unless water is struck while excavating for the foundation, then it will be necessary to go below frost or select a new site for the barn. If the site selected is not level the foundation may be stepped down at intervals to save concrete. Care should be taken in obtaining the gravel not to get any earth mixed with it. The gravel can be tested by placing an average sample in a quart glass sealer until it is about 1-3rd full, filling the balance with water, and shaking thoroughly for five minutes, then allowing it to settle. If more than 5% of earth is shown on top of the gravel it should be discarded or washed. The great secret in making good concrete is to mix thoroughly, place quickly, and tamp.

FLOOR

A concrete floor is much to be preferred in a dairy barn. The floor can be made thinner if a good coating of gravel or broken stone is well tamped on to the ground before the floor is laid. This greatly improves the bearing qualities of the ground. The floor should be laid in sections and according to directions given in another bulletin.

SUPERSTRUCTURE

If the builder wishes to build the lower story of concrete, stone, or brick, it should be sheathed on the inside preferably with V. joint running vertically. This greatly improves the heat retaining powers of the walls. It is also much better to put ceiling of V. joint than leave the joists open to collect dust, etc.

Figure 1 shows the colums made of 4" wrought iron pipe which is 4!4'' outside diameter. These are amply strong to carry the load. They should be threaded into the corbel casting at the top and have the bottom faced and sitting in a casting supported on a foundation 2 feet square. If preferred a 6 x 8 post can be used with a corbel 4" x 8" x 24" long. The beams are composed of 4 pieces of 2" x 10" x 14' fir, these should be increased to 2" x 12" x 14' for the 32 barn. The joists are 2" x 10" if in ad should be lapped over the beam and well spiked together and to the studs. The diagonal braces from the joists to the rafter are out of 2 x 6 x 12' and these do not obstruct the loft space to any extent being placed 6 feet apart, while they serve as a very good wind brace. The large space of the end gables should be well braced back to the wall plates.

VENTILATION

Low temperature does not mean pure air, so that the stableman must not judge the purity of the air by the temperature. Figure 4 shows sections through the inlet and outlet flues as designed under the Rutherford system. The desirable conditions are: 1st, no animal should be in a direct draught; 2nd, each animal should get an equal amount of fresh air, i.e., no animal should be in a corner or space where the fresh air does not circulate and from which the foul air is not carried off. 3rd, the system should be easily controlled so that in