

the provisions of the laws of said state relating to the drainage of swamp or over-flowed lands for agricultural purposes to the same extent and in the same manner in which lands of a like character held in private ownership are or may be subject to such laws. Provided, That the United States and all persons legally holding unpatented lands under entries made under the public-land laws of the United States are accorded all the rights, privileges and benefits given by said laws to persons holding lands of a like character in private ownership.

This act further states that the Federal Government will not be liable for the cost of draining the unpatented lands, but that the state may reimburse itself for drainage expenditure by selling these lands, the Federal Government to receive one dollar and twenty-five cents per acre of the sale price.

This is the price the Federal Government receives for any areas of unpatented lands sold by them. Thus, the Volstead Act binds the government to sell to the state at a fixed price per acre any unpatented areas which are hindering drainage work. The state then sells such lands at public auction to defray the cost of the land and expenditure for drainage.

It would seem that no more simple, just and effective method of equalizing the cost of improvements over drainage areas could be devised. It is obvious that the conditions obtaining in the State of Minnesota and in Saskatchewan are analogous. As the Volstead Act has completely solved this difficulty for Minnesota we may logically conclude that an effective solution for Saskatchewan's difficulty would be a similar law passed by our Dominion Government.

In the second place the cost of construction work to the farmer is increased by failure on the part of engineers to recognize the full importance of drainage with particular regard to roads for the municipality at large, and a consequent superficial assessment as provided for in Sections 10 and 28 of the Drainage Act. These state in effect that all roads directly or indirectly benefited by the drain shall be assessed. The writer is of the opinion that the benefit accruing to the municipality has not been to date sufficiently recognized and would submit the following suggestions as a method of arriving at the actual benefit received:—

The engineer, before the construction of any proposed drain, shall make an estimate of the cost of constructing roads within the bounds affected by the proposed drain, and also of the cost of constructing such roads after completion of drain. The difference between the two costs is an actual cash gain to the municipality for which they should be assessed in the same proportion as is the farmer for his benefited areas. The fact that the municipality might not immediately construct such roads does not cancel this gain.

Further, the cost of upkeep in a drained area is insignificant as compared with the cost under previous conditions. The municipality, therefore, should, in addition, be assessed the amount of an annuity which would give the difference in cost of upkeep for a period equal to the life of the drain.

Some such method of assessment would materially lessen the burden for the individual farmer.

The Provincial Government gives the construction a great deal of attention, and spends a large proportion of the money devoted to public works on highway improvement. Until the last couple of years, large sums have been annually spent in these wet areas on roads which were annually washed away. The government has finally recognized the futility of trying to build permanent roads

in a district subject to floods and has, therefore, materially decreased expenditure in this region. The need of roads remains, however, and until they are built the homesteading of regions any distance from a railway will be negligible.

It would seem, then, that the government might bear some proportion of the assessment for road improvement levied on the municipality.

The physical and climatic conditions of Saskatchewan, as they affect drainage work, are to its disadvantage as compared with conditions existing in those areas where drainage work has previously been carried on.

In Italy, France and various parts of the United States, for example, where the greatest proportion of drainage work has been conducted, those areas drained consist in the main of overflowed and swamp lands. Such areas are comparatively easy to drain. Location of the drain presents no serious difficulty. With a fairly uniform cut, which must exist in these areas, construction cost is light, as machines that will excavate at a remarkably low rate per yard have been specially designed for this work.

Climatic and Soil Conditions.—The drainage areas of Saskatchewan do not lend themselves to such simple treatment. Probably the most fertile area now in need of drainage stretches from Humboldt on the west to Kamsack on the east, a distance of almost 130 miles, and approximately 30 miles in width. This area drains south from the height of land with a very rapid fall. Far from being swamp land, it is decidedly rolling, with numerous depressions, large and small, which are flooded for at least half the summer season. Cultivation is consequently made impossible. To date, machinery has not been designed that will excavate in such country as cheaply as in flat lands.

For specific comparison, consider Minnesota. The areas flooded in this state are, as a rule, the bottom lands along rivers, the Red River in particular. This river, in places, annually overflows its retaining banks. Owing to the flatness of the adjacent country, the land is so long submerged that seeding is greatly retarded and often made impossible. Further, the seepage from the higher lands at a distance after excessive rainfall also tends to keep the flat areas in a flooded condition. In Saskatchewan the rivers do not overflow but every little depression fills with water which stays there until removed by evaporation. The sub-soil is a heavy impervious clay through which there is very little seepage. Also, there are few creeks to carry off this water which are not badly clogged up with beaver dams and brush. If these streams were cleaned out so as to be effective drainage channels, conditions would undoubtedly be much improved as there would be a constantly increasing amount of seepage water finding an outlet.

The short summer season in Saskatchewan adds appreciably to the cost of drainage construction. Owing to the severity and the length of our northern winters the ground freezes to a depth varying from five to eight feet. It is usually impracticable to work at depth before the end of May in the Humboldt-Kamsack region. (In the prairie regions construction may commence about the first of May.) The season closes about the first of November, leaving only five months in a year for actual construction, and results in a very heavy monthly interest and depreciation charge.

It is obvious, then, that physical and climatic conditions greatly enhance the cost of drainage work.

Location and Design of Drainage System.—The proper location of a drain is most important both from