

### Barns Without Beams.

The frequent use of the horse-fork and hay carrier renders it desirable to avoid cross beams in the barns, as these prevent the convenient movement of those implements. Formerly it was necessary to have the hay-mows so low that a man could easily pitch the hay on it from a wagon. This made it necessary to have the barn long and wide, in order to secure sufficient capacity. The roof is the most costly part of a building, and as the wider the roof the stronger the frame must be to sustain the weight, the old-fashioned style of barn was very costly. The machinery now in use for handling hay enables us to avoid the extra cost of building, and long, high, narrow barns are found to be more convenient in many cases than the low, broad ones. But to construct a barn without cross beams to support the sides and roof, is a difficult problem for the ordinary builder, who does not understand the nature of truss work, and the immense strength gained by skillful use of comparatively very light timber. The airy, web-like railroad bridges, which combine strength with lightness and elasticity, and the ordinary balloon frame houses, are examples of truss work, and there is certainly no reason why this principle of construction should not be made available for farm

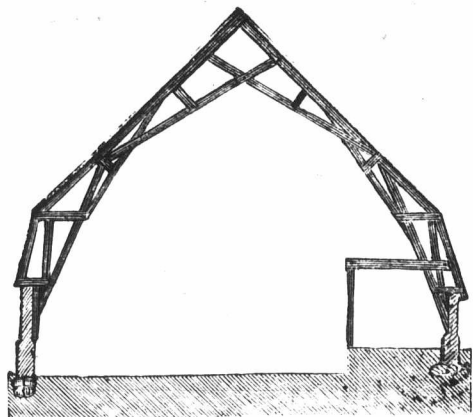


FIG. 1.—SECTION OF BARN.

buildings. We now give some illustrations of barns of ordinary shape, without cross-beams, and with roofs made on the principle of the truss. The section fig. 1 is that of a Danish barn, illustrated in the *Journal of the Royal Agricultural Society of England*. The mode of construction is shown very clearly by the engraving, it being only necessary to point out the longitudinal timbers, which are shown by the dark shaded parts, and the manner of securing the roof timbers to the walls, which is done in an ingenious manner. The T shown by the dark lines in each wall, is an angle iron built into the masonry, by which the strut is fastened to it.

At fig. 2 is a section of a cow stable, built above where the fodder is stored, somewhat on the same principle. The arrangement of the stable below is also worthy of notice. The central passage is the entrance way for the cows, with a manure gutter on each side, in the rear of each row of stalls. The feeding passages are on the outside, and the cows are fastened by chains, which slide on the irons seen on the sides of the stalls. A ventilating shaft (A) is carried up from the stable through the floor above, and out through the roof. This is divided so as to form four distinct shafts, through which cold pure air can descend, as well as hot air can ascend. The section of the shaft, and the upper extremities above the roof are also shown. The framing of the roof is simple, light, and strong; the roof is covered with straw thatch, shown by the thick dark shading. At figure 3 we give a method of a similar construction by means of light timbers fastened together with bolts. The walls are of stone or brick, and if thought desirable these may be strengthened by buttresses wherever the roof timbers exercise the greatest thrust. The main timbers are intended to be 3 x 10, the braces 2 x 8 or 3 x 6, as may be thought proper. Cross girts may be used wherever needed to stiffen the roof.

The ends of the main timbers should rest in shoes fixed so the wall by angles and bolts. The form of a shoe that would be useful to sustain the weight of the timber and its load is shown in fig. 4. This may be cast or may be made of wrought iron. The building is intended to be 36 feet wide; the



FIG. 4.—shoe for beam.

walls 12 feet high; the main roof timbers 20 feet long, and the cross-beam at the top 24 feet long. The machinery for carrying the horse-fork will be suspended to the beam in the usual manner.

### Feed-Racks for Fields and Yards.

We give herewith, in response to some inquiries, some illustrations of cheap and convenient racks for feeding green crops to stock, for use in yards or

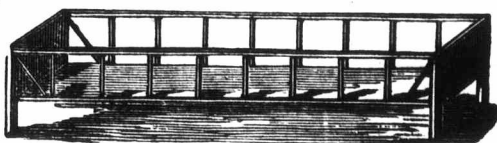


FIGURE 1.

fields. Either complete or partial soiling is now very frequently practiced, and many farmers and dairymen find it impossible to do without this help during that part of the season when pasturing fails. Early planted corn fodder is now nearly ready for use, and in feeding this a great saving is gained by the use of racks which prevent its waste. At figure 2 is shown a common form of feed rack; easily made, and which, if three feet square, will accommodate four cows without dan-

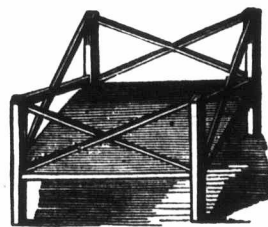


FIGURE 2.

ger of quarrelling. It is made of fence strips nailed together and braced as shown. Wrought nails should be used, and the same be securely clinched. A larger rack, useful for cows or sheep, is shown at figure 1. This may be made of fence strips with 4 x 4 scantling for posts, and in size 16 feet long by 4 feet wide. *American Agriculturist*.

The importance of manuring ground specially for the wheat crop is becoming more and more evident. It has been found in Pennsylvania where rust prevails, that wheat on manured land is much less affected than that on the unmanured. A correspondent of the *Practical Farmer* writes: "A large per cent. of the wheat is hopelessly ruined by rust and fly. But wherever you find a field that has been manured, there you find good wheat. To make a good crop of wheat requires less manure than for any other crop, if it is properly applied, and my experience teaches that this should always be as a top-dressing." Manures rich in nitrogen and phosphoric acid are best for wheat.

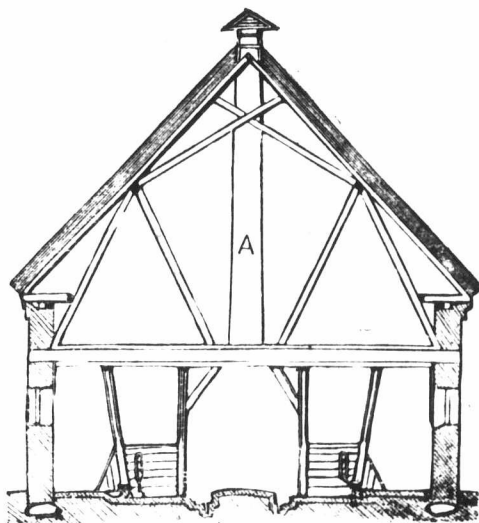


FIG. 2.—SECTION OF COW HOUSE.

It is estimated that the loss to agriculture from the growth of weeds instead of useful grass, in meadow and pasture lands, is not less than \$100,000,000 per year in the United States. Nothing will sooner or more cheaply bring about the desired change in this direction than a more general employment of sheep as scavengers on every farm where their introduction is indicated.

### Co-Operative Farming.

That man is said to be a benefactor of his species who makes two blades of grass grow where only one grew before. Could not the principle of co-operative labor be applied to farming, so that a vast increase of production might be attained without any increase of the working expenses? It is with farming as it is with other industries—the more extensive the scale upon which operations are carried on the smaller becomes the proportionate expense. That is why, in the Mother Country, large farms are rapidly superseding small ones. There a man who works a farm of 140 acres can hardly, after paying his rent, earn anything beyond a bare subsistence. Here, happily, most of our farmers are freeholders, but that circumstance does not reverse the economic law, that the more perfect the application of the division of labor principle the larger, necessarily, is the product. On a few farms in this country there are single fields of from 40 to 100 acres in extent. Every practical farmer knows that it is easier and cheaper, especially since machinery has come to play such a large part in agriculture, to work a single field of a hundred acres than it is to work half a dozen fields the combined area of which is no greater. But the bulk of Canadian farms aver,

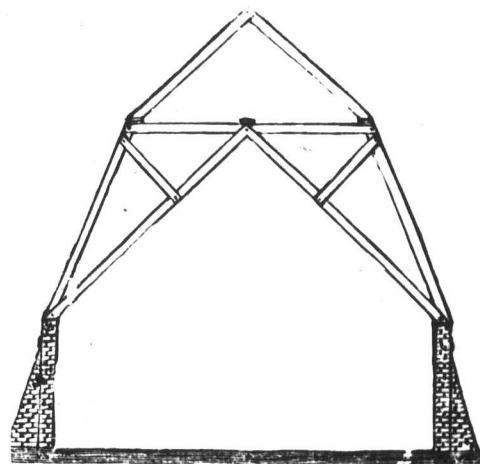


FIG. 3.—FRAME OF LIGHT TIMBER

age one hundred acres, so the cheapness which pertains to farming on a large scale seems out of the reach of the average farmer.

Is there, however, any reason why a number of farmers, occupying contiguous farms, should not co-operate for the purpose of working their farms in combination, thus securing to the owners of one and two-hundred-acre farms all the advantages of extensive farming? Can any reason be suggested why farmers should not combine, any more than capitalists or traders? Farms lying contiguous to each other could easily be thrown into one; fences could be largely dispensed with (and the land lost in connection with snake fences is by no means inconsiderable), labor would be economized, and all the advantages of combined effort secured. In a crude way, co-operative farming is exemplified in the "bee," which may be reckoned an institution in our newer settlements. But the "bee" involves a loss of time which is wholly incompatible with true economy. Take it in its more modified form. Smith wants Thompson to give him a day's help. The better part of a day is consumed in the preliminary negotiations. When all is fixed, and Smith is awaiting Thompson's arrival in order to begin operations, Thompson's little girl comes over to say that her father can't come that day, but will come on the morrow. Another day lost!

Now, supposing four farmers, whose farms lay contiguous, were to agree upon working them together, is any one prepared to say that it could not be done with more advantage and profit than if each continued to act independently of the other? In the latter case there would be a multitudinous variety of duties to be performed in the course of a season; in the former case the variety would not be increased, while they could be performed in a "wholesale" manner. It matters not whether the co-operation we speak of were only in regard to the working of the different farms, or went the length of a joint purse; in both cases a clear gain is apparent. We commend this matter to the serious consideration of the farmers.

Clover helps the soil in many ways. Its roots are the cheapest sub-soiler, and if the field is not very wet, will give all the drainage needed for ordinary farm crops.