

in the partitions. The foal should be handled and petted, and induced to eat oats and bran, by putting a little of the feed in its mouth at first, and later in the manger. It is, where practicable, an excellent plan to keep two foals together for company when separated from their mothers, as companionship has a good effect in keeping them contented. Of course, at night they may run with their mothers at pasture, though, in case of cold rains, both are safer in box stalls together.

Well-ventilated Horse Barn.

The accompanying plans for a horse barn, although, perhaps, more elaborate than can be advised on the average farm, merit consideration by every horseman. A floor plan and a cross-section plan of the horse barn on the Central Experimental Farm at Ottawa are shown. Stabling accommodation is provided for 23 horses. Convenience and perfect ventilation are two features that stand out prominently. The following description is given by J. H. Grisdale, Agriculturist, in the annual report for 1907:

The accompanying plan of the ground floor explains itself for the most part. The doorway at the end, marked "doorway or stall," is not used as an entry or exit for horses. It is of such size and so constructed that it may, if occasion arises, be used as a stall.

Referring to the cross-section diagram, it is intended to show the (1) wall construction, (2) floor construction and inclines, (3) feed chutes, (4) mangers, (5) King system of ventilation, (6) Rutherford system of ventilation, (7) stall divisions.

The walls starting at the outside are built: vertical inch-dressed lumber, battens over joints, two building papers, rough lumber, horizontal; 6-inch studs and air space; rough lumber, horizontal; building paper; V-joint inside finish. The ceiling or upper floor is constructed similarly, joists supported by two beams resting on stall posts.

As indicated, the foundation is built of concrete. The floor, a regular set one, with the necessary pitches or inclines, etc., was built of rather unusual strength on account of its being for horses. A good depth of stone was laid on the ground, a layer of about five inches of rough concrete, one cement, three sand, eight gravel, followed and finished off with a second layer, one part cement, two and a half parts coarse sand, and a half part crushed granite. The surface of the passages is cut by inch-deep grooves into six-inch squares. The main passage, twelve feet wide, is about three inches higher in the center, descending with a convex slope to immediately behind the horses. The stand for the horses is about four inches higher than the gutter or lowest point of the twelve-foot passage.

The stands are nine feet long, first three feet level, and a fall of one inch in six feet at rear. Stalls vary in width from five feet to six feet one inch, the center of the stall floor being one-half inch lower than the outer edges. The horses stand on cement.

Feed chutes, as shown in diagram, begin at the plate and end in the manger. Doors to admit hay into chutes occur at top, about half way down and near the floor of loft. The chute is slightly bell-shaped, so that hay once started drops to manger. This plan of feeding long hay has been found very satisfactory.

The mangers extend clear across the stall, the hay chute falling into one end. The grain or meal is fed in the manger, no special box therefor. Horses are watered by man in charge. Tank at end of twelve-foot passage, to which they may be led if so desired.

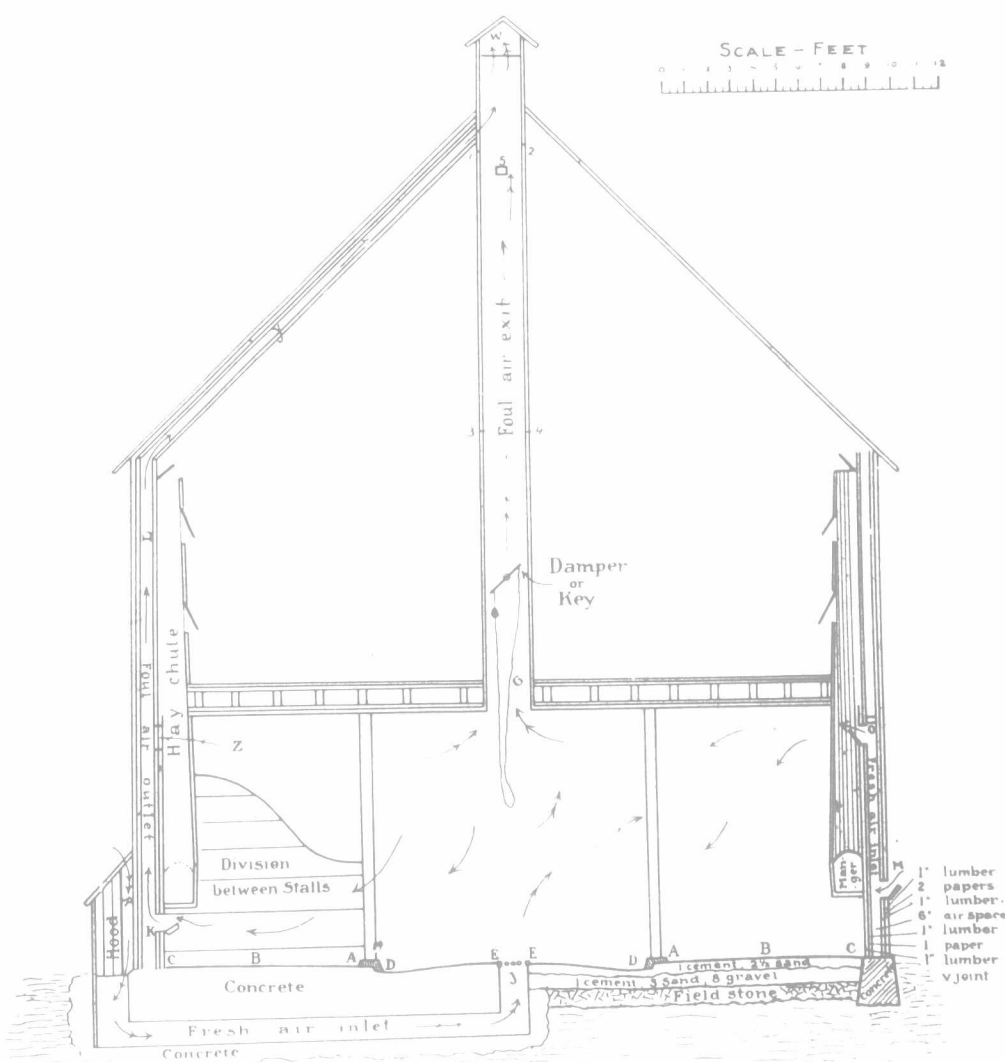
This stable is equipped with two distinct systems of ventilation, either one of which may be operated quite independently of the other. They are what are known as (1) the King system of ventilation, (2) the Rutherford system of ventilation. In the King system the fresh air is allowed to enter at the ceiling, and leave at or near the floor. In the Rutherford system,

the air enters at or near the floor level and leaves at the ceiling.

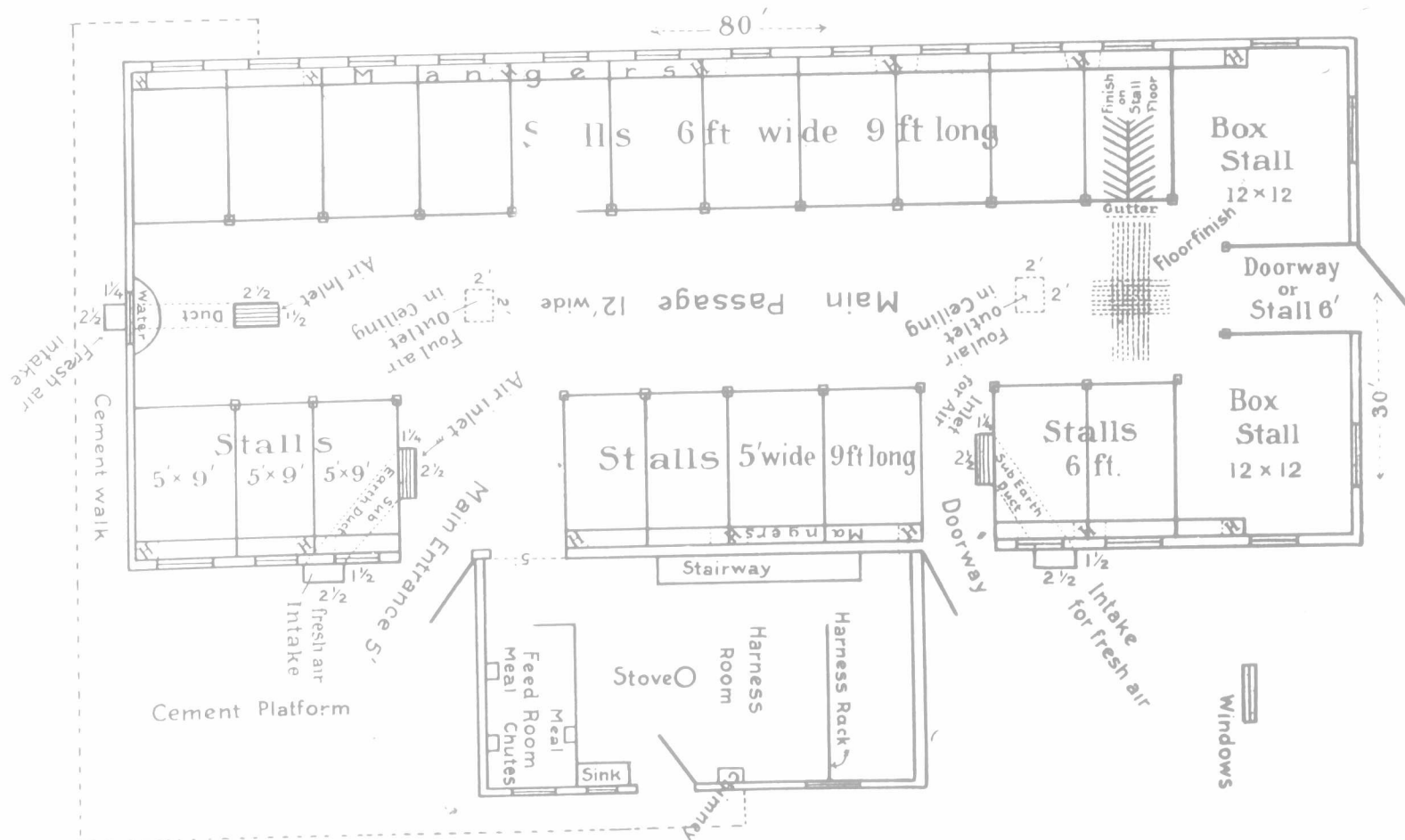
In the diagram the course of the air currents when the King system is in operation is shown by the single-headed arrows. That is, the air enters the intake passage at "M" on the right, ascends by "fresh-air inlet" to "O," where it enters the stable. The air then circulates, is befouled or mixed with the carbon dioxide gas, becomes heavier, falls to the floor, and is then driven out through the openings under the mangers, as at "K," passes up through "foul-air outlet," L.Y.W. If desired, and as recommended, controlled openings may be left in the outlet passage or tubes near the ceiling, as at "Z," to be used in case of the stable becoming too warm. This system has been found satisfactory in many stables.

The air currents in the case of the Rutherford system of ventilation follow the course indicated

by the double-headed arrows. The air enters by passages passing underneath the walls. The external openings are protected by a species of hood (see "Hood" in diagram). These passages might open into the stable immediately the wall was passed if the internal arrangement permitted, but may be conducted by underground or surface tubes or passages to whatever point or points may be considered most suitable. In this case air enters at "R," behind the "Hood," passes along underground passages and is discharged into stable at J. It circulates and escapes from the stable by "foul-air exit" G. W. This outlet should have a cross-section area of twelve square inches for each horse. The inlet capacity may be satisfactory if somewhat less. The outlet pipe is provided with a damper or key, which permits of the air current being controlled. It is also well to provide the "hoods" with keys or dampers to control the incoming air.



Cross Section of Horse Barn, C. E. F., Ottawa.



Floor Plan of Horse Barn, C. E. F., Ottawa.