

and, of course, happier, than when out on the frozen ground, holding up first one foot and then the other to keep them from freezing, and with frosted combs dripping with blood.

On warm, sunny days, when the ground is not frozen, let them out by all means; they will pick around and get things to eat that we should never think of giving them, and often in the afternoon when, after an inclement morning, the sun comes out warm and bright, they would enjoy immensely a run of an hour or two before roosting time. Hens do need exercise, but if you watch them out of doors you will see that they are still a great part of the time, and they had much better be spending that time in a house sheltered from the chill wintry wind, where instead of standing upon the hard frozen ground their feet will sink deep into soft warm straw. But some light they must have in their house, else many will remain upon their perches and mope all day without even coming down to eat. So put in a few glass windows by all means. They are not expensive and if arranged to slide back against the wall instead of opening, there is small danger of breaking them. Windows are to be preferred with a southeastern or southwestern exposure—better one of each, so as to admit the greatest amount of sunshine.

I used to think that getting eggs in winter depended upon the breed, and I am still of opinion that it does to some extent, but I believe now that most of the improved breeds will lay fairly well if we provide for them comfortable quarters as well as suitable foods. Of course such a fowl as the Black Langshan, possessed of plumage of extra softness and thickness, will be more easily kept warm than the more thinly clad Leghorn. Still, in warm winters, we get nearly as many eggs from one as the other. I have both, and with the thermometer ranging from a little above to several degrees below zero, I get some Leghorn eggs every day. The trouble is that neither kind lay well, although both get a variety of suitable food. At night, their supper consists mostly of sound wheat boiled to bursting, with some whole corn, not much; their breakfast of cooked cracked corn mixed with an equal quantity of wheat bran, seasoned with salt and chopped meat, cracklings or something of that sort if I can get it; at noon they have sorghum seed, which keeps them busy for hours getting out the small kernels, and whatever green food I can provide for them. Some days, they have potatoes or other vegetables, and I have just got in some finely chopped hay which will be steamed and sprinkled over with wheat bran. They need more meat, ground bone, and oyster shells, perhaps; still, in warm winters they lay well on the above regimen. For drink, they have warm milk three times a day, which in cold weather is slightly thickened with corn meal gruel. All soft food is fed warm, as a big wood fire burns continually in the capacious fireplace of the back kitchen and affords ample opportunity for warming and cooking things.

I thought perhaps the hens were too fat, and caught a lot to dress for market, but nearly all were so light I had to let them go. The trouble is all owing to their running out this dreadful cold weather. Next winter I shall provide them the right sort of a house, and shall not try to winter more than can be accommodated indoors during all the bad weather.

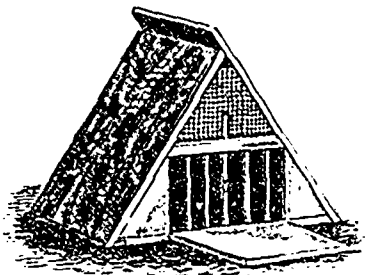
Logan County, Ky.

A FARMER'S DAUGHTER.

Cultivator.

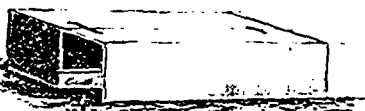
Handy Coop and Laying Boxes.

EDS. COUNTRY GENTLEMAN—The readers of your paper generally have the best of everything placed before them, and, as it is largely the contributions of practical men and women, these designs for laying boxes and coop for hens and chickens seem appropriate to be submitted for criticism and instruction. Both have been in use in our yards for twelve years past,



and have proved satisfactory beyond any others that have meantime come under our notice. If neatly and well made, occasionally painted and properly cared for, they will last many years; some of ours have been in constant use for fifteen or more seasons, and the first cost need not be great.

An empty shoe-box or similar packing-case will furnish most of the lumber. The material for the coop should be $\frac{1}{2}$ -inch, dressed on one side. The



bottom frame 1 by 2 inches, halved together at corners; ridge-piece $1\frac{1}{2}$ inches; wire cloth in upper front $\frac{3}{4}$ or 1-inch mesh. The slats for front, of hard, strong wood, $\frac{1}{2}$ by $\frac{3}{4}$ -inch, the centre one movable, and all let into mortices, top and bottom. There is a movable bottom board, 19 by 29, of $\frac{1}{2}$ -inch stuff. The front board of coop can be best secured with wooden buttons. We have abandoned hinges as they rust fast. This board, when down, can be used to place feed on. The bottom-boards will save many a



brood from marauding skunks and rats.

The laying boxes have the merit of seclusion, which will please biddy and prevent excuse for a stolen nest. One end can be placed against the building, and the interior will be made quite dark and perhaps stop egg-eating. No bottom or back should be used, so they may be easily whitewashed and kept clean. The front, when raised, can be rested back on the top while gathering eggs.—Cultivator. J. W. M.

Apiculture.

THE PROFITS DERIVED FROM AN APIARY.

We translate the following article from one that appeared in the January number of the *Journal d'Agriculture*.

I have great pleasure in acceding to your request that, for the benefit of the readers of the *Journal d'Agriculture*, I would give you some information on the prospects of apiculture in this province. I will state, in as few words as possible, what are the principles of the improved method of bee keeping as regards the hives with movable frames, and the different modes of managing them.

I am so thoroughly convinced of the

superiority of this system, over the old plans, that I feel sure that if they were better known by those that possess a few hives of bees, the fixed-comb hives would be no longer used anywhere. For, with the movable frames, the harvest is no longer a matter of chance; the bee keeper has the whole affair in his power to deal with as he likes; he can use his apiary either for the purpose of gathering the yield of honey, or for the increase of his colonies, or partly for one, partly for the other purpose.

The queens which are worn out may be replaced by younger ones; a very important point; the natural increase, swarming, may be almost entirely stopped, so that the entire offspring of a colony may be kept within the same hive, whence it comes that very rich harvests may be gathered amounting to a hundred, one hundred and fifty, and occasionally to even two hundred pounds of honey from one hive.

Such yields, doubtless, are not obtained every year and in all localities, but I know that there are some districts where even these quantities are greatly exceeded. I can fancy how some of my readers will open their eyes when they read this; but I must tell such that, if they will take the trouble to study modern methods and go to work in a good spirit, I can promise them great surprises even in places that are supposed to be unfit for honey production.

How many young people could save money by taking care of a few hives; it only demands the sacrifice of a few minutes every day. I know what I am talking about, for I began in this way myself, and I should rejoice at leading others along the same path; knowing, beforehand, that, like me, they will soon be deeply interested in the marvels displayed by the interior of a beehive and by its wonderful management, the inspection of which is so greatly aided by the movable frames.

Well, to encourage those who wish to improve themselves in this art, I must inform my readers that at the request of the patriotic Director of the *Journal*, I, with the assistance of some other experienced bee masters, intend to write a short series of articles on the proper care to be bestowed on bees at the different seasons of the year. These articles will be based on an experience of ten years of steady practice, and will have the advantage of containing the most recent information on the subject. In conclusion, I must add that there are few more profitable occupations than well managed apiculture, and that as long as my hives continue to yield 50 lbs of honey each, beyond what is required for the consumption of their inhabitants, I shall make it my chief pursuit, and increase my 150 colonies as much as circumstances will permit.

Ste Foye, 21th December, 1892.

J. H. BLAIS.

The Orchard.

Piece Root-Grafting

For a number of years certain nursery men have advocated grafting on sections of roots but with doubtful success.

Facts are clearly demonstrated to prove that whole roots are the most reliable and that they produce trees more vigorous, symmetrical, fruitful and longer lived.

The influence of the stock upon grafted trees is very remarkable and although the facts appear, it is difficult to explain why, for instance, an apple

grafted on the Paradise stock, will always remain a dwarf, but a healthy or prolific tree, while one grafted on a crab or strong growing apple stock will attain the vigor and habit of growth of its base. The same rule holds good with the pear on the Quince, or seedling pear stocks, the cherry on the Mahaleb, etc. etc. In roses, this is particularly noticeable, some of the weak, slow-growing hybrid perpetuums are but of little use on their own roots, but when budded upon the dog rose or the Manottie are robust and floriferous, as for instance, the old "Géant des batailles", while others are not improved by being worked on any other sort and seem to thrive and produce more flowers on their own roots as "General Jacqueminot", etc.

We live in an age of rapid motion and try to obtain our ends by quick processes which may not always be the most satisfactory in the long run. Section root grafting of fruit trees is one of these processes, and if a workman can make a much larger number of root grafts in a day by using pieces instead of whole roots, but numbers of them entirely fail, and none are so good as the slower method, surely the system is to be condemned as dangerous.

We will summon a few witnesses of acknowledged authority as to this practice, and see how dangerous it is for the tyro in fruit culture.

Charles Downing, in his standard work, "Fruits and fruit-trees of America", thus writes:

"The practice of piece root grafting is of very doubtful value and by prominent horticulturists considered as tending to debilitate and reduce vitality, the seat of vital life, in resting in the natural crown of the seedling, and that, once destroyed cannot be renewed. It is therefore apparent that but one healthy permanent tree can be grown from a single seedling stock."—Prof. J. L. Budd, before the session of the American Pomological Society at Washington, said:

"In sections where injury to apple trees by root killing is unknown, the budded or crown grafted trees are to be preferred. To illustrate—3000 grafts were inserted in strong seedling roots and set in trenches. By their side were set grafts (3000) on two inch sections of roots."

*** The results in nursery were very striking. The crown grafts made a uniform growth of four feet the first season, while the lower section grafts ranged from one to three feet, with many gaps where root and cion both died together, when three years old. *** not five per cent of them equalled the poorest of the crown grafts in height, stockiness or thrift.

"In the orchards, the crown grafts are yet ahead in size, conformity of growth, health and bearing."

"The most profitable is the crown graft planted down to the top bud of the cion."

The argument that these are more expensive to make should not be considered. It is true the trees stand deeper in the nursery and are harder to dig, but the increased labour is more than compensated for by the stronger and better distributed root system.

Berckmans, an horticulturist of 50 years experience in Belgium and Georgia, U. S. A., says, emphatically, that the most desirable method is to use a whole seedling as a basis for a tree if a standard is expected.

"The history of all piece root worked trees planted in orchard since 1860 has been the same, eight or ten years of life, a few small crops of fruit, and then, DEATH."