

**Barn Building.**

BY D. A. HEWITT.

Sooner or later nearly everyone builds a barn, and it causes either pleasure or annoyance in proportion as they see fit to make it. To those who go about it knowing what they want there is a pleasure in seeing their buildings rise from raw materials and take their place amongst the features of the landscape. To those who cannot tell how it will look or whether they will like it or not, building operations are likely to prove expensive, if not unsatisfactory. The intelligent layout of the floors is of vastly more importance than any other part, and the arrangement of the several parts with reference to the site and ease of communications is successful in proportion to the degree in which convenience and comfort are exemplified. The purpose of this article is merely to point out some of the details of construction and conveniences of arrangement that are applicable in an up-to-date barn, and to compare the relative difference in handling of the farm products in buildings of each plan. In case you want to sell, if the property does not sell for more it will sell more readily than if the buildings were built without careful thought. The farmer cannot build economically or in good taste without a well-arranged plan on paper first, if he wishes to build well and cheaply.

We wish to call attention to the fact that a handsome barn can be built as cheaply as a deformed or repulsive one, as the real beauty lies alone in its proportions. It may be rude, yet shapely; plain, yet attractive.

**Drainage.**—Along one side of the barn a six-inch tile or sewer can be located. The waste water from cistern, tank or eaves may be gathered by a four-inch vitrified tile and discharged into a larger sized pipe. Weeping or agricultural tiles, covered with broken brick and stone rubbish or coarse gravel, placed under the cement floor or on exterior of the bank side of the building, will materially aid in removing the surface water and can be leached into a cesspool or barrel filled with large stones.

**Windows.**—The windows in the basement to have a 24-inch jamb and 24-inch rebated sills, with 1 inch by 1 inch iron water bar for sash to close against; 1 1/2-inch white pine sash. These may be in three sections, the center one screwed solid with the two side sash rebated to same. Sashes may be hinged at the top and provided with hooks to hold them in place when opened upwards. Sashes can be swung on side pivots or spring catches, admitting of the easy removal of sashes from the opening if desired. If the pivots are placed below the center line of sash its weight will swing it inwards and keep it there.

**Root Cellar.**—The inside of root cellar against stone walls should be slatted perpendicularly, commencing say two feet from floor level to ceiling line, with 1 1/2 x 4 inch slats at 6 inch centers. A double-sided wooden partition constructed in the above manner if placed in the center of root cellar will ventilate the pile. Sometimes the dividing line between stable and root house is double boarded to within two feet of the ceiling, the remaining space filled with slats three inches or less apart so that the upper temperature may be alike in both places.

**Watering Troughs.**—There are several contrivances for the easy watering of animals: The open troughs, six inches wide by three inches deep by the length of the stalls, placed in front of the mangers. A deeper and wider trough is sometimes concealed under the sloping outer portion of the riser to the manger, with a small trapdoor for each pair of animals opening over the water. Cast iron troughs or small sinks placed on a line of 1 1/2-inch pipe, which brings the water to the corner of the stalls or between the animals. Large tubs (made from coal oil barrels) are often put in box stalls and inside the entrance way of horse stables, and supplied from an overhead pipe by turning the valve. A wooden watering trough on south side of the barn in barnyard is also very necessary for the stock.

**Waterworks.**—Water may be forced to the buildings by hydraulic rams to tanks placed in one of the mows above cellar, or by the windmill power. The supply of water is regulated by a copper ball or float. Iron water mains are laid the full length of the barn (with lesser sized pipes to every row of stalls) from the tank either on the ceiling or beneath the concrete floor.

**Size to Acreage.**—Some reader may ask if there is any guide that the average hundred-acre farmer

may be governed by in building, as to the size of the structure he would require to properly house his stock, implements and products. The dimensions might vary somewhat according to the productiveness of the soil and the crops grown therefrom. The barn with two side drive floors of 46 x 70 x 16 feet to plate and one 48 to 54 wide by 72 feet long by 18 feet post for an end drive are fair-sized buildings for 100 acres of land. For 200 acres a structure 54 feet wide by 100 feet long by 18 feet post, with the drive floors located with entrances either from the side or end, are suitable dimensions.

**The Single Drive Barn with One Long Mow.**—A new form of using the single drive floor barn is by making a 20-foot mow at one end and a 30-foot mow at the other, the last 10 feet of the latter being used as a hay mow, to which full access from below is gained through a shaft 3 feet by 2 feet 6 inches, with steps perforated through the sides from bottom to top, and three vertical trapdoors, one at the bottom and one 8 feet from the top, with a third door midway distant between them. They

tilation by windows: the center section is fixed solid, with the two side sashes rebated into the sides of center sash, hinged to window frame and secured to the middle division. Frames made with diagonal sloping boards, with open spaces between, when placed near the ceiling on outside walls, allow the foul odors to escape and prevent the rain or storm from beating in upon the animals. A close-fitting board door, hinged to open inwards against the ceiling, effectually closes the vent. Ventilation by ducts or boxes from stables to louvers in roof space, used in combination as hay or straw chutes. Boxed ducts on side walls, connecting with a pair of rafters which are sheathed on the underside and connected with roof ventilators.

**Floors.**—In the cattle department they should be of concrete. Grade the full width of basement with a 6 inch fall to the barnyard side. Manure gutters should be formed with a slope 8 inches high against stall face, by a width of 30 inches. The passageway should be 3 inches lower than the stall floors, to show off the stock when selling or exhibiting to better advantage. In the horse stables use pine floors with graded counterfloors in stalls. Clay with a mixture of sand is most acceptable for box-stall floors, but it is much harder to preserve cleanliness than when a cement floor is put in. The threshing floor should be made of 2 inch plank, mill worked, sound and dry, tongued and grooved, driven well together and nailed to each joist or bearing. The granary floor and ceiling over it to be of inch material, matched pine, making the former a taut place on which to deposit grain, while the floor above prevents the dust from leaking through into the bins. The mows are better when floored with close-fitting rough boards, with their joints concealed by thin battens (provided grooved and tongued material is not easily obtained), so that the animals can be seen at any time without the prevalence of hayseeds on their coats. Some farmers imagine that cattle require little or no care, but from the experience of the most successful cattle breeders it is proved that comfortable and conveniently arranged stables, pure air and wholesome food are essential to successful stock-raising.

**Ventilators.**—Doors placed on sides of the barn at mow floor and beneath plate level are useful to open for air and light during the threshing time. Combination ventilators are often placed over the horse stable, extending to the roof and capped with a louver. These are used as hay chutes, with a series of doors arranged at different heights with proper attachment to open, shut and hold in place. A ladder is placed on the inside to climb to the hay loft.

**Doors.**—Large drive doors should be placed in horse stable so that in stormy weather a team could be harnessed or unhitched inside. In the four foot stable door when made in one length a small wicket door is placed, a suitable height and size for a man to pass. The space into the center of cattle stable should be accessible through double doors to a roadway opposite root cellar, left so that a team could receive a load of roots or straw with one handling of the stuff.

**Shelters.**—The recessing of the south wall from six to ten feet inwards affords an excellent shelter for the cattle against the driving storms of winter or rainy weather of the spring and fall seasons. In "threshing out" the straw stack can be placed almost against the rear wall of the barn, still giving freedom for passage to and fro of the stock below. If less shelter room is required and more stable room, then continue the horse and cattle stalls at the extreme ends to the full width of the structure, and leaving a shelter in the center portion of barn, about half the length of wall.

In arranging the interior it is preferable to have the horse stable on the end of basement nearest to the dwelling. In case of sickness or a horse getting untied during the night someone is almost sure to be aroused and the life of a valuable animal is often saved. Between the different stables a cross wall of brick or stone should be run to ceiling line, with a door connecting the two departments.

**Horse Stalls.**—Horse stalls vary in length from eight feet six inches to nine feet, ending in a six inch turned or a six by six inch square post with chamfered edges. The two-inch divisions between stalls look neater with a two by four inch capping. When the capping is omitted then bind the upper edge, top of manger and feed box with two inch hoop iron well nailed on.

**Horse Mangers.**—The covers on feed passage

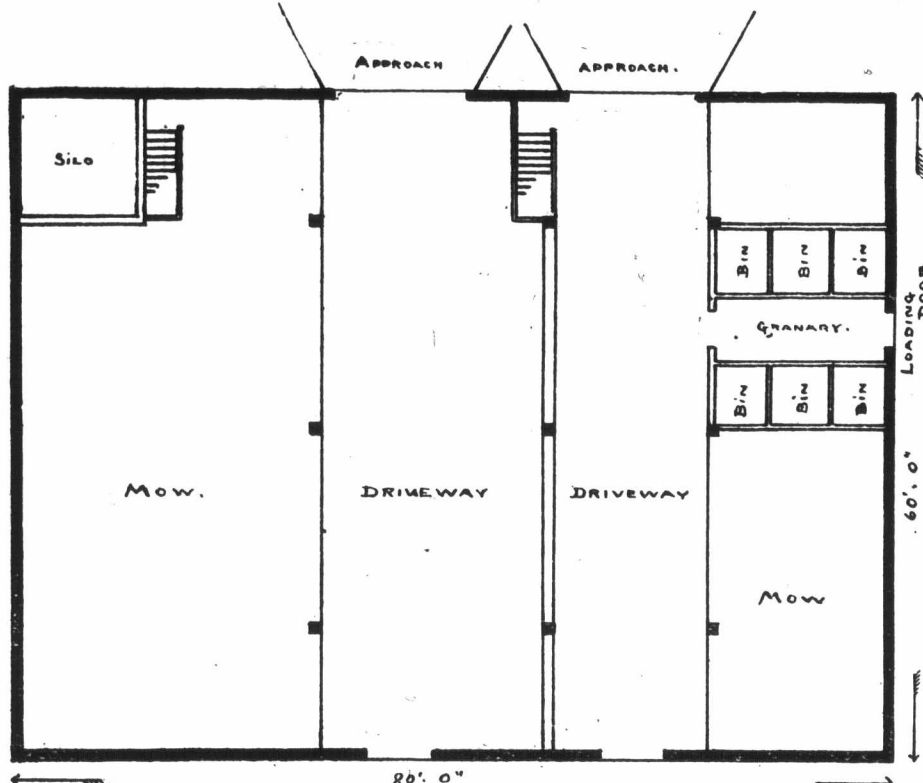


FIG. A. — BARN FLOOR PLAN — SIDE DRIVE.

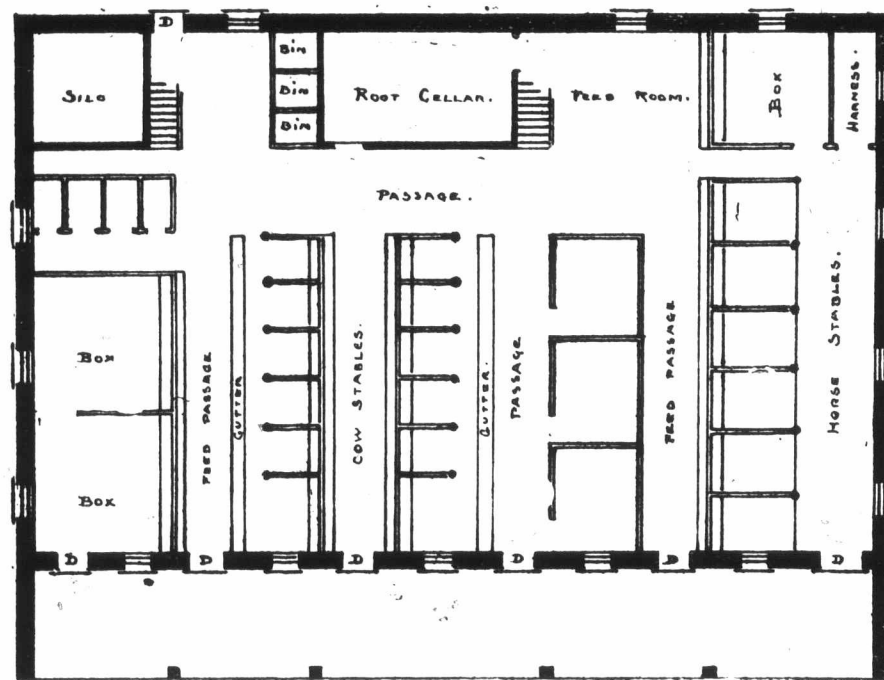


FIG. A. — BASEMENT PLAN.

are used for throwing down hay, according as the quantity in the mow is diminished.

**End Drive Barn.**—Superiority of the end drive barns over those entering from the side: (1) Simplicity in feeding; the driveway can be traversed with all classes of feed, which can be dropped into a chute at any desired point near center of barn; (2) two men with a rack-lifter can fill a barn of this description; (3) two exits, with the two long sides given for light into stables and for access into barnyard. This is not a bank barn in any sense, but stands on level ground, having 10 to 12 foot walls of masonry, with free air from all sides. For convenience of reference and conciseness of arrangement, we will confine ourselves to the stone foundations first and deal with the framework and layout of the upper part of the barn later.

**Ventilation.**—A frame is made in outside walls above the stable door 12 x 12 inches. Against this opening a box 10 inches deep by 20 inches wide and 6 feet high is used to conduct the air to ceiling level. The air is controlled by a hinged lid. Ven-

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