

and I have kept hay in stack for two years, and sold it to those who know the value of good hay at double the then price of new hay. Our whole trouble in this country is that we cannot get men to build stacks, as only English, Irish, Scotch and Canadian laborers can do it. I have seen in Canada as well built ricks and stacks as I have in any part of Europe.

This sort of building is not learned by inspiration, it is drilled into them from boyhood, as in erecting stacks or ricks, a boy hands to the operator the sheaves, butts to him and just so; then the boy attends to the ventilating of either, by drawing a tight bound sheaf of straw through the centre of stacks, or empty barrels through the centre of ricks; (1) then the proper salting. All this brings the boy up to be a stacker or ricker. Then again, in thatching a boy makes the wads of straw or coarse grass, butted at end for operator to place. When finished, it is scalloped with any wood that will bend in a bow, both ends sharpened and shoved in, to keep this thatching in its place. These go all around stack or sides of rick, from two to three feet apart. The operator uses no line; all is as straight as if each gad was measured between before inserting them.

If Mr. Sage can do this, or direct how to do it, I assure him that he will not have a forkful of musty hay in 100 tons so saved. An old-fashioned hay-barrack, slatted on sides with slabs from sawmill logs, an air-chamber carried through the hay in filling it, either by a tight bundle of straw, or a barrel carried up the centre to come out at top or at the side, will be far preferable to his published ideal of a hay-mow, and cost far less money. I have seen some well built stacks of loose straw (and that is the very hardest material to build a stack of) at straw-paper factories through Massachusetts and Connecticut—quite stack yards in fact—built, I presume, by foreigners; so that Mr. Sage or others need not travel to Europe to see them. Could I have a dependable supply of English, Irish, Scotch or Canadian laborers, I should never house a forkful of hay or a sheaf of grain. Our American-born laborers are not brought up from boyhood to such useful, systematic habits of labor. Rest assured that a laborer has to learn his trade like any one else.

GERALD HOWATT.

Mobile Co., Ala., April 24.

FERTILIZERS FOR TOMATOES.—As the tomato combines the good qualities of a fruit and a vegetable, its consumption is large and is rapidly increasing. The warm soils of the Southern States bring this crop to perfection. G. Speth, at the Georgia station (B. 17) has tested the effect on tomatoes of single fertilizing materials, of combinations, and of successive applications of these. The soil was a hard clay, with a clay subsoil. The fertilizers were cultivated into the ground. The application of nitrogen or potash alone did not increase the yield on poor land. The effect of the nitrogen depended on the presence of phosphoric acid and potash. Only the complete fertilizers gave profitable returns. The yield increased with the amount of complete fertilizer used. The nitrate of soda did best in two applications, the cottonseed meal in one. Nitrogenous fertilizers were most profitable. Phosphoric acid, in double ration, not only decidedly increased the yield, but also furnished the earliest fruit. Large rations of nitrogen, especially in the form of cotton-seed meal, prolonged the time of bearing. These fertilizers were profitably applied in June, when cultivating.—*Am. Ag.*

CORN SILAGE VS. SUGAR BEETS.—The relative fattening

(1) No good farmer in England ever either salts his hay or makes a chimney in a stack. Hay in stack should heat equally all over, a chimney draws the heat to one place. A. R. J. F.

values of fermented corn fodder and of sliced sugar beets has been ascertained at the Michigan station (B. 84), by P. M. Harwood and F. B. Mumford. Eight grade Shropshire lambs used daily one pound clover hay, 0.7 pound oats, 0.3 pound bran, and 4.7 pounds sliced sugar beets. Eight other lambs of the same breed consumed each day the same amount of grain, but 0.8 pound clover hay, and 4.4 corn silage. The beet-fed lambs averaged 36 pounds gain to each, and the silage fed 30 pounds each, in 12 weeks. The cost of 100 pounds gain with beets was \$4.38; of 100 pounds gain with corn silage, \$4.96. The average gain of each lamb on sugar beets was three pounds per week. Each lamb on silage gained 2.5 pounds per week. The nutritive value of the beet ration was 1.6; of the silage ration 1.7. The experiment indicates that, by using either sugar beets or corn silage, lambs may be profitably fattened on a light grain ration, and that for this purpose sugar beets are preferable to corn silage.—*Am. Ag.*

EXERCISE AND SHELTER FOR STOCK.—If free to choose between barn and field, stock will seek shelter only during storms. Experiments by J. W. Sanborn, in the dry, cold climate of northern Utah (B. 11) seem to prove that this natural inclination is also the most profitable to the farmer. The cattle ate more when in the open air than when stabled, and much of the extra food was coarse material refused in the stable. The open-air cattle gained the most weight in the same time. Four years of experiment has shown that in a dry climate stabled cattle use more feed for a pound of growth than those not stabled. Cattle kept in yards surrounded by high windbreaks did better than those kept in the open field, and better than those stabled. Steers turned out every day, and others kept loose in box-stalls, did better than those tied in stables, proving that cattle need exercise. Work horses, blanketed in the stable at night, and wearing blankets beneath their harness during the day, did not hold their weight as well as those without blankets. No trials were made with stable horses blanketed only while being worked on stormy days. None of the trial cattle were allowed a choice of shelter. No comparison was made between horned and hornless or dehorned cattle. Sheds were not tried. No experiments were made with cattle given the choice of the open field, the sheltered yard, the open shed, and the closed stable. Nevertheless, the experiments prove that exercise in pure air and sunlight is necessary to supply the healthy appetite which eats and thoroughly digests the most possible food in the shortest time.—*Am. Ag.*

HEN MANURE.

F. Burlington, Ont.—Q.—Can you inform me, through the *Witness*, whether hen droppings are good to put on the ground for manure, and how much to the acre? Would they be better applied alone, or mixed with something else? Ans.—The dung of all domestic fowls contains fertilizing properties similar to those of guano. Hen manure may be applied at the same rate as guano, which is usually given in small doses of from three to four hundredweight per acre. (1) It is often mixed with one-half barn-yard manure. All fowl droppings should be kept dry to avoid fermentation. It is best to compost this manure, with peat or charred earth, and instead of spreading it broadcast all over a field, it may be made to go much farther, and do more effective work by putting a small quantity into every hill of corn or potatoes.

(1) Try a ton first. The poultry dung is very trifling compared with guano. A much over rated fertiliser. A. R. J. F.