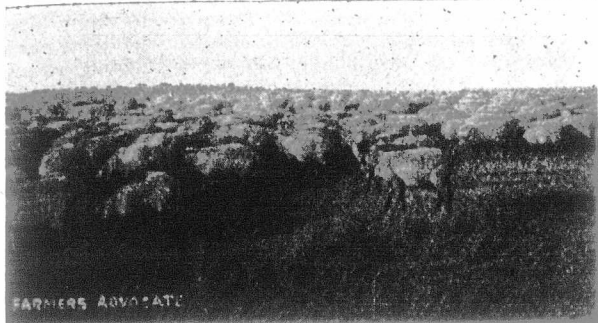


### Irrigation in South Alberta.

BY J. M'CAIG.

It is undoubtedly the case that the greater part of what constitutes modern civilization is due less to favorable natural conditions than it is to the improvement wrought on natural conditions by the ingenuity and industry of man. The *laissez faire* system is bad for nations and individuals alike. The men who trust to the beneficence of nature to provide for them, and the nations that fail to improve on and skilfully manipulate their resources, will find themselves alike shouldered back into insignificance and obscurity. Rewards fall to the industries and occupations that embody and illustrate the greatest skill and the greatest art; mere



"TOO MANY LEGS."

subsistence returns are the lot of those who are content to follow commonplace and routine lines.

In connection with the business of agriculture, it is rather remarkable that the pioneer West should show a susceptibility to the need of improving on natural conditions above what is shown in the east. This is manifest with respect to the practice of irrigation of arid or semi-arid lands. It may be pertinently remarked that the conditions are not the same or similar: that a precipitation of twenty-eight or thirty inches in the east, as against ten or eleven inches in the west, puts lands in these opposite ends of the Dominion in two totally different classes. This is, on the whole, true. On the other hand, it is certainly the case that in some seasons a crop may be reduced by drought to one quarter of its value, when relief could occasionally be given by the diversion of a small stream.

A very fortunate conjunction of circumstances has given irrigation a strong impulse in Southern Alberta. In the first place, the surface configuration is such that the irrigating of considerable areas of fine lands is a comparatively easy proposition. Secondly, the tide of immigration that has set in Canada towards the rapid appropriation of United States free-grant lands has turned into our country a class of settlers from Utah and other States, many of whom are thoroughly conversant with the management of irrigable lands and thoroughly imbued with the idea of the advantages and certainty of a good system of irrigation.

It must be conceded that, apart from the scarcity of rain, Southern Alberta is one of the most favored regions of the Dominion of Canada. There is probably no better ranching country in the world. The soil is a rich alluvial, fertile sandy loam or clay loam, such as might be looked for at the base of the great continental ridge. With only a third of the moisture that the eastern Provinces have, this beautiful prairie region is covered with grasses in such luxuriance and variety as make it a rancher's paradise. With regard to climate, likewise, it is no less fortunate. Contrary to what might be expected of any part of the great interior continental area cut off from the ameliorating influences of the warm, moist Pacific winds by the Rocky Mountains, the climate is not extreme, nor at any time severe in winter. It is swept and warmed by a part of the south-west equatorial wind called the chinook, which blows the ranges clear of any light, dry snowfall that does come, or by its warmth causes the snow to totally disappear, so that grazing is not interrupted at any time. As this wind is almost a constant wind, the climate in winter is kept almost continually balmy. The occasional low dipping of the mercury that sometimes occurs brings little inconvenience, for the climate is always dry and changes are not, consequently, felt. It is slight wonder that homesteading of Government lands has gone on at a phenomenally rapid rate, which means, of course, that the time is fast approaching when each rancher will have more neighbors than are compatible with continued large profits in the future, for a rancher's profit is measured chiefly by the scarcity of his neighbors. The inevitable future for him is to become a farmer instead of a rancher. To do this he has to overcome the natural scarcity of moisture and become his own rainmaker. Irrigation is still young in the West, but it is very rapid, and within the last couple of years a couple of hundred miles of irrigation canals have been dug in Alberta, and an area of between five hundred thousand and a million acres have been thus made available for intensive agriculture, with large possibilities for additional ramification and extension.

The advantages of irrigation, even over the precipitation of moisture in sufficient quantity by rain or snow, are evident, and amount practically to an insurance of the crop. By it one is prevented from both oversupply and undersupply. Even where rainfall is sufficient, it frequently does not come at the right time. A crop of grain may do well for a

couple of months at the beginning of the season and afterwards be ruined by three weeks of continuous drought. Again, an extra wet spring may delay planting or sowing, or may cause the rotting of seed in the ground. Where the supply of moisture is under the farmer's control, he can have just what he wants and at such times as he judges it will be best to apply it. In addition to making possible the regulation of the water supply, irrigation provides constant fertilization by means of the alluvial matter carried in suspension in the waters. The vigor of the soil is thus constantly and periodically renewed. This explains the apparently inexhaustible character of lands in Colorado and other irrigation States of the American Union, where wheat crop after wheat crop is taken from the soil without any measures for renewal or rest of the soil being necessary. The alluvial plains of the lower Mississippi and of the Nile Valley illustrate the operation of the same processes. On the whole, irrigation stands for the certainty of methods approaching scientific and within the control of man, against the uncertain and spasmodic bounty of nature, with respect to an essential in the growing of all crops, viz., moisture. The experience of Manitoba during the past season's drought is an eloquent argument in favor of having the water supply under the control of the agriculturist, as the drought in that Province meant the loss of the greater part of the wheat crop.

The methods by which irrigation is secured are two. One is the flooding method, the other is the furrow method. By the former, water is carried by a lateral or side ditch from the main canal to the highest point of a farm, and is taken from this ditch by other furrows, from which it floods the crops to be benefited by it. The furrow method is employed for roots and vegetables principally, the water being turned into the furrows between the rows and allowed to settle to each side to the roots of the crops. For the successful operation of any system of irrigation, it must be understood that the land to be irrigated presents only slight irregularities or variations of surface, as is the case with the prairie land irrigated in the district of Alberta, and, of course, generally speaking, only the land on one side of the canal can be irrigated, as the canal cannot be carried along the crest of a ridge, but is led along the side of a gradual slope or dip.

The most ambitious and complete irrigation undertaking in the Northwest Territories is, perhaps, the Galt canal. It is named after Mr. E. T. Galt, the president of the Alberta Railway & Coal Co., with headquarters at Lethbridge. Mr. Galt is likewise president of the Canadian Northwest Irrigation Co., whose work is referred to above. The topographical feature of South Alberta on which the canal is constructed is a general fall from the point where the Rockies cross the Montana boundary towards the north-east, in the general direction of the slope of the Nelson or Saskatchewan River system. The fall between the intake and the town of Lethbridge is about one thousand feet. Lethbridge, the present terminus of the system, is about fifty miles north of the United States boundary, but, as the canal crosses the country diagonally, the length of it is nearly seventy miles. Twenty miles south of Lethbridge, near the new town of Magrath, a branch of the system turns easterly to Stirling, a new town on the railway connecting Lethbridge with Great Falls. Both these towns are settled principally by Mormons, who have displayed a commendable thrift and energy in establishing and improving their new homes and farms. Last year beautiful grain and root crops were produced in the neighborhood of both these towns. The water of the canal is drawn from the upper part of the St. Mary's River, a stream abundantly fed by the snows of the Rockies, and entering Canada from Montana. This river flows north-east to join the Belly River, of which it is a tributary, a few miles from Lethbridge. The irrigation canal runs in a direction parallel with the river, and at some distance from the left bank of the river. The water is thus diverted and trained, so to speak, along the upper elevations of the left basin of the river, so that from these elevations the water is utilized to irrigate the lands below the ditch in elevation and between it and the river itself. At Lethbridge the water is returned to the Belly River, dropping into it from the bench country, which is three hundred feet above the bottom of the gorge through which the Belly River runs at this point. The water of the St. Mary's, or part of it, is thus used, in a natural and easy way, to render richly productive for intensive agriculture large tracts lying adjacent to its artificial course. Along this course many natural channels are utilized to carry the water, but in many places flumes are constructed to carry the water across slight depressions. The chief irrigable lands, and the best and most fertile lands, lie about the town of Lethbridge. This town is an important mining center and is growing steadily, and everything indicates that it will become more important. It is a fine market for farm produce, while, on the other hand, the existence of good farming lands (now made productive) in its neighborhood will build it up and stimulate its industries by the cheapening of food products. It short, it possesses the complementary and necessary conditions for substantial and rapid growth by having valuable industries itself and the immediate prospect of cheaper food stuffs to support its industrial population.

The engaging in farm work on the ditch is not regarded as a doubtful experiment. Experienced irrigationists are taking up lands and breaking

them with a buoyant confidence. The excellent soil and climate of the district have been waiting only for the water to give the district the highest attractiveness for the agriculturists. Men who have never yet worked on irrigable lands are not absent from the settlers on the ditch, and Ontario has given its contribution in skill and intelligence to the group of settlers rapidly taking up the lands. Houses, sheds and fences are being built, while breaking the virgin soil has been going on with a steadiness and energy this spring that show a strong confidence in the results. The rapid sale of lands lying close to the ditch has led to the extension of the system by the construction of lateral ditches from the main canal that will reach large tracts of land at considerable distance from the main canal. It is quite a popular plan to buy a quarter-section of land below the ditch—i. e., of land that can be for the most part irrigated—while larger tracts are bought on the upper side of the ditch that are cheaper, and that are grazing lands simply. In this way the area devoted to cropping is cheaply supplemented by grazing land.

The opening up of these irrigated lands in the very heart of what is, perhaps, the finest ranching country in the world is making a fine opportunity for the fancier and breeder of pure-bred cattle and sheep. The principal market for Ontario bulls is the Northwest Territories. These bulls are reared on lands representing a value of from fifty to seventy dollars an acre, in a climate that requires expensive housing in winter time, and they can be sold at a satisfactory profit after paying the Canadian Pacific Railway one hundred and seventy-five dollars a car, besides incurring considerable other expense in bringing them out. Range bulls are not satisfactory. It is Ontario bulls, or, at least, bulls of Ontario type, that are required. The North Alberta country is doing a profitable business in producing stock bulls. This country has a considerable fitness for producing such animals, as it gives opportunity for mixed farming, but it still has scarcely the moisture to make possible a high degree of succulent feeding, which is the necessary condition to producing the fastest-growing type of stock animal. Everything considered, there seems to be the highest inducement to the establishment of pure-bred herds for the rearing of good sires in the irrigable-land district. All kinds of roots and cereals with which sappy and rapid-growing animals are built up are a pronounced success. If this can be done on lands that can be had at ten dollars an acre, with no clearing to do, and without a heavy contribution to the railway companies, there should soon be plenty of good herds in our midst.

The same argument applies to sheep. The range sheep grow light with rustling for food over long distances, and with the competition for food that belongs to the grazing of sheep in bands of two or three thousand. This tendency to grow "too many legs," as it is sometimes expressed, has to be constantly counteracted by the use of sappy, meaty, good-sized eastern males. The demand for these is large and is constantly on the increase. If these same sheep can be produced here, he should be as profitable at half the price as he is when grown in the east and transported to this country at a high freight rate. Rams could be produced here that would have a semi-range character. This would give them



"THE SAPPY KIND."

a hardness that would counteract the tendency to become reduced in energy and strength that result from putting a highly-nurtured eastern ram on the ranges in late fall, with an unlimited number of ewes to follow. The demand is already here; the conditions are such as to invite the breeder and fancier of the pure-bred stuff to follow his bent on the irrigable lands. Ranching and the breeding of pure-bred males of fine type are complementary phases of the live-stock industry of the country. Each is necessary for the successful pursuit of the other. To the confident and enterprising pioneer will fall the rewards.

The west illustrates a phenomenal development; but what has already been done is not a patch to