginning if possible at answering these and similar questions that I undertook the experiment with section foundation. It first occurred to me that samples of honey made from different kinds of foundation and from natural comb might be submitted separately to several careful individuals experienced in the production of honey for comparative tests with the hope that the reports of such tests would give the light sought. With further thought that hope gradually grew dimmer, until the committee of the N. A. B. K. convention to whom the septa cut from comb made from the several foundations were submitted for comparison with a view to a report, gave the matter up in despair, when it went out altogether.

My next resource was mechanical instruments for fine work in measuring and weighing. I knew there were such instruments at our agricultural college and in speaking of the matter with Mr. E. R. Root he informed me that his house possessed a micrometer and generously put it at my service. To the septa of the foundations I added one from natural comb which I designated by the letter "I." I at once gave Mr. Root a set, and measurements of them were taken by C. C. Washburn of his establishment who is skilled in such work. These measurements appear further on.

To procure samples of comb for the purpose of the weighing test I took two sets of sections of the several varieties and extracted the honey as thoroughly as possible then after filling the cells with water I plunged them in a large vessel of water where they remained twenty-four hours when they were further washed and then thoroughly dried. To get pieces of exactly the same size I first shaved off the comb from both sides to bring all to an equal thickness, about one half inch. To accomplish this I began by cutting away the section box within a little less than a fourth of an inch of the septum making the opposite sides perfectly straight and parallel then using these sides as guides with a long straight sharp knife all portions of the comb jutting out were shaved off leaving a perfectly flat surface of comb. As guides for shaving off the other side two straight pieces of wood of even thickness—about half an inch—were nailed to a smooth, flat board and after cutting away the other edges of the section box sufficiently it was laid on the flat side of the comb between these and fixed firmly with wedges, when the superfluous comb was shaved away as before. After this process was completed a circular piece to be used for the purposes of the experiment was cut from each with a rim of tin a little more than two and a half inches in diameter, used after the manner of a cake cutter, thus leaving in each case the septum with a portion of the cells upon each side. The first set I thus prepared came short of perfection to such an extent as to be unsatisfactory, so I made use of the other set only. These were taken to the college, and after having them weighed I cut each sample in two, giving one part to Dr. Beal, of the col-

lege, for measurement, reserving the others, and afterwards sending them to Mr. E. R. Root, to secure another set of measurements from Mr. Washburn, so as to get them from two capable persons of the same comb as nearly as practicable. As it turned out, Mr. Washburn was ill when these reached him, and a substitute was found in Mr. Hubbell. As it will appear in the sum-

	A	B	C	D	E	F	G	H	I
Weight in Grams	1.93	2.2398	2.093	2.2349	1.9664	1.8432	1 8886	2.083	1.6321

If any one has a curiosity to turn the results into grains he can do so by multiplying by 15.432 the number of grains in a gram.

The measurments of the thickness of the bases of the cells now follow in their order in ten thousandths of an inch,

WASHBURN'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	95	86	85	76	86	96	73	66	57
	95	90	83	110	105	70	75	90	57
	125	85	93	96	92	75	75	82	57
Total.....	315	261	261	282	283	241	223	238	171
Average.....	105	87	87	94	94	80	74	79	57

DR. BEAL'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	70	110	65	120	70	60	60	80	50
	100	65	70	100	100	60	60	60	50
	80	100	70	80	90	80	60	60	50
Total.....	250	275	205	300	260	200	180	200	150
Average.....	83	92	68	100	87	67	60	67	50

MR. HUBBELL'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I
	95	80	62.5	75	70	62.5	50	65	50
		110	67.5				90	75	75
		90							
		95							
		70							
Total.....	.....	445	130	.....	.....	.....	140	140	125
Average.....	95	89	65	75	70	62.5	70	70	62.5

THE GENERAL AVERAGE.

	A	B	C	D	E	F	G	H	I
Washburn's Average.	105	87	87	94	94	80	74	79	57
Beal's Average.....	83	92	68	00	87	67	60	67	50
Hubbell s Average...	95	89	65	75	70	62.5	70	70	62.5
Total.....	283	268	220	269	251	209.5	204	216	169.5
Average.....	94	89	73.3	89.6	83.8	69.8	68	72	56.5

mary, he took a varying number of measurements of the samples—from once to five times—while in the other cases these measurements were taken in each instance.

The weighing was done by Mr. Frank S. Kedzie, adjutant professor of chemistry, with the result in grams as shown on the previous page.

All this work it seems to me has been very satisfactory, for while there has not been particular uniformity—a thing which could not be expected—there has been general uniformity.

I must close this article, already too long, by mentioning some of the apparently tenable inferences which may be drawn from these tests.

1st. No comb made from foundation quite equals in fineness the natural, though in some cases it approaches it very closely.

2nd. In foundations of the same make the thinner has but very slight advantage over the heavier in point of producing comb of lighter weight.

3rd. The foundation kept for a long time before using has but a slight disadvantage if any as compared with that freshly made. The slightly greater thickness of the septum of comb made from "H," as that compared with that made from "G," may well be accounted for by the fact that H was heavier than G.

4th. Granting that different methods ordinarily in use of manipulating wax do not make a difference in the character of foundation made from such wax, that foundation made on the Given press has a pretty decided advantage over that made on the roller machines.

If these investigations lead manufacturers of foundation to strive to learn the best methods of manufacturing wax and to find out what peculiarites characterize the best foundation machines they will not have been made in vain.

Lapeer, Mich.

FULL SHEETS VERSUS STARTERS SOME REASONS WHY THE GIVEN COMB FOUNDATION WAS CROWDED OUT OF THE MARKET.

NONE BUT THE EXPERIENCED AND SKILFUL SHOULD MANUFACTURE FOUNDATION FOR SALE.

E, T. FLANAGAN.

I WAS the first, or among the very first, to procure a Given press and dies—in fact, I ordered one before the first one was made, when Mr. Given was experimenting, in order to obtain sufficient power to make the necessary impressions on the sheet of wax. I have owned and used five of these presses, and claim to have some experience in making foundation on them. One of the first troubles was getting a suitable lubricator. A strong extract from slippery elm bark was recommended, but it proved a failure; then salt water, starch, and strong soapsuds, were used with more or less success; but it was only after Friend Heddon recommended a weak solution of concentrated lye that we had the problem solved. The advantage of using concentrated lye was that one application would suffice for many impressions, thus doing away with the objection urged against the press by the Messrs. Dadant and others, that too much moisture was left on the sheets after pressure, which was a drawback, if other lubricants were used. The small amount of lubricant left on each sheet was no detriment, so far as the bees were concerned, as they would accept and draw out all of it, no matter what lubricant was used. Some claimed indeed, that the salt solution was a benefit, as it was a substance used by the bees.

One of the advantages of the Given press was the ease with which it could be operated. Well do I remember my experience with the first roller machine I owned. It was a Dunham—one of the first constructed—and in some way defective. Day after day was spent in trying to make it "work," but in vain. Finally I traded it to the Dadants, who felt sure they could "make it go;" but they, too, failed, and sent it back to the manufacturers, who recut it, and then it done better work, and was sent to Europe, (France, I believe), and is now in use there for aught I know. It took considerable strength to turn the handle of a large twelve-inch roller machine, and if the least stop was made before the sheet of wax passed through, the sheet of foundation was spoiled. Not so with the Given—a 15 year old boy, after some instruction and a little practice, could operate it as well as a man, and do good work, too. If the wax was sheeted properly, just as nice foundation could be made on the press—thick, medium or thin—as on the roller machines. The great trouble was that foundation could be made so easily on the press, that many engaged in the manufacture of it, that had no means, or else did not take the trouble to purify the wax, so that much was put on the market in so crude and imperfect a condition, as to discredit all foundation made on the Given press. This, in my opinion, was one of the causes that operated to throw the Given foundation out of market.

As regards the merits of foundation made on the Given press, I will say that I have made and used all kinds of foundation—that made by pouring melted wax in plaster of Paris moulds; that made on the Dunham, Root, Vandevort, and Pelham roller machines; in full sheets; in half sheets, and in starters; for both comb honey and for the brood chamber; that freshly made and that five or more years old; and the conclusion I have come to is that, though I personally prefer and use the Given press, and the foundation made on it, there is for the average bee keeper really no great or material difference in *any make,* if the foundation is made in a workmanlike manner, from clean, pure beeswax.

I may be asked, why, then, do I prefer and use the Given foundation? Chiefly for its convenience; as a honey producer, I am independent of the manufacturer. I make and use my foundation as I want it, and if I do not count my time and labor, at far cheaper rates than I can buy even at wholesale rates.

Would I then advise every bee keeper to invest in a Given press, and make their own foundation? Decidedly *no.* Where one needs but a comparatively small amount of foundation, it is far better and cheaper to buy, or have your wax made up on shares by one having the necessary conveniences and facilities. With those that own and run 300 to 500 colonies, the case is different.

STARTERS OR FULL SHEETS—WHICH?

I do not agree with the majority of bee keepers in regard to full sheets of foundation in sections. I have tried them repeatedly and could see no advantage in full sheets. A starter one and a half to two inches is sufficient. I would not put more, if the foundation was given to me, but I would *always* put a small starter of say one-third to one-half inch on the bottom. The bees always join them, and the comb is thus securely fastened to the bottom of the section, which is not always the case if no starter is used at the bottom. In regard to the brood chamber, the reverse is the case. Full sheets wired in for me *every time.* A few years ago I used about one thousand pounds, in which, owing to lack of time to make it, I used one-third to one-half sheets of

foundation, and the way the bees filled out the remainder of the frames with drone comb was a caution. Those frames have been a nuisance ever since, and they taught me a lesson I will never forget. There may be occasion when running for comb honey, in hiving a new swarm. They may be run in on starters, but as a general rule, use full sheets of foundation in the brood chamber, and you will never regret it.

Belleville, Ills.

PREVENTING AFTER-SWARMS.

G. M. DOOLITTLE.

I AM often asked how to best prevent after-swarms, as with an after-swarm goes all prospects for surplus honey from the old colony. There are various methods of doing this, such as removing the old colony to a new stand, as soon as the swarm has left it, setting the hive containing the new swarm on the stand it previously occupied; cutting off all of the queen-cells but one on the fifth or sixth day after swarming, and hiving the after-swarms in a box on top of the old hive till the next morning after they came out, when they are to be shook out of the box in front of the old hive, and allowed to run in, so that the young queens will all but one be destroyed. Now each of these plans have their various advocates, who think them superior to anything else, but as it is the *best* plan which is wanted, I must give the one I consider best from my standpoint. There are two plans which I have used with good success at all times, and use them in accord with what I wish to do with the old colony of bees. Where I wish to treat the swarms the way they are generally treated by hiving them on a new stand, I proceed as follows: As soon as the swarm is hived, I go to the old hive from which it came, and mark on it with a lead pencil, sw'd, 6-22, which tells me at a glance that a swarm came from that hive on June twenty-second, should that be the date on which the swarm issued, and the one which was marked on the hive. If it should be another day the date is different, but the plan is the same and suited to any day on which the swarm is cast. On the evening of the eight day from the date on the hive, I listen a moment at the side of the old hive, and if the prime swarm issued "according to rule," I hear the young queen piping, when I know that a queen has hatched, and an after-swarm will be the result if not stopped. If no piping is heard, I do not listen till the evening of the thirteenth day, for the next rule is that the colony swarmed at the time an egg or small larva was in the queen-cell, which allows the queen to hatch from the twelfth to the sixteenth day after the prime swarm issued. If no piping is heard by the evening of the seventeenth day, no swarm need be expected. When it is heard, which it will be in nine cases out of ten on the eighth day, I go early the next morning and take every frame out of the hive, shaking the bees off of each, in front of the entrance, as I take them out and return them again, so I shall be sure and not miss a queen-cell, but cut all off, for we know that there is a queen hatched from the piping we have heard. Once in a great while the bees will take a notion to go with the queen when she goes out to be fertilized, but such a happening is of rare occurrence, and has nothing to do with what is known as after-swarming. The above is a sure plan of accomplishing what we desire to, under all circumstances which may arise, while those spoken of at first will work at times, and at others not.

The other plan which I use is equally successful with the above, but is used only where the old hive is carried to a new stand while the swarm is in the air, hiving the new swarm on the old stand;

in which case I proceed as follows: As soon as the swarm is seen issuing from any hive, I go to the shop where I get a box or hive, which has been previously prepared, having the desired number of frames in it, taking it to the hive from which the swarm came, when the frames are set out of the box near the hive. I now open the hive and take out the frames of brood, putting them in the box. If the combs of brood seem to be unusually well covered with bees and the weather is warm, I shake a part of them off in front of the hive, before putting the combs in the box. If few bees or cool weather, I put all in the box, setting the box in the shade, and a rod or so from the hive, as soon as all the frames of brood and bees on them are in the box. I now put the frames brought from the shop into the hive and rearrange it, by which time the swarm will return if the queen has a clipped wing. If the queen is not so clipped, then the swarm is to be hived in this prepared hive on the old stand the same as any swarm is hived. I next put the combs of brood and bees which are in the box in a hive where I wish the colony to stand, and adjust the entrance to suit their wants, when they are left till the next morning. By this time, nearly all the old or field bees have gone back to their old location, so that the young bees which remain are ready to accept of anything in the shape of a queen. I now go to my queen nursery and select such a young virgin queen as I wish them to have, place her in a wire-cloth cage, and take her to this hive. Upon opening the hive, I take out one of the central combs, holding the same up before me. As the bees are all young bees, they will at once take to filling themselves with honey, and while they are so doing, I let the queen run on to the comb where there are a few cells of honey not occupied with the other bees eating out of them, when the queen will commence to fill herself the same as she sees the others doing. The frame is now lowered down into the hive, and the hive closed. In this way the bees and queen appear natural, and I have yet to lose the first queen put in under such circumstances. As the colony now find that they have a queen, they proceed at once to destroy all queen cells, so that no afterswarms ever issue; at least an experience covering a period of twelve years says that none do. In the above two plans we have something very near perfection, if not quite so.

Borodino, N. Y.

USE OF FOUNDATION.

R. C. AIKIN.

FOUNDATION is a good thing. I think, like Mr. Hutchinson, that we *must* have perfect brood combs. I know of just two ways to get them; and one of the ways is to have them built on the plan given by G. M. Doolittle some years ago, viz.: Use weak colonies, and place empty frames between nice, straight, full ones, and by spacing close, you can get good worker combs. Nucleus colonies, or any weak colony, will do this work quite well, especially if they have a young queen. A failing queen would give poor results. I would arrange the combs in this way: If you have a two-frame nucleus, put an empty frame between the two, and a frame of drone comb on the outside. So soon as the new frame is full of comb, spread again, and put in two empty frames, either alternating with the others, or put one of the new ones next the hive side, then a full one, and next an empty.

The reason I would use the drone comb is because if there be plenty of drone comb in the hive, the colony will not want to build any more until they get almost strong enough to occupy the

whole hive. If there be about two drone combs used—one on either side of the brood nest—after the colony has grown to occupy three or four combs, you can usually have them build about two more. Ordinarily, this plan, when starting with a two frame nucleus, will get built by each colony about four good combs. Some will build five or six, but you cannot trust them when the hive is so near full. Of course if the flow ceases and nc feeding, no combs will be built. To get true combs, straight combs only must be used on either side, and the spacing rather close. A little practice along this line would be wise for beginners.

The *best* method to get good combs is to use wired frames and full sheets of foundation. The foundation should be as warm as can be handled well when put on the wires, for if not quite warm, it will stretch with the heat of the bees when put in the hive, and cause it to bulge. If the frame be not reversible, let the lower edge of the sheet be not over one-half inch from the bottom bar. If the foundation be put in quite warm and plenty of wire, and then not too large a colony to work it, one-fourth inch space is enough next the bottom bar.

As I have never made a practice of letting my bees swarm, I cannot say anything in regard to the use of starters versus full sheets in the brood chamber, to hive swarms on. I think the plan would not be a success in the hands of any but a man of experience and good judgment. I can recommend only the two methods for the brood chamber.

The use of foundation in the supers is quite a different matter. I have many doubts as to the profit to be derived from an indiscriminate use of foundation in the sections. Full sheets well put in, will make it much easier to get good work done, *especially* in weak colonies.

I believe when the flow stands moderate for four or five days and then comes more free just when the bees are in good shape to secrete wax, they do not thin the base of the foundation as they should—so we have the "fish bone" in the honey.

I believe the secretion of wax to be voluntary; and so believing, think if we could just so manage our bees that we could make *them* believe that they *need no wax*, there would not be any secreted. But since they are prone to follow instinct, they naturally fall to secreting wax when the honey comes freely. I think there is very little tendency to secrete when a large lot of empty comb is in the hive—two or three extra chambers full—but when we raise comb honey, we cannot have the comb and must have the new wax.

As I view the matter now, I would advise the use of both full sheets and starters. (Reader, note well the following): If I had the ability to foretell the honey flow just as it would be in its conditions, here is how I would arrange for it: First of all, very strong colonies. I would want a few sections with comb in, all ready to receive honey. Now for a slow flow, I would put in two or more bait combs—not too many—and fill out with starters. If the flow comes abruptly—changing in two to four days from none at all to good—use ten or more bait combs and fill out with full sheets. In either case, should the flow continue fair to good after fairly started, when more room is needed, use starters only. Just at this time—five or six days from the start of the flow, and upwards if the flow began abruptly-sooner if there was a little honey coming for several days before—they will secrete wax quite freely. As the flow "tapers off," they will have more wax than needed, so use only starters when you have occasion to give more room. This gives them a chance to use the

wax they will have, and also tends to make them finish better the sections already nearly done.

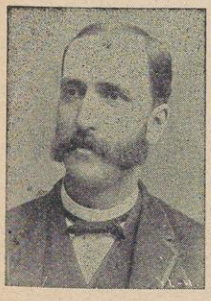
Whether full sheets or starters be used, put a starter on the bottom. Cut the full sheets enough shorter, allowing one-fourth to three-eighths of an inch between. The bottom starter makes a section that will ship much better, and pays.

If we could just get the bees to secrete wax at our option, then we could use full sheets of foundation to advantage; but they will follow instinct—*not reason*—and do not anticipate our interposition in giving them wax; hence, they will at times have a surplus of wax. They may secrete voluntarily, and yet be found with a surplus. How many merchants and others voluntarily bought goods before this crisis, but would have been glad later if they could have stopped their coming or found a use for them. If the act be not voluntary, then it is caused by the honey alone, and cannot any more be expected to adjust itself to the conditions than a cow can stop her secretion of milk, if the need of the milk suddenly ceases.

Loveland, Colo.

WHEN, WHERE AND HOW TO USE COMB FOUNDATION.

W. Z. HUTCHINSON,



BRO LEAHY, you ask for an article on the above subject. It is a pretty large subject; besides I have written considerably about it; but I will do the best I can in the allotted space, even if what is said may be something of a repetition of former writings.—perhaps what I have to say may be new to some of your readers.

When foundation first came out, I began using it. I secured beautiful, straight, all worker combs, and was pleased. The books and journals were then full of the "consumption of twenty pounds of honey to make one of comb" idea, and without ever stopping to do any experimenting of my own, I supposed that I was making a big profit in using foundation. In some instances I think, in fact, I know, that I used it at a profit. I was then raising extracted honey and queen bees.

After I had been at the business five or six years, I attended our state convention—the first convention I had ever attended. There I met for the first time T. F. Bingham, C. C. Miller, James Heddon, A. I. Root, T. G. Newman, H. D. Cutting, R. L. Taylor, Prof. Cook, and I don't know how many others, with whom I have since passed so many pleasant hours. I think it was one of the best conventions I ever attended. It was before every little point had been so thoroughly discussed as it is now—there seemed to be plenty to talk about. Perhaps it was because it was my first convention that I enjoyed it so much. The production of comb honey was the chief topic of discussion. I went home quite imbued with the idea of trying my hand at the raising of comb honey. I was particularly attracted by the sound logic of Mr. Heddon. His clear reasoning and brilliant oratory, and the masterful manner in which he swept away the chaff that some of the "other fellows" were continually blowing about, captured me completely. After reaching home, I wrote him, asking him some questions regarding comb honey production, and he replied: "Come down and see me, and I will tell you how to raise as much comb honey as you can of extracted." I went and stayed with him nearly a week,

I doubt if two men ever "talked bees" so long and enthusiastically as did we two during that week, as we swung around and around the apicultural circle. In the production of comb honey, particularly, did we go into the minutia. Hives, frames, hive stands, honey boards, sections, supers, hive covers, shade boards, contraction of the brood nest, "feeding back," hiving bees, shipping crates, etc., etc., were all gone over again and again. Among other things, I was cautioned against the hiving of swarms upon drawn combs. The bees would soon fill the combs with honey so that there would be but little room in which to rear brood, but, worse than that, so far as a present surplus was concerned, but little progress would be made in the sections after the brood nest was filled. By the time that the brood nest is filled, the first fervor of the newly hived swarm has worn off, and work in the sections is done in a listless sort of way. If foundation is given, no honey can be stored in the brood nest until some of the cells are drawn out; and while this is being done, the honey being brought in is carried into the sections which are transferred from the old to the new hive at the time of hiving. As soon as some of the cells in the brood nest are deep enough to lay in, they are occupied with eggs, while the honey continues to be carried above. The result is that excellent work is done in the supers, and a good lot of brood reared in the brood nest.

As I thought these things over, it seemed to me that if foundation possessed these advantages over drawn comb, then *no comb at all* in the brood nest would be superior to foundation for the very same reasons. I resolved to experiment. The first swarm was hived on drawn combs; the next on full sheets of foundation, and the third on starters only in the brood nest. I continued to hive swarms in this manner until I had hived eighteen swarms, when it became so apparent that those on drawn combs were so far behind in the race that they would never catch up; hence, the rest of the swarms for the season were hived alternately on full sheets of foundation, and on those having starters only in the brood nest. It was exactly as Mr. Heddon had said in regard to how the bees would manage when given drawn combs in the brood nest. They filled the combs in a very few days. Then, slowly and reluctantly, some of them began work in the sections. Some of them filled one case of sections, but none of them more than that, while those hived on foundation, or on starters, often filled three cases each. A swarm would come out, I would hive it on the old stand. The brood nest would be contracted to five Langstroth frames, the sections removed to the new hive, and the old swarm set to one side of the newly hived swarm. Often, in twenty minutes from the time that a swarm issued, the bees would be back at work as merrily as ever, in the same sections they had deserted in such haste. This is when the brood frames contain foundation or starters only. It was difficult to see much difference between those having full sheets of foundation and those having starters only, until the season was over, and the surplus weighed; then it was shown that those with starters only had come out ahead, but there was not so much difference between them as there was between either of them and colonies having been hived on drawn combs.

As I look at the matter, it is something like this: Bees during the working season, involuntarily secrete more or less wax, and, if not given an opportunity to use it, it is wasted. A swarm goes loaded with wax, so to speak, and is delighted to be allowed to build comb. I think the mood in which bees are kept has much to do with their willing-

ness to work. I have seen colonies that had been "crossed" in some of their desires, sulk for days and do no good work. The building of comb gratifies a natural instinct of the bee, and, I believe, leads to greater industry.

Another point is, that where the bees *begin* to store honey when first hived, there they will *continue* to store it. If there is no comb in the brood nest when they are hived, and they are given partly completed sections above, the first honey will be put in the super simply because there is nowhere else that it can be placed. With foundation in the brood frames, at least one or two days must elapse before there will be any cells deep enough for use, and the queen will be ready with her eggs as soon as the first are completed. With foundation the bees are soon ahead of her, and then honey will be put into the brood nest; but, having *begun* storing honey in the supers, the bees will not abandon them. With starters only, the queen, unless a very poor queen, can keep pace with the comb builders; and as long as she can keep up with them, just so long will the comb that is built be of the worker order.

Mr. Taylor, of the Michigan Experi mental Apiary, has been making some very extensive experiments upon these points the past season, weighing everything with great accuracy; and while those on starters did not store so much honey as those on foundation or drawn combs, *they continued to gain* on the *others*; and as the test was for only three weeks, instead of the whole season, I feel that the matter is not yet settled by this one experiment. Many others have tried this plan of hiving bees on starters, and I believe the reports are almost universally in favor of starters so far as the amount of surplus is concerned; but the trouble is that with old queens, there is too much drone comb built, and that unless the brood nest is very much contracted, so that all of the brood combs "grow at once," they are sometimes bulged. Imperfect combs are the one drawback to this plan. Some have asserted that it would be profitable, even if the combs were to be thrown away at the end of the season. There is no necessity for this, however, as the combs can be sorted over, the straight, perfect ones saved, and the others melted into wax. If Langstroth frames are used, and the brood nest contracted to five frames, there will be no trouble from bulged combs, and none from drone comb unless the queens are old.

One thing is certain—we must have perfect worker combs, to attain the highest success, and if they can be secured in no other way, then the use of foundation for that purpose is advisable.

I do not doubt that there are localities and seasons where it would be profitable for the bees to build combs in the surplus apartment as well as in the brood nest. A slow flow all of the summer would bring about this condition. There would then be time in which to secrete the wax and build the comb. It is when the flow comes with a rush, and is soon over, that it pays to use foundation in the supers. At such times, there is not time to secrete the wax nor to build the combs to store the honey; and the use of foundation is very profitable. Of this there is not a particle of doubt.

No one must take the rules and conclusions of others, and follow them out blindly, as law and gospel, without some experimenting and reasoning of his own. Localities and different conditions may cause an exactly opposite course from the one recommended to be the most profitable for the reader.

Flint, Mich.

REMARKS AND SUGGESTIONS.

J. C. STEWART.

AS I was one of those who worked to get the Convention at St. Joseph, I would like to see something done now to insure a success of the 1894 convention. Still I do not know what can be done. Let your paper request western men to write articles that will induce others to subscribe and be posted on the programme as soon as announced. A great many farmers will attend the annual fair there, when the rates will be low; and would it not be well to have the meeting the same time? However, I know the committee will do the best thing.

Several attempts have been made to get a permanent organization in Northwest Missouri, and some good meetings were had in St. Joseph six or eight years ago. I did not then know there was a state society. Let us see to it that our state society gets in good shape now, and arranges for a warm reception. I know Mr. Abbott will do all possible for one.

The last annual convention was a treat of good fellowship that will never be forgotten. I saw many that I did not think ever to see. A Canadian came up to me and asked if I was the Stewart over in Michigan, who sold her some boxes for shipping extracted honey, that would only hold beechnuts. It was too large a meeting for much discussion, but when it came to voting, it passed the best opinion, of a large number, that was ever obtained. For instance, it voted upon a sectional shallow chambered hive, and I think one-third of those who voted were in favor of it. I have not yet received the official report from Mr. York. Here is an item for some who will not pay $1 to be a member of the National. I consider the report worth at least a dollar.

Someone from Nebraska brought a sample of honey. He sat near me, and gave me a taste. It was not bad at first, but soon it began to bite the tongue; then began to burn the stomach; and I began to spit. It took a good two hours to remove the smart. I think I could manufacture some like it by digging some Indian turnip, and cooking it in honey. I offered some to Dr. Miller, when he sagely shook his head. I expect he could see blood in my eye.

I have just tasted a sample of Aikin's alfalfa honey. It is candied, and is delicious; and I think milder than our clover honey. I will keep my two ounces to remember him. He came from Iowa, only ten miles from here, Aikin, why did you not tell us you had a Heartsease with you? I thought you were only a Mullein stalk like Rambler.

I think the Canadians are quite up to us in the business. I got several pointers from them. Oh, my! How fine most of the honey was on the fair ground. But poor Missouri, who excelled in so many things, was not heard from as I know of. In '92 I had fine honey, and saved some to send to the fair. I wrote to the fair, but was told Missouri had not bought a case, so I sold my honey in August, '93. Who knows what was done in Missouri? I know that St. Joseph has had as fine a display as any fair. Can't we get the fair to give larger premiums for next time only, to bring exhibitors from a distance, if the convention is at the same time. I went into quarters with 118, all in chaff.

Hopkins, Mo.

Thanks, Friend Stewart, for your timely suggestions in regard to our coming North American Bee Keepers' Convention. We second your motion. The columns of the PROGRESSIVE BEE KEEPER will be open for any advice or suggestions, and we will be glad to hear from those who have anything good to offer to further the success of the coming convention. As this con-

vention is west of the Mississippi river, we believe it is the privilege as well as the duty of western bee keepers to make every effort for the success of this meeting. Remember, you will be held responsible if it does not come up to every expectation. Now, kindly let us hear from you. Don't be afraid of crowding our columns, for if it is necessary, we will add more pages.

THINGS NOVEL AND IMPORTANT. GOOD ADVICE TO BEGINNERS.

D. E. KEECH.

MAY 11, 1891, I had some weak colonies of black bees which were at the point of starvation, while a strong colony of Italians were gaining by weight one pound per day. June 4, 1892, bees were nearly all out of stores, and crawling out of hives and dying on the ground. No honey in the fields.

Spring of '93, out of fifteen colonies of bees, with lids placed directly over the lower story, eight died, while all having a full upper story came through alive. Fall of 1893, I fed thirty-eight pounds of honey to a colony for the purpose of having sections finished out; they gained in weight twenty-two pounds, most of which went in the brood nest—a loss of sixteen pounds and all my work. They were transferred and divided, a part being placed in each of two old fashioned Quinby hives.

My first instructions in bee culture and hive making were taken from a Chase receipt book. I afterwards procured an A B C of Bee Culture; also Prof. Cook's Manual of the Apiary; and finally, G. M. Doolittle on Queen Rearing, the latter of which I consider to be a very valuable work for the bee-keeper, and especially the queen breeder. Well, from that time till the present, I have had many ups and downs in bee culture. However the present finds me in possession of thirty colonies of bees in Simplicity hives, the most of them having Italian queens. Well, now, have I learned anything in these past years.?

I think I have learned a few things from experience and more from books, journals, and from personal intercourse with bee keeping friends. I learned that an enthusisastic beginner is apt to ruin a few colonies of bees by fussing too much with them, while he may learn enough to more than pay for the loss. I think I have learned that if a colony of bees has from thirty to forty pounds of honey in their hive in the fall, they will as a rule, winter better, build up faster in the spring, and cast more swarms or store more honey, or both, the following season than when having less honey in the fall. I also have learned that bees wintered in a cellar where sledge building and heavy pounding are carried on overhead, will likely be carried out dead in the spring. Also that a full upper story, filled about one-third full of packing in wintering. is better than one filled full. A good way to prevent increase is to clip the queen's wings, and when the bees swarm, open the hive while the swarm is out and cut the queen cells out. They will soon come back, and enter the hive. The queen will also crawl back in the hive. All weak colonies had better be united in spring. A good way to start weak colonies to work on empty combs and strong ones in sections at commencement of honey harvest: First, place empty combs on strong colonies, and when well at work on them, move them to the weaker colonies and place sections on strong colonies. A box made the width and length of hive and one and one-half inch deep, with a dozen or more partitions, and a sheet of zinc tacked to the bottom makes a good queen nursery when placed over a hopelessly queenless colony of bees.

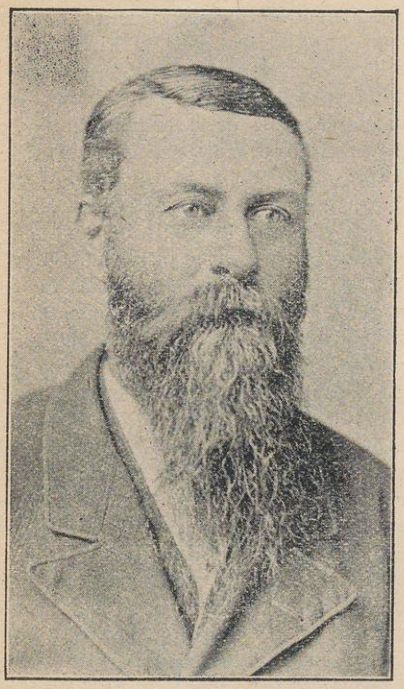
Martinsville, Mo.

LIKES THE "PROGRESSIVE."

The PROGRESSIVE BEE KEEPER is at hand, and I find it very interesting, as I have commenced in a small way to keep bees, and have everything to learn concerning them. Two years ago I had two colonies of bees—Italians—had never seen brood, queen, or queen cell. I have learned something of all these, but have never yet learned how to make the honey pay for the supplies.

JOHN TRUCKMER, Cherokee, Ala.

LIFE AND HOME OF A PIONEER BEE KEEPER.



COL. T. H. STRICKLER.

THE subject of this sketch represents the successful apiarist in "Windy Kansas." He was born in Shelby county, Indiana, May 5, 1840, and spent his early years on his father's farm, meanwhile acquiring a common school education, to which he has since constantly added by reading and observation.

He first learned the trade of millwright, but soon became imbued with the popular enthusiasm of "going west to grow up with the country," and in 1864 emigrated to Kansas, where he became not only a successful farmer and stockman. but was first to demonstrate the successful nurseryman and fruit grower in his adopted state.

The great success which has crowned his efforts in so many avocations and undertakings in life, is due to the mechanical genius with which nature has so bountifully endowed him. Contrary to the common belief that bees would be blown away in Kansas, his natural fondness for honey, together with his faith in the bees' ability to weather the clime, induced him to purchase one hive in 1885. From this modest investment, he claims to have realized much profit and pleasure, and he began at once to study all the ins and outs of bee culture, subscribing for the leading journals and rapidly enlarging his stock.

He makes and deals in all apiarian supplies, and is now reckoned a successful Kansas apiarist.

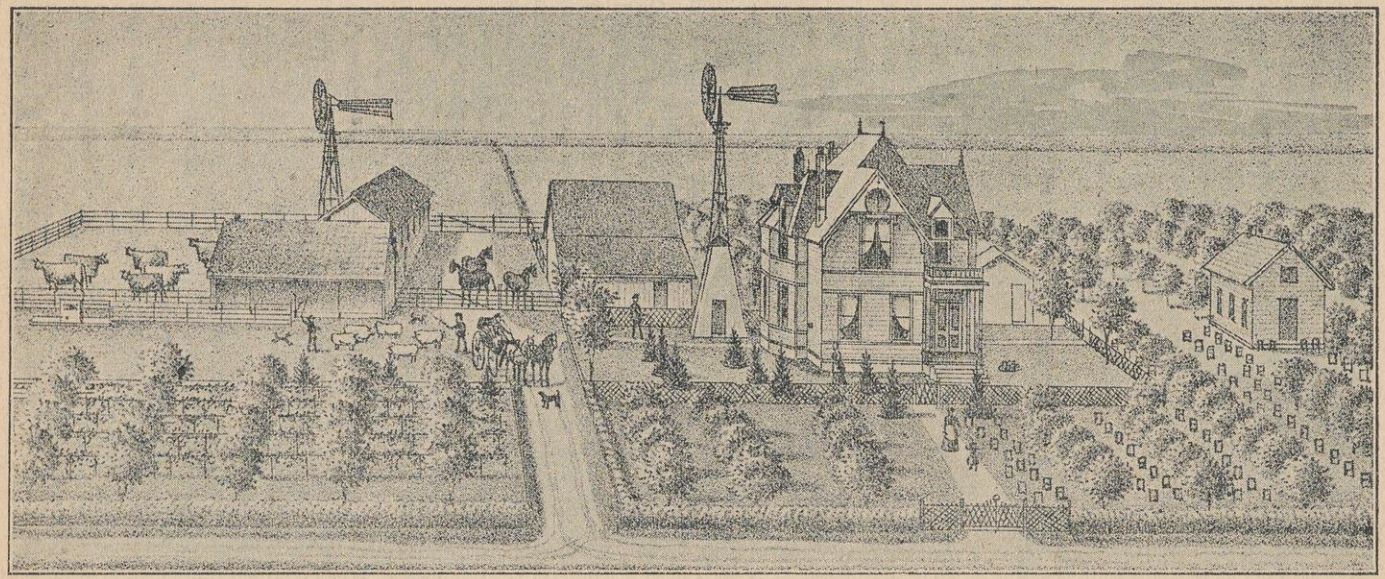
Mr. Strickler was first to exhibit Kansas grown bees and honey at county fairs, and his exhibitions attracted universal attention and comment.

He has his bees located in his large orchard, and the invariable presence of fruit on his farm, even when fruit is a failure elsewhere in the state, proves conclusively that bees form a necessary adjunct to constant and successful fruit growing.

His business ability, indomitable energy and will power have enabled him to conquer obstacles and difficulties, and insures to him reasonable success in all his undertakings.

His beautiful residence of modern architecture, surrounded by convenience and luxury, was without a name, until the addition of the bees gave it the name: "Home of the Honey Bees."

EMMA STRICKLER.



APIARY AND FRUIT FARM OF COL. T. H. STRICKLER, SOLOMON CITY, KANSAS.

FOUL BROOD.—HOW TO PREVENT

D. L. TRACY.

"An ounce of prevention is worth a pound of cure."

AS I have seen a number of articles in the different bee journals upon the above disease, I thought I would give my experience in what I claim has prevented foul brood for me.

Some eight years ago, the bee keepers of Colorado met in Denver to try and devise some way to stamp out this disease that had then got a hold in some of the bee sections of the state. I had never seen the disease, but as I had a number of colonies of bees, I attended the meeting. At that time carbolic acid was thought to be the best remedy for the disease. I went home with the determination to prevent the disease, if there was such a thing as preventing. I first made a die and pressed out enough tins 1x4 inches, one-fourth inch deep, for all my hives. These tins I placed at the entrance of the hive, filled with diluted carbolic acid. This was done to prevent the carrying (I had heard that the disease was carried upon the feet of the bees) of the disease into the hive. The bees had to go over the pan, and they could not do this without getting their feet into the acid. I noticed that the bees would drink this water—whether to get it out of the way or not, I do not pretend to say—out of the tins. I used these tins for three years; then the nameless or shaking disease came, and I commenced to use salt, with a good effect. For the last four years, I have used a solution of carbolic acid, one part; salt, three parts; water about 300 parts. I have discarded the pans, for the reason that it was too much bother, and I now use a very large oil can. I go around about three times, from January to June, through the hives, and give them one good squirt from the can on the top of each comb in the hive.

The chewing of the string is proof of the pudding. Mr. J. B. Adams, of Longmont, inspector of Boulder county, Colorado, found foul brood in nearly every apiary all around mine, some of them so bad that he condemned every colony. Some of these apiaries condemned were only a half mile away. While they were small in number, mine numbered 200 or more. Now while my apiary was surrounded by foul brood, only half a mile away, there was no disease among my bees. Now why did not my bees have foul brood? and did my remedy keep the disease away? If anyone is able to answer, please do so.

I have read with a great deal of interest all that has been written about foul brood, and I am of the opinion that climate has considerable to do with the tenacity with which the malady hangs on. The very dry climate of Colorado may not take such radical means to exterminate as would a lower altitude, but from my experience, I believe my remedy is sure in a climate like this; and not only do I think so, but Mr. Alex Preston, inspector of Weld county, and Mr. Adams, of Boulder, think the same.

Many have written in the bee journals that there was no virtue in carbolic acid as a preventative for foul brood. I think there is.

Denver, Colo.

SKUNKS IN THE APIARY.—HOW TO EXTERMINATE.

C. W. DAYTON.

IT is after the spring rains have ceased and the earth has become dry and hard so that it is laborious to dig for other insects, when skunks turn their attention toward the bee hives. In Iowa, (my former location), where rains come occasionally all

summer, I never knew them to molest bees. Here in California the last rains come in March and by the last of June, or July we may look for the visitations of Mr. Skunk. As the bees are likely to cluster out at that time, all he has to do is to walk up and pick them off the alighting board or front of the hive until he gets enough for a supper. If there are any bees in reach, I have never known him to jar or scratch on the alighting board, but go quietly about the eating, and when he had obtained enough, frisk quietly out, to return the next evening, leaving no indication of his having been in the apiary; and the only way to detect him is to watch in the evening, or to stroll through the apiary at different hours of the night. I have driven them out in the evening, and supposed they had changed boarding places, and afterward found they had learned to avoid me by coming an hour or so before daybreak. Later in the season, when all the bees cluster inside, he will scratch on the hive or make other commotion at the entrance, to cause the bees to come out. While he may pick up those that get tangled in his fur in trying to sting, the usual way is to pick them from the hive or ground singly, as a chicken picks up a kernel of corn.

Of all the plans to get rid of them, trapping is the poorest. The best way is to use strychnine in a small piece of tough beef. Sharpen a small stick, about seven inches long, on both ends. Stick the meat on one end, and stick the other in the ground three or four inches from the entrance of the hive. The kind of beef I use is called "flank." Five cents' worth will make thirty to forty baits, or enough to exterminate all the skunks for miles around. When Mr. Skunk finds a piece of tough meat on a stick, he straightway carries it off into the adjoining thicket, or into his burrow, to enjoy the eating thereof without interruption. If he goes into his burrow, he is buried without our assistance; but care should be exercised that there are no holes where he can crawl under buildings, hay stacks, or piles of brush or logs. I have used poisoned brood and hen's eggs, and know them to be good, but they nearly always made me the job of burying the carcass, when by the meat plan there was a sudden end to their depredation, and I always found the carcass from three to forty rods away from the apiary.

Again, meat is easier to carry to the out and isolated apiary, (on the bicycle for instance,) than eggs, and brood in August and September is scarce in the hives, and if the matter is attended to on cool days there is a danger of losing queens in opening hives, and I cannot trust a smoker to remain at an out apiary. Thus the brood plan necessitates carrying a smoker and having a sunshiny day. These matters may seem of small moment, but when we give the apiary a chance call, while doing some other errand, or at evening, they are worth considering.

Eggs and brood would not be so liable to poison cats or dogs, but still again, I have seen several skunks at once in my out apiary, while at the home apiary where dogs and chicken roosts are plenty, skunks have not troubled, and my directions are intended for out yards.

I know that many apiaries are visited by skunks, without the owner's knowledge, from not knowing when and how to detect them, and others knowing of it, through a dread of the animal, permit them to continue their depredations; and for these I have reduced the job to the simple fastening of meat on a stake. Make an incision in the meat with a pen knife, drop a small particle of poison in, and close up again.

How much real damage skunks may cause by picking off the old bees from the hive, I am yet undecided. It is

nearly always after the spring honey harvest before they begin. We seldom get a fall crop. I think it was Judge Andrews, of Texas, who advised destroying a part of the bees in the colonies to save their consumption of winter stores. Also Mr. O. O. Poppleton, one of Iowa's successful bee keepers, I think practiced the plan. Even if it is a correct method, it would seem ill advised to leave to Mr. Skunk the choosing of the colonies wherein there is a surplus of bees above the requisite amount for wintering.

Placing the hive up at least six inches from the ground, will prevent their getting but few bees, though they may continue to scratch in the earth just below lhe entrance.

Downey, Cal.

NEBRASKA NOTES.

BY MRS. A. L. HALLENBECK.

JANUARY 15th it came—the warm spell we had been waiting for since November 10th. There was no snow on the ground, and but little wind. All the bees in the cave were carried out and looked over to ascertain their condition. All were alive, and the housecleaning job began forthwith, but considering the time they had been confined, it was not a very heavy task, and, that completed, a general rejoicing was indulged in by the happy little housekeepers who had been so long imprisoned. For two days the jubilee lasted, and then all were carried back to their warm winter home, before the beginning of the worst weather we have yet had this winter.

"Oh, you don't know what a blizzard is," said 6-year-old, who goes to school, to 4-year-old, whom he wished to impress with his superiority.

"Yes I do," replied 4-year-old; "it's a lot of big blows."

The "big blows" kept coming for about two weeks, and zero weather predominated till about February 1st. This is all the severe cold weather we have had so far, but as the predictions are for a cold, backward spring, I am thankful that the bees have had an opportunity for a good cleansing flight, especially as they were put in so early in the fall. They have lost but few bees up to the present time, and having plenty of stores, will stand confinement for quite a while.

During the latter part of February or the first of March, if a warm, favorable time comes, they will be carried out again and carefully examined to see that all have an abundance of honey to last them till permanent warm weather comes, and those outside will be carefully examined also. Should any colonies be found queenless, if they are strong, a queen from the south given them as soon as it can be obtained, saves the colony, or, if weak, it will be united at once with some other colony. The division boards will all be moved up till the colony is confined to what frames they can cover, and then the bees are ready to stand another spell of cold weather if it should come.

I always try and save plenty of frames of honey over to be used in helping out those that are short of stores, and then if a cold spell should come, there is no need of disturbing them. After the weather gets warm, a little sugar syrup given warm at night is a great help, but does not work well when the weather is cold.

By the latter part of March, we may begin to calculate a little on what our winter losses have been, and make our preparations for the season's work. In this preparation, one of the most important things is to *pay as you go.* A soap or cracker box, with home-made frames, will do to hive a swarm in, much better than a patent hive with several dollars unpaid hanging over it.

as a perpetual terror, for the bees, to be profitable, must be self-supporting. Then, if no harvest comes, we can stand it much better than if we had expended money they had not earned, and had no way of paying our bills.

The editor of the Review asks, "What is the chief object of interest in your vicinity?" Raising sugar beets is quite an industry in our county. If the bees could get any honey from them, ours should have had a harvest last year, as there were about seventy acres raised within two miles of us. Our population is largely German, and the sugar beet industry is well known to them in the old country. During the busy season in the beet fields, the public school is closed so that everybody—men, women and children—may work at the beets. During the month of June, thirty or forty workers found employment within one-half mile of our home, on two or three fields of ten or more acres each. The beets are shipped to the factory at Grand Island, and many readers of the PROGRESSIVE have doubtless sweetened their coffee this winter with Nebraska sugar, and perhaps some may have tried the experiment of manufacturing sugar honey with it last season. Twenty and twenty-one pounds of granulated sugar for one dollar does not help raise the price of honey very fast.

Since writing the above, we have had another heavy snow storm, and the "big blows" are busily drifting it up today.

Millard, Neb., February 12, 1893.

GIVEN FOUNDATION.

MARION MILLER.

I NOTICE in the last issue of your valuable paper an article from the pen of E. T. Flanagan in regard to the Given foundation press and Given foundation. I have used the Given foundation during the last ten years, and must say like Mr. Flanagan that I prefer it to any other make. I hope to see those presses manufactured again, and that soon, and at a price within the reach of all bee keepers who keep enough bees to justify them in buying a press.

HIVE COVERS.

I am glad to find a good hive cover at last, and that is the Higginsville hive cover. It is far ahead of the old cover used on the dovetailed hive. I have tried covers made of inch lumber, and they generally cracked in several places. Then I tried thin covers made of three-eighths lumber, and they cracked and curled up at the outer edges. Then I tried tin covers, and while I could paint them on the upper side, I could not paint them on the lower side, and right there was where the trouble came in. The moisture from the bees caused the tin to rust on the under side, and soon holes began to appear and let in the rain; and a hole once started in a cover is not very easy mended. Some persons have advised the use of sheet steel, or sheet iron, but I think it is just about as bad as tin. In regard to the style of hive, one can do no better than to adopt the dovetailed hive and stick to it, and not be changing to other styles of hive every year or two. But, says one, I want a hive with a portico aud tight bottom board, and the dovetailed hive has neither. No, my friend, you do not want either portico or tight bottoms. Porticoes are a nuisance, and tight bottoms ditto. Porticoes are a nuisance in warm weather—the bees delight in clustering under them and idling away their time, while hives having no such useless parts will be entirely free from clusters of bees about the entrances, unless the weather is unusually hot and sultry.

HIVES.

I have just been asked by a friend of mine whether it pays for a bee-keeper

to make his bee hives, instead of buying them in the flat of some dealer in standard supplies, and my answer to him and other bee keepers as well, is, unless you do not live near a dealer in standard apiarian supplies, it will never pay you to make your hives. If you live where lumber is very cheap, and you don't have any work during the winter, it might pay you to make your hives, but then you will need a buzz saw in order to do a good job, and the buzz saw costs considerable, so that in the long run, I would advise buying one's supplies in the flat and nailing them up at odd times. This winter is a good one for wintering bees on the summer stands. There has hardly been a week that they have not had a flight since cold weather commenced, while those bee keepers who winter their bees in the cellar are getting none of the benefits of the warm, sunny days. For my part, I want no cellar wintering in mine, but probably if I lived in other localities, I might think differently, but so far I have been unusually fortunate in wintering bees out of doors, packed in straw, in a shed opening to the south.

Le Claire, Iowa.

The Progressive Bee Keeper.

PUBLISHED MONTHLY BY
LEAHY MANUFACTURING COMPANY

R. B. LEAHY, E. F. QUIGLEY, } Editors.

Terms—50 cents a year in advance. Two copies, 80 cents; 5, $1.75; 10, $3.00.

HIGGINSVILLE, MO., MARCH 1, 1894.

"Keeping everlastingly at it brings success." We refer to advertising.

Thomas G. Newman has been re-elected general manager of the bee keepers' union, and R. L. Taylor has been re-elected president. Correct **again.**

"'Everything is chuck full,' so says Barney, the boss printer."—(Gleanings page 152.) From the abundance of good articles and the excellent make-up of the journal, we should judge that the editor and boss printer were *not* "full."

J. E. Pond thinks much that is written in the bee journals now is only a repetition of what has been written before, but thinks it is necessary, and will be necessary "as long as there are learners," to cover to some extent the ground which has been gone over before.

In a recent number of Gleanings, Bro. Root says of separators, that a discussion at the last North American Bee Keepers' Association brought out an opinion that there was no advantage in having insets cut in both sides of separators, (and in some instances a disadvantage) and in future they would cut insets in the bottom only of their regular separators. The cut herewith shown gives the "new idea."

A separator like this will be more durable, as there will not be so many projections to break off, and it will cost less to manufacture.

EMPLOYMENT DEPARTMENT.

Believing we can serve our friends, we want to open up communication between those in need of employment in the apiary and those needing such help. Therefore, we will publish free of charge the applications of those wanting employment, and of those wanting to employ, and hope by this means to be able to serve those desiring employment in the apiary and those desiring help. Now don't be backward, friends, because we have offered you the use of our columns free, for the more good we do you the better we will enjoy our part.

About all the old bee journals are now running a department for beginners.

The Nebraska Bee Keeper, has added a poultry department and more pages.

Don't mention it, but we have a strong suspicion that there is a supply business that is a near relation of "Success in Bee Culture."

Criticism is all right if done in a friendly way. It helps to get at the truth, but let those that criticise be prepared to show a better method than the one they attack.

Gleanings is discussing the value of sweet and alsike clovers as forage and honey plants. We hope to see this subject more in our journals, as we must have something to produce honey that will take the place of those being destroyed by cultivation.

HALF A MILLION SECTIONS.

We have half a million snow white, sandpapered sections (any width) for sale at the following prices: $2.50 per thousand; 5,000 at $2.25 per thousand. For more than 5,000 write for special prices. These are last year's make, and we wish to close them out. Order soon, as they will not last long.

Lewis K. Smith, in American Bee Journal, (page 115) warns bee keepers against climbing after swarms. He came near losing his life by the limb splitting off that he was standing on. If there are tall trees near the apiary, have a Manum's swarm catcher or a supply of Alley's improved queen traps, and you will not have to run the risk of breaking your neck.

We had some Albino bees in our apiary for testing in the season of 1892. A correspondent wants to know how they compared to the Italians. Will say that they were not equal to them, in fact there is no bee known that combines as many good traits as the American bred Italian, although the Albino was bred from them. We have spent considerable money buying the different races of bees, but have gone back to where we started from just that much out of pocket.—[Quigley.]

Thirty-six pages in this issue of the PROGRESSIVE, and yet much valuable matter is crowded out.

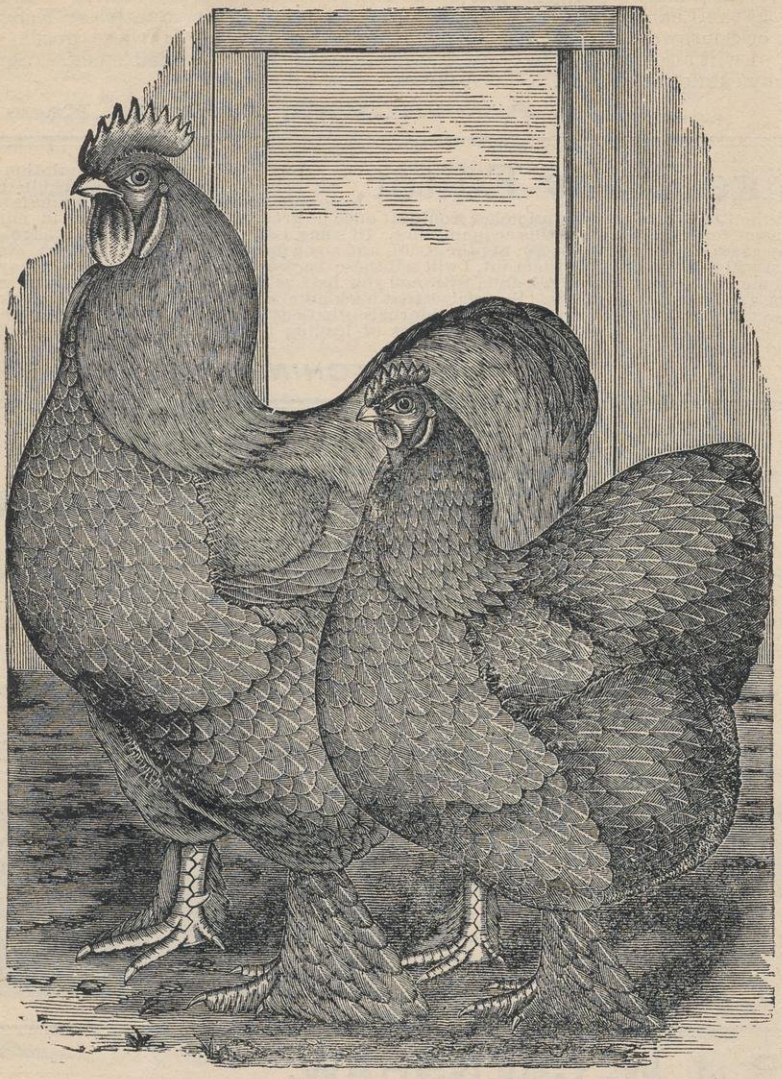
EARLY QUEENS FROM THE SOUTH.

We will be ready to ship queens from Texas by April 1st, at the following prices: Untested, $1.00 each; tested, $1.50 each. These are five-banded golden queens. Write for prices on large quantities.

There are no Golden Carniolans in the "Progressive" Apiary now. How long they have been dead, we do not know. It's the same old story—fool and his money parted—but we only got them to use in comparing the working qualities. Guess the old reliable Italians are good enough.

R. F. Holtermann says the prolificness of a queen rather than the locality should decide the size of the brood chamber. [Many colonies are ruined for storing honey in sections by waiting too long before putting on sections. For this reason, always put on your surplus cases early, and use a few sections of comb if you have them. We prefer to start our bees in shallow extracting combs first. In this way we get the brood combs almost solid with brood, and it up to the top bars. This management allows the colony to expand at a time that it is needed. Bees once started to storing honey above the brood nest will give a good surplus if the flowers produce the nectar.

FOR SALE.



200 head Indian Games, Blk. Langshans, Buff and Partridge Cochins, Light Brahmas, Barred Plymouth Rocks, S. C. Brown Leghorns, Silver Laced Wyandottes, Bronze Turkeys, and Pekin Ducks. I will sell very low to make room.

Write at once for prices, if you want extra good fowls and chicks for little money. Enclose stamp, and address,

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No. 2.	18 Geraniums, 18 kinds	1.00
No. 3.	18 Coleus, or Foliage Plants, all different	1.00
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No. 8.	20 Fine Bulbs, Gladiolus and Tuberoses	1.00
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Trees, Shrubs, Asparagus, Rhubarb, and Small Fruit Plants, on Application.

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EGGS, $2.00 per 13; $3.50 per 26 by express.

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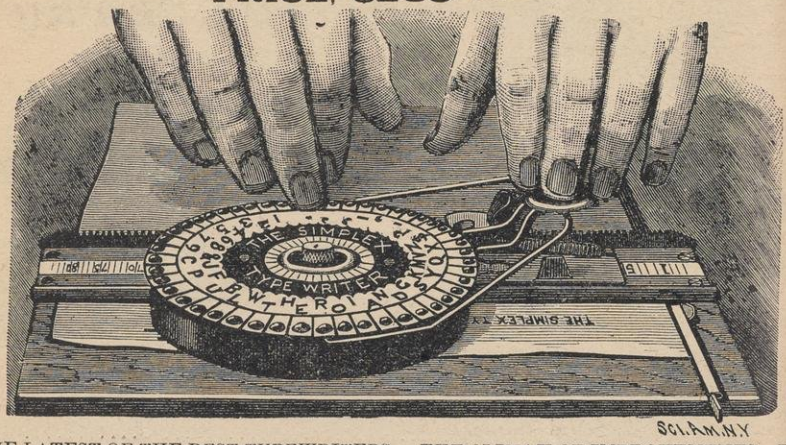

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FOR BOYS AND GIRLS.—The "SIMPLEX" will be hailed with delight by BOYS AND GIRLS. It will improve their spelling, and teach proper punctuation. It will encourage neatness and accuracy. It will print in any colored ink, violet red, green, blue or black. It will PRINT A LINE EIGHT INCHES LONG, and admit any size letter paper. The printing is always in sight. A USEFUL, INSTRUCTIVE AND ENTERTAINING NOVELTY, AT THE PRICE OF A TOY.

Nothing is of greater importance than correct forms of correspondence. The "SIMPLEX" encourages practice, and practice makes perfect. Writing with this machine will be such jolly fun for your boys and girls that they will write letters by the dozen. This may cost you something for postage stamps, but the improvement in their correspondence will repay you.

FOR THE HOME CIRCLE AND KINDERGARTENS.—Mothers and teachers will at once appreciate the immense assistance afforded by the "SIMPLEX" in teaching children the alphabet. A child can operate the machine WITHOUT INSTRUCTION, and once interested, half the work is done. It prints all the capital letters, all the figures, and the necessary punctuation marks.

EXTRA POINTS,

The alignment of the "Simplex" is equal to the very highest priced machine.

It is positive in action, and each letter is locked by an automatic movement when the stroke is made.

It has no ribbon to soil the fingers.

Letters written by it can be copied with a letter press.

The "Simplex" is mounted on a hard-wood base, and put up in a handsome box, with bottle of ink, and full instructions for using.

Mr. E. T. Flanagan, of Belleville, Ill., writes: "I received the typewriter one hour ago. You can judge my progress by this letter. It is much better than I expected, and with practice I think I will be able to write very fast with it."

Price of Machine in plain pine box, $2.50. 25c extra for postage.

Address, **LEAHY MANUFACTURING COMPANY, HIGGINSVILLE, MO.**