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bearing out the government's expectations. That the farm has become a popular institution is evident from the thousands who visit it annually. In Quebec city there is a good market, and when the farmers learn better methods of production and marketing there is no reason why they shouldn't derive more profit from their farms than they do. At any rate, that is the mission of Supt. Langelier and "The Farm" at Cap Rouge. AGRICOLA.

Underdrainage at the Central Experimental Farm, Ottawa.

While the Central Experimental Farm was yet in its infancy the necessity for installing a system of underdrainage was realized. From year to year the system has been improved and extended, until at the present time a very complete drainage scheme is in operation.

Soil conditions vary greatly. The surface soil ranges from sand to clay with all intervening types. Besides there are considerable areas of muck. The subsoil is of the same variable character, and in many places the problem of combating quick or running sand is encountered. The contour of the land may be termed gently to abruptly rolling, inclined to form pockets or basins, and on the whole having little natural outlet. Under these conditions, the problem of drainage was rather a difficult one, entailing considerable thought and accurate work. Three main outlets are used, two located at the western and one at the eastern boundary. In explanation of the system it may be defined as a combination or modification of the herring-bone, gridiron and across-the-slope systems of drainage. The first-described system is well suited to drain ponds or basins; the second or gridiron system is adapted to level land where the drainage required is fairly uniform; the across-the-slope system is used on the side hills and slopes. Clay tile were used throughout, varying in size from 3 to 10 inches. Tile smaller than three inch were considered too small in this instance, and are not recommended for ordinary operations.

Sand traps or silt basins are indispensable, furnishing clearance for the fine sand that enters the tile and which, if not provided for, would lodge in and clog such tile as are laid on somewhat less than a two-inch grade. These sand traps are of different sizes, according to requirements. Some are six feet square while the majority are approximately four feet square, extending into the ground about two feet below the outlet tile, thus providing ample space for considerable deposits of sand and silt. The traps are enclosed by concrete walls six inches thick, flush with the surface of the ground and covered by concrete tops provided with man-holes protected by gratings. They are located, as far as practicable, adjacent to roadways, fences or other suitable places to ensure the least possible obstruction in cultivated fields.

The depth and distance apart of the drains vary with soil conditions. In clay sub-soil, the laterals are as close as forty feet at a depth of approximately three feet. In lighter soils, the laterals are farther apart and often deeper in the ground, especially towards the outlets.

With regard to the maintenance of a drainage system the most important factor to observe is to practice systematic inspection of the whole and prompt repair of part or parts that require attention. This is essential for a low cost of maintenance and for an efficient system.

From the earliest time in the history of the Farm the staple field crops grown have included silage corn, alfalfa, red clover, roots and cereals, which require thoroughly drained soils for best results. During this period the records show that corn has never been a failure, red clover and cereals have rarely suffered.

In recent years, especially in the season of 1916, the benefits of and necessity for underdrainage were very pronounced. In that memorable season 11.13 inches of rainfall were recorded at the Central Farm for the months of May and June, but even under these adverse conditions the following creditable yields of crops per acre were recorded: silage corn, 12.4 tons; oats, 44.4 bushels; roots, 10.4 tons, and hay, 4.6 tons. Throughout the district, however, no such yields were obtained and, with the exception of hay, farm crops were practically a failure.—Experimental Farms Note.

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