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THE FRED W. MUTH CO.

PEARL & WALNUT STS.

CINCINNATI, OHIO

GLEANINGS IN BEE CULTURE

SEPTEMBER, 1918

EDITORIAL

SINCE OUR August issue a number of our subscribers have written to us, saying that they had made application to the U. S. Food Administration, Sugar Division, at their State capitals, for permits to secure sugar, but had received no reply, much less a permit. Several in our own State of Ohio wrote, but received no response.

To clear up the matter the Editor of Gleanings made a special trip to Columbus on Aug. 20 and there learned that Ohio beekeepers—in fact, beekeepers in every State in the Union—should first go to their local food administrator and ask for blanks marked A and B. Disregard blank A on the sheet and fill out statement B only. Put in your full name and address. Opposite the words "Bee Culture" make a cross-mark in the printed square, certifying your industry. Then fill out items 6 and 8. Item 6 calls for the amount of sugar used from July 1 to Oct. 1, 1917. You may or may not have used any; but if any, state the amount. Item 8 calls for the amount of sugar needed up to Oct. 1, 1918. When the blank is so filled out it should be taken before a notary or other official who can administer an oath, and sworn to in the space provided below, after which it is to be sent to the United States Food Administration, Sugar Division, of your State capital.

Ohio beekeepers, however, should fill out two blanks, and send both to Thos. K. Lewis, U. S. Food Administration, Sugar Division, Columbus, O. The notary will probably charge no more for two affidavits than for one. One of these blanks is to be filed by Lewis with the State Bee Inspector of Ohio, E. C. Cotton, Department of Agriculture, Columbus, and the other with the Sugar Division, Columbus. It would be a wise thing for the beekeepers of other States to furnish two sworn blanks so that one could be filed with the State Bee Inspector or State Apiarist, and the other with the regular Food Administration.

In some cases the State Food Administration may require that an officer of some bee organization pass on the validity of the claim of the beekeeper for sugar. In such case, where it is at all practicable, send the blank to the secretary or the president, and ask him to mark his O. K. across the blank,

signing his name as an officer of the bee organization, and return to you, when you are to send it to the U. S. Food Administration, Sugar Division, of your State capital. Most of the States will probably require something of the sort. Where there is no state or local organization, or when you do not know who the secretary of a local beekeepers' organization is, send your blank to the secretary of the National Beekeepers' Association, Floyd Markham, Ypsilanti, Mich., who will immediately return it to you provided you inclose a stamp and an addressed envelope.

The ordinary retail grocer probably will not have enough sugar to take care of beekeepers' requirements, and therefore you will have to go to the wholesaler. But before you do it be sure you are armed with the permit as above outlined.

The beekeeper should anticipate his wants early; and, if he needs sugar, make application at once as above outlined.

A STATEMENT made in two leading daily newspapers, to the effect that beekeepers are profiteering, is based on the statement of Dr. Phillips of Washington, D. C., at the field meet at Medina, that any beekeeper who sells all his honey and asks for sugar, where there is no bee disease, is profiteering. One paper, the Cleveland News, has drawn the inference that beekeepers are using sugar to feed bees to sell as honey, and that in so doing they are not only "profiteering" but are "cheating" their customers. While we can not agree with Dr. Phillips that the beekeeper is profiteering when he sells honey and feeds sugar, it is but fair to him to say that he is quoted only in part. He never intended to convey the impression that beekeepers are feeding their bees sugar to sell as honey. Gleanings fears that this garbled statement may be scattered far and wide, with the result that beekeepers will be unable to obtain sugar this fall for feeding their bees. Accordingly, beekeepers everywhere should be prompt to refute this untruth. It would be nothing short of a real calamity for the beekeepers not to get the sugar needed, as it would mean a great decrease in the number of bees another year and a great shrinkage in the honey production of 1919.

How to Get That Sugar for Feeding.



This Is Not Profiteering.



THE EDITOR, in his last trip among some of the largest beekeepers of the country,



Bigger Hives and Colonies

found, among other things, that the largest producers were running more and more to large brood-nests. The Dadants have emphasized the importance of a large brood-chamber, favoring the large size put out by Father Quinby. They have shown that such a hive cuts swarming down to the minimum of one or two per cent, makes queen-excluders unnecessary, and reduces winter losses and labor.

In 1894 the editor tried out the proposition of whether he could accomplish these results with two eight-frame brood-nests, and found that he could, to a very great extent. If the reader will turn to the series of articles by C. A. Hatch, and footnotes and editorials written by E. R. Root in *Gleanings* for 1894 to 1895, he will find that we not only controlled swarming, but produced honey, with the advantage that our brood-nests could be handled in halves. But the objection to the eight-frame was that, in a good season, it might be too much of a sky-scraper—one that, when tiered up, would be easily tipped over by the wind or by stock running loose. The illustration on the cover page of this issue shows that an eight-frame width of hive sometimes requires bracing up to keep it from toppling over.

Since that series of articles was written we have found the whole beekeeping fraternity has been tending to a double brood-nest, either for eight or ten-frame Langstroth, for breeding early in the spring and then confining the queen down to a single brood-nest by means of an excluder at the approach of the harvest. The plan is almost universal among our largest beekeepers, because it is now generally agreed that a ten-frame Langstroth brood-nest is not large enough in the spring for a good queen, and therefore two are needed. Upon a good queen hangs the success or failure of a crop, other things being equal.

The average beekeeper contends that even a ten-frame Langstroth brood-nest is rather heavy to lift. The argument might be advanced that the eight-frame would be better so far as lifting is concerned; but in tiering up it becomes necessary for the apiarist to stand on a box or stepladder to get to the top of the supers when the season is good and the queen prolific.

We found in our recent travels that there is a pronounced tendency toward a twelve and thirteen-frame brood-nest. There is also a tendency, equally pronounced, toward a ten-frame Jumbo hive, which is practically the Dadant-Quinby, and of about equal capacity to the twelve-frame Langstroth hive. The advantage in keeping the size of the frame standard is obvious. The Langstroth frame is nearly universal, and so well adapted for extracting purposes, that one will think a long time before he will consider a

deeper frame—one that is not well adapted to extracting. The Dadants and all who use the Jumbo or Quinby depth of frame find it quite necessary to use a half-depth frame or one slightly shallower than a Langstroth frame for extracting, because the frame is too deep. The users of the Jumbo or Quinby frame are compelled to have the two sizes of frames—one for the super for extracting purposes and the other for the queen, for the queen is usually confined to the lower brood-nest, and that, too, without the need of an excluder, says Mr. Dadant.

In favor of the Jumbo or Quinby depth of frame, it may be said that our best beekeepers admit that a queen seems to prefer a large frame; and she will lay more eggs in one large card of comb than she will in the same number of square inches contained in two combs, one above the other, but divided from each other by a top bar, a beespace, and a bottom bar, as is the case when the queen occupies two supers. We have yet to run across a beekeeper who denies this proposition. From a strictly breeding standpoint the advantages are all in favor of the big frame. Moreover, there is a further advantage in that the Jumbo frame makes it possible for one to use a standard width and length of Langstroth hive—standard cover and bottom, standard comb-honey supers, standard Langstroth hive-bodies or shallow supers. In the apiaries we have visited, where Jumbo frames are used, we found numerous instances where the owners had bought up colonies in standard Langstroth hives, and were using them on top of the Jumbos for extracting.

On the other hand, the users of the twelve and thirteen-frame hives have nothing standard but the frame. The standard Langstroth and hive-bodies will not fit these hives.

However, one very strong argument in favor of the twelve and thirteen-frame hives is that an ordinary colony does not have to be tiered more than two or three stories high. The supers, while relatively heavier than the ten-frame Langstroth, are low enough down to be easily lifted. The twelve and thirteen-frame Langstroth hive has the advantage over the Jumbo or Quinby in that it will never be as high as the Jumbo of the same cubic capacity.

The excellence of the Jumbo or Quinby brood-nest as compared with the twelve and thirteen-frame Langstroth, is a matter to be settled by the future experience of beekeepers. So far as we have met beekeepers who are using the larger brood-nest, we have found they prefer to use hives requiring only one size of frame thruout the beeyard.

There is another small school of beekeepers who are working toward the Long Idea hive of thirty or forty-frame dimensions. This does away with all lifting of supers, providing that the extractor is used when a hive of this capacity is filled with honey. But it requires handling the frames individ-

ually instead of in groups of eight, ten, or twelve frames according to the size of the hive-body.

So far we have left the reader on the fence. What style and size of brood-nest shall he adopt?

The great majority of beekeepers have settled down to the proposition that the regular ten-frame Langstroth hive, while lacking some of the advantages of either the Quinby or Jumbo depth, or the twelve or thirteen-frame Langstroth depth, have the great point in their favor that **they are standard.** Supplies cost from 25 to 50 per cent less. As illustrating the advantages of standard equipment, let us say that the expert producer finds himself compelled to buy out a less successful and perhaps competing beekeeper who, perhaps, is encroaching on his territory. The latter, in all probability, will have standard equipment. If the survival of the fittest, or the more successful beekeeper, is using something that is not standard, he has got the everlasting nuisance of either a difference in the size of the frame or a difference in supers, hive-bodies, covers, and bottoms. This nuisance is intolerable; and altho the beekeeper may see the advantage of the larger brood-nest, yet he is almost compelled to keep standard equipment.

There is no denying the fact that there are hundreds of beekeepers in this country who are producing honey by the carload with the standard ten-frame Langstroth equipment. The eight-frame Langstroth size of hive is going out so rapidly that we can almost put it among the discards.

We have been taking a good many photos showing twelve and thirteen-frame hives, Jumbo hives, and the Long Idea hive; and in forthcoming issues of Gleanings we shall illustrate some of these different equipments and show their advantages. What we have here said goes to show that there is a strong tendency toward breeding in two-story brood-nests of Langstroth size, as well as wintering in two such brood-nests, or one such and a shallow-depth extracting-frame.

DR. E. F. PHILLIPS, with whom we had quite a long conference at the field meets in the State of New York, wished us to emphasize in September Gleanings that outdoor-wintered colonies should be packed early for the following reasons:

Unpacked colonies in late September and October are subject to extremes of temperature and frosty nights, with the result that a good deal of brood is chilled, and with the further result that the queen is discouraged from laying. When the colonies are well packed, says Dr. Phillips, they can be kept right on breeding clear up into November. Late breeding means young bees, and these are vitally important for wintering, either indoors or outdoors.

The second reason is that, if the colonies

are packed early, they become accustomed to the new surroundings; and before cold weather sets in they will be so accustomed to their entrances that they will not "drift," as will colonies that are packed late. One of the serious difficulties that beekeepers often encounter during the following spring is the "drifting" nuisance by which colonies will be either too strong or too weak. As their bees are not entirely familiar with the changed surroundings, the bees are liable to get mixed up by going to the wrong hive on the first good flight day. Some colonies get too many bees, and some too few. The former may starve, and the latter be chilled and die with dysentery.



THAT QUESTION is being asked hundreds of times. If one lives in a locality subject to continuous zero weather for weeks at a time, and especially if he lives in a hilly country where he can have side-hill repositories, we would advise the indoor plan. The past winter showed that those who wintered in cellar, especially with side-hill cellars, had stronger and better colonies than those who wintered outdoors. This is not saying that bees can not be wintered outdoors in the colder climates. Some of our best beekeepers did it last winter and had rousing colonies in the spring.



Outdoor or Indoor Wintering

In localities where the winters are more open, and the bees have an opportunity for a flight four or five times during midwinter, we would advise the outdoor method.

What shall the small beekeeper do who has only a few colonies? If he lives in a cold climate, he can winter in a cellar where there is a furnace. The bees should be in a room separate from the furnace room. Twenty-five or thirty colonies will winter in such a place very nicely, even in warm climates, if sufficient ventilation is provided; and this can be done very well by leaving the door ajar from the bee-room into the furnace room.

If one will properly pack in a milder climate, the chances of success are better outdoors than indoors. Control of temperature and ventilation in a cellar is a nice art, and beginners may not be able to master it.

In our next issue we shall have full particulars with illustrations on how to winter bees outdoors by the most approved methods. These illustrations will embody some features that proved successful last winter.

If there ever was a winter that proved conclusively that packing is essential for outdoor-wintered bees, it was the past one. Some of the beekeepers who argued for single-walled hives on summer stands have had their theories knocked into a cocked hat. While they are not saying anything, they are sadder and wiser—sadder because they had almost no bees this spring, and wiser because they will never do it again, if the Lord spares 'em for another chance.

THE BEST CELLAR WINTERING

Some of the Fundamentals as Illustrated by the Continued Successes of Big Michigan Beekeepers

By E. R. Root

the bees thru the coming winter with a minimum of stores. It would be a mistake for us to urge every one to practice indoor wintering, as the aver-

THE severe winter of 1917-'18 — the hardest on bees, perhaps, in over 35 years — has brought its lessons. Those beekeepers that were thoroly prepared with plenty of good stores suffered comparatively light losses, while those that were not prepared lost heavily. It will be the particular purpose of this article to explain some of the fundamentals of good wintering indoors, because plans for indoor wintering must be made as early as possible in advance. In our next issue we will give the various methods of outdoor wintering—those that proved to be successful during last winter.

The present high price of honey, the shortage of sugar, with the prospect that the Food Administration at Washington may cut all rations of sugar down still further, will cause some to favor the indoor plan of wintering. It is generally admitted that a colony in a good cellar consumes about half the stores that the same colony requires when wintered outdoors in a good packing-case. Or, to put it more concretely, a colony of bees in a good cellar consumes anywhere from five to ten pounds of stores during the period of confinement, while the same colony outdoors, well housed, requires anywhere from 15 to 25 pounds or even more. At this time we will not discuss the question whether the outdoors bees will be more vigorous and ready for harvest, for the big problem now is to bring

age beginner, or the average good beekeeper south of the Great Lakes, will secure better results by wintering outdoors; but the fact that most of those who wintered in the cellar last winter had their bees in better condition this spring suggests the wisdom at this time of inquiring how they succeeded.

The Editor has been giving the matter special consideration; and with that end in view he has traveled some hundreds of miles visiting some of the best beekeepers of the United States—especially those who wintered in cellars with little or no loss. After consulting some of our best beemen, and especially Government experts, we were especially directed to one man, said to understand with special throness the subject of indoor wintering. He has wintered bees for the last 12 or 15 years in a cellar of his own design, with a loss of less than one per cent. That man is David Running of Filion, Mich.,—ex-president of the Michigan State Beekeepers' Association, and now president of the National Beekeepers' Association. He agrees as to wintering in almost every detail with that veteran authority, the late G. M. Doolittle. The fact that these two men came to precisely the same conclusions 30 years apart, the one

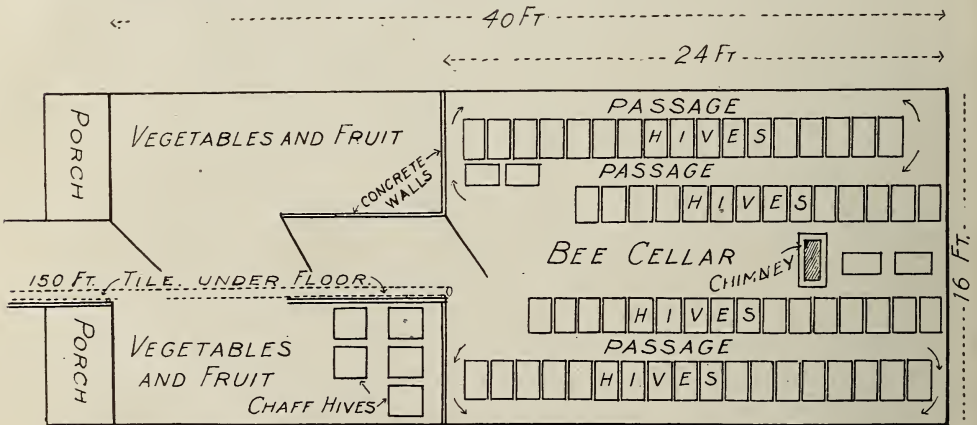


FIG. 1.—This is a diagram of the ground plan of the David Running bee-cellar which has wintered bees for the last 12 years with a loss of less than one per cent. The cellar proper is built in a side hill. The bottom of the cellar is on a level with the ground in front. The walls are 6 inches thick, of concrete, with a concrete ceiling on top. Directly above the cellar is a concrete workshop and extracting house. Between the ceiling of the cellar and the floor of this building above there is packing material of one foot of dry sawdust and one foot of air space; and then another set of joists covered with matched flooring. Between the ceiling and cellar roof is 6 feet, and the cellar is capable of holding between 300 and 400 colonies. It will be noticed that there are three doors to shut out the outside cold. The hives are piced as shown in the diagram. The ventilator, or chimney, has a 9 x 13 flue which extends clear up thru the building above. The outer cellar is sometimes used for wintering bees in double-walled hives.

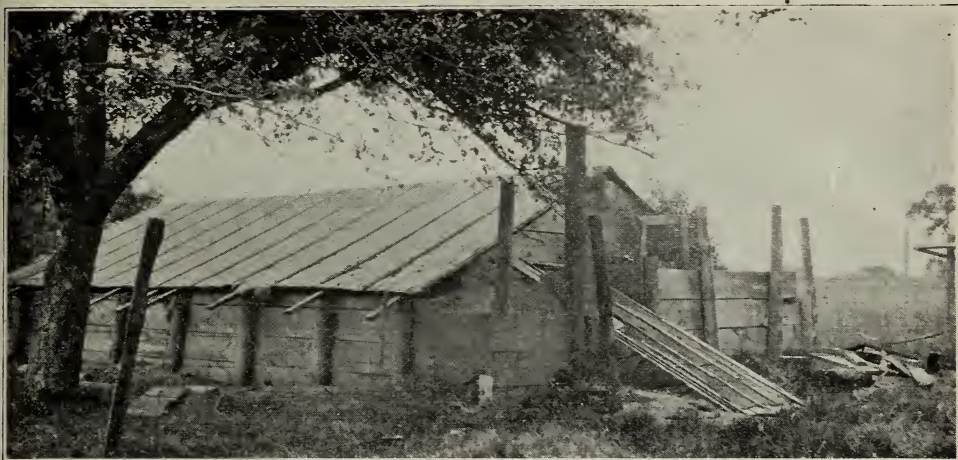


FIG. 2.—This is a lee-cellar belonging to Leonard Griggs of Flint, Mich. It is a type of an above-ground cellar embodying the ideas of David Running. The cellar proper extends into the ground about 3 feet. Then there is a three-foot embankment about 3 feet wide around the upper part of the cellar. The ceiling is covered with about three feet of sawdust. To keep the side embankments dry and frost-proof the roof extends entirely over the cellar, and embankment, except in front; and Mr. Griggs thought it would be a good idea to cover this also. Mr. Griggs has been uniformly successful in wintering bees in this cellar.

without the knowledge of the other, marks the information that we are now about to give as very important.

Mr. Running specifies that the whole bee-cellar must be well protected from both cold and dampness. It is not enough, he says, that the whole of the cellar be underground and the ceiling on a level with the ground, unless between the ceiling and roof is three or four feet of sawdust. Many and many a good bee-cellar gives poor results because the inside ceiling varies with

the changes of the outside temperature. A cellar where frost during severely cold weather can be scraped off the ceiling is badly designed and cannot be expected to give good results.

On account of the difficulty in obtaining proper drainage it is not essential, Mr. Running says, that the whole cellar be submerged $2\frac{1}{2}$ to 3 feet below the general surface of the ground to get below the frost line. In the great majority of cases the cellar will have to be partly above ground

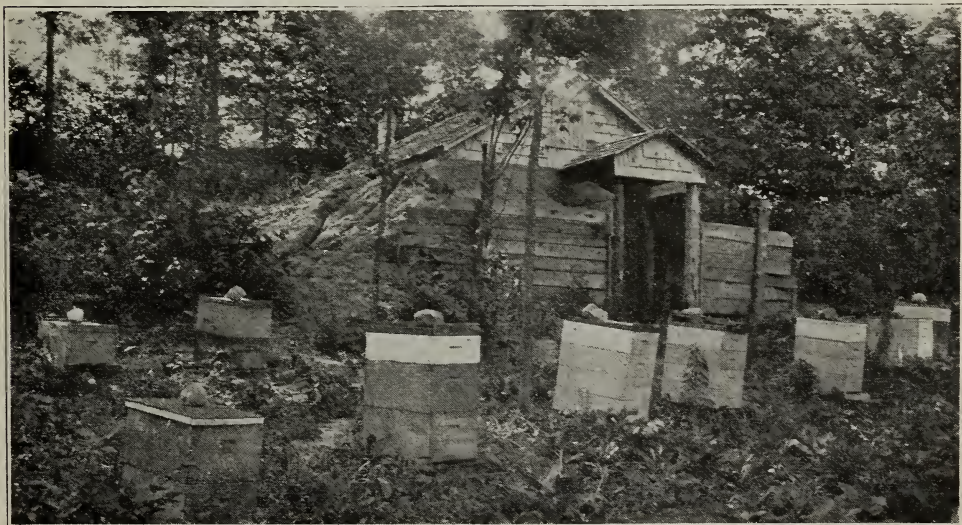


FIG. 3.—This cellar would be well designed if the roof extended over the side embankment. As it is, it would seem that the roof water is washing away the embankment on the left. The embankment becomes water-soaked, causing the temperature of the cellar to become too cold.

and partly below. But the important thing is to remember that the part above the general level must be protected by four or five feet of embankment of dry earth. The ceiling of the cellar proper must be covered with at least three or four feet of dry earth or sawdust. Mr. Running has a workshop directly above his bee-cellar, making only a foot of sawdust above the cellar ceiling necessary. In order to keep the side embankments dry as well as the space over the cellar proper, it is important that the roof itself cover not only the width of the actual inclosure, but the embankment at the sides and ends. A wet or frozen embankment means a low temperature in the cellar and that is often fatal.

Mr. Running told us that he believed he could winter bees in a properly constructed winter bee-cellar even in Tennessee or in any of the Southern States with a great

this sub-earth ventilator continue in a vertical pipe to within a few inches of the ceiling. This would bring about a thorough circulation of air from top to bottom.

The entrance to the cellar is effected by means of double (or better, triple) doors thru a narrow passageway leading from the level of the ground to the bottom of the cellar. If the cellar is halfway below ground and halfway above, the entrance and exit are made easy by means of steps. If it is located under a side hill, so that the bottom of the cellar is on a level with the ground in front, the conditions are ideal.

To recapitulate: "The important thing to remember," said Mr. Running, "is to make the cellar room so that it will not be subject to any outside variations of temperature; and to prevent these variations the sides, end, and ceiling must have



FIG. 4.—This belongs to L. C. Gordon of Bellaire, Mich., and apparently has the same defect as Fig. 3. The owner said that in this 12 x 20-foot bee-cellar last winter he wintered 151 colonies, without the loss of a colony. According to David Running's idea the roof should have extended over the side embankment. But these embankments are made up of sand that dries out very quickly; and, in spite of the fact that it is not covered, it makes a good insulator. This cellar has the ventilation recommended by Mr. Running.

saving of stores. "For," he said, "it is acknowledged that where bees can fly one or more times during every week of the winter they will consume anywhere from two to three times the amount that bees in the North will eat." He would put them where the inside temperature of the cluster would be at the point of the least activity, or 57 degrees F.

Regarding the amount of ventilation, Mr. Running has been successful in the use of one ventilator in the back end of the bee-cellar about 9 by 13 inches, extending thru the roof, and surmounted at the top by a chimney. This shaft should extend down to the level of the cellar floor. This is for the outlet of foul air. The inlet consists of a sewer pipe running under ground, opening into the front end of the cellar. Altho he has not used it, he believes it would be an advantage to have the inlet of

enough protection of dry earth or sawdust to keep the bee-cellar at the right temperature.*

The temperature of Mother Earth, according to Mr. Running, is about right for cellar wintering. Mother Earth varies all the way from 41 to 50 degrees. Mr. Running said the best results in a cellar would be where the variation of the temperature is between 43 and 47 degrees; and from the interviews that we have had with those who have followed his ideas we have come to the conclusion that an average of 45 degrees is about right; for at that temperature the bees inside of the hive approach nearly the temperature of the least activity—57 degrees Fahrenheit, which temperature has

*In localities where there are deep snows less insulation would be needed; but, as there are some winters with little snow, it is well to have a large dry dirt embankment.

been carefully determined by the Government experts.

In later years there has been a tendency toward a higher temperature—50 to 55 F. This is because, in house cellars, a lower temperature can not be maintained; but where it can be regulated to a nearly uniform point by Mother Earth 45 is probably better.

So far we have not touched on the question of food nor the age of the bees. Mr. Running said that of course he would much prefer good stores, for when good stores are used, there is no spotting of the hives when the bees are taken from the cellar in the spring, even if they have been confined from four to five months. But tho the bees will not winter as well on poor stores as on good, still if they are wintered in a properly constructed cellar, the amount of stores consumed by the bees is so small that no serious consequence occurs.

He says that many times the beekeeper can not have young bees, and many times he will have to put up with inferior stores. But he is strongly of the opinion that if bee-cellars were built right—and that, of course, means proper drainage and protection—one could winter any kind of bees. When the cellars are not properly protected, good stores and young bees are almost a necessity.

So much for David Running's methods—methods that are in use in Michigan, where good results have been secured.

Wintering in an Ordinary House Cellar.

Wintering in an ordinary house cellar is possible and practicable; but it should be understood that a house cellar is much more subject to variations of temperature, either on account of the presence of a furnace in the adjoining room to heat the house, or because of the exposure of the walls above

ground to outside temperature, which is always very variable. Our own experience has shown that where the temperature inside is variable—from 40 to 65—there must be a large amount of ventilation, especially at the higher points. We have had most excellent results with the temperature ranging between 55 and 60; but when the temperature is as high as this there will be a loud roar from restless bees, unless there is a constant interchange of air. It is a little



FIG. 6.—Another of Mr. Sowinski's bee-cellars.

difficult to bring this about in an ordinary house cellar; but where there are a few colonies—10 to 15—in a room 10 x 12, the matter of ventilation is not hard to overcome, especially if the door leading from the bee-cellar into the furnace-room is left slightly ajar. It is put down as an axiom that 10 colonies in a house cellar will winter better than 50 or 75 colonies, provided the temperature does not go below 40. If the cellar is not frost-proof—that is, will not prevent vegetables from freezing—it

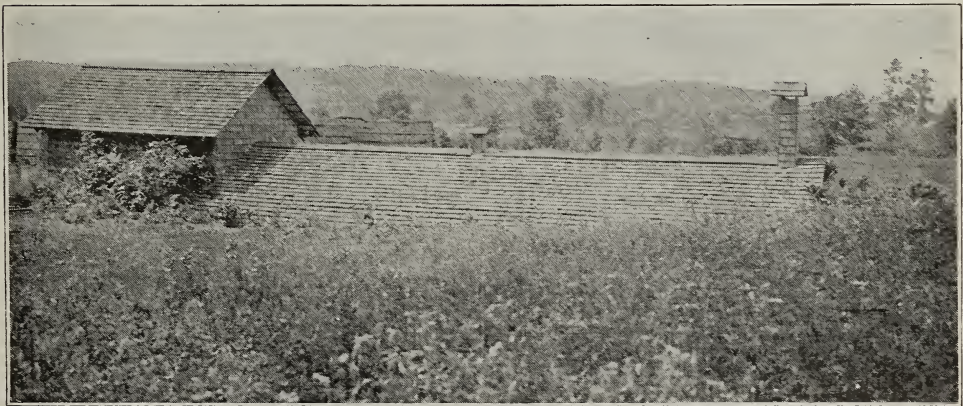


FIG. 5.—This cellar (7½ x 25) belongs to Peter Sowinski of Bellaire, Mich.; so also does the cellar (7 x 30) shown in Fig. 6. Mr. Sowinski wintered 285 colonies in these two cellars without loss. The embankment in Fig. 6 appears to be covered. The home cellar, Fig. 5, embodies all the ideas of David Running. We went into this cellar at the time of our visit, and, notwithstanding the temperature was 80 degrees in the shade outside, it was down to 45 in the cellar. Mr. Sowinski keeps his vegetables, butter, eggs, and other food stuffs in this cellar. The drinking-water, kept in jugs here, seems to be as cold as ice. The scheme of ventilation was the same as Mr. Running's.

will be a very poor place for bees. A cellar reeking with dampness is also bad, altho bees have wintered well in house cellars where there was a large amount of dampness; but it was because there was a temperature not lower than 45. We are not so sure but that 50 would be better.

The question of whether the hives should be carried into the cellar without the bottom-boards will depend on conditions. In cellars of the David Running type the bees should be put in with hive-bottoms and covers sealed down. Mr. Running uses an entrance $1\frac{1}{4}$ inches deep running the width of the hive.

Stores.

Usually a single brood-nest will have enough stores to carry the colony thru winter in the cellar; but some beekeepers—notably Leonard Griggs, one of the most successful producers in Michigan—give to every colony they put into a cellar a half-depth super of natural stores. This is in

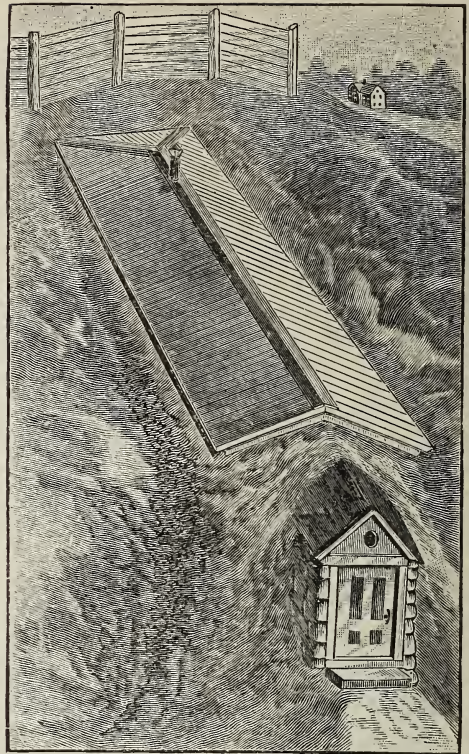


FIG. 7.—This cellar belongs to Ira Bartlett of East Jordan, Mich. He had some heavy losses in the cellar, which he attributed to bad stores and old bees. When asked if he didn't have too much ventilation, as shown by the ventilators, he admitted that that might be true. The sides and embankments are not covered by a roof, as will be noticed, and the result is that the temperature varies.

addition to what the lower story may or may not have. In this connection Mr. Griggs follows Mr. Running in the construction of his bee-cellar. See Fig. 2.

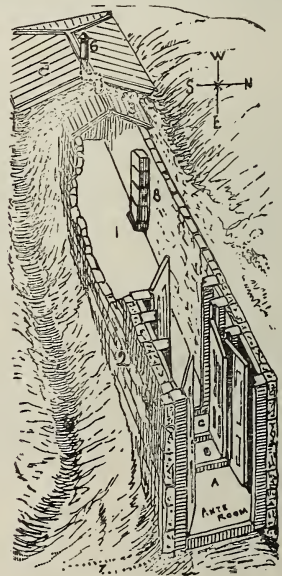
How to Build a Bee-Cellar.

So far we have given no specific directions how to build a David Running cellar. See Fig. 1 and legend beneath. Where the clay is firm and will not cave in, sustaining walls are not necessary. But in most localities a wall or a board siding is very necessary. Concrete walls are probably cheapest in the end. Where the cellar is temporary or on rented land very good beecellars have been built by using cheap boarding nailed against wooden posts. Mr. Brown of the Western Honey-producers, Sioux City, Ia., makes four holes in the ground with a post-auger. These holes are deep enough so that an ordinary fence-post will stick above the ground three or four



Exterior view of the bee-cellar of the late G. M. Doolittle. Note fence in rear.

feet. The boarding is then nailed inside of the posts above ground. The man then gets inside of the inclosure, digs an oblong pit deep enough so that he will have about $6\frac{1}{2}$



Interior view of the bee-cellar of the late G. M. Doolittle, shown as if part of the roof was removed.

feet between what is the top ceiling of the cellar-to-be and the bottom. The inside dirt is thrown outside of the wooden barricade. This leaves an embankment of four or five feet of earth. He uses no sustaining walls in the lower half of the cellar. A ceiling is then put on, and then a gable roof is made to cover the embankment as well as the cellar proper. On top of the ceiling and under the gable roof is put from three to four feet of sawdust.

In our next issue we shall give the latest methods for packing bees outdoors.

G. M. Doolittle on Cellar Wintering Nearly 30 Years Ago.

After we had written the first draft of Mr. Running's methods, we began going back in our mind to the time when we first took hold of Gleanings in 1885. We recalled that we visited Mr. Doolittle in 1890, and at that time we were much interested in his cellar where he had wintered his bees so many years successfully. The result was that we asked him to write it up. The illustrations for his article appearing in Gleanings at that time (and later printed in the A B C of Bee Culture) are here reproduced. By consulting these old woodcuts it will be seen that Mr. Doolittle was

long ago an advocate of the very principles that David Running has found to be so successful. One of these principles was a roof projecting over the side embankments. The other was a cellar ceiling below the frost-line. The series of doors in the hatchway leading into the cellar proper are very much the same. Mr. Doolittle believed in a temperature of 45 degrees and a very moderate amount of ventilation. The hole in his ventilator was 6 x 8 inches. A sub-earth ventilator was about the same size as that used by Mr. Running. Perhaps it would be well to mention that Mr. Doolittle in his later years thought less and less of ventilation until he finally abandoned it. In this we believe he made a mistake. However, Mr. Running says that if the temperature can be maintained uniformly around 45 very little ventilation is required. It might be well to mention also that a fence was put in the rear of Doolittle's cellar so the driving snows would completely cover the roof—not a bad idea; and it goes to show that he was thoroly in accord with the idea of having plenty of top protection. Mr. Doolittle used to say that the variation of temperature in his cellar did not exceed two degrees during the entire winter.



IMPORTANCE OF WINTER STORES

*Quantity, Quality, and Arrangement.
The Last Stores Gathered by the Bees
or Fed to Them Should be the Best*

By Belva M. Demuth

IN many of the Northern States the month of September brings an epoch in the life of the colony, for it ushers in the broodless period of fall

and winter. Thruout the spring and summer it has been necessary for the bees to rear large numbers of young to replace the wastage of bee life incident to the toil and struggles of the active season. This replacement of worn-out bees is now temporarily discontinued, and the colonies attempt to make their future existence secure by another method—a slowing-down of the expenditure of bee life.

In order to dispense with brood-rearing entirely until March the colonies must reduce tremendously their daily energy output, for, if they should spend at the same rate as they do in the active season, all of the worker bees, present in our hives on October first, would die of old age before Thanksgiving Day. We know, of course, that the bees slow down their activity during any lull in nectar-secretion, seemingly, always on the lookout for an opportunity to save their energy. Under certain conditions, therefore, even during the summer the individual workers may live much longer than the six weeks which is general-

ly accepted to be the normal span of life during the active season. The supreme effort toward energy-saving and life-prolongation, however, begins

when brood-rearing ceases. It is then that bee energy becomes the best of colony assets.

We have, therefore, at the beginning of the broodless period, a stop-gap crew of worker bees, whose only business in life is to live so slowly that their lives shall be prolonged to several times that of the more active preceding generations, and finally, before the spark of life goes out, to nurse into being a spring crew to take up again the life of the colony. This slowing-down of colony activity is well known among beekeepers and has been aptly described by Dzierzon as follows:

"The vital activity of the bees varies a great deal according to circumstances and the time of year, and the quantity and quality of food necessary are dependent thereon. The quantity of honey which a bee is able to hold in its stomach may, under certain circumstances, afford it ample food for more than a week; and, under different circumstances, may be insufficient to prevent death from starvation within 24 hours. If we compare life to a process of combustion, then a bee's life is at one time like a spark glimmering under the ashes, and, at another, like a bright flame which

in a few minutes consumes the combustible matter that would have fed the but glimmering fire for a much longer time."

The climate in "our locality" is such that this quiescence, so necessary to slow living, is easily upset; and, if we are not careful, we may have, even in December or January, activity more like the consuming "bright flame" than like the "glimmering spark." Wintering, therefore, so far as the beekeeper is concerned, means providing conditions favorable to the greatest possible degree of quiescence on the part of the winter bees.

The effort of the beekeeper in this direction during September is largely concerned with winter stores. The quantity, quality, and arrangement of winter stores each have much to do with the degree of quiescence as well as with the length of such period.

Quantity of Winter Stores.

It is important that every colony shall have, at the close of brood-rearing, an abundance of stores both for winter use and for spring brood-rearing. They may need 10 pounds for winter and 20 to 30 pounds more for spring; but it should all be in the hives this fall, not necessarily because the larger amount may affect the quiescence of the bees during winter, but because the bees will need it in the spring before it can well be supplied.

Quality of Stores.

Most beekeepers know what a tremendously disturbing factor poor winter stores become when the bees are confined to their hives for some time. In this connection, it is interesting to note that cellar wintering has been found satisfactory only in those regions which furnish year after year winter stores of the best quality, or where the beekeeper practices feeding sugar syrup to supplement the winter stores. Cellar wintering is practically impossible when honeydew is mixed with the honey stored at the close of the season, unless the beekeeper feeds for winter. Even when bees are wintered out of doors and are fortunate enough to have a cleansing flight about once a month, the disturbance during the interim must be extremely costly in bee energy. When the stores are poor an enormous quantity is consumed, and colonies sometimes live so rapidly under such conditions that they consume all they have and starve, providing they do not first use up all their vitality and die of old age in midwinter.

It is fortunate for beekeeping that in the extreme North where the bees are confined to their hives several months without a cleansing flight, the winter stores average much better in quality than farther south. If the reverse were true, it would not be possible to winter bees on natural stores in the far North. Last winter some of the most severe winter losses were reported from the middle latitudes; due, no doubt largely to the character of the stores.

Arrangement of Winter Stores.

It usually happens that the very best hon-

ey stored during the summer is either all removed as surplus, or is stored in the brood-chamber most remote from the winter nest. As the season draws to a close and brood-rearing is decreased, the cells left vacant above and back of the decreasing brood-nest are filled with the latest-gathered honey, which is usually inferior in quality to that gathered during the height of the honey flow. This arrangement of the stores causes the bees to use the poorest honey first as their winter food, leaving the best honey for spring brood-rearing. This is exactly the reverse of what it should be for best results. If the stores are so arranged that the best honey is used first, the activity of the bees is greatly reduced, and they must live correspondingly longer. Furthermore, if only the best of stores are used during the broodless period, a surprisingly small quantity is needed if the bees are properly protected. Even five pounds of either heavy sugar syrup or the best of the early-gathered honey stored in the margin of the winter nest may save, under some conditions, several times that amount in the total consumption of stores during the winter, to say nothing of the decreased wastage of bee energy. This better condition is readily brought about by feeding this amount of sugar syrup or honey after the brood has emerged, when it will be placed in the margin of the winter nest where it will be used first. Thus if the bees need five to ten pounds of stores during the broodless period and twenty pounds for early spring brood-rearing, the five to ten pounds should be of the very best quality and so arranged that it will be used first. With this arrangement the quality of the remaining twenty or more pounds does not materially affect the results, for this is used when the bees can have more frequent cleansing flights. Colonies may be uniform on the first of October as to strength, age, and vitality of bees and even as to quantity and quality of stores, yet if the arrangement of the stores in all colonies is not such that the best of the food is available for use first, there may be a great difference in the way they winter. Some colonies may have put in a few pounds of inferior honey late which, being used first, upsets the quiescent condition quite early. In the absence of a cleansing flight such colonies may winter poorly, even tho the remaining twenty-five pounds or more of stores may be of the finest quality.

Uniform results in either cellar or outdoor wintering in many localities will probably never be attained, unless the beekeeper makes it a practice to feed to each colony already provisioned an additional five or ten pounds of either a heavy sugar syrup or the best early-gathered honey. This feeding is done after the brood has emerged and too late to have it again covered up with later-gathered stores from the fields.

The arrangement of the stores in relation to the winter nest should not be dis-

turbed later by changing the places of the combs, for in the subsequent rearrangement the bees might carry some inferior honey or honeydew from some other part of the brood-chamber and put it into the inner circle of stores.

The time for this feeding in the North is usually late September or early October. If at this time each colony has plenty of young and vigorous bees (see page 462, August Gleanings), plenty of stores for both winter use and spring brood-rearing, and if a quantity of these stores sufficient

to last until March is of the best quality and so arranged that it will be used first, we have most favorable pre-winter conditions. If to such colonies we add adequate winter protection, either by packing them well in a sheltered location out of doors or by housing them during the cold weather in a comfortable dry cellar, we have provided conditions which should enable the winter crew to live so slowly that they will be able to hold the fort until the arrival of reinforcements in the form of young bees next spring.



AS explained editorially in our July issue, page 393, beekeepers now enjoy the privilege of sending bees in one, two, three, and five-pound lots by mail. Our dear Uncle Samuel up to this time has granted every reasonable request that has been made by beekeepers, and not the least of these by any means is the ruling that now permits the sending of bees by parcel post in suitable cages.

During the last two or three years, conditions brought about by the war have greatly delayed express shipments of bees. In a few instances the express companies declared embargoes on bees. While these restrictions have since been lifted, the fact remains that bees in package form by express have been greatly delayed. In many cases there have been losses of 50 and even 100 per cent; and while under normal conditions express companies could have been held liable, and are legally liable now for any unusual delay or carelessness in handling, yet experience shows that it will be a long time before any claims are satisfied, even if they are ever taken care of.

These claims of delay and loss of bees

THE CAGE THAT WILL DO IT

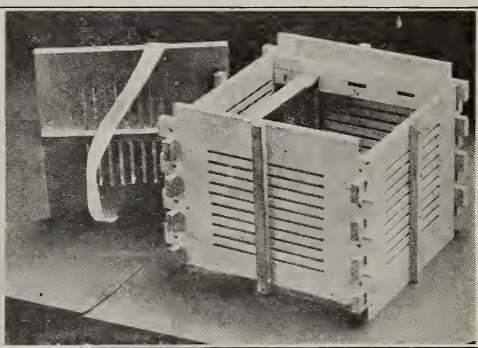
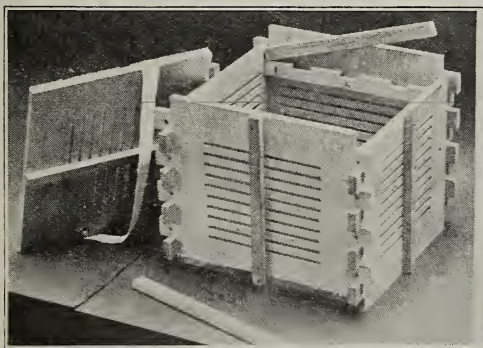
How the New Postal Order Allowing the Shipment of Bees in Pound Packages May be Made Use of

By E. R. Root

urging the necessity of the privilege of sending bees by mail. We explained the delays that the express shipments of bees were receiving, and how the bees were dying en route as they had never done before; that there had been very heavy winter losses east of the Mississippi; that there was a shortage of bees in some parts of the country and a great plenty in others. We showed that it is impracticable to send bees in carlots, owing to the congestion of freight; that unless the beekeepers of the country could have the parcel-post privilege of sending bees in package form without combs, the industry would suffer materially.

At the last interview we submitted evidence from shippers from all over the country, showing how bees have been lost in shipping by express. We met very favorable responses at each of the interviews, and finally the Department, as told in our July issue, issued a ruling making it possible to send bees in quantities by mail, as has been

in shipment led Dr. E. F. Phillips, Apicultural Investigator in the Bureau of Entomology, and the writer, to appear before the Postoffice Department,



The cage for shipping bees by mail that the postal authorities favor. Notice the frame of foundation in position in second cage shown above.

done heretofore with queens and a dozen or so of attendants.

We submitted two forms of shipping package to the Department; but the one that eliminates the use of wire cloth entirely, using saw-cuts thru the sides of the box, appealed to the Department officials as feasible, practicable, and safe. We explained that this cage had no patent on it, and that any one could make it; and from preliminary trials that had been given it, excellent results had been obtained. This cage was first submitted to us as a suitable mailing-cage by E. J. Atchley of California; and it would be no more than proper to call it the Atchley mailing-cage.

While cages using saw-cuts without wire cloth were used quite extensively for sending queen bees and a dozen or so of attendants, some 25 or more years ago, no one ever thought of the same principle for sending bees in larger quantities by mail until Mr. Atchley submitted his cage.

The subjoined illustrations show cages made of basswood, the panels of which are $\frac{3}{8}$ inch thick, with saw-cuts $\frac{1}{8}$ inch wide* and $\frac{3}{8}$ inch apart. This box, with its ventilated sides, ends, top, and bottom, is further reinforced by cleats that not only strengthen the cage but prevent it from coming in close contact with some other parcels, thus shutting off ventilation. The projecting lock corner teeth are for the same purpose.

The inside of the cage is provided with one or more miniature frames that contain strips of foundation. This last idea was the suggestion of Mel Pritchard. Why the foundation? Mr. Pritchard reasoned in this way: When bees are sent in boxes or cages without combs the environment is unnatural. The bees become discontented, worry, and when they get to worrying they soon die. His idea was that if bees were given a chance, they would draw out the foundation and build the comb. Such comb would be perfectly free, of course, from any possible taint of disease; for it is a well-known fact that a colony having American foul brood will be cured if put in a clean hive on clean frames of foundation. The same treatment has been very effective for curing European foul brood as well.

To test out this principle of bees building comb en route, we had some cages made early in the season—in fact, they were nothing more nor less than nucleus boxes with full-sized Langstroth frames containing half-sheets of foundation, a box of water, a box of candy, and a box of syrup. These cages were sent to different points, even as far as California. Pounds of bees were put in them, and sent back to Medina. As Mr. Pritchard fully expected, the foundation was drawn out into comb en route, and in some cases larvæ and eggs were found; but, more remarkable, the bees came

thru in every case these long distances without any greater loss than two or three dead bees to the box.

If Mr. Pritchard's idea is correct (and we now think it is), it solves the problem of sending bees by mail or express. That idea, joined to the Atchley cage, ought to make bees by express or mail in package form an assured success.

But, as we have pointed out before, it is absolutely necessary that the Department ruling as to the style of cage be adhered to exactly. It will not do for any one to try any experiments. The old cage used for express shipments will not do. If a wire-cloth cage is adopted, there must be two thicknesses of screen separated by slats $\frac{3}{8}$ inch in thickness. Obviously it would be better and cheaper to use the saw-cut principle and eliminate the wire cloth entirely.

It should be noted, however, that Uncle Sam assumes no responsibility for bees going thru in bad condition. If bees arrive dead, either the shipper or the consignee must stand the loss. That will be a matter that will have to be adjusted between the two parties—and should be definitely agreed upon in advance.

As a matter of fact, the present extraordinary conditions do not make express shipments of bees any better; and, moreover, the express companies charge a rate and a half, while bees in parcel post will go thru at the regular zone rate, which will be on a par with a single rate of express, and in many cases less.

From the fifth zone up and over 15 pounds, express is cheaper. In zones one, two, three, and four and up to 25 pounds, parcel post is cheaper.

In order to try out the cages, we decided to ship packages to some distance (both one- and two-pound sizes). We accordingly sent some of these packages from Medina to Washington, D. C. Upon arrival at Washington they were given no attention whatever but were immediately reshipped to us. These packages were five days en route, and yet were returned to Medina in fine condition, with no more than a dozen or so dead bees in the bottoms of any of the cages. This trial proved conclusively that bees may be sent much safer and cheaper by parcels post than in any other way. It also convinced us of the value of Pritchard's idea of sending the bees on small frames of foundation, accompanied only by bee candy; for not only was the foundation all drawn out into comb, but also good worker brood had been reared en route, so that on arrival all that was necessary was to lift out the three small frames, place them side by side in a standard frame and insert in the nucleus hive. By making use of foundation there is no danger of spreading disease with such a package; and since there is brood on their arrival, there is no danger of the bees being discontented with their new hive. The package is a decided success.

*The saw-cuts should never be wider as bees would go thru. Three thirty-seconds-inch width is about right.



CONVERSATIONS with DOOLITTLE

Stores for Winter—How Much and How to Know When There Are Enough

“Several of my colonies starved last winter on account of lack of stores, and I do not want such a thing to happen again. Will you tell us in Gleanings how much should be allowed for each colony in October, in honey or its equivalent in sugar syrup, to carry an average colony thru till the flowers bloom in the spring?”

Something depends on what is meant by an average colony; and much more still, whether the colonies are to be wintered in the cellar or on the summer stand, or what is termed, “out-door wintering.” For this latter, bees should be allowed not less than twice enough to carry them safely over an ordinary trying winter. Last winter was one of the most trying sort, and it is no wonder that many colonies went short of stores, where they were at the mercy for days and weeks of from zero to 20 and even 30 degrees below. No colony should start in October with less than 25 pounds of good stores in the northern half of the United States or Canada, as a minimum amount, where the colony is to be left out on the summer stand, no matter how well packed and protected, and 40 pounds would be far preferable. Some of our practical outdoor winterers say 50 as the maximum, but nine winters out of ten, 40 will carry them safely thru till spring, when, if any are in need, they can be supplied with enough to carry them till fruit bloom.

For cellar wintering, we have more nearly a uniform temperature, from the time the bees are put in the cellar to the time they are taken out, so that we do not need to vary but little on the amount of stores to meet the variation of temperature outside. With a cellar whose temperature can be kept during the five months the bees are in it from 42 to 48 degrees, not more than two pounds will generally be consumed each month or ten pounds in all as an average. To be safe, I always try to make the amount 20 to 25 pounds, beginning with October 1 and ending with May 15. If I find an occasional colony with only 15 pounds, I allow it to go in the cellar with that amount, rather than to go thru the process of feeding, especially where I am short of feed in the fall. But such hives are marked so that as soon as the bees are out of the cellar, all such colonies that are light in stores can be supplied enough to carry them thru till fruit bloom.

But some one may ask, “How am I to know how much honey any certain colony may have?” At a convention some years

ago the following was given out as the right way to ascertain in this matter. “Put into an empty hive the number of combs used in wintering, and weigh the hive so arranged, when the hives in the apiary are to be weighed, the amount of the other deducted, and, if there was 40 pounds left above this deduction, there would be sufficient stores in that hive for wintering on the summer stands, and if there was 15 pounds, it would do very well for cellar wintering.” But I can hardly put this plan out for anyone except those who are willing to look after their bees on the first warm day that the colonies can have a flight. Hives subject to the weather weigh more than dry hives, colonies differ very much as to size and weight, old combs weigh double that of new combs, combs from a colony that was queenless for some time during the summer will often contain pollen to one half the amount allowed for cellar wintering, and, for these reasons it would be well to add 10 pounds to the amounts given so as to be on the safe side. If our bees are in single-wall hives that may be readily handled, take any hive of the same pattern which may have been standing out, and put in it the same number of old empty combs as are in the hives having bees in them and proceed in this way: The hive with old empty combs weighs, say, 20 pounds. Now allow 5 pounds for bees and beebread, this making 25 pounds. If to be wintered on summer stand, we add 40 pounds as the necessary amount of honey, making 65 pounds as the weight necessary for each full colony, to put the same in good condition for winter, so far as stores are concerned. If to be wintered in the cellar, then, instead of the 40, add 25 pounds as the necessary amount of honey, thus making 50 pounds as the weight for a full colony where cellar wintering is practiced. If you are to winter on the summer stands, weigh a few colonies till one is found that weighs the 65 pounds required. Now lift, or “heft” this hive, as we used to say, a few times carefully, till you have a good conception of its weight, and, if you lose that conception at any time, come back and lift it again. Having a good idea of this weight, you can now go rapidly over the apiary, lifting each colony just clear of the ground, always taking the same position in this operation, and marking with a small stone each one that is doubtful or light. If there has been a good fall flow of nectar, most of the colonies will be over the 65 pounds in weight, some running to 70 and 75 pounds, and all such require scarcely more than a “taking hold” to determine their satisfactory condition. Next weigh each of the doubtful and too light ones, placing the

FROM THE FIELD OF EXPERIENCE

scales on a box or adjacent hive for that purpose, and mark the weight at a certain place on each hive. After the weights are determined, it only remains to put the light ones in condition for winter by uniting, by supplying them with the needed frames of honey from the store room, or with sugar syrup. And this holds good for those to be wintered in cellar except that 50 pounds is the standard instead of 65.

Borodino, N. Y.

G. M. Doolittle.



INEXPENSIVE WINTER CASES

But They Seem to Protect the Bees and to be Easy to Provide

My winter cases are composed of any cheap lumber that will hold a nail. The end is made of four pieces, 28 inches long, and one 30 inches, so the front is the highest, and covered with tarred paper or rubberoid. As to length of cases, I generally make them about 52 inches long so there will be nearly 8 inches of packing at each end. For a roof or cover I find that two gable covers are the nicest, as they can be used in summer time. For winter I lay an extra piece of tarred paper across the center to reach over the top of each. When summer comes I stack the cases to one side and put the packing in them for another season; and I save for packing any grass that may be cut. The last hard winter I

lost only three colonies—one from starvation; the other two had honey, but were affected by dysentery. We had a very hard winter. They were more than 100 days without a flight, and many colonies were affected. I generally winter in two bodies, even if one is only a shallow Danzenbaker extracting body. I also give bottom protection for all hives that stand up from the ground.

With care, the cases here described should last for years. I have used some of them for eight years, and they are still as good as new.

Johnstown, Pa.

J. B. Holsinger.



AN INEXPENSIVE PACKING CASE

How a Kansas Man Has Solved the Problem in His Country of High-priced Lumber

Out here in Kansas lumber is mighty high—perhaps not higher than in some other places, but high enough so that making the quadruple packing cases would mean a big expense. Picking up packing boxes that would do is out of the question. When one is “picked up” it is at a price of about \$1 and then has to be rebuilt. Getting together enough lumber or boxes for my 150 colonies of bees seems too big and too expensive a job for me when I have a cheaper way that appears almost as good to me.

After extracting is over I put a deep or



The apiary of J. B. Holsinger made ready for winter.



FROM THE FIELD OF EXPERIENCE



shallow extracting-super of combs under every brood-chamber. Over the brood chamber I put a box that I make myself out of 1x4 stuff, and which is the size of the hives, outside measure. A piece of burlap is tacked over the bottom. Inside I place five or six newspapers on the bottom of the box, fill the box with planer shavings, and then cover with more papers on top. This box is set on top of the regular super cover. Over the box I put a sheet of one-ply roofing paper, folding it down over the sides and ends of the brood-chamber, and fastening it with tacks and tin washers. On top I place the regular cover, put the regular entrance contractors in, and my bees are packed for winter.


The winter of 1916-'17 was a normal winter, with the exception of two very cold days. The mercury went down those two days to 20 below and there was a 50-mile gale blowing about all the time. Unpacked or partially packed bees in my neighborhood suffered very severely. Mine were packed as described, without a windbreak except a short strip of hedge on the west and a chicken wire fence on the north, and I lost only 8 out of 135. The eight lost were in hive bodies without the extracting-supers under them, with one exception, and that one came thru weak and queenless.

It will be seen that the bees are in the top brood-chamber with the top of that well insulated with the box of newspapers and planer shavings, and the top part of the sides covered with roofing paper, which covers the joint of the box and hive. The paper being waterproof keeps all moisture out, even if the cover is not on. The heat is easier kept with the entrance so far below the bees. I have not yet seen a wet hive inside. The boxes are left on the hive the year round as they are a good insulator against heat as well as cold, and are kept on the bees as handily as if they were taken off and put somewhere else. The paper will last several years if taken care of. It should be put in a building and set up endways or edgewise.

My bees look good early this spring (when this is written) despite the very severe winter weather just experienced.

Sabetha, Kan.

Frank Hill.



THE QUESTION OF FEEDING

A Kind of Feeder that Has the Approval of a Veteran Beekeeper

During the Watertown, N. Y., convention, Mr. Loutes gave his method of feeding. In his address he described a feeder designed by Mr. Elthorp, and said he had used about all the feeders invented and had settled on Mr. Elthorp's.

It should be remembered that nuclei need


plenty of feed to bring them thru the winter. If poorly fed, they are one of the poorest properties a beekeeper can have. To build a nucleus up, Mr. Loutes advised, during the early autumn, to give about two tea-cups of syrup at a time stimulating them to brood-rearing. He believed the latter part of September the best time to feed bees for winter. In other words, feed as late as possible. If fed early, the bees will use the stores for brood-rearing. Mr. Loutes weighs the colony about Oct. 1, and feeds with a pan feeder set under the brood-chamber. He puts the food on towards night, leaving an entrance only $\frac{3}{8}$ inch square. His feeders will hold 20 pounds of syrup or more, but feeding at that time he never feeds that much. The syrup is given to the bees warm. Any normal colony will take up the feed in one night.

Mr. Loutes first used floats in the pan feeders to keep the bees from drowning in the syrup. This did not suit him, and he put cheese-cloth on top of the float. He now uses excelsior, which is both cheap and serviceable, putting enough of it in to let the excelsior touch the bottom bars of the frames above.

He said the question might be asked: Does it pay to feed sugar syrup to the bees. He thought it did. The honey most suitable for winter stores is early-gathered honey. First in order is the clover. The dandelion and apple-blossom honeys are not as good. Canded or granulated honey he considered to be of little use to the bees. He said when the nights were cool, Mr. Elthorp closed the entrance entirely when feeding. (We must remember he referred to October nights.)

R. F. Holtermann.

Brantford, Ont.



HAS WINTERED IN MANY WAYS

But He Now Gives All the Preference to a Side-hill Bee Cellar

As I commenced keeping a few bees in 1882, I have tried many ways of wintering. I have even tried burying them. They wintered well, but it was a lot of hard labor. The next best way proved to be a house cellar where a family lives above, or at least where there is a fire above. One year I had bees in a cellar the ground floor of which was frozen for some time. The following spring there was a heavy loss. It was so cold that the bees ate only what was within their reach, and chilled and died with lots of honey in the hives. If you find it freezing for any length of time, start a fire in the cellar in some way and warm it up. The poorest wintering I experienced was in the cellar of a vacant house which was used for a beehouse. The cellar became cold and remained cold. When the sun



FROM THE FIELD OF EXPERIENCE



warmed up it never reached away down into the cellar. The result was very poor wintering. The next season I put building-paper over the floor. I put on some hay and tried it again. But I had heavier losses than ever—more each time than a good bee-cellar would cost.


In one's own cellar he can control matters. Last winter my son and myself, in wintering in seven different places, found it not so easy to control things away from home. The farthest yard is 40 miles distant.

The best wintering with least labor and least expense I have ever tried, in the long run, has been a cellar in a side hill. In the first one I built, I left dirt sides, as the ground was very hard. There was just a little wall at the top where the dirt bothered by falling down. But since then I have found it best to lay a stone wall up from the bottom. The last one built suits me perfectly. The bees are on a flat at the bottom of a side hill, where they have fine pasturage. These are 35 miles from home. I had the farmer living where these bees are located pick out a spot for the cellar where the snow drifted deepest over the hill. He reports that every winter now the cellar is out of sight, as the snow is usually 10 feet deep above it. This is very important, as very few temperature changes occur under that amount of snow. This cellar goes in the bank on a level with the yard. There is just enough slope to the floor so that if there is any water it will run out at the door. On opening the first door you come to a five-foot vestibule leading thru to the second door. This is a very important arrangement, as frost will not get thru the second door. The cellar is nine feet deep. A deep cellar will not be changeable like a shallow one. It is 25 feet long and 9 feet wide, laid up with loose stone—something a mason would call a dry wall. Near the top I used mortar on account of frost. The wall is laid on a level with the ground. A plank, 2 by 8 inches, is laid for a sill; then the roof is put on; some boards are laid across the sills and filled with straw to the roof. The back end of the cellar is about two feet higher than the front. This conducts any water away from the sides. In carrying the bees, we walk on a level, set four in a row, and pile five high. About 200 will thus winter finely. We could put in 225. We started in with one ventilator on top of the first cellar. We now use two on top, about eight inches square. We lock up the door and do not see the cellar again until time to set the bees out in the spring. We built this cellar when we had a spare day. We first dug, then laid the wall, then put on the roof. Straw was to be had close by for the drawing. We bought lumber for the roof. We usually have paid \$10 a year

for cellars to winter in. The cellar's rent for two or three years paid the cost of building it. The additional labor necessary in putting the bees in and getting them out of a rented cellar will soon pay for building one—and then there is no worry, no insurance, and better wintering. We expect to build another one next summer.

Mayfield, N. Y.

G. W. Haines.



THE HONEY-RIPENING PROBLEM

Wherein Conditions Differ in a Hot Climate from Those in Temperate Regions

I have read on page 398, July Gleanings, the article on fermented honey. It is right, too. But honey is much earlier ripened in this hot climate than it is in a wet country. If the combs are half sealed in this country, my experience is that the honey is safe and will not ferment. But most beekeepers in the Gila Valley extract before there is an inch sealed along the top of the frame, or even less; yet I have not heard any complaints of their honey fermenting—probably because their honey has always been sold to the biscuit and cracker manufacturers, and has never been used for the table. Such honey will sugar hard in two or three months; but its grain is very much like coarse brown sugar, and all thru it is a thin watery substance. Put it on a wagon and haul it a few miles and it will begin to ooze out around the screw cap. Take off the cap and it will emit an odor. The mesquite and catclaw are much thicker and heavier than the alfalfa and other honeys. Mesquite weighs 12½ pounds, well ripened, to the gallon. Catclaw weighs 13 pounds to the gallon. Our other honeys weigh only about 12 pounds to the gallon. We all have to extract the mesquite and catclaw honey when it is so thick that you can hardly uncap it; and it is very hard to extract without breaking the combs out of the frames. When I was in the bee business in Safford, Ariz., I had a galvanized tank that held 1,800 gallons, and my honey was put in it direct from the extractor. This tank was put where the full rays of the hot sun could strike it all day; and the first 10 days after it was extracted there would be a white foam rise on the honey. Some times it would keep rising for 15 days. Just as soon as this impurity would stop rising I would draw it off into the five-gallon cans, and then it was ready to ship. If this tank was nearly full, I have known this foam to rise six inches on top of the honey, and the surface of the foam itself would become perfectly dry and free from stickiness. In this way my honey seemed to ripen in this hot country as nicely as the bees could ripen it.

Miami, Ariz.

W. D. Jefferson.

J. KETTLE says (Brit. B. J., 186): "I have lifted up the brood-chamber and outer case with a couple of sticks in some of mine, to see

if this adds to the stamina of the young bees to stand the long damp winter, and shall keep them up till robbery begins." It may be worth considering whether bees reared in abundance of pure air may not stand hard knocks better than those reared in somewhat stifled quarters. But that "till robbery begins" suggests that there is danger of robbery with so large an opening, and I am wondering whether the difference here is made by the bees or the locality. Most of my colonies have five openings, counting the entrance and the openings between extracting-supers, the total opening amounting to 48 square inches, or a third of a square foot, and I have no fear of robbing when the flow stops, provided everything is left just as it was during the flow. But if, when the flow stops, I make a fresh opening, robbers promptly note the change, and there is danger of trouble.

STRAY STRAWS

Dr. C. C. Miller

vitamines in the larval food did not come from honey, but from the pollen partaken of by the nurse bees. The value of pollen has always been underestimated

in the normal feeding of the larvæ, and only too often the failure of a colony to build up is due to a lack of pollen rather than a lack of honey."

The tribute to the value of pollen is well deserved, but it's a little beside the mark in the present case. If vitamins are not in honey, we should make no such claim. But what Mr. Aeppler says is not entirely convincing. He tells us why he believes vitamins are in larval food, but does not tell us why he believes them in pollen and not in honey. I confess to a mind prejudiced in favor of believing honey a vitamin-container, and as between the opinions of Stacey Puerden and Mr. Aeppler, until further proof is forthcoming, or until she recants, I prefer to pin my faith to the skirts of Mrs. Puerden.

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According to U. S. Bulletin No. 685, there are in the United States 6,000,000 colonies of bees, the total honey production being considerably in excess of 200,000,000 pounds. Figuring this at only 18 cents a pound makes \$36,000,000, a good bit more than the twenty millions we have been accustomed to estimate. Interesting to note in the same bulletin is that Florida is earliest of all the States in the matter of swarming, a third of its swarming being in March. Wyoming is the latest, 22.5 per cent of its swarming being in August. Taking the country at large, June is the great swarming month, 36.2 per cent of all swarming being then, with 3.5 per cent in March, 16.4 per cent in April, 25.1 per cent in May, 14.8 per cent in July, and 4 per cent in August. This bulletin, by S. A. Jones, shows that Uncle Sam is interested in doing something for beekeepers. It's a fine document.

* * *

C. A. Aeppler says in *The Beekeepers' Item*, "As far as I know, no one has proved that honey contains vitamins." I commend him to the tender mercies of Stacey Puerden. He further says: "I am convinced that it is not honey that contains vitamins, but pollen. The vitamins that are present in the larval foods of the bees are derived from pollen and not honey. Also, larval food contains large quantities of vitamins; so much so that when rats were fed upon a vitamin-free ration to which had been added 10 per cent of larval food, normal growth resulted, proving the presence of vitamins in larval food. But these

We are told that it is better to breed from a queen whose royal progeny are uniform in character. I'm sure that's right. I would rather brood from a queen of that kind than to breed from one whose workers should store a good bit more honey but with royal progeny scattering all over creation in their characteristics. But while such a thing is all right in theory, putting in practice is not unattended with difficulties. In the first place, according to all I have heard and read, queens whose royal progeny are uniform are about as scarce as Len's teeth. The royal progeny must not only be uniform, but uniformly good, and not uniformly bad. In the second place, the necessary testing cannot be done in a day. Suppose you rear a queen in 1918. You cannot tell what she is as a honey-gatherer until she has been thru the whole of one season, and that will take you to the close of the season of 1919. That will be so late that you will hardly rear any queens from her before 1920. These can not be tested for uniformity before the close of the season in 1921, allowing you to begin using her as a breeder in 1922. In 1922 a queen born in 1918 will be somewhat "in the serf and yellow leaf." It is possible that you might speed up that program, rearing your trial set of young queens after the close of the season in 1919, and then using your queen as a breeder after the close of the season of 1920. But I imagine you would find that not so very satisfactory. You must remember that this sort of testing involves the testing of an additional queen, if not several. For if you have no second choice, and are going to use that queen as

a breeder anyhow, what's the use of first potting her royal progeny thru their paces? Thirdly and finally, my brethren, how many of you are breeding from a queen whose royal progeny are as like as two peas in a pod?

* * *

H. D. Murry, in *The Beekeepers' Item*, reports a remarkable loss of queens in the spring of 1918. Natural stores were so scarce last fall that the bees had to depend almost or entirely upon sugar syrup, and conditions were such that he says, "I was continually feeding, all winter, every time there were a few days of warm weather. As soon as spring began I would notice that the queens were missing from a few colonies. They would just disappear, without the bees having made any preparations to supersede them I noticed that the loss of queens was greatest where I had to feed the most sugar after spring opened. At one yard, five miles out in the country, there was an occasional light flow from various sources, and the loss at that yard was comparatively light. But, at one yard in town, I started into winter with 25 and lost 22 of them. Of the three that survived, one was an old breeder whose colony was not fed any sugar syrup, but wintered on honey; one quit laying for some weeks, but resumed business again after sweet clover began to yield; the other is still alive and doing well." The only explanation that occurs to Mr. Murry, he says, "is that sugar syrup does not contain the elements necessary to sustain life indefinitely, nor those necessary to growth of animal tissue. Since the queen is called upon to lay something like her own weight in eggs daily, those eggs must be supplied with the germs of life, and, as she could not get those elements from the syrup, she had to draw on her own resources for them, and it was more than she could stand for a limited time." Have the friends of sugar-feeding a better explanation?

* * *

A strong colony of strong bees is a requisite for best wintering, with abundant stores of good honey. If wintered outdoors, there should be protection against cold, and especially against the approach of strong winds. If in cellar, the temperature should be not far from 57 degrees, with chance for entrance of abundant fresh air, and hive-entrance wide open. Don't tinker with the brood-nest late in the season. Strong colonies mean all strong, any weaklings to be doubled up not later than September. Strong bees are those not worn out by field work, but reared late in the season. For bees of extra stamina, always breed from the best.

* * *

That new kink, page 460—let your combs stand four or five weeks after extracting, and then extract again. As intimated, that doesn't always work—the air may not be moist enough. Put the combs in a damp cellar, and a few days will be better than a

few weeks in a dry room. (It's a good plan, also to put wet cappings down cellar to drain.) But it should be remembered that even after that second extracting the combs are not really clean of honey, and it may be worth while to give them then to the bees to clean up, so that the small quantity left may not form granules to injure the honey put in them the next season.

* * *

Prof. J. H. Cook said years ago that the honey from milkweed overbalanced the harm done by the pollen appendages fastened to the bees' feet. Ye editor goes farther, and says, page 458, August *Gleanings*, that they "do little or no harm, as these appendages are pulled off by other bees." Maybe; but in this locality a well-appendaged bee is driven out by the other bees, and I never saw them pulling off the appendages.

* * *

H. H. Root, what you say at page 465, and the sight of the accompanying pictures, incline me to the opinion that it should be made a felony for any one either to buy or sell a 60-pound can without having it substantially jacketed. It's only one more of those cases that show it's often penny-wise and pound-foolish for a man to use something of his "own git-up" when he can get a standard article ready to his hand.

* * *

Belva M. Demuth, I'm your debtor. Not only for the good advice given on page 462, but for your approval of building air-castles. I've done lots of it, and am as much of an air-carpenter as ever. What fun it is! Even tho 99 out of every 100 come tumbling to the ground, the standing of that 100th castle pays for all the work done. The man who never dreams and plans is lacking in one of the elements of a true beekeeper.

* * *

Mr. Editor, I'm not anxious to mix into that quarrel between you and Dr. Phillips about feeding sugar to bees, page 461, but merely rise to remark that some day it may be discovered that sugar is an incomplete ration, and that bees fed on high-priced honey may have extra stamina enough so that the extra honey gathered by them will more than make up for the higher price of honey over sugar.

* * *

The Beekeepers' Item for June is an auto number—and a good one. But the discussion is one-sided, no one standing up for poor old Dobbin, who must stand aside for a "tin Lizzie" that has no fear of stings. Some prefer a truck car, some a car and trailer, but there is general agreement that a light machine for speed should be chosen rather than a heavy one for great weight.

* * *

But aren't those California fellows just going to it in the way of organization? Maybe they'll shame some of the rest of us into it.

THOSE illustrations, page 466, Aug. Gleanings, are just great, "true to nature" as to the condition honey shipped some distance usually appears as it is unloaded from the cars. Even honey put up in cases as shown on page 467 I usually find more or less broken open and the cans loose in the car.



Says Belva M. Demuth, page 462, "The beekeeper's calendar should begin in August." That is as it should be, for, as she says further on, "At this time is laid the first course in the foundation for next year's honey crop, namely, the production of the bees that form the winter colony." And again she says, "Much of the so-called winter losses are not winter losses at all but August-September losses." These items are of special importance in those sections where there is little late summer forage for bees. Where such conditions exist, care should be taken that each hive at the close of the clover season should be left "rich in stores," which will compensate in a large measure for the lack of a continuous flow thru August in fitting the bees for winter. Where a colony does not get a laying queen until well into August, I have been in the habit of giving it two or three combs of brood from strong colonies that can spare them, so that it may have a sufficient number of young bees to form a cluster large enough to winter safely. Having laid the foundation for next year's crop of honey, let us proceed with the superstructure. Next in order will be to see that every colony is supplied with sufficient stores to carry it thru the winter. As some colonies consume much more than others, it is well to supply them with a liberal allowance. If a colony has somewhat more than it needs, it does no harm; but, if it has not enough, serious results are apt to follow.

Shall we winter in a cellar or out of doors? Well, that depends. If one has a deep dry cellar, I believe there is no better place for bees here in the North during the winter. The strongest colonies I found last spring in inspecting had been wintered in such a cellar, and, altho there were but six of them, they were in almost perfect condition. If colonies are to be wintered out of doors here in the North, much more care should be given to prepare them for the long cold months than when wintered in a cellar. First: all weak colonies should have their brood-chambers reduced to fit the size of the cluster. If very small, not more than three or four combs should be given, and the strongest reduced to not more than eight. I have wintered successfully out of doors on only three small frames about

three-fourths the size of a Langstroth frame. Then pack warm to the extent of two or three inches at the sides and six inches on top,

with planer shavings, dry sawdust, cork chips, or leaves—the more, the better. I use a three-fourths inch tube six or more inches from the bottom-board to make an upper entrance, so there may be no danger from suffocation if the lower entrance gets closed by ice or dead bees. This works well.

Shall we use sealed or porous covers over the brood-chamber? I have been a great stickler for a porous cover over the frames for winter, but last spring, when I began inspecting, I found the strongest colonies were wintered under an oilcloth cover. Could it be that I had been wrong in my conclusions all these years? But later I found quite as many dead colonies under sealed covers as live ones. How could the difference be accounted for? I finally came to the conclusion that a very strong colony under an oilcloth or sealed cover might winter well, or even better than under a porous cover, while a weaker one would perish. Just so a strong man may take a cold-water bath and be the stronger for it, while a feeble person would be almost sure to receive harm. However, but little upward ventilation is required with the average colony. Two boards with a crack between laid over the brood-chamber seems to answer every purpose; or if in one piece, a three or four-inch hole should be bored thru it and covered with wire cloth, or old cloths half covered with propolis. Of course there should be a sufficient amount of packing above.

I have noticed in visiting different yards that bees winter better in old box hives than in frame hives, and better where the combs are irregularly shaped than where they are straight. Six or seven Langstroth frames set on end would make an ideal shape and size for a moderate-sized colony; but when we depart from this we must make up for it in extra care and packing, if we expect to winter our bees successfully here in the North.

I was glad to see Mr. Holtermann's explanation of his method of making swarms late in the season, as some young beekeepers might otherwise have been misled by his previous statements on page 468. There is little difficulty in dividing a strong colony after the close of the clover harvest, if you have a young queen and combs and can feed sugar enough to carry them over till the next season.

FOR a year and a half I have been writing for Our Food Page and have never before mentioned dining-rooms. However, it was not for lack of convictions on the subject, for I firmly believe the best of food is not going to fulfill its mission unless eaten amid pleasant surroundings, and, I might add, in pleasant society.

Let me describe my ideal summer dining-room. In the first place it has no telephone. Telephones are sometimes exasperating conveniences. Also there is no mahogany furniture to dust, no rugs to clean, no windows, mirrors, nor lights to wash. But you never saw a more beautiful dining-room. Underneath the foot there is yielding green turf, overhead are blue sky and soft, fleecy clouds, constantly varying in tint and formation. Tall trees give shade and coolness, the air is the purest, and in every direction is beauty of landscape, rolling hills, a brook, rocky banks, rich farm lands, all so quiet, so peaceful that one can almost forget that a cruel war is raging in the same world.

No jazz band ever deafened unfortunate victims in that dining-room, but we have wonderful music, sweet bird voices accompanied by the soft ripple, ripple of the near-by brook as it slips over its rocky course, and sometimes one catches the mellow tinkle of a distant cowbell.

If the dining-room is somewhat lacking in conventional furniture, it by no means lacks conveniences. There is a gracefully curv-

OUR FOOD PAGE

Stancy Puerden



slabs of sandstone which are useful for various purposes. Broad pieces of it under the tablecloth make a firm foundation for certain tall dishes. Other slabs may be built into a hearth for a fire, if we happen to plan a corn roast or to fry potatoes or eggs.

There are shrubs in plenty of a height to make convenient hat and coat racks, and, if you love to lie flat on your back and watch the clouds, there are places where the ground curves gently to make a most delightful couch. The small children are much more willing to wash their fingers in the brook than in the prettiest cutglass finger bowl, and they are not only willing, but anxious to risk a sudden and unexpected bath by paddling barefoot on the slippery bottom of the brook.

In the Puerden family picnics are general very simple, impromptu affairs. Sometimes "the tired business man" telephones home an hour or so before the evening meal, suggesting that we make it a picnic. Sometimes the inspiration comes from another member of the family. Quite often another family or two accompany us, but we can have a blissful time by ourselves, if no one else happens to be in a picnicky mood. We have even taken our breakfast out picnic fashion.

Almost any sort of a meal can be adapted



Here's the ideal summer dining-room—and some diners.

ing old log which does duty as a seat or sideboard, according to the mood of the diners. In the bed of the brook and for a wide space each side of it are flat

to outdoor eating. For instance, omelet, creamed potatoes, bread and butter, cake and fruit can be changed to hard-boiled eggs, potato salad, and sandwiches, plain or otherwise, and, if the fruit happens to be stewed, it can be carried in a fruit jar. On cool nights, such as we have in September, it is fun to build a fire and scramble or fry the eggs out of doors. As a matter of fact, food tastes so much better in the open air that quantity is more important than quality.

There is one point on which we are very particular, and that is not to let any member of the picnic party drink any water of doubtful purity. We usually take from home everything we drink. Plenty of milk and water (not mixed) are indispensable for the children, and hot coffee or cold tea is much appreciated by the grownups. Before we had thermos bottles I used to scald a gallon jug, pour boiling hot coffee into it, wrap it tightly in newspapers, and succeed in keeping it hot several hours; and even yet, when the number of coffee drinkers is large I resort to the jug. Water may be kept cold in a jug in the same way. A half-pint can of condensed milk makes a good cream substitute for the coffee.

There is one drink which seldom appears at a Puerden picnic, and that is lemonade. Perhaps I should not neglect to state that there are a number of other beverages, somewhat stronger, which never appear at our picnics, and I am rejoicing because they will probably soon be a matter of ancient history to all Americans. Now lemonade has a good reputation, but if ever a picnic meal is followed by disagreeable consequences to our children it is when it has been accompanied by cold lemonade. I believe a hearty cold meal, with cold lemonade as the only beverage, is a sure and speedy indigestion-promoter.

In order to lessen the work of preparation for picnics I have a simple picnic outfit which is always in readiness, and the eats taste quite as good as if served from a \$50.00 automobile hamper. Our picnic basket cost 75 cents, a large tin sandwich box was 60 cents, aluminum cups with handles, which will nest together in a comparatively small space, were 10 cents each. Tin forks and spoons are a comfort, as one need not worry about losing them. Paper napkins, paper plates, paper towelling, and oiled paper save work, and paper tablecloths may be bought for a trifle. Two quart size thermos bottles are the only expensive part of our picnic equipment.

Sometimes one hears the remark "picnics are always wasteful." It is due to poor management if they are. Picnic leftovers may be utilized just as successfully as those from the home table. It is wise not to have very many sandwiches with fancy fillings. The plain ones may have a short session in a hot oven the next morning and appear on the breakfast table as toast. Take care that

all left-over food is kept clean and pack it carefully for the return trip.

Altho we have enjoyed many suppers in our ideal dining-room the past summer, ours only as we appropriate it for the occasion, we have been careful to use no more wheat than we would at home. Steamed cornbread sandwiches help fill the sandwich box, and wheatless cakes, sweetened with honey, save both sugar and wheat.

Never start on a picnic without honey. Even if you do not eat it yourselves, it may help to sweeten existence. There are farmers who do not care to have their pasture lots converted into outdoor dining-rooms. No doubt they have been justly annoyed by careless picnickers who have failed to leave the beautiful dining-room tidy, or who have left the bars down. It is far easier to prevent wrath with a gift of honey than to attempt to "turn it away with a soft answer."

As to the picture, or what is left of it after the editor and his little scissors were thru, it is not a widower and his five children displaying cheerful resignation. The wife of the man hiding behind the big cup is at the other end of the camera, bidding the rest to look pleasant.

Honey for Canning and Preserving.

Now that we are all buying sugar by the card and are limited to two pounds per person a month, canning and preserving with honey assumes a new interest, even at the present high prices. In the recipes below sugar may be substituted for half the honey, if preferred.

As a family we Puerdens have been accustomed to the use of a variety of marmalades and preserves, as we prefer most of our sweets in that form, or as honey, to sweet pastries. Also, as we never care for sweet in coffee or tea or on breakfast cereals, we perhaps crave more of what the Hoosiers call "spreads." But, in spite of that fact, I shall never again "do up" quantities of marmalades and jellies in the hot summer months when there is so much vegetable and fruit canning to be done. It is better to go without them than to be "done up" yourself. However, it is unnecessary to go without. Enough for present use may be made every month in the year, even during the cold weather when there is little fresh fruit. They may be made from canned fruits and even dried fruits, and orange marmalade is easily and quickly made at any season. Freshly made preserves always have a finer flavor, even if made from canned fruits, and many housekeepers prefer to can their fruit juices and make it up into jelly, as needed. If all housekeepers followed this plan, the demand for sugar would be much more evenly distributed thruout the year.

YELLOW TOMATO PRESERVES.

1 lb. yellow cherry to-¹/₂ lemon sliced thin
matoes cloves, stick cinnamon
³/₄ lb. honey or ginger to taste

Wash the tomatoes, but do not peel.

(Continued on Advertising Pages.)

SIDE liners who happen not to live in Dixie may well skip this Department this month — there are compensations, it seems, for living north of the Line! This is all about wintering—wintering in the South. Yet, after all, what can I say particularly different from what I have said before? And that, summarizing, is about this.

Bees Wintered Outdoors Without Packing.

There are in this section of the middle South many successful beekeepers, honey-producers, and queen-rearers both, some of them having been in this work for more than a score of years. And these men, almost without exception, leave their bees thruout the winter on their summer stands, in single-walled hives, with no packing of any sort—either around, below, or above. Most of them contract entrances. And they do, most of them, lose some colonies every winter. And those that they do not lose come thru with varying degrees of strength—varying from hive to hive—varying from beekeeper to beekeeper. And many of them, inertia being one of the common human qualities, say, "We prefer to do it this way—we are used to it—this is good enough." And others, more progressive, have made one time or another, one way or another, some slight attempts to pack their bees for winter, and have discontinued the practice, saying, "It does not pay in the only way that can justify it—in dollars and cents." And still others have said, "We lose practically no colonies; and our bees come out so strong in the spring that any increase of early strength would embarrass us with swarming tendencies before the honey flow."

Government Experts Favor Packing.

Meantime, up in Washington, there are earnest, scientific men giving their entire time and their trained faculties to a betterment of this industry, and they have made careful painstaking experiments that have convinced them of the value of packed hives in any locality where the temperature may often drop to freezing. That, of course, includes Tennessee. So there we are—right there. Shall we pack, or shall we not? Personally I have times of regretting not being able to line up energetically behind either one side or the other of this question—for so **somebody** would have approved of me! As it is, the earnest desire to be open-minded to the intelligent claims of both sides has of course resulted in criticism from both. Yet, after all, this is quite unimportant. What is important is the right answer to the question: Will it pay, in dollars and cents, to provide packed winter cases for bees in, say, Tennessee and North Carolina? While this matter has grown

Beekeeping as a Side Line

Grace Allen

almost to the proportions of a controversy, of course it is not of a personal nature, but one of the controversies that, in almost any field of endeavor, must

necessarily attend either the establishment of modern progressive practices or the defense of old dependable ones against mere novelties and innovations.

Abundant Stores and Young Queens and Young Bees Considered Sufficient by Some.

If I have referred often to the decisive opinions, based on the results of experience, of J. M. Buchanan of Franklin, Tenn., and L. E. Webb of Morgantown, N. C., it is because I am impressed with the reasonableness of them and others like them. More than once I have quoted their statements and it may seem unnecessary to do so again, yet, as this is an endeavor once more to review the whole situation to date, there may be some justification to do so. Mr. Buchanan is an enthusiastic advocate of wintering in two stories, with a wealth of stores. "I pack my bees," he has often remarked, "only on the inside, with solid slabs of honey." During locust bloom, usually late April, he customarily finds 15 to 18 combs of brood, and would only have to contend with an early swarming tendency, if colonies were stronger. Mr. Webb also advocates extra room, using himself either Jumbo hives or a story-and-a-half standard brood-chamber thruout the year. He, too, insists on unstinted stores, and with good hives, young queens and young bees, he defies the winter weather—successfully. Then there is W. E. Lee of White's Creek, Tenn. His colonies also are of the big, vigorous spring type that is in danger of being crowded out of all bounds in April. (I might remark in passing that I am not in that class myself. In late April, we seldom have more than seven or eight combs of brood per hive, with many colonies having less.)

Winter Losses Common.

On the other hand, opposed to these records, we do have in this section, repeatedly, heavy winter losses. And we are only too often judged thereby. But we have, too, many careless beekeepers, unread men of the mountains or uninformed backwoods farmers. And it is a question if it is so much winter packing that they need as ordinarily good beekeeping practices, with particular care on the points stressed by these men just referred to—plenty of room, plenty of young bees in that room, plenty of stores for the young bees, and a vigorous young queen presiding over the destinies of the colony.

Now it may be that these cases where the bees come out so especially strong are

the results of particularly favorable conditions that do not prevail widely, or a particularly high degree of skill, or a happy combination of the two; perhaps for the great majority of Southern beekeepers winter packing would bring about such results, where nothing else would. Unless a beekeeper is sure—soundly and intelligently sure—that he does not desire colonies any stronger in spring, has no out-and-out winter losses worth changing his methods for, and either does not think he could be any more successful, or does not care to be—the correctly progressive thing for him to do is to give this winter packing a trial, as thoroughgoing a trial as he feels able to give it. The cases are a bit expensive, and that is unfortunate at this time when everything else is expensive. Yet if they pay, they pay, expense and all.

In the winter of 1917-18 the losses thruout the South were startlingly heavy, even among the best beekeepers—(tho I must except L. E. Webb, with his 100 per cent perfect wintering). It seems as tho these losses might convince the losers of the necessity of winter protection. Yet most of them reply, "It is honestly cheaper to stand such a loss once in 20 years—for this winter was almost unprecedented—than to equip the whole yard with packing cases, and then pack and unpack every fall and spring; and a whole lot easier!"

A Probable Solution.

It may be that the solution of these two almost unreconcilable systems may lie in moderate protection, without full packing,—heavy paper wrappings or shallow supers filled with dry leaves or other material. I, for one, have been encouraged thru the results of a limited experiment to try still further the principle of absorbent covers, placing burlap instead of a sealed cover between the bees and a super of packing. In a rather generous collection of letters that have reached me on the subject of wintering, there is one from A. B. Anthony of Sterling, Ill. And Mr. Anthony advises thus: Put an extra $\frac{3}{8}$ -inch wall, painted white, over the bees, without packing, and contract entrances; let the space between this extra box and the hive be $\frac{3}{8}$ of an inch—protection without packing. Some such middle course may be best here.

Last fall I put four colonies, two hive bodies each, in a quadruple packing case that cost nearly \$8.00, and the results were not encouraging. Yet as one swallow does not make a summer, so one packing case does not settle the problem of wintering bees in the South. From what the federal experts in the South had predicted, I had hoped great things from this packing. The fact that the great hopes did not materialize had to be admitted honestly, yet none but a shallow mind would expect this to settle things. I have searched in vain for any reason this case should have failed so signally in producing the results claimed by its advocates. But now Dr. Phillips has most

kindly come to my assistance with a friendly letter, in which he suggests that the weakness may lie in the entrances. These four entrances, two to the west, two to the east, were contracted, as were all in the yard, with the regular contractors that come with the hives—no more. Here let me quote from Dr. Phillips' letter:

"In Washington, the bees have for ventilation, in the dead of winter, a $\frac{1}{2}$ -inch auger hole, and perhaps you will think this is entirely too small; but I suggest that you give it a trial, and, if your results are anything like ours, I am sure you will have larger colonies than you have ever seen before in all your beekeeping experience. During the fall and spring we give the bees four such auger holes for flight, but during the colder weather three of these are covered with a piece of section material. Of course it would be absolutely fatal to a colony to reduce the entrance in this way unless the bottom is packed, because the dead bees would accumulate on the bottom-board at the entrance and close the opening, causing suffocation. There is one test you can always apply to your bees to see whether they are sufficiently packed. If they are able to carry out the dead bees during the coldest weather which you have in the winter, and dump these bees on the ground outside the hive, you may be certain that your bees are warm enough. Unless they are able to do this, and if dead bees accumulate in the bottom, you may be quite certain that it is too cold for them to do housecleaning as they should do, and therefore they are insufficiently packed."

Kenneth Hawkins has told me about the Washington bees sauntering out the front door in midwinter and dropping their dead out in the weather, and I watched in vain to see mine act that way. They never did. Slowly thru the winter the piles of dead grew before the doors of this winter case, but they seemed to be deposited, as with unpacked colonies, only on flight days. Tho it was surely true that the packed bees did not fly out so often as those not packed, nor did they have so many dead before their entrances.

What Mrs. Allen Will Do This Fall.

Acting then on Dr. Phillips' suggestion, I shall try these very much contracted entrances this next fall. And I shall again put shallow supers of leaves (over burlap) on other colonies, with no other packing. And probably I shall try Mr. Anthony's plan of the double wall with air space between. Still other hives shall remain with nothing different from summer conditions except the contracted entrance. Of course, much of this we tried last winter, with neither the quadruple case nor the colonies with supers of leaves above showing any especial advantage, except that those with absorbent covers had no moldy combs, while most of the others did. But in a matter of this kind only a more extended experiment will ever justify a final conviction.



FROM NORTH, EAST, WEST AND SOUTH



In Northern California—A month ago we reported our crop prospects as favorable. The season opened several weeks earlier and indications were that we would get a normal crop. During the past month alfalfa has bloomed profusely, yet as far south as Kern County and as far north as Butte County reports continually come in that the honey flow is very disappointing. Some isolated sections report a fair flow, but the majority of reports indicate very poor yields. This is especially true in the southern portion of our valley. The prospects for a fall flow are likewise disappointing as the condition of fall plants is much below normal. As yet there is no indication of a honeydew flow along the rivers. Ordinarily "river honey" should have put in its appearance at this writing (Aug. 5). As it appears to the beekeeper the weather conditions were not unfavorable for a good flow of honey from alfalfa. The absence of a good flow has caused no little astonishment among our best beekeepers. Undoubtedly there are some climatic factors, which either control or have a very great influence on the secretion of nectar in plants. What these conditions are we do not know, and, even should we know, we would be powerless to have any control over them.

It is now a month or more before most of us will give much thought to the problem of wintering, yet a few lines on this subject will not be out of place. Colonies at this time which have yielded 50 per cent or less of the average yield per colony in an apiary by all means should be requeened as soon as possible. At this time queens are easily secured and readily introduced. In this manner weak colonies may be built up with a sufficient number of young bees to pass the winter. The experienced beekeeper knows well the value of a colony the following spring when it received a young queen the autumn before. The advantages gained in requeening are twofold. In the first place colonies that are producing little or nothing now are almost always the ones that are lost during winter. Barring disease the fault lies invariably with the queen. She is failing and should be replaced. In the second place, a weakling requeened at this time is not a source of trouble the following spring, as is usually the case when a colony is allowed to retain its old queen. It has proven disastrous to let such colonies supersede their queens. Next to the importance of good queens comes the question of the amount of stores necessary for wintering purposes. The amount necessary is, to a large extent, dependent upon location. Beekeepers situated along rivers are able to winter successfully colonies in single stories that contain no more than five frames filled with honey. In the

foothill districts a little more honey is required for successful wintering; and, on the plains, especially when there is considerable alfalfa and little or no deciduous fruits, it is wise to retain at least six full frames of honey in the super. It is of the utmost importance for each beekeeper to study very carefully his locations, as no two locations are alike and it is impossible to set forth any definite information regarding the amount of honey necessary for wintering in a given location. Beekeepers that have studied this problem know that the amount of honey necessary varies greatly from year to year, and that it is always wise to leave with the bees the maximum amount of honey that they required during any unfavorable winter or spring. Such an eventuality may arise any year, and this is a very wise precaution to follow. The writer winters his bees with all their surplus comb. About 10 per cent of the colonies have two extracting supers and the balance only one. Queen-excluders are left on the entire year, and the queen and her brood always remain in the brood-chamber. In this manner, the bees have properly arranged their nest for the winter, and the brood combs are kept in good condition. After the last extracting it is necessary to see that each colony is queenright, and that the brood is well surrounded with honey. All covers should be fastened down tight either by means of two nails, one on each side, or weighted down by rocks or the like. Entrances should be contracted to about the space of one inch until bees commence active breeding the following spring. This is best done by means of a cleat. Entrances are contracted for the purpose of conserving the warmth within the colony, and as an aid in enabling the bees to better protect themselves against their enemies, such as robber bees and wasps.

M. C. Richter.

Modesto, Calif.

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In Southern California—Some people—and some who are beekeepers, too—think we have no wintering problem in California; but I believe in many cases the crop will be harvested in proportion to the care and skill exercised in wintering bees. September, a month in which bees of some localities are still gathering honey, is none too early to begin to prepare for winter. For years I practiced wintering with the supers on the hives. This was done for two reasons: first, the bees can take better care of the extract combs than I can, for the wax moth is an constant handicap to storing empty combs, unless one has a sulphur house or is otherwise prepared to care for them; secondly, a colony run without excluders, for extract honey, is not likely



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to have sufficient stores below to winter on and come out in the spring strong and ready for the honey flow. Now, to obviate this trouble, I have for several years practiced using excluders and prefer to use them after the main honey flow is over and the probability of swarming is past. Then the colony will fill the lower story full and leave the bees in much the same condition for winter as when run for comb honey.

If the supers contain honey sufficient for extracting, take off part of it, leaving two or three full frames in each super. As the cool weather gradually comes on, take off the supers and at the same time carefully examine each colony to be sure that it has plenty of honey below and a good queen. Perhaps you will find a few where an exchange of a heavy frame of honey for a light one will be beneficial. Leave combs with pollen next to the combs containing brood. Perhaps in six or eight supers you will find enough combs with honey in them to fill one super. Place this on a strong colony over an excluder. As some colonies will consume more than others, the combs of honey will come in handy to help out during the winter and early spring months.

The dry combs that have been taken off should be thoroly cleaned by scraping all top, end, and bottom bars. Most of the moth eggs are laid on the top and bottom bars. Those combs containing any pollen should be looked after very carefully as they are a paradise for wax worms. Combs well cleaned, placed seven in a 10-frame super and stacked in a dry, open shed, where there is plenty of light and where no mice can get at them, usually come thru the winter in good condition.

Begin this month to prepare for winter by requeening all colonies that have old queens or have not given satisfactory yields of honey. It is not always the most populous colonies that store the most honey. Some of the largest ones seem to consume a good part of the honey they gather. Others that do not appear to be so strong are better honey gatherers and always give good results in surplus.

Be sure that all covers are rainproof. If you use cloths under the covers, it will be well to place a weight of some kind on each, sufficient to keep them from blowing off. Most parts of this country have occasional high winds during the fall and winter months.

See that all hives slope to the front from one to two and one-half inches. All bits of wax, etc., will then be carried out instead of accumulating in the back of the hive; the rainwater will also run away rather than into the hive.

It is well to place the hives on some kind of a stand to keep them off the ground during the winter. Anything one inch or

more in thickness will do. I have tried to observe if there is any difference between those colonies wintered with the hives sitting directly on the ground and those on one-inch stands; but have seen none. However, it is a great saving of hive bottoms when some kind of stand is used. Many times squirrels and gophers will throw earth against the hives; and, if these remain damp, the wood will decay and the combs may mould. A free circulation of air under the hive seems to soon dry this earth and prevents bad results.

Wintering in southern California may be in many ways preparing for the next year's honey crop. Very little, if any, brood is in the hive during a period of about a month in November and December. By January, in many localities, colonies will begin to build up and will soon have from one to four frames of brood. It is not long until they may be quite populous. Some winters—like our last one—bees will gather considerable nectar almost every month. If the colonies have become strong early in the season, that is when our wintering problem may cost us the lives of these same colonies. Should a long cold spell come on, being sure that the bees have plenty of food is the necessary item to save them. This is the time a 10-pound frame of honey is worth—well, what is the life of a good colony of bees worth next season?

* * *

The honey market remains active and buyers are taking all offerings at from 20 to 22 cents a pound for extract. From \$5 to \$6 per case is being asked for what little comb honey has been produced. While the crop has been less than 50 per cent of normal in many cases, yet about 100 tons of extract honey have been shipped from Corona this season. This comes from a source that would be entirely lost were it not for the little busy bee and will do considerable to help feed the boys "over there" and help to swat the Kaiser.

* * *

Very few apiaries are being offered for sale and most beekeepers feel that, in their bees, they have one of the best investments they can make.

L. L. Andrews.

Corona, Calif.

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In Minnesota—"How is the honey crop?" "What is honey selling for?" These and similar questions are being asked here daily by beekeepers and by others as well. The interest shown by the general public in the honey industry is no doubt due in large measure to the prominence given to honey as an important article of food by the U. S. Food Administration. To put an estimate on the Minnesota honey crop for this year is not



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an easy thing to do because of the varying weather conditions. There have been partial drouths in some localities, while only a few miles distant there has been an abundance of rain. In many sections the white clover was a total failure. Basswood yielded fairly well in some places, while in other places the blossoms yielded no nectar. From the present outlook I would place the crop at about 60 per cent of normal. Prospects for a fall flow are excellent. Several beekeepers who sell direct to consumers are asking 20 to 22 cents in 10-lb. pails. [They are not asking enough.—Editor.]

Many beekeepers in Minnesota continue to keep black or hybrid bees, and as a consequence we find European foul brood appearing in new localities each year. For this reason I was especially pleased to receive a few days ago a copy of the new Farmer's Bulletin 975, "The Control of European Foul Brood," by Dr. E. F. Phillips. The bulletin is very helpful, going thoroly into the subject, and it is a fine illustration of how the trained bacteriologist and the expert beekeeper can work together, each supplementing the work of the other. Every beekeeper should procure a copy of this bulletin and study it.

I have just returned from a meeting of the Hennepin County beekeepers, and they unanimously passed a resolution advising that beekeepers ask not less than 25 cents for honey in 60-lb. cans and 30 cents in smaller packages. These prices are gross in both cases.

Minneapolis, Minn. Chas. D. Blaker.

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In Iowa—It is time for beekeepers in this latitude to begin seeing that each colony is well supplied with stores and otherwise in first-class condition for winter. There really is only one safe way to winter bees in Iowa, without a great amount of work and expense, and that way is in the cellar. Each colony must be strong and healthy, with a surplus of 25 or 30 pounds of good stores. The cellar must be dry and clean, easily ventilated, and absolutely dark. The temperature must be from 45 to 53 degrees F. Do not wait until severe weather has arrived before putting them in the cellar. About the last week in November is as late as it is safe for them to be outside. With the above conditions complied with, you will not need to take them out until the middle of April, thus avoiding that bugaboo of spring dwindling. Leave the $\frac{7}{8}$ -inch opening with no screen over it. The small beekeeper cannot afford to take the chance of losing a large per cent, or all of his colonies, because he of all others is best prepared to find room for his bees in his cellar. The very worst place to winter bees is in a barn, or side shed. It is almost sure death to the

colony, even when in good condition at the beginning of winter. If you must winter outside, follow directions given in A B C and X Y Z of Bee Culture. Never mind the cost, for the bees will make proper returns for the extra investment. I hope I have made it plain to winter your bees in the cellar. During seven years of wintering in my cellar, I lost no colonies until last winter—and then only two. They were not in good condition when put in, and I expected to lose more. I had 28 colonies piled up in four rows, with the backs of the hives elevated about 1½ inches, so the bees could drag out the dead ones; and some of the hives kept their bottom-boards clean.

The Polk County Beekeepers' Association held their annual meeting in Greenwood Park, Des Moines, the afternoon of August 7. "Fall Management of Bees," by State Apiarist F. Eric Millen, and "Diseases of Bees," by Assistant State Entomologist Wallace Parks, were the principal addresses. Polk County Agricultural Agent Carl Kennedy and Dr. A. F. Bonney of Buck Grove also addressed the meeting.

The annual report of the State Apiarist is out. If you have not received a copy, write Prof. F. Eric Millen, Ames.

The membership of the Iowa Beekeepers' Association is increasing rapidly from the new memberships sent in by the new county associations that are being organized.

Iowa is having a poor honey crop this year. There are some spots where white honey was produced. It is worth 25 cents per pound to the jobber. The burning, hot winds and weather the first week in August are injuring the chances for a fall flow also.

Marshalltown, Ia. Hamlin B. Miller.

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In Michigan—Because of the congested condition of Battle Creek hotels, due to the proximity of Camp Custer, the place for holding the next annual meeting of the State Beekeepers' Association has been changed to Lansing. It also develops that during the first half of December there will be a large number of conventions such as the Grange, horticultural societies, etc., and therefore, the date has been changed to Nov. 19, 20, and 21.

In Michigan and everywhere, when feeding is to be done, good heavy syrup made from granulated sugar should be fed plentifully. It is an unjustified waste to feed a colony enough to carry it thru the winter, but not enough to prevent starvation in the end. The equivalent of six frames of sealed stores should be in the colony at the beginning of cold weather.

Let me say to our Michigan beekeepers, looking forward to winter, that a very large number of what were fair colonies in the fall either die out or become so weak as to be useless because of the loss of the queen



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before spring. All queens that are not known to be first class should be superseded at once. When colonies are requested late in the summer, brood-rearing will continue much later than in those colonies in which there is an old queen. This condition is very desirable, inasmuch as it insures a large number of young workers to carry the colony over until spring. Every queen that is not up to standard should be superseded now.

From the best information available, it seems that there is likely to be a local sugar shortage this fall, similar to the one experienced last fall. With this in mind, every beekeeper should preserve combs of sealed honey for feeding. If it is possible to secure sugar later on, then the honey can be extracted and sold. Any beekeeper who has had disease to contend with, or whose honey crop has been cut short by the drouth, should send in at once for a sugar affidavit, in order that a permit to buy may be secured as soon as possible. There is a great deal of delay at present in securing these permits, as the Food Administration is receiving daily from 2,500 to 4,000 letters. Many beekeepers produce honey in shallow extracting supers. If such supers filled with honey are reserved for feeding, there is no more profitable use to which that honey can be put. Nearly everyone agrees that sealed honey is much preferable for feeding to sugar syrup, provided, of course, that the honey was produced by a colony free from disease. The story-and-a-half hive is also more conducive to good wintering than the one-story hive, because it allows a colony to cluster a considerable distance above the entrance. The place between the brood frames and the shallow extracting-frames also makes an ideal path for the bees to travel from one comb to another. Last winter the college bees were wintered in two-story hives, with the upper story filled with sealed honey. These colonies were wintered in packing cases, and most of them had only one-half inch auger holes for entrances. Every colony wintered exceptionally well, excepting one that lost its queen.

The matter of good packing cases was mentioned last month, but I wish to again emphasize the necessity of Michigan beekeepers making preparation for winter now. When honey was very cheap and food was not particularly in demand, one could possibly be excused for not giving the best of care in wintering. With honey at the present price and with such an incessant demand for sweets, it seems that the giving of proper protection to the bees is one of the ways in which every beekeeper can demonstrate his loyalty and patriotism. The matter of protecting bees in winter has gone beyond the experimental stage. It is

definitely known that a colony must be well protected in order to be in the proper condition for gathering the maximum crop the next season. Packing cases can be made from very cheap and otherwise useless lumber. As one honey buyer said recently: "At the price of honey today, the beekeepers are getting as much money for one crop as they used to get for three, and it is nothing more or less than good business to give the bees more protection than they used to have."

A joint meeting of the Branch County Beekeepers' Association and the Steuben County, Ind., Association was held at the apiary of H. W. Barnes of Orland, Ind. Frank Wallace, State Entomologist of Indiana, Mr. Yost of the same office, and the State Inspector of Michigan were present and addressed about 40 beekeepers. Mr. Yost demonstrated American foul brood. This is the beginning of what is expected to be a very close co-operation between the apiary inspectors' offices of Indiana and Michigan, with the end in view that a closer relationship between the beekeepers on both sides of the line may be established, and foul brood thus more effectively controlled.

East Lansing, Mich.

B. F. Kindig.

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In Ontario—At this date (Aug. 5) it is possible to have a better idea as to what the crop of white honey is like here in Ontario, as we have had reports from many parts of the Province. Reports are extremely variable, for while many sections have a very light crop, others not far from these places have a fair yield. White-clover localities have done better than usual, especially in places where late rains came and freshened up the clover, thus prolonging the season while other sections were all dried up. My own largest yield has been in a locality where little, if any, alsike is grown. So for the first time in my beekeeping experience I have to report white clover beating out the alsike for honey-yielding. But taking one year with another, alsike is beyond question the main honey source for Ontario, and without it many beekeepers would soon go out of business. While the crop will average larger than last season, on the other hand bees in the Province are much reduced from last year, so it is a question if there is much more honey available than last year. Prices are firm, and at this date it looks like 25 cents wholesale for No. 1 honey. In fact, I know of sales having been made at that figure; but, on the other hand, some have sold at much lower prices.

Basswood seems to have been a total failure, and, unless we get rain soon, buckwheat will not be a big yielder either in honey or grain, as it is in bloom and only a few



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inches high in many cases. But buckwheat is wonderfully recuperative, and with seasonable showers it might still surprise us.

The month of September makes us think of winter preparation again, and the first thing to consider is the question of having a good queen in each colony. Systematic requeening is fine in theory and equally as good in practice, providing one can get time and proper weather conditions to attend to the matter in due season. While systematic requeening is quite possible when one has a limited number of bees, I must confess that I find it impossible to do as much requeening as I would like to do each year, and consequently pay the price by having queenless colonies all too frequently, and also having queens play out at a time of the year when a poor queen is fatal to a colony so far as honey surplus is concerned. But replace all poor queens that you can possibly attend to, and do not put off uniting weak colonies or otherwise building up stocks too weak to winter, till the season is too late to do the work properly. See that all colonies have enough good stores, and, if you have no buckwheat in your locality or other fall sources of honey, it is quite possible (and I believe profitable) to have the bees ready for winter by Oct. 1. Personally, I like to have all fed up no later than Oct. 10, and, if done earlier, I would not worry. Speaking of feeding the bees, reminds me that for the present at least the Food Controller has ruled that we can have no sugar for feeding. While I believe drastic rules should be enforced to see that no beekeeper abuses the privilege of using sugar, yet it is to be hoped that some modification of the order will yet be issued, else much hardship will result in many instances. This will be the case where the honey crop has been a failure as well as in apiaries where there is a sprinkling of foul brood, thus making it very dangerous to feed honey. I am confident that with proper representation to the proper authorities, this matter will yet be adjusted so that these difficulties may in a measure be overcome. Having provided the bees with good stores, then see that all are either well packed in outside cases or else put in a good repository. Bees will be worth money next spring whether the war is over or not; so let us try and see that we do our part in trying to winter them successfully. J. L. Byer.

Markham, Ont.

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In Texas—At this time, with the extreme heat and drouth, it is rather difficult to look ahead to contemplate winter preparations. However, this year of all years every beekeeper should carefully consider the matter of carrying his bees successfully thru the coming winter. The losses of the past two winters must not be added

to. Now is a time to make every effort to save every colony possible for honey production next year to help solve the food problem. In many sections of the State the colonies are weak, and wherever such conditions do exist uniting should be done. The sooner this is done, the better. A good strong colony is always better able to take care of itself than is a weak colony. The next matter of prime importance is to see that every strong colony has a strong, young vigorous queen. More and more beekeepers are coming to realize the importance of the colony going into the winter with an abundance of young bees. Requeening should go hand in hand with uniting, as the first steps in the preparation for winter. Introduce the young queen early enough that she can provide for the young bees—do not wait until late fall. Beekeepers now are wanting more from their queens than ever before, so that two years is as long as a queen can properly meet the demand. The feeling is gradually being overcome that black blood is necessary in a colony of bees for the best honey-gathering. There are plenty of strains of Italian queens that produce most excellent honey-gatherers, and are far more pleasant to work with. Among the more progressive beekeepers natural requeening is not allowed any more. Close attention is given to every queen, and a high standard must be maintained, if she is retained.

Assist the bees in every way possible to gather ample stores. The two suggestions given above will aid greatly in this endeavor. The beekeeper should not be over-anxious to sell a large amount of honey this year. Leave ample for the bees to winter on. Do not extract a single drop of honey from the brood-chamber. Many of the more successful beekeepers are following the plan of Dr. Miller in storing some extra honey in brood-frames for possible feeding in the spring. The beekeepers have made the Food Administration realize the necessity of saving all the bees possible, so they should not forget to try to save bees without the help of sugar. The question of the relative merits of honey and sugar for feeding has been much discussed of late, especially in the Beekeepers' Item for Texas conditions. The fact can hardly be denied that honey is the natural food for the bee, and consequently is the better. Of course, the situation can be saved by sugar-feeding, but it should not be made an easy means of solving the problem. The proper attitude has been taken by the Food Administration in not wanting to supply sugar in unlimited quantities to beekeepers who have extracted too closely for the normal needs of the colony to winter on. Money looks good this year, especially considering the short crop of last year; but it is not right to sell



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honey at 25 cents and hope to get the bees thru on sugar at 10 cents. No doubt many will not be able to comply with the card put out by the Food Administration, and will find it impossible to secure any sugar. Do not rely upon the Food Administration to save your bees after you have taken too much of their stores from them.

In many locations bees will go thru the winter and spring in better condition, if they can be given protection from the prevailing cold winds. In one successful yard in the southern part of the State, a tight board fence serves as the only protection necessary. In another locality the colonies are brought close together, and a few spadefuls of dirt are thrown around the base of the hive. Not much protection is needed, but it can not be neglected entirely. The practice must vary in the different sections of the State, but the thing needed for your locality should be considered and put into practice this year. If every beekeeper will give the wintering problem due consideration, there will be more and better bees with which to start next year. It is a double duty this year to winter bees successfully.

The meeting of the Texas Honey Producers' Association held at College Station on July 29-30 in connection with the Texas Farmers' Congress, was without doubt the best meeting had by the beekeepers in many years. Those who attended last year will appreciate what is meant by that statement, for the meeting last year held the record. The sessions had an average attendance of 50. The best of most of the societies hold their meetings at the Congress. The attendance came from all parts of the State, from the lower Rio Grande to the Red River. Many new faces were there, which speaks well for the interest created by the program. Much discussion was evoked by the excellent papers presented on many timely topics. The program will be discussed for a long time by those who attended. Plans are already under way to make the meeting next year even better than this one.

College Station, Tex. F. B. Paddock.

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In Florida—In the June issue I brought up the subject of the experienced beeman helping the beginner with advice and supplies. My meaning has, unfortunately, been misunderstood in some quarters. In fact, a considerable kick has come from some long-established beekeepers, whilst some would-be beginners have come to the conclusion that I am running a bee-supply department on the gratuitous plan. Like Dr. Miller, I may be a "disputatious sunofagon," for I will not retract what I wrote in June, but will try to add a few amendments to meet the varied tastes of my correspondents. One man, with 12 to 20 colonies, monopolizes a good location,

but knows nothing about bees and will learn nothing, depending on the other beekeepers to do his extracting and make provision for his increase. He will not sell out nor let his bees be worked on shares. The sooner such "bee-owners" are out of the business the better I shall be pleased. Also, I have no sympathy for the man who wishes to keep bees in boxes or hives of any description and will not use full sheets of foundation everywhere, and prevent the nuisance of maintaining a drone factory near his neighbor's queen-mating yard. It is the one who is willing to put eight or ten dollars into a modern hive, and himself study and work with bees that I am willing to help.

Last month I spoke of there being a fine prospect for cabbage palmetto in this locality, and, altho the bloom has materialized and may have yielded well where nothing else was available, there will be no cabbage-palmetto honey produced. Altho we have made a fine crop whilst the cabbage palmettoes were in bloom, it is a crop of high-bush partridge pea honey. No doubt many producers will market their crops as palmetto, because they have not observed closely enough, and this unintentional deception will pass with the buyers because partridge pea honey has been branded by Prof. E. G. Baldwin of DeLand, in his articles to Gleanings, as "always dark red in color and dark brown in taste." This libel on a light honey of good quality has struck with some of the buyers (please note, Mr. Selsler), and they are offering 16 to 18 cents for it. A sample of what I know to be pure high-bush partridge pea honey is in the office of Gleanings, and I leave it to the Editor to correct the false impression that is current to the detriment of one of Florida's important honey plants. It is possible that Prof. Baldwin had in mind the low-bush variety of cassia which yields in September. At that season very many other sources of nectar are available, and the resulting mixture is of various colors and flavors, according to the particular locality in which it is produced. [The sample of honey referred to can't be located, but we are ready to accept your statement as to the excellence of high-bush partridge pea honey.—Editor.]

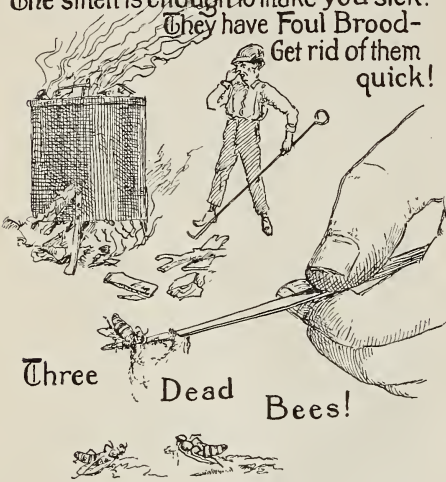
Florida beekeepers certainly have the advantage over their brethren of more northern States in that whilst they are now studying their wintering problems, we are preparing for another honey flow. A few words will cover the wintering proposition for Florida—leave at least 40 lbs. of honey and contract the entrances.

Cotton, as a honey plant for this part of Florida, has proved itself to be of no importance. It may be that this year the partridge pea has yielded so heavily that the bees have preferred to go three miles to it rather than work the cotton close to the apiaries.

Hary Hewitt.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Three Dead Bees!
 Three Dead Bees!
 They all rope out on a tiny stick,
 The smell is enough to make you sick.
 They have Foul Brood—
 Get rid of them quick!



A Back-yard Investment That Pays.

The four hives of bees you see in the accompanying illustration are in my back yard on a city lot in North Columbus, and my little daughter Gertrude is standing in the background. The bees have made 250 pounds of comb honey up to July 15 of this year. The honey is of the best quality and

The four hives of bees you see in the accompanying illustration are in my back yard on a city lot in North Columbus, and my little daughter Gertrude is standing in the background. The bees have made 250 pounds of comb honey up to July 15 of this year. The honey is of the best quality and

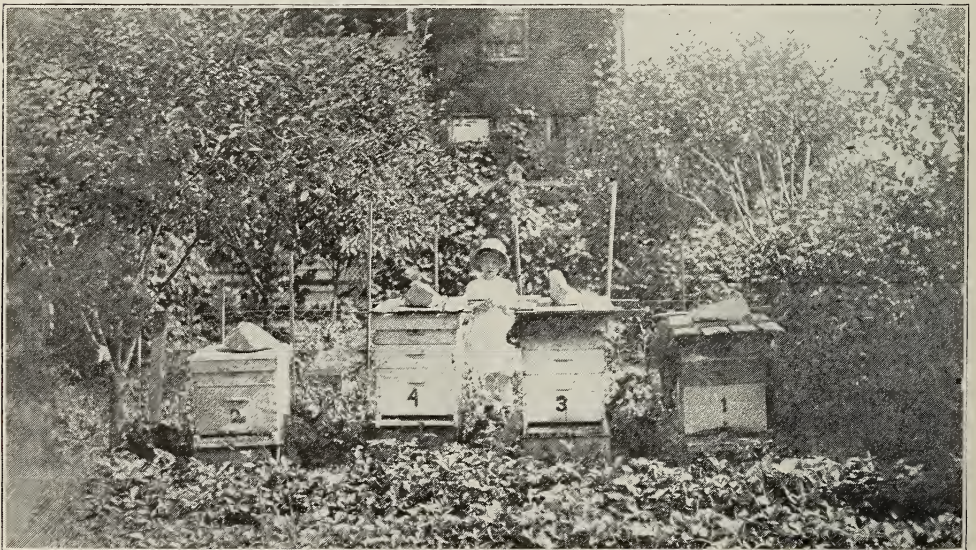
flavor, made of white clover, which was very plentiful in and about the city. There was no trouble to sell it right at the door for a fancy price. The only trouble was to supply the demand. I consider the bees a nice little side line, and they are surely an interesting little insect. They are very little trouble, especially the Italian bees. More people should keep bees, for the product that they supply comes in very nice at this time, especially when sweet is so scarce. Columbus, O. E. W. Mendenhall.

Some Remarkably Good Wintering.

I wintered 84 colonies outdoors last winter, well packed, without the loss of a single colony. For over two months my apiary was snowed under without being shoveled out. But all came out fine. The secret of my success in outdoor wintering is simply top ventilation and plenty of stores. The winter of 1916-17 I wintered 117 colonies without the loss of a colony also. A. H. Guernsey. Ionia, Mich., R. D. 4.

An Easy Way to Feed.

A safe and easy way for the beginner or the owner of only a few colonies to feed is thru a screened board over the brood-chamber. With an extension bit bore four holes the size of the top of a can or pepper-box feeder in an escape-board or any board having a rim or cleats deep enough to allow the proper space at the top of brood-frames. With



A good investment in bees at Columbus, O.

HEADS OF GRAIN FROM DIFFERENT FIELDS

small tacks attach a piece of wire screen over each hole on the under side, so that the can will sit down in on the screen. The bees will get at the feed coming thru the perforation the same as if no screen was there. After adjusting the board the cluster will be under one or more of the openings, ready to take down the feed the moment it is placed there. The openings not used can be covered with a board or piece of thick cloth to keep, as far as possible, the heat from escaping. When the board is once adjusted, feeding can be done at any time without using the smoker, and no bees can escape. For the timid beekeeper there is no better way. Being over the cluster no robber bees can get near the feed. If the hive is chaff or large on top, a rim as high as the feeders can be set on top, which keeps the space above the brood warm and bee-tight by covering with a chaff tray. The escape-boards can be used the same with the screens on. Of course, a piece of section will have to be nailed over the hole after removing the escape, while using the board for feeding.

East Avon, N. Y.

A. C. Gilbert.

Queens Return to Former Locations.

Do virgin queens return to former location? In an editorial note following Jay Smith's article on

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"How Queens Mark Their Hive," July Gleanings, page 405, mention is made that Mel Pritchard says that he always supposed queens mark their location each time they take a flight. Mrs. Grace Allen raises the question of virgin queens re-locating themselves in "Side Line," page 414.

Like Mr. Pritchard, I thought queens would mark a new location before taking a flight, and would return to the same; but late experience has taught me different.

Having received two queens by mail, I wished to introduce them to nuclei, Nos. 3 and 4. Each of these having a virgin queen a few days old, to make them queenless I removed the virgins to another location in the yard with entrances facing a different way from their former locations. A few days later I found both the virgins missing in their new locations. Looking thru Nos. 3 and 4, I found, to my surprise and loss, that both had returned to their former locations. One of my bought queens had been liberated by the bees and killed. The other one was still in her cage.

This has been my only experience in re-locating virgin queens of that age. I have changed the location of many virgin queens before, but always did it soon after they had emerged from their cells, before they were old enough to have established their location.

John E. Keefer.

Millersburg, Pa.



Benny Sourweed got stung again. Traded his hive of bees for a mule. The mule died from totin' sugar home in two pound lots.

THE Pennsylvania State Beekeepers' Association held its summer meet at Dr. E. E. Sterner's home apiary at Wrightsville, Pa., on July 6. Addresses were made by Dr. H. A. Surface, Dr. Sterner, and Prof. Rambo. It was the largest and best field meet ever held in York County.

* * *

The next annual convention of the National Beekeepers' Association will be held in Chicago. Date and program not yet arranged.

* * *

The Federated Massachusetts Beekeepers' Association held a union field meet at Norfolk County Agricultural School at Walpole on Aug. 17. Among those on the program were J. E. Crane, Arthur C. Miller, Allan Latham, and Burton N. Gates.

* * *

The people of the United States are now on the same sugar ration as is England—two pounds a month to a person. France is allowing only $1\frac{1}{2}$ pounds a month to a person, and Italy is allowing her people only one pound each a month. But none of our European allies is finding the sugar to supply even these small allowances at all times.

* * *

The dangers to beekeeping and its good name, due to newspaper reporting and sensationalism, are illustrated by some results of Dr. E. F. Phillips' address in Medina on Aug. 15, when he said: "A beekeeper, who has no disease in his apiary, and who sells all of his honey and then asks the government for sugar with which to feed his bees until next season is the worst kind of a profiteer." The next day the leading two daily papers of Cleveland (which circulate all over the country) came out with reports of what Dr. Phillips said under these several head lines: "Hits Profiteers Who Feed Bees—Expert Tells Beekeepers Not to Give 'Em Sugar," and "Beekeeper Profiteers Cheat." Already beekeepers in Ohio are being charged with wrongdoing and "profiteering" if they ask for sugar.

* * *

The Editor of Gleanings has recently attended a number of beekeepers' field meets held in Michigan, New York, and Ohio. At the apiary of W. L. Lovejoy, Clarkston, Mich., on June 26, addresses were delivered by B. F. Kindig, State Apiarist, and E. R. Root, and field demonstrations given. At the apiary of J. N. Harris at St. Louis, Mich., on June 28, a similar field meet was held. Mr. Harris is one of Michigan's best beekeepers, and Gleanings will have some-



thing to say about his beekeeping in a later issue. E. D. Townsend and family were present at this meeting. A field meet of the Western New

York Beekeepers' Association was held at East Aurora, N. Y., when Geo. H. Rea, special field agent for New York, was present. On Aug. 2 a very successful field meet and picnic of the N. Y. State Association of Beekeepers' Societies was held at an apiary of C. B. Howard at Hayt's Corners. Dr. E. F. Phillips of Washington was present at this largely attended meet. On Aug. 6 a meet was held at the apiary of A. H. Root (brother of L. C. Root) near Canastota, N. Y. Here addresses were made by Dr. E. F. Phillips, E. R. Root, S. D. House, Geo. H. Rea, and others. On Aug. 15 was held at Medina the field meet of the Ohio State Beekeepers' Association, when J. E. Vernard of Wilmington presided and Prof. Jas. S. Hine of Columbus acted as secretary. About 300 beekeepers were present, and it proved to be one of the most profitable and pleasurable beekeepers' meetings ever held in Ohio. Addresses were made by A. I. Root, Dr. E. F. Phillips, and Leonard S. Griggs, and a good deal of questioning done, besides a number of demonstrations given.

* * *

State Bee Inspector Chas. N. Green of Pennsylvania at a beekeepers' meeting held at the apiary of Edwin A. Wright, Ellwood City, Pa., on July 26, telling of the many possibilities in honey production, related how a very valuable chemical had been found in certain honey produced in a restricted locality in the northern part of Pennsylvania. This chemical served to crystallize honey in a short time, and its name and nature were not discovered until chemists at both Harrisburg and Washington had repeatedly made analyses. It proved to be a substance which had formerly been provided only by Germany and was never found but in one place in the United States, and then only in a very small quantity, in one of the western States. The market price when imported from Germany was \$8 per dram. Altho quantities of that gathered by the bees last season were destroyed it was estimated that about 1,200 pounds had been the amount. Mr. Green received a communication a few days ago telling him that the same sugar substance was being brought in this year and state representatives will be sent at once to ascertain just what plants the bees were gathering honey from, and it is possible that another of Germany's importations may be obtained in our country. Gleanings gets this item on the authority of the New Castle (Pa.) Herald and the statement of Mr. Wright.

QUESTION.—
As I had just finished extracting my 1918 crop a well-known beekeeper happened in; and, looking at the honey in the large open receiving tank, remarked, "Do you know that if you do not cover that tank tightly the ammonia in the honey will evaporate and your honey will lose flavor, and depreciate in quality?" As it is practically impossible to cover my tank air-tight, I wish you would advise me if the above statement is correct.

I extracted about the middle of July, after which I piled on the hives the empty supers of extracting combs to be cleaned up. Now, if I take them off and place them in the honey-house, I understand I am running a grave risk of moth-infested combs. What is the best thing to do? To leave them on the hives means a lot of work taking them down every time I wish to examine a colony. To take them off means moths.

Ontario.

Answer.—We were not aware of the presence of any ammonia in honey, and wonder if your friend did not allude to the fact that if the honey were left uncovered a small amount of the aroma might be lost. However, even in regard to this, we do not think that you will notice any appreciable difference in the flavor of the honey, whether the tank is covered or not. After the combs have been thoroly cleaned, they may be carefully piled in the honey-house, taking pains that at the top and bottom of the pile and also between the supers, no opening is left large enough for the admission of the wax moth. Such stored combs should be examined every two weeks during the summer, and, if any evidence of moths occurs, the combs should be fumigated immediately, or else given to strong Italian colonies to be cleaned up.

Question.—Would it be too early to take off top super of combs the last of August and let them store what honey they can get from that on in the brood-chamber? or do you leave them on so they can put what they get in the fall from fall flowers in the super?

Pennsylvania.

Answer.—In your locality it would be well to leave the super on, as you will probably obtain some surplus from sumac after the main flow.

Questions.—In the book entitled "Practical Queen-rearing," by Frank C. Pellett, on page 85, is the following for making increase: "When the colony becomes populous place the queen on a frame of brood in an empty hive-body and fill out with empty combs. This is set on the regular hive-stand occupied by the colony. * * * Now place a queen-excluder over the hive-body containing the queen, and over this a super of empty combs. On top of these is set the original hive-body containing the brood. A hole is bored in this upper hive-body to give the bees an extra entrance above. About 24 hours later a ripe queen-cell is placed in the upper story with the brood. The queen will emerge in a day or two, and in due time will leave the hive on her mating-flight, by way of the auger-hole. Within a few days more she will be laying in the upper hive-body, while the activities of the

GLEANED BY ASKING

E. R. Root

bees will continue without interruption in the lower story."

(1) Is there any danger of the colony swarming, either when the young queen takes her mating flight or before that time with the old queen? (2)

He says, "When the colony becomes populous." Will this system work after preparations for swarming are started? or is it necessary to do this work before they think of swarming? (3) Could a laying queen be introduced after 24 hours, instead of a "ripe queen-cell," as given in the book? (4) Would the upper entrance be necessary if a laying queen were given, or does it prevent swarming? (5) Would two queen-excluders be any advantage—one between the first and second story, as suggested, and the other between the second and third story? (6) Would slipping the top hive-body forward to give an entrance be as good as the auger hole?

Kansas.

John E. Geiger.

Answers.—(1) Not much danger unless the colony has already contracted the swarming fever. (2) We believe this system tends to prevent swarming, even if applied after the bees have begun building queen-cells. (3) Such introduction would be very risky. (4) An upper entrance should be given. The upper and lower stories are then virtually two separate colonies, each with its own entrance and its own queen. (5) Yes, two excluders would be a decided advantage. When only one excluder is used, one of the queens may be killed. (6) Except in very hot weather we should prefer the auger hole, since with this smaller entrance the brood would not be as apt to chill.

Question.—Please tell me how Arthur C. Miller uses his smoke method to introduce a queen.

Tennessee.

W. T. Anderson.

Answer.—On page 442 of the A B C and X Y Z of Bee Culture you will find a very complete discussion of the Arthur C. Miller method of introduction. In general, we may say that the entrance should be closed, leaving only an opening one inch square. Into this the nozzle of the smoker is inserted, and several good puffs given until, in a few seconds, the bees begin roaring. The entrance is then completely stopped and left for 15 or 20 minutes. Then the one-inch square opening is again given them, and the whole entrance not given for over an hour, or, better still, not given until the next day.

Question.—In one of my hives there are no queen-cells and no eggs nor grubs, yet the queen is not to be found. What should be done? I introduced one queen but she was killed.

Pennsylvania.

H. O. Whitlinger.

Answer.—Immediately after the honey flow the queen usually lays fewer and fewer eggs, and may even stop entirely for a time, so that the absence of eggs and young larvæ in the hive does not prove conclusively that the colony is queenless. We suggest that you give such a colony a frame containing

eggs and young larvæ, and watch developments to see whether or not they will start queen-cells, thus showing their queenless condition. Of course, if they have been queenless for some time, it is possible that they now have laying workers, and this might account for the destruction of the queen that you introduced. To dispose of the laying workers, about the best plan is to distribute the combs, with adhering bees, to other strong colonies, exchanging for good frames of brood with the bees, taking about two from each colony. You will then have, instead of the worker colony, a good colony of brood and bees to which it will be perfectly safe to introduce your queen. Another method that is sometimes employed is simply to take the hive several rods away from the apiary and shake the bees onto the ground and then return the hive to its original location. The workers will return to the hive, but the laying workers can not find their way back and will be lost. A queen can be introduced then more safely. If laying workers are present in the hive, you can determine this by noticing the way the eggs are put into the cells. If they are placed irregularly, some of the eggs being placed on the sides of the cells, and perhaps several eggs placed in a cell and nothing in the hive but drone brood, they without doubt have laying workers. The work of a drone layer would have much the same appearance, but there would be apt to be less brood and the eggs would be more likely to be placed at or near the bottoms of the cells.

Question.—Please give me some information in regard to the most efficient way to advertise honey to grocers and consumers.
R. M. Woodring.
Pennsylvania.

Answer.—About the best advertisement that we know of is a fine grade of honey. It always sells itself. You might, perhaps, be interested in giving lectures in the high schools in your own town and the neighboring towns, at the same time giving samples of honey and various things made with honey. It would also help considerably if you could get the domestic-science teachers interested in the use of honey, perhaps giving them free samples with some good honey recipes. Another effective way of getting your honey before the public is to advertise by roadside signs or thru the local papers or enter your honey at the various fairs in your locality. An occasional display of honey and bees at some local grocery is also a great help.

Question.—Could you tell me what is the matter with my bees? They are killing all their queens. After the queens have filled their hives with brood, then the bees kill them. Most of the queens were young ones. My brother is having the same trouble with his queens.
M. G. Freeman.
Michigan.

Answer.—We can not be certain of the cause of the disappearance of your queens and those of your brother. It may be that when you removed the supers from the

hives the queens were above and you smoked them down below; the bees may have been more or less demoralized, especially if a little robbing were going on at the time. Under such conditions we should expect that many of the queens would be balled. Another possible explanation might be that you handled the colonies at an unfavorable time. If handled when the bees are very cross, they are quite liable to ball their queen.

Question.—In case of a cross colony how long may a queen be left in the introducing cage when it is put into the hive? Would any harm result by leaving her caged five days before giving the bees access to the candy?
Geo. W. Meyer.
Pennsylvania.

Answer.—If the colony of bees is unusually cross, and you have had difficulty in introducing, you may leave the queen caged for as long as eight days. By that time she will probably begin to lay eggs in the cage. If you then allow the bees access to the candy, they will not be apt to ball the queen when liberated.

Question.—I shall appreciate it very much if you will give me your opinion as to the quality of honey extracted from brood-combs in comparison with that from combs free from brood.
Mississippi.

J. W. Carpenter, Jr.

Answer.—Of course no one should extract from the brood-chamber, using combs that have brood in them, but there are many beekeepers who in the spring allow the colonies two stories for brood-rearing, and then later shut the queen down into one story. Now, those frames above that have had brood in would not be quite as clean, nor result in quite as nice honey as those combs in which no brood was raised that year. Still, the difference is so slight in nice new combs of this kind that we should never hesitate to extract them along with the other honey; but, if old dark combs are used that have long been used in a brood-chamber, you may notice a perceptible difference in the color of this honey. However, as we have said, if combs are used but a short time in the brood-chamber, and then used for extracting, the difference in color of the honey will never be noticed, and, more than that, we believe this is a good plan, because the cocoons add so greatly to the strength of the cells. We should prefer to have all of our super combs used for a short time in the brood-chamber in order to make them good and strong for extracting.

Question.—A colony of my bees swarmed with a virgin, and I tried to return them; but every time I dumped a load in front of the hive they would return to the cluster. At last they became angry and started to sting, so I left them in the cluster. Every time I try to get them they become angry. They are building combs on the tree about three feet from the ground. Will you please tell me what to do with them, and the reason of their staying in the cluster instead of absconding?
Massachusetts.

Albert Waugh.

Answer.—The reason that the colony was so cross every time you tried to shake them

from the limb was because they were practically without honey. Even swarming bees, if they have no load of honey, will be quite vicious. In regard to their staying on the limb and starting comb there, it is very difficult to say why they did that; but every year swarms here and there do this very thing. We have known a colony to hang out on the limb of a tree until they had eight large-sized combs all built nicely parallel to each other, almost as tho one had just lifted them out of a hive. At the time you tried to hive them it is evident that you did not get the queen with them. Probably she stayed with a few bees on the limb, and that is the reason the others went back. If you could get them all, queen included, and give them a frame with eggs and young larvæ, there would be no trouble about their staying in the hive. Now that they have already built combs, perhaps you could transfer these combs into the frames, tying them in and putting them in the hives until the bees have time to attach the combs to the frames. Since the colonies are good Italians it would be a pity to let them go.

Question.—In your 1912 edition of the A B C book, under "Increase" you say, "Set the body (with no queen) on top." Why not put a laying queen in the top at once by the honey method?
Nebraska. F. Kingsley.

Answer.—We have never been very strong advocates of the honey method, for the reason that we believe a queen after having had a honey bath is never quite as good as before. A queen could be introduced to the queenless colony above; but in doing so one would run some chance of losing one of the two queens. By the method given in the A B C and X Y Z of Bee Culture you will note that the upper hive is moved away, so that the two queens are not left in the same hive, in supers right next to each other. If one wishes to keep two queens in the same hive, and do it successfully, it is better to have more than one excluder separating the two colonies.

Questions.—(1) If I am raising queens in a weak colony of young bees, and they accept about 28 grafted cells, and I give them a good large spoonful of royal jelly, what will the bees do with it? (2) Can bees make a drone out of a worker egg? Is there any condition which will cause bees to do that? (3) Why do my bees begin drawing out full sheets of foundation in the super at the bottom? Yours commence at the top, do they not? When I lived in Ohio mine did; but here they begin at the bottom, draw it out, attach it all along to the bottom-bar, and store the honey from the bottom upward. I have seen sheets drawn out five inches high, filled and capped, and at the top nothing but foundation. Would you think in this case that the shallow frames would be better for me to use? (4) If I take out of the hive about three frames of bees and brood, and put them into another hive 30 or 40 feet away, will they build up and make a colony? (5) Can bees control the hatching of eggs? Can they cause them to hatch at will—either hatch them immediately or keep them 10 days or two weeks and then hatch them? I believe they can.
Arizona. J. B. Douglas.

Answers.—(1) The bees would probably

eat the royal jelly, but would not place it in the queen-cells. (2) No. This is impossible. (3) The refusal of the bees to draw out the tops of the sheets of foundation is probably due to the excessive heat. In Arizona the colonies should be well shaded and provided with plenty of ventilation. There should be double covers or shade-boards, and it is best to have the entire colony covered with a good bee-shed. (4) If early enough and given a slow flow, such nuclei may build up into good colonies. (5) We do not know whether bees could do this; but we feel somewhat doubtful whether they ever do. If you have any proofs along this line, we should be glad to learn of them.

Question.—What shall I do with the Alley trap? The bees have very hard work to get thru. An hour after putting the trap on one of my hives the air was thick with bees from the hive, and the alighting-board was covered with balls of pollen that they rubbed off trying to get thru. I immediately removed the trap so they could get in, and they quieted down in 15 minutes. I think the perforations are too small. Could not the slots be made wider and still trap the drones?
Ohio. W. C. Greenleaf.

Answer.—We never advise the use of the drone-trap except as a temporary arrangement, for these traps do interfere considerably with the work of the colonies. Except in unusual cases, we believe that, when bees are bringing in either pollen or honey, there should be no obstruction in front of the hives. As for the little wider spacing that you suggest, it would certainly result in some of the drones squeezing thru such space.

Question.—Can you tell me about what the average prime swarm weighs and also the second swarm?
New York. Walter Garabrant.

Answer.—The weight of prime swarms varies greatly. A seven- or ten-pound swarm would be a good one. The second swarms that issue might be perhaps half as large, or even smaller than that; and finally, toward the end of the season, if the second swarms are still allowed to issue, it will be found that they will be very small, perhaps containing no more than a pint of bees.

ANSWER BY C. C. MILLER.

Question.—You say that you provide a two-inch entrance for your bees while in winter quarters. Do you make any provision for upward ventilation, such as removing covers and replacing with burlap? or do you put on the regular hive cover allowing no ventilation on top?
Quebec. A. J. Gardner.

Answer.—No opening for ventilation is needed above, if there is opening enough below. No opening is needed below, if there is opening enough above. When I had box-hives I turned them upside down, following the teaching of M. Quinby, leaving the hive entirely open above and closed below. Now, with the very large entrance below, there is no opening above, the covers being glued down just as they were on the summer stands.

"THIS coming season I intend launching out in a larger way and becoming a commercial bee-keeper, mainly to aid my brother who has returned broken in health after two years of war."—Harold C. Hardecastle, Rotorna, Auckland, N. Z.

"Not one pound of honey yet this year."—Irving E. Long, Linn County, Mo.

"I will buy home-produced run honey."—Rowe, 28a Moy Road, Cardiff, Ireland.

"My 767 colonies in 10 apiaries are surely dragging in the honey."—F. S. Harter, Platte County, Wyo.

"We have had a fine year in this section, and with good prices the beekeeper is happy."—F. A. James, Hale County, Ala.

"In Ireland beekeepers intend to stand out for about 48 cents per pound for extracted honey, wholesale."—Irish Bee Journal for July.

"Very little surplus honey in this locality. There was plenty of clover but weather was not right for nectar secretion."—M. A. Shepard, Pierce County, Wis.

"It is contrary to law to keep bees in boxes or on frames that can not be removed from the hive."—Notice issued by inspectors of Foul Brood Department of Agriculture, British Columbia.

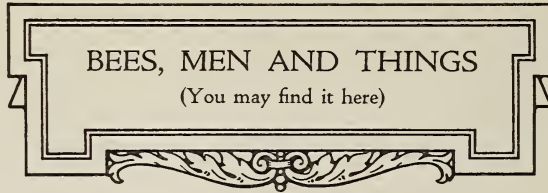
"I wrote you not long ago that basswood was in bloom but no honey in sight. Since then I have secured two supers of basswood and bees working in the third super."—E. Wilson, Orange County, N. Y.

"I have a golden Italian queen on which my value is \$50.00. She has 144 sections now just about full. She is one and one-half inch long and fills 10 frames full out with brood."—A. S. Schwerkengost, Armstrong County, Pa.

"Just finished extracting. Took 2,680 pounds extracted and 400 pounds of chunk honey from 38 hives and will extract again in September from 60, as I divided and requeened in July. All sold at an average price of 19 cents per pound for both extracted and chunk."—J. E. Sutton, Marengo County, Ala.

"The bees around Colorado Springs never before have had such a chance to gather nectar as they have had this summer. Many colonies have one and two supers full now. Sweet clover and Rocky Mountain honey plant are at their best now, and a recent fine rain insures several weeks more of good forage."—F. M. Perkins, Colorado Springs, Col., Aug. 10.

"Yesterday, June 20, I had more reason to think of you in the old bee yard. Saw a swarm issue from an old wooden hive standing in the open window of a thatched



roof of a French farm house. The old Frenchman who owned them didn't seem to know much about bees—tried to get the swarm with an old tin pan."—

Corpl. Alpine Couse, son of Henry Couse, of Cookstown, Ont., a veteran of the Canadian Armies in France, in a letter to his father.

"If you want to have a success that will prove 99 per cent in introducing queens, introduce them by the honey method only. I believe I can introduce a queen into a yellow-jacket's nest."—Henry S. Bohon, Roanoke County, Va.

"Since eating some very green, unripe honey two years ago, I have been unable to eat but very little at a time without being affected by severe stomach pains, perspiration and an itching sensation all over the body."—L. Bellman, Erie County, N. Y.

"A winter packing case has been rarely seen in Maryland heretofore and never in this locality. After last winter's severity it is very probable it will be less of a rarity as I already hear plans for protection in the future."—C. W. Marshall, Baltimore County, Md.

"While local incorporations of bee men serve their purposes well and good, yet a properly incorporated state institution, to my notion, fills the vacuum—not run in the interest of a few supply concerns as has been the case in past years."—G. W. Berceaw, Los Angeles County, Cal.

"Honey is no higher comparatively than wheat. Wheat was \$1.05 per hundred in August, 1914; honey was \$7.00 per hundred then. Wheat is now \$2.93 per hundred, and honey is \$20.00 per hundred. Wheat is plentiful and sugar is scarce."—Frank A. Childs, Delta County, Colo.

"I am a one-armed beekeeper having started with one swarm three years ago. Now have 23 stands and have sold \$180.75 worth of section honey this year to date at my door. Besides, I work by the month on an Illinois corn belt farm about 14 to 16 hours a day."—Milo Trussel, Vermilion County, Ill.

"White honey crop here was an entire failure owing to sourweed failing to bloom. During the early flow from poplar bees were too weak to gather much surplus. They have now filled their hives with honeydew, some colonies having stored as much as 100 pounds in the supers."—P. C. Asher, Campbell County, Va.

"June 12 last I requested, as County Food Administrator, that sweet clover be allowed to grow till after bloom. This request was made to the road commissioners, and was universally observed. One beekeeper had ten stands and has already ex-

tracted 52 gallons and has at least that amount yet to extract besides one super of box honey."—L. D. Burnham, Food Administrator, Champaign County, Ill.

"Have had all the orders for bees and queens that I could sell and sent a lot back. I thank the editor of Gleanings very much for using his influence in getting pound bees sent by mail. It is too late for me to send by mail this year, but I hope to use the mail altogether next year."—C. H. Cobb, Yell County, Ark.

"I would say that in Cuba I suppose there will be a yield of something like 2,000 barrels of honey, and of this amount I have 600 barrels, which I have engaged to the Sugar Products Co. The steamer that is to carry the Cuban honey to England is a tank steamer fitted to carry liquid honey and is calculated to carry all of Cuba's 2,000 barrels. I have heard that the Sugar Products Co. have instructions to obtain up to 2,500 barrels."—Adolfo Marzol, Cuba.

"I had three hives of bees last fall, and having no cellar I screened them in and put them in a room in the house. I kept them there for four weeks; but they were restless so I took them outside and made a tigh of boards and tarred paper and then covered them with blankets and straw. They did not get a flight until Feb. 2. Then they were out every fine day, but did not build up and finally two of the colonies died out. The others recovered."—Arthur Robinson, Wilkin County, Minn.

"You will perhaps remember that I cut all the fingers and the thumb off my left hand two years ago. The family all said I would have to retire from active work. However, I am fond of the bees and did not like 'skying the towel,' and so I kept at it and now I am getting busier every day. My son Phil made me a hook and if you could see how well it works you would say that Providence intended beekeepers to have one hand and a hook."—Major Shal-lard, South Woodburn, N. S. W., Australia.

"The lower mainland of British Columbia will not harvest an average crop of honey, owing to the months of April, May, and June being very dry, resulting in a short hay crop, and the serious outbreak of European foul brood thruout the part occupied by the largest number of beekeepers in British Columbia. It is hoped fire weed and other nectar-bearing plants will give sufficient stores for winter use. Twelve-ounce jars of honey are retailing at 40 cents. Offers of 25 cents and 30 cents per pound have been made for honey in 60-pound cans."—Williams Hugh, Cloverdale, B. C.

"It chanced that just as Mr. Green arrived in town a colony of bees swarmed on a branch of a tree about 60 feet above the ground. Prof. Hartline suggested that men be sent up to cut off the branch and lower it with a tackle, but Mr. Green had another plan. He made of wire a kind of cage known

as a swarm-catcher and this he attached to a long cord or fishing line. The pitcher of the school baseball team was asked to throw a baseball over the limb of the tree to which was attached a light cord and to the end of which lighter cord he tied the heavier one. The wire cage was drawn up to a point just beneath the swarm and then by means of the heavy cord the swarm was disturbed a little and a part of the bees swept off into the cage which was lowered and placed beside the hive in which these bees went. On the third attempt the queen was brought down and was soon within the hive."—A Pennsylvania newspaper.

"Last summer I was going to work in a bee yard near Ithaca, N. Y., but when war was declared I joined the regular army instead. Since then I have traveled over quite a great deal of France, coming here about March 1, and everywhere I have been there seems to be an excellent outlook for bees. I have seen a few small apiaries kept in the old-fashioned way and have noticed only black bees here. In northern France this spring I noticed many flowers and one in particular on which the bees were at work, but saw only a few colonies in the locality. I am making a study of beekeeping conditions here. I was in Paris the first day the long-range German gun fired upon it, and the same night we had an air raid. I am going to write Gleanings (which I used to read) again when I glean more facts as to the beekeeping of France."—Clinton VanPelt, Sgt., Meteorological Division, Signal Corps, A. P. O. 723, A. E. F., via New York.

"There is a sweet opportunity for professional apiarists in western Iowa, eastern Nebraska and southeastern South Dakota. I have been over much of this region recently and find this section has developed the tame grasses, white clover, sweet clover, alfalfa, etc., much faster than the farmer beekeepers have occupied the bee pasture. Bee diseases and careless wintering have eliminated many of the farmer beekeepers so that whole townships and possibly entire counties have not a single colony and some neighborhoods never have had any. There are also some good basswood locations adjacent to the Missouri and other streams. Bees in carlots could be advantageously distributed in some sections by expert beekeepers by locating the home yard at a railroad point and out yards within a radius of 10 to 25 miles. Bees do well 200 miles west of Sioux City and Omaha. But do not ship your bees into this territory until you investigate conditions. There is room enough without crowding beemen already established. I suggest that those who are interested should write to the County Agricultural Agent, the State Entomologist and the secretaries of the beekeepers' organizations for more information, then visit the locality."—Morris F. Laughlin, Rock County, Nebr.

IT is time to discuss the question of feeding—a possible necessity always in the fall. In those localities where there is little or no fall flow it

will be best to feed in September, if the stores be low, and brood-rearing has almost entirely stopped. If there is a good fall flow, such as that from goldenrod, aster, heartsease, etc., brood will, perhaps, be found in most of the combs. In this case it would be necessary to delay feeding until a few weeks later, when there is less brood and so more room in the hive. But if stores are to be given, it is always an advantage to feed early, so that the stores may be well sealed. When first placed in the cells, the stores are too thin for good wintering; and so, if there is time before winter, the bees evaporate or "ripen" the stores until of the right consistency, when the stores are sealed. If given poor stores, or fed too late, the stores will be so thin that it will be apt to result in dysentery and death of the colony by spring.

Amount to Feed.

For outdoor wintering, about 25 or 30 pounds of sealed stores will be plenty in most of the Northern States. In some instances no feeding at all will be required, for sufficient honey will have been stored in the brood-nest to meet the requirements of winter, and it is always (and especially during war times) a poor plan to extract from the brood-chamber and then feed syrup. The sugar stores should be given only to those having a shortage of honey. The beekeeper should not plan to feed in the spring, if he can possibly avoid it; but enough should be given in the fall to last till the next honey flow. Of these stores fed in the fall, the bees consume only a small part at the time of feeding. All the rest is stored in the combs, and saved to tide them over the winter months, when no nectar can be gathered.

Examining For Stores.

In estimating the number of pounds that will be needed, some experienced beekeepers simply judge by lifting the hive; but, if the beginner wishes to be on the safe side, he should remove each comb from the hive and make his estimate by noting the amount of sealed honey in each frame, and remembering that a full standard-sized comb holds from five to six pounds. The equivalent of five full combs will be sufficient; but this amount should be left in seven or eight frames so that the brood-chamber may be contracted to smaller compass by removing empty combs, and, later, the extra space at the side packed for winter, which point will be mentioned more fully in our next issue. When doing this work, if the bees are not gathering honey, they

will be inclined to rob; and, therefore, before starting this work all entrances should be contracted, and it may also even be found advisable to

work in a tent such as that described in our August issue. Just as last month, any colonies found weak or queenless should be attended to immediately, the weak being united with other colonies, and the queenless being either united with weak ones or given a queen.

In order to leave the bees in good condition for winter no excessive amount of beebread should be left in the hive, as this may cause dysentery. Combs having a large amount of beebread should be lifted out, and used the next spring if needed. Also a few old dark combs should be left at the center of the hive for the bees to cluster on. The cells of these old combs are lined with so many layers of cocoons that they are much warmer than those of newer whiter combs.

After having marked on each hive the amount to be fed, the whole apiary may be checked up to find the amount of syrup required and the number of feeds necessary. If ten-pound friction-top pails are used as feeders, probably all the needed stores may be given in one or two feeds.

Feeding Honey.

Just now, while there is such a shortage of sugar, any deep supers of honey saved over from extracting time will be found very handy for winter stores, if one is certain that such honey does not come from diseased colonies. Those combs with no stores or brood should be replaced with these combs of honey. But if there is not enough of such honey, sugar stores must be resorted to if sugar can be obtained.

How to Get Sugar.

To obtain sugar, the beekeeper should apply to his local food administration for a blank which should be filled out stating his needs, number of colonies and surplus obtained. This should be sent to his State capital, to the Federal Food Administration, Sugar Division, which will grant him a permit to buy of his grocer or wholesaler. There will likely be no trouble in obtaining the permit, but to get the sugar may not be quite so easy; for, obviously, the grocer or wholesaler can not sell what he does not possess. The present condition is causing considerable worry among beekeepers who so far have been unable to get either honey or sugar enough to feed their bees. To such our best advice is to move the bees to some swamp or other location where there is a good fall flow. Of course this honey is not as good for wintering, but it will do very well as a part of the stores. After this fall flow, the remaining eight or ten

TALKS TO BEGINNERS

By the Editor

pounds requisite should be supplied in the form of sugar syrup. If good sugar cannot be obtained, one may perhaps be able to get enough damaged sugar for this final feed.

Easy Method of Feeding.

Among a number of good feeders on the market we shall mention only one—the friction-top feeder which has been fast coming into favor during recent years. These are ordinary five or ten-pound friction-top pails having the lids punctured with about 130 holes made with three-penny nails (punctured by machinery if so ordered). The feeders are filled with a syrup—two or two and a half parts of sugar to one of water, the density depending upon the lateness of the season—the later, the denser. In cold weather the syrup should be quite thick and warm. Over the colony to be fed, an empty super is placed, and one of these friction-top pails of syrup inverted immediately over the cluster, and covered snugly with an old sack to prevent the heat of the cluster from escaping above. A still handier way is to place between the empty super and brood-chamber an escape-board from which the escape has been removed, and invert the feeder over the hole. Some strong colonies will take the contents of a ten-pound pail in a day. If not taken as rapidly as it should be, the residue of the cold feed should be removed and replaced by warm syrup.

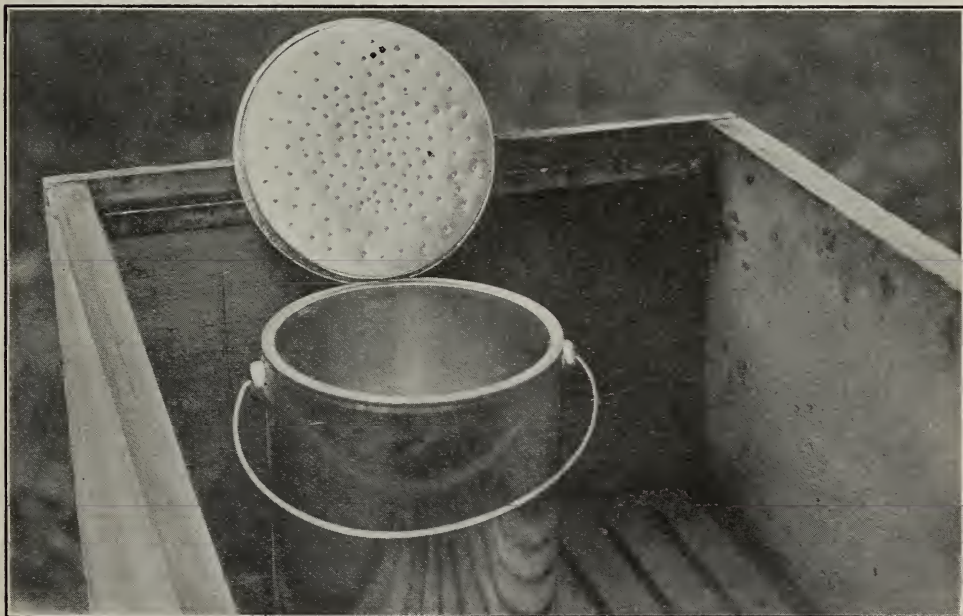
Moving Purchased Swarms.

In the May issue we advised buying new swarms, to be hived and kept by the farmer until fall. This month would be a good

time to move such colonies home. (See "Moving the Bees," May Gleanings, page 303.) If very warm weather, it may be necessary to screen the bottom as well as the top, and to dampen down the bees with cold water whenever they begin crowding the screen. These bees should be shut in very early in the morning or late at night when no bees are in the field. If clustered out in front they should be smoked into the hive before screening the entrance. On arrival at the new location the bees may be helped in marking their new location by placing weeds or brush in front of the entrance for a few days.

Moths in Combs.

There is one other important item of September work that should not be neglected. The extracting-combs, after the bees have cleaned them out, were doubtless piled in neat piles in the honey-house, care having been taken to leave no opening large enough for the access of the moth miller. During hot weather, every two weeks or even oftener, these should be examined for wax worms. At their first appearance such combs should be placed over strong colonies, which will soon clean out the worms. Any one who neglects these combs until they are badly affected will probably be obliged to resort to the bisulphide treatment, as given in the August issue, page 491. It should be remembered that combs are very valuable property for the beekeeper; and the possession of combs instead of foundation means many more pounds of honey the coming season.



The five- or ten-pound friction-top pail with lid punctured is filled with syrup (2 parts sugar to 1 part water), the lid put on tight, the pail inverted within an empty super directly on the top bars of the brood frames above the center of the brood nest, and covered with an old sack or blanket; then the hive cover is put on and the bees left to feed at leisure.

IN years past I had been in the habit of having in this journal a department headed "Travels." I remember that some time ago a good friend wrote me asking if I was going to "travel." If so, he wanted GLEAN-

INGS; but if not, he did not think he could afford to take it. Well, every little while in my old age I feel again the impulse to travel and learn as much as possible about this great, wide world, even if I am toward 80 years of age. I want to see what provision our nation is making for "daily bread." I also want to see how they manage to carry on business with the shortage of help this great war has caused; and I want to know, too, how much the world is becoming inclined in these latter days to follow Him who said, "I came that they may have life, and may have it abundantly." The children said I was getting to be too old to travel; I would get waylaid and robbed in the big cities, or run over by the cars.* And Mrs. Root herself said I would be sure to get sick, and then a lot of other things "might happen." My grandson Wynne, who wrote the article on food, on page 500 of our last issue, ran me down to the depot with the electric automobile. In the great city of Akron I called on my niece and her husband, Mr. Terry Hastings. They gave me a nice supper, and put me on the sleeper bound for Chicago. By the way, they were just sitting down to the table when I called; and when I was speaking about short cuts between producer and consumer they showed me their beautiful garden just back of the house. Every bit of it was high-pressure

*It is true I did not get run over by the cars or else I should not be here dictating; but, on my return home, in the great city of St. Paul I followed the crowd, carrying a big, heavy valise. An engine was coming toward us, but, like the rest, I thought there was plenty of time to get out of its way. On account of the heavy valise I was one of the last to get over. I still thought there was plenty of time, but a big policeman stationed there to look after old people like myself judged otherwise. He swept me off my feet, big valise and all, and set me over on the platform in a place of safety so quickly I hardly knew what had happened. When I expected him to give me a scolding for my recklessness or want of judgment, he did not even say a word, but kept right on attending to his regular business. I suppose he is doing the same thing just now while I write these words.



Give us this day our daily bread.—MATT. 6:11.
It is not good that the man should be alone. I will make him a help meet for him.—GEN. 2:18.
I came that they may have life, and may have it abundantly.—JOHN 10:10.

gardening, and at the supper-table Terry remarked that every article of food on that table came from their back-yard war garden.

Both good friends went down to the train with me, put me on the right sleeper for

Chicago, and once more I was alone in the great busy world's traffic.

On reaching Chicago I was taken in hand by the manager of the A. I. Root Co.'s supply house and taken over to the proper depot and put on board a car for Poynette, Wis. By the way, I am always pleased to see girls and women occupying important posts in our great business marts. In that great depot in Chicago there were two bright women in charge of the "information bureau." I asked when I could get a train, and how soon I could reach Poynette, Wis. By the way, it was a pleasure to me to see how quickly they investigated the different routes to reach the place, and to see them enter into full investigation, as if I was a particular friend of theirs.

Our readers, or at least some of them, will recall that Poynette is the home of Mr. Forrest, whom I visited about a year ago, and wrote up his electric windmill—see page 882, Nov., 1917. By the way, so far as I can ascertain, friend Forrest and I are the only men living, or the only two men who have ever lived, who are running an automobile by electricity generated by wind power. In other words, we are the only two men on the face of the earth who feed their "steeds" neither hay nor grain, and not even gasoline. But we feed the steed only on wind, which the great Father in his kindness gave to each and all, if we will only reach out and up and grasp it.

When I arrived at the town of Portage, where we had to change cars, there were three long trains of soldiers—American boys *en route* for the war. For some reason or other our train was held back about two hours to let these soldiers pass; and while the three long trains of boys—or at least they seemed boys to me—were awaiting orders, a lot of the young girls in and about Portage came to see the boys off. Altho these boys were bound for a foreign land, perhaps never to come back, they

seemed one and all in high spirits, and many of them seemed to be thinking it was the time of their young lives, to see the world, and do their part in saving our nation. Well, as the girls strung along beside the trains of cars, giving the boys smiles, the boys reached down and shook hands with them. It was nothing more than handshaking; and I felt from the bottom of my heart that it was the right and proper thing for the girls to bid the boys a hearty Godspeed, and show them their sympathy. Sometimes the boys would get hold of a girl's hand and would not let go right away. But it all ended in shouts of pleasantry as the cars pulled out. May God in his mercy bless the efforts that are being made to keep these boys (and *girls* also) well chaperoned and protected from evil when they go to fight our battles!

As Mr. Forrest was exceedingly busy with his electrical projects as well as harvesting his crops, Mrs. Forrest came to meet me at the train. She, too, seemed to recognize that the responsibilities of the world are now resting on *women* as they never rested on them before; and, when I was reckless enough to suggest that Mr. Forrest should drop his work and go with me away up into Wyndmere, N. D., she assented at once. She said he had not had a vacation for years, and richly deserved one; and as the Manikowske brothers had already paid *them* a visit some time before, it was no more than fair that he should improve the chance to visit the brothers' place, the place of all the world where electric windmills are being made. By the way, friend Forrest was just diagnosing a problem in wind and electricity when I arrived. His sixteen-foot windmill is on the summit of quite a hill. Now, his house is also well up on a hillside; but the mill is still higher up. His automobile is driven by 40 oxide storage batteries. Besides this he has 30 or more batteries, part of them homemade; so you see when the batteries are all stored he has power enough to do a lot of work on his farm. Let me pause a minute right here.

I recently saw a statement that storage batteries have attained such a wonderful degree of efficiency just now, that a single cell or a group of cells will, when fully charged, hold power enough to elevate themselves *six miles* straight up in the air. Say a single cell of a storage battery weighs from 15 to 20 pounds. This cell, when properly charged, will give out power enough to raise that weight of 20 pounds six miles. I thought at first that this must be an exaggeration, but listen.

The little electric auto, which I have pictured for you on page 387 of GLEANINGS for May, can be pushed forward and backward on a level floor; but it takes a pretty good strong man to push it any distance. Now, the 28-cell storage battery will push it over fairly good roads 62 *miles*; and, if it will do that, would it not raise the naked batteries alone almost six miles straight up?

Well, friend Forrest has quite a little work to do in grinding grain for his neighbors for different kinds of war bread; and this big windmill on top of the hill (which runs an upright shaft), after storing all his batteries, has quite a little idle time, with the wind they have there on those Wisconsin hills, especially in winter.* Now, he has built a little house right beside the big windmill, and is preparing to take power to grind the grain directly from that upright shaft without using electricity. The Wyndmere people, as you may remember, do not have any shaft to their mills. The dynamo is right close up to the revolving wheel, and a wire brings down the electric current. Therefore to work a mill with the Wyndmere outfit, the power must first be converted into electricity at the top of the tower and then changed back to mechanical power where the mill may be located. I think this way of carrying power loses some 30 to 40 per cent; but gearing and belting, shaft, etc., lose quite a good deal more power. Now, friend Forrest has not got his grinding mill located yet; but with the plan he had in mind when I arrived, the farmers would

*Before leaving this pleasant home I want to tell you of another electrical invention he had recently installed. I think it is called a "hot-point" warmer. A beautiful concave mirror is supported on a little stand, and right in the focus of this mirror is a coiled wire that becomes redhot when the current is on. By swinging the mirror you can direct the heat toward any person or spot in the room. If you have the earache it will heat up your ear and one side of your head like a hot-water bottle. I at once inquired the cost of the apparatus and the amount of current it used. If I remember rightly the price was between six and seven dollars. After some figuring he announced that the current required was about what it would be for eight electric-light globes. The device is new, but I think it can be obtained of almost any dealer in electrical supplies. Right here comes a point in favor of electric heating. Instead of wasting a great lot of fuel in securing a little heat, with this electric heater you can put the heat right where you want it, and just as much as you want, and no more; or it can be put on in an instant when wanted, and stopped in an instant when it is not wanted. Where the rate per kilowatt is furnished at a low rate, say five or ten cents, as it is in the cities, electrical heating may be cheaper than wood, coal, kerosene, gas, or gasoline, just because you can have just so much of it and just where you want it, and no more, none going to waste.

have to haul their grain to the top of the great hill; and farmers just now do not have a surplus of time nor of horses either, as a rule. Shall they climb uphill, leave their grist, and then again come up after it? or shall a wire bring the power to the home or even down to the valley? I have taken space to make the above statement in order that you may get a fair glimpse of the problem that awaits us in making the wind store the electricity, or "canned electricity," as the *Scientific American* terms it.

Well, one reason why I was anxious to have friend Forrest go along was because he is so much younger than I. I thought he might take me along and keep me out of trouble. When we arrived at St. Paul, the man who had charge of the information bureau was looked up. There were many people around asking him questions, and I guess he was tired. He said we could not get a train for Wyndmere nor anywhere near it until some time next day. Well, Mrs. Forrest not only runs an electric automobile but when we planned our trip she traced our route by railroad folders and told us we could get to Wyndmere early the following morning. I went back to the "information" man; but he was short and crusty, and intimated that he knew his own business, etc. I went to the ticket agent and told him we had been informed we could get to Wahpeton that night. He said Wahpeton was away off our route, etc.—there was no way but to wait until the middle of the next day. But friend Forrest still insisted that his wife was right, and he seemed to think she knew more than the information bureau and the ticket agent together. As there were four or five clerks at the ticket-windows in St. Paul, I applied to their man at another window. He too snubbed me by intimating they knew their own business. Notwithstanding all this, Mr. Forrest pointed out by our folders that we were right; and I made the chap at the information bureau own up; and he gave as a reason that he had run out of folders for the train we wanted to take; and when I applied for a sleeper berth the same ticket agent again insisted that it would not do me any good to go to Wahpeton.

I give the above as an illustration of how important it is when we want to travel any long distance that we thoroly inform ourselves before starting as to the route to take, etc. My impression is that if they had had a woman in charge of that information bureau, or even at the ticket office, she would have been sufficiently posted to

save us a great part of a day besides the expense.

When I started from home Mrs. Root said, "Now, don't you go and burden George's wife with her two little children. I know about them, for I have seen their pictures. But you *insist* on going straight to a hotel."

Well, I tried to obey orders; but George and his good wife said, "*nothing of the sort.*"

As I was tired from the day's travels I was soon off to bed. Perhaps I should explain here that by some blunder our good friend Forrest did not get off the train at Wahpeton, but he arrived at George's place a little after I had retired, and he too tried to go to a hotel, but received the same answer I did. So, instead of obeying Mrs. Root's injunction I went there and stayed over night; and not only that, I brought another man with me and we both stayed over Sunday. Oh, dear me! didn't "*we three*" have a time in discussing windmills, storage batteries, electricity, etc.?

The town of Wyndmere has about 600 inhabitants, and it is lighted by an electric-light plant owned by the Electric Windmill corporation. A kerosene engine operates it. I think it requires toward \$2.00 worth of kerosene to run it 24 hours, and an expert to take charge of the engine in the night. But this expense could all be saved by electricity furnished by the windmill. George thinks about four mills located at the four corners of the town would do the work; and the reason why these windmills are not installed is that they are away behind on orders for the mills. They received three orders for outfits of \$500 each the day I arrived; and two days later they received five more orders for outfits. The factory is a one-story one, I think about 140 x 50 or 60 feet wide. Almost everything in that line is made on their own premises. The particular trouble just now is a lack of help. Some of their best men have been called to the war. From a notice I gave of their invention in GLEANINGS, inquiries have come from almost every part of the world. In fact, George showed me a pile of letters that were quite in evidence as showing that our journal reaches almost the uttermost parts of the earth. The Manikowske family are all geniuses. When George took us up to "the old home farm" we found his father and mother and sister and brother each driving a four-horse reaper; and a hired man drove the fifth, so that each time around the field they cut a swath as wide as the five reapers. Nothing would do but

that A. I. Root would have to mount a machine and drive the team once around the field, half a mile long on each side. George's mother volunteered to be my "chaperon" and see that I pulled the right levers and did not fall off. The sister wore while driving what I think they call "feminine overalls," and somebody told me that if any of the five reapers get out of commission the sister would diagnose the trouble, and many times remedy it quicker than anybody else.

Let me pause here to say that I did not suppose until this visit there was a place in the whole wide world where the most beautiful luxuriant wheatfields were covering acre after acre. In this part of North Dakota there are no fences. The crops come right up to the road, so there is but little chance for weeds. One farm joins another without fences so there are no fence corners where weeds can go to seed. This year they have had better crops than ever before, and North Dakota, so it seems to me, is better prepared to win the war by doing its part to *feed* the world than any other spot in the world. The ground is so level there that George says he has seen a furrow a mile long full of water after a big rain, and so level the water would not run either way, but stand still the entire length of the furrow. Cornfields that alternate the wheat are just as handsome as the wheatfields. In fact, I never before in my life saw miles and miles of cornfields without any poor spots—just a bright rich green; and the crops there are further along than they are here in the East. The war gardens too are just wonderful. The farms are all large; and with the outbuildings every farm makes almost a little village by itself. I think George told me there were 22 different buildings, big and little, on his father's farm. No wonder they are going in for windmills, electric lighting, etc. And it is not all lighting. They have electric motors on little trucks that they can haul around from one building to another; and by hitching on a wire they can turn a grindstone, cream-separator, icecream-freezer, fanning-mill, mill for grinding grain, cutting fodder, and no end of things. Of course, in many places they have stationary motors, where much power is required. These little motors can be used anywhere, doing the washing, churning, etc.

While out in the harvest field George's mother informed me that in the absence of herself and daughter they had two schoolgirls doing the housework, and she felt a little anxious about them. A little

later I met and became acquainted with the two. I think they were 13 and 15 years old respectively. One of them wore the feminine overalls somewhat abbreviated for a young girl, and they were doing all the housework, getting the meals, making the beds, and even making beautiful bread. In visiting another farm I met and was introduced to different members of the family. It was just at dusk, and they were congregated in and around a large automobile. After the farmer had introduced all the rest he made a remark something like this:

"I want you to shake hands with my hired man. He has been helping me a good many years, and he is the very best hired man I ever got hold of in my life."*

Well, said hired man seemed to be a little shy about meeting strangers. In fact, I had to go clear around the machine to get a good view of him, as it was nearly dark. What do you think? It was a rather tall slim daughter of the old farmer, dressed in the feminine overalls as a matter of course. By the way, I think I have at different times made objection to women folks leaving off the skirts, but when it comes to doing farmwork, especially caring for modern machinery, skirts would certainly be very much out of place. A short skirt might be covered by overalls, but during hot weather such as we have been having this last week of July and first of August it certainly should be the privilege of the women and girls in the house to wear just as little clothing as is absolutely necessary for comfort and decency, exactly as your old friend A. I. Root does.

Well, after I got home I was telling my grown-up daughters how the girls and women in the great grain-growing regions of the Northwest were helping to win the war, and one of my daughters remarked:

"Father, if you were a younger man I might question the wisdom of sending you away off to see and become acquainted with the women folks in the harvest fields, especially the good-looking girls."

To this I replied:

"My dear child, it would be a perfectly safe thing for *any* man, of any age, to go anywhere in the world, providing said man has in his heart the beautiful text or prayer that has been my comfort and joy daily and I might almost say hourly, for many months past. Here is the text: 'Let the words of my mouth, and the meditation of my heart, be acceptable in thy

*Has it occurred to you dear reader that never before since the world began has women proved such a "help meet" to man, to the nation, and the world, as just now?

sight, O Lord, my strength and my redeemer.”

I think those who have tried it, especially men folks, may have found that it is a comparatively easy thing to be careful of their words; but when it comes to keeping “the meditations of their heart” so that *they* will all be acceptable in the sight of the all-seeing God, then it comes to be a task; and at times it may seem to be a most hopeless task. But do not despair nor give up, dear brother or sister. As you look back you will see and feel you are making progress; and altho at times it seems as if the pinnacle would never be reached in one short human life, it is worth the trying; for among all the promises in God’s holy word there is *one* that seems to me overtops them all; and when you get perfect control of your thoughts as well as of your words you will have in view the precious promise of the dear Savior, in one of the beatitudes—“Blessed are the pure in heart, for *they* shall see God.”

(To be continued.)

FISH AS AN ARTICLE OF DIET; DOES THE SAVIOR INDOSE IT?

On page 410 of Gleanings for July, Dr. Miller kindly suggests that I am not careful enough in quoting scripture. While this may be true, and I promise to be more careful in the future, let me explain that I did not have in mind Luke 24:42. In the 21st chapter of John, verses 12 and 13, we read:

“Jesus saith unto them, come and dine. And none of the disciples durst ask him, Who art thou? knowing that it was the Lord.”

“Jesus then cometh, and taketh bread, and giveth them, and fish likewise.”

The above indicates without question, as it seems to me, that he provided a repast of bread and fish; and when he at another time performed the miracle of loaves and fishes, he gave them fish also. My opinion is, however, that he provided only the most common article of diet, or, in other words, such a meal as they were accustomed to; and I am not sure that he meant to indorse a meat diet by furnishing fish. On the other hand, it is quite true—that is, it so seems to me—that he did not consider fish diet in any way objectionable or unwholesome.

TOBACCO AMONG THE SOLDIERS IN THE ARMY; SOME FURTHER CONSIDERATIONS REGARDING THE MATTER.

I wonder how many of our readers take the monthly published at Battle Creek, Michigan, entitled *Good Health*. Each issue of late seems to be especially valuable; and after what I have said in regard to to-

bacco in the army in our two past issues, the following clipping fits in well, even if it does suggest that perhaps I have been thoughtless sometimes, and may have gone too great an extreme. Here is the clipping:

Our war administrators are men of extraordinary ability, and are showing an amazing degree of efficiency and wisdom in the management of the greatest enterprise ever undertaken by any country. The advisability of including tobacco in the soldier’s ration doubtless received careful consideration before the order was given, and the order must have been based upon the fact that 90 to 95 per cent of all the soldiers are smokers.

To deprive the smoker of tobacco, while at home everybody continues to smoke as much as he likes, would naturally tend to make the soldier discontented and unhappy because of the apparent discrimination against him. Hence it was doubtless regarded as expedient, under the circumstances, to give the soldier the same opportunity for indulging in his favorite dope as the tobacco addicts at home enjoy; and the most convenient way of doing this is doubtless the distribution of the drug as a part of the soldier’s ration. But there is nothing in this action that in any way indorses the idea that tobacco-using is a good thing for anybody. It is simply a concession.

CIGARETTES—ARE THEY HARMFUL TO ADULTS—MEN AND WOMEN?

The letter on the first page of *Our Homes* of our last issue intimates, as I take it, that cigarettes are harmful only to boys and girls; but the clipping below, from the *Cleveland Plain Dealer*, does not quite seem to accord with that idea.

MAN CIGARETTE SUICIDE; KILLS HIMSELF BECAUSE HE CANNOT QUIT.

Redding, Cal., July 14.—Because he could not stop smoking cigarettes Charles M. Byers, a miner, walked out to the county cemetery and fired a bullet thru his brain.

“Bury me in here,” instructed a note found in his clothing. “I have tried again and again to stop smoking cigarettes. I cannot do it.”

Byers was 50.

WHAT A LITTLE TRACT MAY DO.

The Asher Publishing Co., 359 Minnesota St., St. Paul, Minn., sends out a printed list of religious tracts and temperance leaflets. These tracts are offered at the very low price of from two cents a dozen up to two cents each; and this latter price sometimes includes quite a little book for a small sum of money. Among others is the *Dairyman’s Daughter* for two cents. Well, their list of tracts, big and little, comprises several hundred titles. On the last page is something that gave me one of my happy surprises. It is this:

“A woman dropped a tract in the way of Richard Baxter which led to his conversion. Richard Baxter wrote “The Call to the Unconverted,” which was the means of bringing a multitude to God, among others Philip Doddridge. Philip Doddridge wrote “The Rise and Progress of Religion in the Soul,” which brought thousands into the kingdom; and among others the great Wilberforce. Wilberforce wrote “A Practical View of Christianity,” which was the means of bringing many to Christ, among others Leigh Richmond. Leigh Richmond wrote “The Dairyman’s Daughter,” which has been the means of converting many.”

Is not this wonderful, friends, that just one seemingly insignificant slip of paper should start a ball rolling down the ages that shall not only “save a multitude of souls,” but perhaps make a marked change in the literature of the whole wide world? Send a stamp to the Asher Publishing Co. and get their price list.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00, 6, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00.
C. W. Phelps & Sons, Wilcox St., Binghamton, N. Y.

Golden Italian queens that produce gentle and good honey-gathering bees. My bees were prize winners at Illinois State Fair. Mated, untested, \$1.00; select untested, \$1.25; tested, \$2.00. No bees for sale.
A. O. Heinzel, Lincoln, Ills.

Golden and 3-banded Italian queens will be our specialty. We can also furnish Carniolans. Tested, \$1.00 each; untested 75 cts. each. Bees per lb., \$1.50; nuclei, per frame, \$1.50. Send your order for bees early.
C. B. Bankston & Co., Buffalo, Leon Co., Tex.

FOR SALE.—Cheap, 125 colonies, clean bees. Abundance of supers and extracting equipment. Fireweed, wild blackberry and maple. Good exclusive territory. Good road, hunting, fishing, fine water. Room for more bees.
G. L. Welch, Potlatch, Wash.

FOR SALE.—100 to 300 colonies of bees in 8-frame dovetailed hives, Hoffman wired frames, 3 comb supers around, in two best locations in Valley. Two good honey houses. \$8.00 each. No disease. M. W. Harvey, Reno, R. D. No. 1, Box No. 45, Nev.

PURE ITALIAN QUEENS. Golden that are GOLDEN and Doolittle's choice stock. Select untested (laying queens), one, \$1.00; 6, \$5.00; tested, \$1.50; best breeders, \$5.00. For large lots write for prices. Pure mating, safe arrival and satisfaction I guarantee.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

ITALIAN QUEENS.—Northern-bred three-banded, highest grade, select untested, guaranteed, queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, 1, \$1.00; 12, \$10.00; 50, \$35.00. Send for circular.
J. H. Haughey, Berrien Springs, Mich.

North Carolina bred Italian queens of Dr. C. C. Miller's famous strain of three-band Italian bees, gentle and good honey-gatherers. July 1 until Oct. 1 untested, 85c each, 12 for \$9.00; tested, \$1.25 each; select tested \$1.75 each. Safe arrival and satisfaction guaranteed.
L. Parker, Benson, N. C., R. F. D. No. 2.

FOR SALE.—Achord's Pure Italian Queens, hardy and prolific. No disease. Satisfaction guaranteed. Before June 16, untested, 1 for 90c; 12 for \$10.00; tested, 1 for \$1.50; 12 for \$16.50. After June 16, untested, 1 for 75c; 6 for \$4.25; 12 for \$8.00; 50 or more, 65c each; tested, 1 for \$1.25; 6 for \$7.00. Best breeder, \$3.00.
W. D. Achord, Fitzpatrick, Ala.

Fine queens of Dr. Miller and Walker's stock, \$1.00 each, 6 for \$5.00; 12 for \$9.00, 100 for \$75.00.

Testimony of Mr. J. M. Meadow, Dorton, Tenn. "I have in my yard queens from four different breeders. Walker's beats them all."

Testimony of Mr. A. K. Whidden, San Jacinto, Cal., Bee Inspector of Riverside Co., "I have just inspected an apiary for Roy Bateman. They were requeened with your queens. The superiority of those queens was so marked that I want 100 or more." Curd Walker, Queen-breeder, Jellico, Tenn.

BREEDING QUEENS.—We are now doing our annual requeening. Our bees are of the celebrated Moore strain of leather-colored Italians. Gentle, hardy and great workers. I have decided to se'e t the best one-year-old queens, tested for purity of mating, gentleness and working qualities of the bees, queens good enough to use for breeders, and offer them for sale for \$1.50 each; 6 for \$8.50; 12 for \$16.50. Untested queens of same stock for \$1.00 each, 6 for \$5.00, 12 for \$11.00. Safe arrival and satisfaction guaranteed.
Elmer Hutchinson, Lake City, Mich.

SITUATIONS WANTED

Position wanted in apiary by experienced apiarist. Hungarian, speaks little English; 50 years old, robust and good worker. For further particulars address John Duka, c o Hutter, 23 Bostwick Ave., Detroit, Mich.

HELP WANTED

WANTED.—Young men of energy and character, of clean habits, not eligible for military duty, as helpers in our extensive bee-business. Fine chance to learn. Write immediately, giving wages, age, height, weight, experience, and references all in first letter, or expect no answer.
E. F. Atwater, Meridian, Idaho.

Perdue's Southern-bred Italian Queens

that resist disease well — those that resist disease must be hardy, prolific, and hustlers; and they are superior to many as honey-gatherers, and mated for their gentleness. Why not try them and be convinced that you have been losing by not buying them the three bands.

Untested,	one,	\$.75;	six,	\$1.25;	12,	\$8.00;	per 100,	\$60.00
Sel. Untested,		1.00		5.00		9.00		
Tested,		1.50		8.75		17.00		

Satisfaction guaranteed

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will find a complete line of supplies here. Order early and avoid delays. Write for catalog.

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Queens Rhode Island Queens

Italian Northern Bred Queens. Very gentle and hardy. Great workers. Untested, \$1; 6 for \$5. Circular on application. Queens delivered after June 1.

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remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and Grand Trunk.

Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Maine. J. B. MASON, Manager.

Our Food Page—Continued from page 541.

Cover with the honey, add the spice and lemon, and simmer slowly until thick and rich. When done, pour into hot, sterilized jars and seal.

WATERMELON RIND PRESERVES.

- 1 qt. prepared rind ¼ cup cider vinegar
- 3 cups honey 1 oz. stick cinnamon
- ½ oz. whole cloves

Trim the watermelon rind and slice it, cover it with a very weak brine, and let it soak several hours or over night. Drain and rinse thoroly, cover with clear water, and cook until transparent. Drain again in a colander, add the honey, vinegar, and spice, and cook slowly until done, about an hour. Seal immediately in hot, sterilized jars.

CARROT MARMALADE.

- 3 cups carrots chopped
- 1 orange
- fine water
- 1 lemon honey

Wash and scrape young carrots and put through the food chopper together with the orange and lemon. Use the lemon and orange peel, but reject the seeds. Cover with water and cook until the carrots are tender; measure, and for every cup of pulp, use ¾ cup honey. Cook slowly until thick and rich, and seal at once in hot, sterilized jars.

PLUM MARMALADE.

- Plums Honey Water

Select freestone plums which are of a mild flavor when cooked. There are plums which are of a fine flavor eaten raw, but become strong when cooked. Wash the plums, cut in halves, and remove stones. Add a very little water and cook gently about 20 minutes. Measure the cooked pulp, and for every cup of pulp use ¾ cup honey. Cook until it will drip from the side of a spoon in two or more rows of drops, pour into hot, sterilized glasses, and when cold cover with melted paraffin.

APPLE JELLY.

- Apples Honey

Wash, quarter, and core tart apples, not quite ripe, leaving on the skin. Cover with water and cook until soft, pour into a jelly bag and let drip. To every cup of juice add ¾ cup honey, cook until it will drip

from the side of a spoon in two or more rows of drops or a thin sheet, pour into hot, sterilized glasses, and when cold, cover with melted paraffin. An old-fashioned way of adding a delicious flavor to apple jelly is to drop a small rose geranium leaf into each jar. Delicious peach jelly may be made by combining apple juice with the juice obtained from cooking the peach parings. The apples furnish the pectin which peaches lack. The apples and peach parings may be cooked together.

PEAR CHIPS.

- 2 lbs. prepared pears 1 lemon
- 1½ lbs. honey 1 oz. preserved ginger

Peel, core, and slice the pears in small pieces, add the honey and ginger and let stand an hour or two or over night. Add the lemon, cut in very thin pieces, and cook slowly about three hours. Seal in hot, sterilized jars.

PEACH PRESERVES.

- 1 lb. peaches cut small ¾ lb. honey

Cook the peaches and honey together until thick and rich, pour into sterilized jars and seal. Peaches which are lacking in flavor and juice will make good preserves if a tablespoon vinegar and a bit of stick cinnamon are added to this recipe.

PEACHES CANNED IN HONEY SYRUP.

Cut the peaches in halves, remove the stones, peel and pack closely in the jars, cover with the boiling hot syrup, partially seal, and sterilize in water bath 15 minutes. When sterilized, remove, complete the seal, and invert to test for leakage. An attractive-looking jar is secured by being careful to pack the peach halves with the stone side next to the glass.

For a rich syrup, use one cup honey to one cup water and bring to a boil. One cup honey to two cups water will do very well in these days when we must accustom ourselves to food less sweet.

PEARS, HARD APPLES, AND QUINCES.

Peel, core, and slice into convenient sections, dropping into slightly salted cold water to prevent darkening, blanch in boiling water 1½ minutes, cold dip, pack into jars, pour over honey syrup, and sterilize in hot-water bath 20 minutes.

QUEENS THAT WILL PLEASE

OVER TWENTY YEARS OF CAREFUL SELECTING AND BREEDING

GUARANTEE

You take no risk in buying my queens, for I guarantee every queen to reach you in first-class condition; to be purely mated, and to give perfect satisfaction.

They are bred from IMPORTED stock. The very best for honey gathering and gentleness. They are not given to swarming and are highly resistant to disease. Give me your order and if after you have given my queens a fair trial, you are not satisfied in every way that they are as good as you have ever used, just return them and I will send you queens to take their places or return your money with any postage you have paid out on returning the queens.

	1	6	12
Untested	\$.75	\$ 4.25	\$ 8.00
Select Untested	1.00	5.00	9.00
Tested	1.50	8.75	17.00
Select Tested	2.00	11.00	20.00

Untested \$70.00 per hundred before June 15th.
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L. L. FOREHAND - - FORT DEPOSIT, ALABAMA

BOOKS AND BULLETINS


"Report of Iowa State Apiarist for 1917," by F. Eric Millen. The report of the State Apiarist of Iowa contains nearly 100 pages of live interest to beekeepers. In addition to demonstrations and regular inspection work, Mr. Millen has charge of a week's short course in beekeeping at the State college at Ames, and also of a correspondence course in beekeeping. Most of the booklet is taken up with a report of the Iowa Beekeepers' Association, which has enrolled about 300 members. Fourteen very good papers were given among which are such practical subjects as "What the Beekeeper Throws Away," "Beekeeping in War Times," "Painted vs. Non-Painted Comb Foundation," and other articles of a more scientific nature, such as "Points of Interest in the Anatomy of the Honey Bee," and "The Mechanism Which Determines Sex in the Honey Bee." The report is well worth reading. It may be obtained (we believe) by addressing F. Eric Millen, State Apiarist, Ames, Ia.

"Every-day Essentials of Beekeeping," Bulletin No. 14, Apiary Inspection Dept. of State Board of Agriculture of Massachusetts, by Burton N. Gates. Within a space of 32 pages Dr. Gates "presents some essentials adapted to the beginner" or amateur. This bulletin seeks primarily to promote efficiency among beekeepers, and is one that any amateur beekeeper or beginner (especially if living in New England) would do well to ask for. Dr. Gates is also author of the eighth annual report of the State Inspector of Apiaries of Massachusetts, very recently off the press—and an interesting one.

"Control of European Foul Brood," Farmers' Bulletin 975, by Dr. E. F. Phillips. This is a popular treatment of the subject. In it the symptoms are given as quite variable, and the disease is, therefore (aside from a bacteriological examination), very difficult of accurate diagnosis. Eleven characteristics are enumerated. These, when present, are of help in determining the disease. Dr. Phillips calls attention to the fact that European foul brood is a disease of weak colonies. The earliest brood of the year usually escapes with little loss, yet the disease is especially prevalent in the spring and early summer, usually disappearing at the beginning of the honey flow. Also the method of spreading the disease is not well understood, the disease is sometimes carried thru feeding, and there is also evidence that the disease is carried by the nurse bees. Three remedies for this disease are suggested. (1) dequeening and requeening with good stock as soon as the dead larvæ are removed, or even sooner if the colony is strong; (2) at least half of the strong colonies shaken onto combs, and the brood tiered upon the weaker colonies until they are strong enough for treating; (3) above the lower story is placed the brood-combs, and below is placed the queen, one frame of brood, and the remainder of the hive filled with foundation or drawn combs. Of the first two which have been commonly used, the second has the advantage of losing no time in the brood-rearing. The third method is of interest inasmuch as it does not, during the treatment, provide any time in which nurse bees cannot have access to the young diseased larvæ. If the disease is carried by nurse bees, as suggested, one might naturally suppose that as soon as young brood appeared in the lower hive the nurse bees would be able to feed them infected juices, and thus continue the disease.

"The Segmentation of the Abdomen of the Honeybee." We have received from Dr. Jas. A. Nelson an interesting paper on the number of segments found in the abdomen of the honeybee. Dr. Nelson is the author of "The Embryology of the Honeybee," and contributed to the last edition of the A B C

(Continued on page 571.)



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Beekeepers: Let us print you some cloth or manilla tags to go on your shipments of wax with your name and address. That is the only safe way to be sure your wax isn't lost in transit.

Prices on Application.

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Dr. Miller QUEENS

We are again rearing queens from mothers supplied by Dr. Miller from his apiary. These bees are proving to be very gentle as well as hardy and resistant to Foul Brood. Two queen-breeders not interested in us at all have declared them to be the gentlest bees they ever saw. Our list of customers that demand Miller Strain is growing fast. Remember that we are the only breeders that get breeders direct from Dr. Miller. Can you find a man more able than Dr. Miller to select your breeding queens? Besides that he has the material that he has been working on for over fifty years to select from. Safe arrival and satisfaction guaranteed.

One untested, \$1.00; 12 for \$10; 25 or more, 75c each.

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Formerly of Mayhew, Miss.

COMB HONEY SHIPPING-CASES

Our shipping-cases are all accurately made of nice basswood lumber. This makes a very attractive, neat, and strong package.

Send for our catalog.

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Bred for Honey Production

That are gentle and hardy. Reared from the best mothers by the best known methods. We will have 2000 mating nuclei in operation by June 15th.

We may have some pound packages to offer after June 15th but are not in position to say until about June 10th to 15th. Safe arrival and satisfaction guaranteed.

One untested, 75c each; 12 to 100, 60c each. Full colony in 8-fr. hive with tested queen, \$9.00; 10-fr. hive, \$10.00. Can make prompt shipment of these.

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Penn, Lowndes Co., Miss.

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Often need their reports and bulletins printed. We are in the market for this work. Our complete stock of cuts and illustrations are at your disposal. We can often save you the expense of new cuts. Let us quote you on your printing—reports, stationery, cartons, advertising matter, labels, etc.

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Publishers of Gleanings in Bee Culture

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The season is drawing nearer and beekeepers should endeavor to order early. By making up your wants now you will be better fitted to go into the season with a view of not only obtaining a bigger crop but to facilitate matters thruout the season. If you will make up a list of requirements for quotation we shall be glad to quote.

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Dealers Everywhere

"Simplified Beekeeping," postpaid

W. T. FALCONER MFG. COMPANY, FALCONER, NEW YORK

where the good beehives come from

Books and Bulletins - Continued

of Bee Culture an article on the development of this insect. An examination of the abdomen of the worker bee shows that it apparently consists of six rings or segments. The head and thorax are also composed of segments, but in the head they have become so closely fused together that the individual segments can no longer be easily distinguished. The insect is thus a cylinder composed of rings or segments. But in the embryo the segments still remain distinct, and there is no differentiation into head, thoracic, or abdominal regions. There has been in the past more or less difference of opinion as to the number of segments which enter into the formation of the head and abdomen. The trunk of the insect was by the earlier workers in this field regarded as consisting of 10, or, in some cases, of 11 segments. From his studies of the embryos of the honeybee Dr. Nelson finds plain evidence of the presence of 12 segments in the abdomen. This valuable paper is published in the Annals of the Entomological Society of America, Vol. XI, pp. 1-8.

"Mysteries of Beekeeping Explained," by Quinby. Quinby has long been recognized as such an authority on beekeeping, and his books in such demand, that The A. I. Root Company has found it necessary to publish recently an eighth edition. The subjects treated are: "The Natural History of Bees"; "Directions for Obtaining the Greatest Amount of Pure Surplus"; "Honey with the Least Possible Expense"; "Remedies for Losses Given"; "The Science of 'Luck' Fully Illustrated." The book is the result of more than 30 years' experience in extensive aparies. Those wishing to purchase the book may obtain it from The A. I. Root Company.

"The New Zealand Co-operative Honey Producers' Assn., Ltd." According to a leaflet put out by the New Zealand Co-operative Honey Producers' Association, this concern received honey from share-holders only, each of whom is required to take up shares on the basis of his average crop. The association was organized in order to regulate the supply to the demand, and enable the beekeeper to get a fairer return for his produce. Since organizing, the association has caused a great increase in local as well as export trade, and has increased from 20 beekeepers to a large organization, with shareholders all over the Dominion.

Queens of MOORE'S STRAIN of Italians

PRODUCE WORKERS

That fill the super quick
With honey nice and thick

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens, \$1.00; six, \$5.50; 12, \$10.00. Select untested, \$1.25; six, \$6.50; 12, \$12.00. Safe arrival and satisfaction guaranteed. Circular free.

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"Best Hand Lantern"



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**
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We carry the largest supply
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your inquiries.

Lowest Prices, Quality Considered

C. C. Clemons Bee Supply Co.
128 Grand Ave. KANSAS CITY, MO.

**Dont Send
a Penny**

These Len-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you prepaid, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$5 and \$6 for shoes not near so good?

**Great
Shoe
Offer**



This shoe is built to meet the demand of an outdoor city workers' shoe as well as for the modern farmer. Built on stylish lace Blucher last. Special tanning process makes the leather proof against the acid in milk, manure, soil, gasoline, etc. They outwear 3 ordinary pairs of shoes. Very flexible, soft and easy on the feet. Made by a special process which leaves all the "life" in the leather and gives it wonderful wear-resisting quality. Double leather soles and heels. Dirt and water-proof tongue. Heavy chrome leather tops. Just slip them on and see if they are not the most comfortable, easiest, most wonderful shoes you ever wore. Pay only \$3.85 on arrival. If after careful examination you don't find them all you expect, send them back and we will return your money. **SEND** your name and address; and be sure to state size you want. Send no money. Price only \$3.85 on arrival. We send these splendid shoes PREPAID. You are to be the judge of quality, style and value. Keep them only if satisfactory in every way. Be sure to give size and width. Send now. **Leonard-Morton & Co., Dept. 2019 Chicago**

WANTED SECTION HONEY

in Carlots and less
than Carlots. . . .

Correspondence Solicited

J. E. Harris
Morristown, Tennessee

Mott's Northern-bred Italian Queens

are hardy, prolific, gentle, and hustlers,
therefore resist well disease.

Untested, \$1.00 each; \$9.00 for 12

Select Tested, \$1.50 each.

Virgins, 50c each; or three for \$1.00.

Bees by pound.

Plans "How to Introduce Queens," and
"Increase," 25c. List free.

E. E. Mott, Glenwood, Mich.

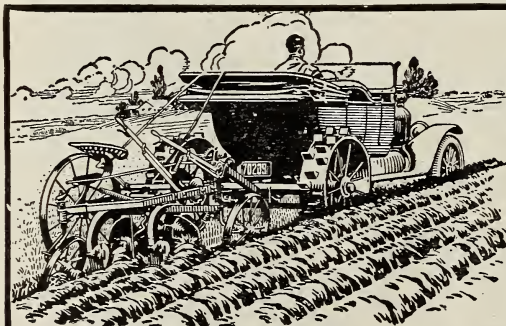
Cans and Shipping-cases

We have a fine stock of 5-gal. cans and shipping-cases; also
comb foundation, extractors, honey-tanks, etc.



Quick Shipments.

KRETCHMER MFG. CO. Dept. G, Council Bluffs, Iowa



Plow and Pull
With **FORD** Or Most
Your Other Cars
Pullford \$155 F. O. B.
Quincy, Ill.

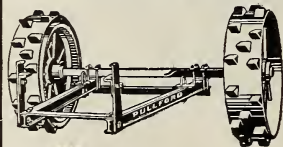
MAKES a practical tractor
out of a Ford or most any
other car. Easily attached to or
removed from the car in thirty
minutes. No holes to drill, no
springs to remove. **Practical,
Durable, Reliable.**

New FAN DEVICE Prevents Heating Hundreds WORKING NOW for Satisfied and Enthusiastic Owners

Pulls plows, harrows, drills, mowers, binders, hay loaders,
road graders, wagons, trucks, etc. Steel wheels with roller
bearings and tires 10 inches wide, two pairs of hardened
Vanadium steel pinions, one for plowing and one for haul-
ing speed. A tractor with the reliability and durability of
the Ford car. Prompt shipment. Write for catalog.

It was the Pullford attached to Ford cars pulling two 12-inch plows
running on Kerosene, equipped with new fan device, that made a most
successful demonstration at Fremont, Nebraska.

PULLFORD COMPANY, Box 23C
Telephone No. 84 Walton Heights, QUINCY, ILLINOIS



AROUND THE OFFICE

M.-A.-O.

The awful hot weather just now and the plague of moskeeters and squash-vine wilt that has lit down onto Medina seems to have been influencin' me to compose just sober, high-class readin' matter. Praps I am not very well. Anyhow, I am goin' to give just this glimpse of "Uncle Amos"—and that's sure to be nothin' but good. There was a meetin' and supper of all the Roots' foremen and heads of departments in the company's factory lunch room last evenin'. I got in on a squeeze and A. I. Root got in complimentary, I suppose. He's got some rights here yet, anyhow, and got in on the feed and seemed happy about it. When the talkin' time came, "Uncle Amos" was called up early, and got onto his feet smilin' and smilin' midst a roar of hand clappin'. His smile is a real smile, too—a boy's sort of smile. It ain't 79 years old like his pedigree age. He reminised a bit about the early days of the Root business when he carried the load alone onto his own shoulders and told of a recent trip west. Then suddenly the smile on his face sobered up a little bit—just a little, tho—and then he said somethin' like this: "But I am growin' old, and I am happy in growin' old, too. So I want to say somethin' here now that I want you boys all to remember long after I am gone, and remember your old friend, A. I. Root, said it to you and begged you to remember it. Some way, today I have been thinkin' about and repeatin' over and over that verse in the Bible that reads 'Let the words of my mouth and the meditation of my heart be acceptable in thy sight, O Lord, my strength and my redeemer.' I have got so the words of my mouth are pretty well guarded," he went on, "but the hard, hard battle is to keep the meditation of the heart right. So it must be with us all; but how grand a thing it is to keep our meditations right with the Lord. Let's never give up tryin'." Then "Uncle Amos" sot down amid another outburst of hand claps. It struck me all of a heap that we had just had a whole summin' up of A. I. Root in that speech that began with a talk about work and money-makin' and a trip to new fields in Dakota, and then closin' with a exhortation about what he thought was most important of all—a feller's heart and soul. A. I. Root's for business and he's also for heaven, so he is.

* * *

Probably E. R. Root and Dr. E. F. Phillips won't concede it's any of my particular business, but I ain't carin' and am goin' to mention it just the same. Those two fellers were at a Courtland County, N. Y., beekeepers' field meet the other day, kind of bumptious-like, as I spose they have a right to be at such meetin's seemin' as how they know so much beekeepin'. It was of a Mon-

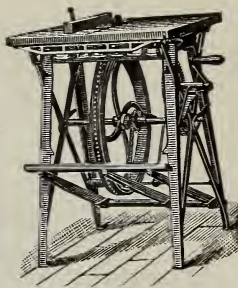
BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices

W. F. & JOHN BARNES CO
545 Ruby St
ROCKFORD, ILLINOIS



BANKING BY MAIL AT 4%

BUILD UP A SURPLUS FUND

Present day conditions emphasize very strongly the importance—indeed the necessity—of everyone building up a surplus fund of ready cash.

A Savings Account BY MAIL in this strong bank is an ideal method of building up a surplus fund.

Deposits may be safely sent in the form of check, draft, money order or the currency by registered mail.

Write for detailed information concerning this safe and convenient plan of BANKING BY MAIL AT 4 PER CENT.

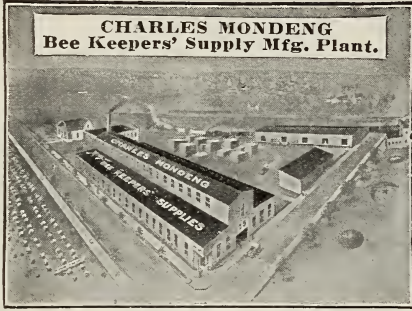
THE SAVINGS DEPOSIT BANK CO. MEDINA, OHIO

A. T. SPITZER, Pres.
E. R. ROOT, Vice-Pres.
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ASSETS OVER ONE MILLION DOLLARS

"Special Crops" A high-class illustrated monthly journal devoted to the Growing and Marketing of Ginseng, Golden Seal, Senega Root, Belladonna, and other unusual crops. \$1.00 per year. Sample copy 10c. Address Special Crops, Box G, Skaneateles, New York

\$30,000 WORTH OF Bee Supplies



All boxed ready to ship at once: 275,000 Hoffman frames, also Jumbo and Shallow frames, of all kinds, 100 and 200 in a box. Big stock of Sections, and fine polished Dovetailed Hives and Supers. I can give you big bargains. Send for a new price-list. I can save you money.

Will Take Beeswax in Trade at Highest Market Price.

Charles Mondeng
146 Newton Ave., N. Minneapolis, Minn.

Around the Office—Continued

day, and E. R. was a-goin' it and seemin'ly unconscious got to tellin' about visitin' and lookin' over somebody's apiaries just the day afore. Dr. Phillips thought he see a openin' agin the editor of the Sunday-observin' Gleanin's and he up an says: "E. R., do you mean that was yesterday or Saturday you done that?" The snicker was on E. R.; but it seems he meant somethin' about Dr. Phillips' own personal Sunday habits when he right up and says: "Well, anyway, I got Dr. Phillips to go to church yesterday and he got by without dyin' of heart failure or shock, either." I, myself, think "Uncle Amos" ought to have a little quiet talk with both those boys. Any way, they oughtnter get to twittin' on facts in public. Facts is what gives a feller away oftener 'n anything else all put together most generally—and all to oncet sometimes, too.

Here's a feller worse degraded almost than M.-A.-O. was afore he got reformed. He's a Kalamazoo, Mich., man, and he even pays money to say words as what he ought-nter. I want all those particular good folks who used to peel M.-A.-O. alive afore he got reformed to go right after him and take his skin off while he's still livin' and hurts most. So they can know him and for what to pile onto him for, I am regretfully compelled to reprint the advertisement he put in a Kalamazoo paper the other day as follows, to-wit: "Notice—Whoever borrowed my jack screw, please return it, by gosh. Willie Lawrence." Think of that! That doesn't now seem to me possible, but it's all too true, I'm afraid. So, you human hide peelers, pile on to Willie, and reform him the way you did me. Don't leave a inch of

THAT GOOD QUEEN

in your colony that is two years old. Are you going to try her another year? Are you going to gamble on our next Spring crop? Probably she has kept your colony booming for two years. If she hasn't you don't want her. If she has DON'T keep her. Why? Because she has "exhausted herself." She is no longer a young queen. Next spring she will fail you. Your colony will be weak. And in the spring rush the flow will be over before you can get another. Don't risk your 1919 crop for the sake of 75c. Why not requeen this fall with

FOREHAND'S THREE-BANDS---the thrifty kind

and be sure of your next spring crop. Over a quarter of a century of select breeding brings them up to a standard SURPASSED BY NONE BUT SUPERIOR TO MANY. We guarantee pure mating, safe arrival, and perfect satisfaction.

	one	six	twelve
Untested	\$.75	\$ 4.25	\$ 8.00
Select Untested	1.00	5.00	9.00
Tested	1.50	8.75	17.00
Select Tested	2.00	11.00	20.00

Write for circular.

W. J. FOREHAND & SONS, Fort Deposit, Alabama

Around the Office—Continued

skin on such a son of Satan as he sure is.

* * *

Chalon Fowls, over at Oberlin, O., is a good beekeeper and sort o' soft at the heart, too. So a lot of beginners go to him to get started goin' right. One of these pulled up at his house the other day and wanted to get five bee-escapes, altho this beginner has only one colony of bees. Mr. Fowls asked why he wanted so many. "Oh," said he, "I put about five of 'em into one escape board and the bees get out just so much faster." Still Mr. Fowls couldn't see why and asked some more questions. Then it showed up that this beginner feller fitted five or six escapes into one escape-board, put it on the ground and then put the super on top of it there. "Why not leave the super above the hive body, and just slip the escape-board between them?" persisted the Socrates-like Chalon Fowls. "Oh, my beginner's book tells me to take the escape board and put the super on top of it when I want to get the bees out. It don't say anything about puttin' it between the super and hive. So I do just as the book says." You old bee wisekers will all be laughin' at this beginner. I ain't. Some first-class apicultural genius wrote that beginner's book. All of 'em know so much about bees and take for granted a beginner's knowin' so much that they shoot away over the mark and make things just as clear as mud to a beginner, so they do.

BEEKEEPERS' SUPPLIES

A Good Stock of the
Lewis Beeware
and
Comb Foundation

Is at your command at
factory prices.

Western Honey Producers
Sioux City, Iowa

We have a market for your honey and
beeswax.

Queens Hardy, Long-lived and Disease-resisting Queens

22 Years of Select Breeding Gives Us Queens of Highest Quality;
Queens for Honey Production; Queens of Unusual Vitality.

"There are few queens their equal and none better."

WHAT BEES DO HEADED BY OUR QUEENS

"One swarm made 185 sections of honey and another 296 sections. I am well pleased."—MELVIN WYSONG, Kimmell, Ind.

"Your bees averaged 150 pounds of surplus honey each. I find them not only hustlers but gentle."—FRED H. MAY, Meredosia, Ill.

"I have tried queens from several different places and like yours best of all."—C. O. BOARD, Alabama, N. Y.

"We are only one mile from Lake Erie and exposed to high winds; in fact, this is the windiest place along the great lakes. Your bees were able to stand the winter with only an insignificant loss, and we would have no others. As for honey they averaged 175 pounds of extracted surplus, did not swarm, and gave an artificial increase of 39 per cent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs." Name furnished on request. North East, Pa.

PRICE LIST OF OUR GOLDEN AND 3-BANDED ITALIAN QUEENS

Untested, .75	25 or more, \$.60 each.	S. Untested, .90	25 or more, \$.75 each.
Tested, \$1.50	25 or more, \$1.25 each.	S. Tested, \$1.75	25 or more, \$1.60 each.

Virgins 30 cts each.

We guarantee safe arrival of all queens—that they are very resistant to European foul brood, and, in fact, will give complete satisfaction. Wings clipped free of charge. Our capacity is 2000 queens monthly.

M. C. Berry & Company . . Hayneville, Alabama, U. S. A.

Weis Fibre Containers
DIRT IN PARAFFINE USED ONLY ONCE

For **EXTRACTED HONEY**

Cheaper than Glass or Tin, yet very attractive and appetizing in appearance. Made of Pure White Wood Fiber, printed as shown or to your special order--and immersed, dipt, in hot paraffine wax *after* they are completely formed. Sealed with Special Expanding Cap. Leak-proof and air-tight.



Write for sample and leaflet "H"--either to us or to your Jobber of Bee Keeping Accessories. We also make containers for Cottage Cheese, Cream, etc., and for Home Dried or Dehydrated Vegetables, etc. Get in touch with us. The *Weis* FIBER CONTAINER CORPORATION
 102 West Front Street Monroe, Mich.

SPECIAL PRICES ON
SHIPPING CASES

THIS FALL we are making a rock-bottom price on our basswood comb honey shipping-cases. These cases have a one-piece cover and bottom, with corrugated straw-board in the bottom, and two-inch glass front and nails, all complete. They come in two sizes, for either 12 or 24 sections.

Cases for 12 sections	- - - - -	\$12.00 per 100
Cases for 24 sections	- - - - -	20.00 per 100

These price are lower than you can obtain elsewhere, and the cases are of the highest quality, both in material and workmanship.

"Hivofelt," our especially prepared mat of flax fibre, is the best method of insulating your hives against cold. It is a necessity in a northern climate, and will be needed with the first cool weather. Let us send you a free sample.

We also have a full line of five and ten pound friction-top pails, and five-gallon square cans. These come one or two in a box. Write for our prices for immediate delivery. Order now and save money.

MINNESOTA BEE SUPPLY COMPANY
 22 Power Building, Nicollet Island,
MINNEAPOLIS, MINNESOTA