

Then when we send a man to do a piece of work we are apt to see that he has the tools to work with. We are not like Pharoah in demanding bricks without straw.

But how about our hens? Do we not demand eggs without proper food? We do that very thing, over and over again.

If there is one fact established in henology it is, that the fondness of fowls for bugs and worms is not an unnatural taste. The animal matter thus secured supplies a most important element in the fowl's food. And it is largely because the hens cannot procure this food in winter, that they cease to lay eggs.

Another reason for few eggs in winter is that the hens are not only not in the best physical condition, but the food they get does not contain the proper elements for egg making, and as has been hinted a hen cannot make bricks without straw. Food containing the necessary elements must be supplied if we are to have full egg baskets.

It is for this reason that the feeding of green cut bones has become so popular among money-making men and women. Green cut bone supplies this needed element as does no other food, and at a less expense than grain can be fed. It keeps the fowls healthy, it makes eggs, and is, in short, an indispensable food. No person who keeps fowls, be they few or many, can afford to be without a green bone cutter.

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growers meet this eastern demand for seedlings with branched roots, by sorting these out (called "budders" in nursery parlance). These "one year No. 1 seedlings, 3-16 inch and up at the collar," with branched roots are worth as much wholesale as those with long, straight, unbranched roots of the same calibre at the collar which are used for piece-root-grafting. In European nurseries the branched roots are obtained either by crowding the seedlings in seed-bed the first year and transplanting with trimmed roots the second year; or more commonly by transplanting the seedling the first year when quite small. This latter method is called "pikiren" by German growers, and is practised extensively in French and German nurseries. This transplanting (and root pinching) breaks up the tap root and causes it to branch.

The budded trees of eastern nurseries have failed in the Northwest because of the seeding root being too near the surface. Northwestern nurserymen have found piece-root grafts far better, because, by using a long scion and short root the tender seedling is brought several inches deeper below the surface and the scion has an opportunity to form its own roots. "Whole-root-grafted trees" are exposed to the same danger as budded trees, the tender seedling being brought too near the surface. If made with as long a scion as the piece-root grafted trees, the seeding root has the same chance of protection by the earth covering, and the scion roots have the same opportunity to form roots. But this



Selecting birds for the Ontario Provincial Fat Stock, Dairy and Poultry Show.

Budding vs. Piece-Root Grafting

In the nurseries of Europe piece root-grafting in winter is not practised, budding in August at the collar on seedlings already established in nursery being the accepted method. Grafting at the collar in the spring is used where the bud has failed. These two methods are the only ones that give the strong, straight-stemmed trees demanded by their trade. The apple trees noted by the writer in 1894 in visiting many nurseries and schools of horticulture in a four months' trip through England, Germany, Denmark, Sweden, Russia, Austria, Belgium, and France were all propagated in this manner (except those in Northern Russia) and impressed me with their smooth, healthy, and vigorous growth. A two-year budded tree averaged fully as large as a three-year-old piece-root-grafted tree in our western nurseries and were superior in smoothness of stem and freedom from an undue number of pruning scars.

Indeed, our American nurserymen in the Eastern States have long practised the budding of apple trees, the same as in European nurseries as they find it gives a larger percentage of saleable trees. Western apple seedling

is not usually done, as it would make the root-graft too long for convenient planting in the nursery. But last winter's experience at Brookings demonstrates that the scion roots of hardy varieties of the cultivated apple are tender as well as the seedling roots, so that hardier stocks are necessary on the northern borders of orcharding in the prairie Northwest.

The latest reference on the subject we find as this bulletin goes to press. Geo. J. Kellogg, of Janesville, Wis., writes in *Wisconsin Agriculturist*, Sept. 7th, 1899:

"After last winter's experience we need a root for the apple as hardy as the crab root, and while I fully believe in using crab seed for stock the trials made thirty years ago on such stock tended to dwarf the trees and bring them into earlier bearing, owing to lack of vigor and push, but such stocks certainly are more hardy in the root, and if we can secure Virginia crab seed I think they will make the best stocks we can get."

At Brookings we find Virginia crab standing next to Transcendent in the old station orchard, planted in 1888 blighting badly the past two years; the foliage is subject to scab. This variety has not blighted in the young station orchard, planted in 1896, with no Transcendent near, and these young trees proved hardy the past winter.—*From Bulletin 65, North Dakota Experiment Station.*