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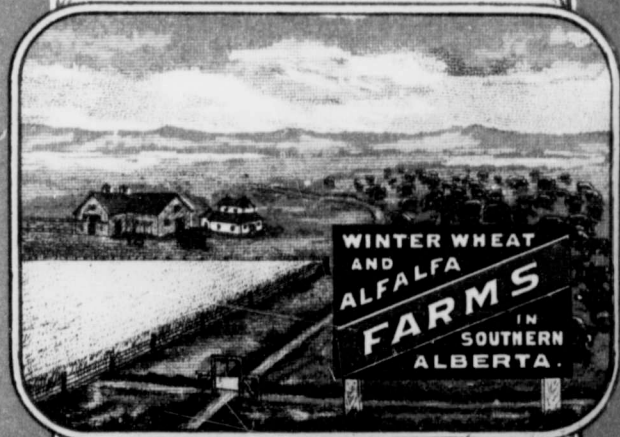
CANADIAN PACIFIC RAILWAY
COLONIZATION DEPARTMENT

CALGARY, ALBERTA
CANADA

OR



THE STAFF OF LIFE
A STORY OF
WINTER WHEAT
PRODUCTION
— IN —
SOUTHERN ALBERTA
CANADA.



PRINTED AND PUBLISHED BY THE
CANADIAN PACIFIC RAILWAY COMPANY
CALGARY, ALBERTA

Introduction

IN the year 1894, the Government of the Dominion of Canada reserved from sale and homestead entry a tract of land containing some millions of acres located along the main line of the Canadian Pacific Railway, immediately east of the City of Calgary, in Southern Alberta, Canada. This reservation had as its ultimate object the construction of an irrigation system to cover the fertile Bow River Valley. It was realized that this could only be successfully accomplished by so administering the lands embraced in the tract that the promoters of the proposed irrigation enterprise would not be hampered by any vested interests created through the alienation from the Crown of any of these lands. This undertaking, the greatest of its kind on the American continent, is now being pushed towards completion. It is safe to state that if this wise precaution had not been taken early in the history of Southern Alberta, it would have been impossible to have carried out the gigantic undertaking which the Canadian Pacific Railway Company now has in hand, and which is not only now increasing the value of land tributary to Calgary on all sides, but is transforming this city into the most flourishing agricultural centre in Canada.

While subsequent events have amply justified the reservation of this enormous area of land, so fertile and so favorably situated, immediately adjoining the largest city in Alberta, and traversed by the main line of Canada's transcontinental railway, a hardship was no doubt inflicted upon the early colonists in Southern Alberta, who were thus prevented from settling in this favorable locality, and compelled to go further back for suitable locations. Their loss, however, is the gain of those who are looking for new homes at this time and appreciate the opportunity presented in this block of land, which is now being offered for settlement.

This pamphlet will deal specifically with the production of Winter Wheat in Southern Alberta, and in view of the fact that the winter wheat fields of the Trans-Mississippi and the Pacific States lie in fairly close proximity to Southern Alberta, it is natural that these pages should be directed especially to the winter wheat farmers of those areas. Such being the case, it would be almost superfluous to go exhaustively into the merits of Winter Wheat over Spring Wheat culture. Every winter wheat farmer in the Western United States is fully cognizant of the enormous advantages of winter crops over spring crops, and, furthermore, he knows what winter wheat means in regard to climate. He realizes that winter wheat is the safest crop grown in the United States, and gives more uniform and satisfactory results than

any other line of agricultural production. He appreciates the fact that he is not at the mercy of the vicissitudes of seasons. He does not have to wait with seeding until the frost is out of the ground. The seeding period comes during the warm summer season. He does not have to lie awake nights wondering whether he will get his wheat cut before any killing frost destroys the fruits of his labor. Winter Wheat ripens early and, with any sort of adequate equipment, can be handled comfortably and housed safely before adverse weather conditions have an opportunity of partly destroying the quality of the crop.

Again, where farming is carried on upon summer-fallowed land, the economy in handling the land is considerable, and a vast saving is effected. The winter wheat farmer starts in to summer-fallow as soon as he can comfortably get on the land. A week or two one way or the other makes no material difference to him. Surface culture follows summer-fallow, and seeding takes place before harvest. There is no expensive crowding of teams and hired help to get the spring work done in time, and, later on, to get the harvest completed within a few days. All the help can be engaged for the whole summer season, and the farm work can be systematically pursued with the certainty that nothing will intervene to prevent the completion of each particular farming operation in good season.

"King Wheat"

It is a trite saying that "Wheat is the basis of all civilized existence." While there are more rice eaters than wheat eaters in the world, wheat is the chief grain food of the white man. There has been an almost universal increase in the individual consumption of wheat of late years. In 1871 the bread eaters of the world numbered three hundred and seventy-five millions; to-day they number five hundred and seventeen millions. In spite of the ever increasing crop area of wheat, the point is gradually being reached when the world's production of wheat will not more than keep pace with the demand. While the production in the United States has doubled during the past thirty years, the tendency at the present time is not towards any continued expansion. At the same time the population of the United States is increasing tremendously, and the point will soon be reached when this great country will become an importing instead of an exporting country. Less than a century ago New York State was the chief wheat producing area of the United States, a fact that enabled Rochester to acquire the name of the "Flour

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City." The latter distinction is now held by Minneapolis, located some 1,500 miles further west. The time will come when the City of Calgary will become the great flour producing centre of the New North West.

Wheat raised in Southern Alberta contains the largest amount of nutritive material of any wheat raised anywhere in the world. The soil of Southern Alberta is strongly impregnated with lime and gypsum, which form essential elements for both the straw and kernel of the wheat. The great length of the summer day in these higher latitudes, provides an extraordinary amount of growth producing heat, which, together with the favorable soil conditions, will make Southern Alberta the leading hard wheat producing field of the American continent.

One does not wonder at the universal use of wheat as a food. Next to milk it constitutes the most perfect nourishment. There is no danger that wheat will decrease in popularity. A quart of milk costs about 7c. in Calgary, $\frac{3}{4}$ lb. of sirloin steak about 15c., 5 ozs. of flour costs 1c. The milk can be used as it comes from the cow, the steak has to be cooked and the flour made into bread. Allowing 2c. for making the flour into bread and nothing for cooking the steak, we get for 3c. invested in Alberta flour as much nourishment, heat, and force to sustain life and do work, as would cost 7c. if spent in milk, and 15c. if expended in sirloin steak.

Every citizen is interested in wheat. It is the warp in the web of the country's prosperity, and that the prosperity of the farming community is synonymous with national prosperity is undisputed. Wheat will undoubtedly be the leading factor in the agricultural development of Southern Alberta, and while it may not always remain so, the wheat grower, like the cattle man, is frequently the pioneer in the great scheme of development, doing the crude work of subduing the virgin prairie and transforming the grass areas into productive farming land, and often leading in the more intricate process of perfecting the diversified farm, with its multitude of interests and economies.

The Dawn and Evolution of Winter Wheat Production in Southern Alberta

There can be little doubt that the enormous expansion of Winter Wheat production in Southern Alberta constitutes one of the most far-reaching Canadian agricultural developments of modern times. Her annual increase of crop area is

regarded as a freak in statistics. Never in the history of Canada has any single crop in any part of the country come to the front with such giant strides as has Winter Wheat in Southern Alberta.

Those who appreciate the large profits and small risks in the production of Winter Wheat will not be surprised at this development, but will rather marvel that it was not initiated years ago. The growing of winter wheat in Southern Alberta is not in any sense in the experimental stage. The crop has been grown successfully for the past twenty years, but owing to adverse commercial conditions, this crop attracted little or no attention. It is not to be wondered at that such was the case.

In the early history of colonization in Alberta, the country was very largely occupied by cattle, horse and sheep ranchers. These men seldom owned large areas of land, but grazed their herds and flocks on the public domain, without either paying taxes or rental for this privilege. Consequently, the profits in the business were enormous, and the work involved was generally of an easy and pleasant character, compared with active farming operations. It is not likely that these men, many of whom owned hundreds of heads of live stock, but only a quarter-section of land, would give up this attractive and lucrative business in order to engage in the growing of winter wheat, no matter how profitable the latter industry appeared to be. In any event, the early pioneers were not in any sense of the word, by training, association or taste, inclined to farming. The calling of the "rancher," with its happy-go-lucky methods and free and easy life, would never be discarded for the more matter of fact existence of the farmer.

It is no exaggeration to state that Southern Alberta was discovered by winter wheat growers from the Western States, who quickly saw the enormous possibilities ahead of this industry in Southern Alberta. Every effort was made by the Southern Alberta "cow puncher" to discourage these men from settling there. Yarns were related of drouths and all the agricultural plagues in the calendar. It naturally did not suit the rancher to have the prairie lands plowed and fenced. Many of the winter wheat men from south of the line, however, had been through the same experience where they came from and took these calamity stories with "a grain of salt" and decided to settle in Southern Alberta, in many cases buying ranching holdings at high prices.

The first official notice which seems to have been taken of Winter Wheat in Southern Alberta was in a report of the Department of Agriculture of the North West Territories for the year 1901, where the following statement from Mr. C.

Kettles, of Pincher Creek, one of the pioneers of Winter Wheat production in Alberta, is reproduced:—

"I have been growing Winter Wheat with unvarying success for the past 10 years, having threshed from 40 to 63 bushels per acre, according to the season. My custom has been to summer-fallow the land, ploughing deeply in June, and cultivating weekly with the disc harrows afterwards. I sow between the middle of July and August. I find it makes no difference whether we have snow to cover the wheat plant or not, as the rank growth of the wheat itself is sufficient mulch. Winter Wheat in Southern Alberta ripens between the 20th of July and the end of August, according to the season. . . . I have experimented thoroughly with Winter Wheat, and find it to be the safest, hardiest, and surest crop we can grow in Southern Alberta, as well as giving the greatest possible yield, being entirely free from smut, as well as giving the farmer the extra advantage of time, and is a sure way of cleaning weedy, dirty or worn-out land. The ploughing and seeding being done after the spring crops are in and before haying commences, gives him time to haul his manure and clean up generally. In fact, I cannot recommend too highly the growth of Winter Wheat in Southern Alberta."

A party of agricultural editors visited Southern Alberta in 1905, amongst them was Professor Shaw, of the "Orange Judd Farmer," one of the foremost agricultural experts of America. During their visit to the City of Calgary, and after a thorough investigation into the agricultural resources of this district, a reception was held and speeches were the order of the day. In the course of his address Professor Shaw said:—

"To my mind the most astonishing feature in the development of this province is the growth of winter wheat. Two years ago it was 30,000 bushels. This year it is expected to exceed the million bushel mark. There are good reasons for believing that winter wheat can be grown over practically all the tillable areas of Southern Alberta. . . . An empire is thus furnished for the growth of winter wheat in a region where half-a-dozen years ago its successful growth was looked upon as an impossibility. . . ."

This expression of opinion speaks for itself, and time has amply justified the conclusions formed by Professor Shaw during his visit three years ago.

"Alberta Red."

The earliest variety of Winter Wheat produced in Southern Alberta was "Dawson's Golden Chaff." This seed was

brought into the Pincher Creek district, the cradle of Alberta winter wheat production, years ago. It was grown there for perhaps eight or ten years, and when winter wheat production became general throughout Southern Alberta, furnished the seed for the balance of the province. This variety was a heavy yielding, soft wheat, and did not quite suit the requirements of the millers.

The settlers who were flocking in from the United States conceived the idea of producing a hard winter wheat, and for that purpose small quantities of "Kansas Turkey Red" were imported into Alberta. The Canadian Pacific Railway Company subsequently made several carload shipments for the purpose of causing this variety to be generally introduced. After producing this wheat for a couple of years, it was found that it improved wonderfully, and the grain and milling trade then decided to give it a distinctive name, with the result that "Alberta Red" was chosen as the most appropriate term. This is the early history of the grain that has made Southern Alberta famous.

"Turkey Red" wheat was brought into Kansas some thirty-two years ago by Mennonite emigrants from Southern Russia, near the Black Sea, who apparently appreciated the superior qualities of this wheat more highly than the Americans. For years after its introduction it was discriminated against by the American millers, who claimed that its flinty character made it hard to grind. The farmers of Kansas, however, persisted in growing it, and its production has steadily increased in spite of the fact that they were compelled to accept a smaller price in the open market, in some cases 10 and 15c. below what buyers and millers were willing to pay for the softer and much better known varieties, but owing to its high yielding qualities it gradually became very popular in the state, and finally commanded serious attention. In the course of a few years the millers were compelled to provide ways and means of more successfully converting this hard wheat into flour, with the result that there were brought into use devices and processes for softening the grain by steaming and moistening before grinding. These are now generally used and are considered indispensable wherever hard wheat is floured.

Owing to the fact that the spring wheats produced in the western provinces of Canada are of the hard variety, the Western Canadian millers have always had equipment for grinding this class of wheat, and the introduction of a hard, flinty winter wheat, therefore, was hailed with delight by all the millers, and immediately became popular here, where no remodelling of the mills was required for handling that quality of grain.

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"Alberta Red" to-day stands at the head of all wheat produced on the American continent. It has become famous in the world's most exacting markets as superior to nearly all others, and is considered equal to the wheats grown in Hungary and Bohemia. This is true either when used alone for grinding, or when the flour manufactured from this wheat is blended with given quantities of other pretentious makes, represented as peculiarly choice because made from extra fancy grades of spring wheat grown elsewhere.

Hard wheat, of which "Alberta Red" winter wheat represents the superior type, now stands for the world's white loaf bread or "light" bread, while soft wheat as definitely represents the total of biscuits, cakes, pastry and crackers. Bakers, millers and wholesale dealers put a distinction between the two flours, as their respective uses well define. To the housewife, custom largely dictates the methods of cooking, and the old time customs are not easily supplanted. For this reason, there is still a demand, small and decreasing, however, for soft wheat grown where the native flour is produced, even for bread making. Since hard wheat has become much more abundant it is forcing its way into competition with the soft wheat flours, even for domestic purposes, and thus by blending proportions of hard and soft wheat flours, the consumption of the former is being systematically increased. The result is, that hard wheat flour is everywhere, or soon will be, the standard material for bread, and the soft wheat flour for the more delicate oven products.

From a baker's point of view, hard wheat flour is better for bread making, because it contains a larger percentage of gluten. This is the compound that makes the grain hard and almost translucent, hence it is branded as "hard" wheat, while the plump, lighter colored berry of the soft wheat is somewhat richer in starch. During grinding the flinty gluten is crushed into angular particles, which makes the hard wheat flour more gritty to the touch than soft wheat flour, in which the smooth starch grains predominate. Gluten absorbs water readily and in considerable quantities, sometimes swelling to several times its dry bulk. When wet it becomes elastic and capable of holding the air that is kneaded into it, with the gases produced by the yeast, thereby becoming porous or "light" to an almost indefinite degree. The weight of the dough (baker's bread is sold according to the weight of the dough) and the bulk of the loaf both depend upon the quantity and quality of the gluten, and bread made from 100 lbs. of "hard" wheat flour will make several pound loaves more than an equal weight of soft wheat flour; hence the advantage to the baker where the market values of the two wheats do not differ too much.

For the consumer there is an advantage even more important. Gluten is the tissue part of the grain, supplying to the body the same important elements that are contained in lean meat. Since starchy foods are proportionately more abundant and cheaper than nitrogenous, and bread is cheaper than lean meat, the bread that contains much gluten is an extremely economical food, at the same time very nutritious and easily digestible.

Winter Wheat and Land Values.

Southern Alberta is at present in the transition stage. The early pioneer was the ranchman. In the course of years the wheat farmer took possession, and the rancher is to-day being driven out of business by the latter. There can be little doubt but that one of these days, the wheat farmer will yield place to those who will engage in dairying and diversified farming, and thus take the greatest possible quantity of wealth out of the soil. The fight for supremacy between the rancher and the wheat farmer, and the wheat farmer and the "mixed" farmer is not a fierce warfare, where "might is right." It is a commercial development. The land owning rancher is driven out of business when his holdings are worth more to the wheat farmer than to himself, and the wheat farmer retires when the diversified farmer gives to his land a value beyond what the continuous cropping of wheat will yield.

Evidences of the prosperity of the farmer on the continent of America have been multiplied and now assume an importance in the world of finance, trade, transportation and manufacturing which has attracted world-wide attention. Profound changes have taken place in the economic results of the farm, which have excited the reflections of many students upon economic principles accompanying, if not underlying, agriculture.

Perhaps the most far-reaching factor in the changes above indicated has been the substantial exhaustion of the free and cheap lands of the United States Government and railroads, fit for agricultural purposes without irrigation. The end of this land has been reached so suddenly that it has given a sort of shock to the whole economic structure of agriculture. There can be no doubt, that one of the features of the early part of this century is the higher valuation of farm lands in America. One cause for this is undoubtedly the fact that up to a few years ago the prices of farm products had fallen to a point very close to actual cost of production and in some cases below. The farmer is now getting a fair net return for

his labor, and this naturally has the effect of increasing the value of his land. Nothing affects land values so quickly as "dollar wheat." It is instructive to examine the records of wheat values for the last few decades. Between the middle of last century and 1883, prices of wheat uniformly ranged at about one dollar per bushel. There was somewhat of a decline between 1884 and 1892, and "rock bottom" was touched in 1894, when the average value of wheat in the United States was 49c. per bushel. Since that time, however, prices have rapidly crept up, until wheat has now nearly regained its normal value, and everything points to even a further and permanent increase in price.

This company's winter wheat lands, capable of producing higher yields per acre than the lands of similar character in the United States, are sold at less than one quarter the price per acre asked for the better class of winter wheat lands in the Pacific States. It is, therefore, evident that either the Pacific Coast land values are too high or that Southern Alberta winter wheat lands are sold vastly below their real value, and thus furnish an investment second to none. The fact that Pacific Coast wheat growers are perhaps the most uniformly prosperous class of farmers that can be found anywhere, would clearly demonstrate the fact that apparently their lands pay a high return on the valuation, and it therefore becomes clear that Alberta lands are on the market to-day at prices vastly below their actual producing value.

It is interesting to reproduce here an article on the above subject, which appeared in 1905 in the columns of the "Farm and Ranch Review," an agricultural publication issued in the City of Calgary:—

"Who is capable of forecasting with any degree of certainty what the future has in store for the great winter wheat area of Western Canada? Is any man rash enough to pretend to estimate what the winter wheat production will be ten years hence or even five years from now? One year has seen an increase in crop area under this cereal of over one hundred and fifty per cent., a development absolutely unique in the world's agricultural statistical history. The year 1905 has witnessed the seeding of an area to winter wheat of enormous extent—how great it really is can only be conjectured by estimating on the basis of the magnificent performances of the last three years. That Alberta is destined to become a leading factor in the wheat markets of the world, that its products will feed countless millions in Oriental countries before many years, are facts which may now be considered as having been finally demonstrated.

"What the effect of this marvellous development will be on land values is already apparent. While the price of land

in Central Alberta to-day is ridiculously low compared with the wheat lands in the Pacific States, less fertile than those in Alberta, it is evident to the ordinary mind that the productive capacity of Western Canada's wheat lands, whose fame is already travelling abroad, will draw an enormous volume of settlers to this country, with the inevitable result of increasing land values. This effect would be merely a case of history repeating itself. The writer has lived and farmed in the West for nearly a score of years, and may, in all modesty, claim to have observed closely, and under peculiarly favorable conditions, the growth and development of the "Last West." In the light of past history here and in the United States, we will hazard the statement that those who own winter wheat lands now and those who acquire such lands within the next year or two, will be counted amongst the fortunate ones when the great general advance in Western Canada farm values commences, and that the latter period is close at hand will not be disputed by even the most casual observers."

Our Winter Wheat Lands.

The outstanding feature of the Company's winter wheat area is that it ranks as a "hard" wheat producing district. As has been explained in the preceding pages, the demand for hard wheat is steadily increasing, while, on the other hand, the area of hard wheat land is very limited. Hard wheat production is confined to a strip of country extending from Western Canada south through Western Minnesota, the Dakotas, Western Nebraska, Kansas, and part of Oklahoma. Hard wheat requires for its production a soil rich in nitrogen, and receiving only a limited quantity of moisture, combined with a short growing season and dry atmosphere. It, therefore, follows, that Southern Alberta, which possesses all these characteristics, is in reality the "Last West" where hard wheat producing lands can be obtained. With the development of the Oriental markets, with which Calgary is in direct communication, for hard wheat products, an era of agricultural prosperity, which has seldom been equalled in any part of the globe, is now dawning in this portion of the Province of Alberta.

The winter wheat lands belonging to this Company are the non-irrigable agricultural lands of the Three Million Acre "Irrigation Block." There is one feature in connection with these lands which should not be lost sight of. It is the Company's earnest desire to dispose of its lands to actual settlers.

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The speculative element cannot, of course, be altogether eliminated in the Company's sales transactions, nor is it perhaps desirable that it should be. The farmer who buys land with a view to actual and immediate settlement is, however, just as much interested in ultimately increasing land values as is the speculator. The bulk of the Company's winter wheat lands, as above stated, are located within the irrigation block. They are simply lands situated at a somewhat higher elevation than the Company's water distributing system. Any agricultural lands that cannot be reached by irrigation are classed as "winter wheat" lands. In some cases these lands are surrounded on all sides by irrigated lands, that will be disposed of for mixed farming purposes and generally in small areas. It is scarcely necessary to point out what this means. The two things that give value to land are, first, the ability of the land to produce, and, secondly, settlement. There can be no question as to the producing abilities of our winter wheat lands, and in view of their proximity to the Company's irrigated holdings, they are located in what ultimately will be one of the densest agricultural settlements in America. We are, therefore, in a position to offer investors and farmers an opportunity to purchase land at a nominal figure that will, within a few years, rank among the most valuable agricultural areas in America. Not alone will they pay for themselves very rapidly in the crops they produce, but by virtue of their peculiarly favorable location they command a speculative value entirely apart from their agricultural worth.

Farm production is governed entirely by the quality of the soil, climatic conditions, and method of cultivation. The latter lies largely in the hands of the farmer, but we shall endeavor to show that so far as the natural advantages of Southern Alberta for wheat growing are concerned, our winter wheat lands are second to none on the continent.

Climate is generally divided into three classes. Humid conditions existing where the rainfall is over 18 inches per annum; arid conditions where the rainfall is less than 10 inches per annum, and where the precipitation lies between these two divisions, the climate is said to be sub-humid or semi-arid. The climate of Southern Alberta falls within the latter category, as does the greater part of the United States lying between the Mississippi River and the Pacific slope, and practically the whole of Western Canada lying east of the Rocky Mountains. It has been conclusively proven that semi-arid conditions are most favorable for the production of high class wheat. The humidity of the air is a feature of climate often overlooked, but, nevertheless, it has an important influence upon plant growth. Its effects upon the wheat plant

are generally unfavorable if long continued, and particularly if it occurs during the time of ripening. Great humidity retards maturity, interfering with the production of proteids, and, therefore, indirectly softens the grain, and through the over-production of starch, gives it a white color, and presents conditions favorable for the attacks of various fungous pests. It is not so much the great precipitation that gives the inferior quality to the grain in humid areas, as the prevailing humidity of the air and the lack of sunshine. It, therefore, follows that with proper soil conditions, the climatic features of the sub-humid districts are actually necessary for the successful production of wheat.

Southern Alberta lays claim to possessing the finest winter wheat lands in America, on the following grounds:—

(1) Low annual rainfall that prevails, only sufficient moisture falling to successfully mature the grain. (2) The very large proportion of this rainfall which occurs during the growing season. (3) The character of the precipitation which occurs in the form of thunder storms without fog or mist. (4) The prevailing clearness and dryness of the atmosphere and the preponderance of sunny and warm days.

It is recognized that there are certain substantial agricultural advantages in connection with lands located in sub-humid districts. It is a fact that the richest lands in America lie in the vicinity of the 100th Meridian, where the rainfall is the lowest. The reason for this is perfectly clear. In humid conditions, the soil is continually subjected to leaching by heavy rains. The water penetrates the sub-soil, washing with it valuable plant foods, which it is thus impossible to retain near the surface, where it is required for the sustenance of the crops. This accounts for the worn-out lands of the Eastern States, as compared with the lands in the semi-arid districts of Oregon, Washington and Idaho, that have been cropped with winter wheat, year after year, without showing any signs of depletion. The soil of the Irrigation Block is amongst the richest in America and retains all the valuable constituents that nature has stored up during past centuries. It only awaits the plow to yield up its treasures. The opinion expressed by Professor Shaw that "there is greater wealth in the upper twelve inches of soil in Alberta than in all the gold mines in America," is nearer the truth than is generally supposed.

Cost of Winter Wheat Culture

Perhaps there is no cereal that lends itself better to satisfactory production under limited rainfall conditions than

winter wheat. The most important agricultural development of recent years has undoubtedly been the improved systems of tillage with a view to utilizing the enormous areas of excellent agricultural lands on the continent of America, located where the rainfall is too small for successful agriculture. To grow crops satisfactorily and profitably under such conditions requires very careful study. Experience and experiment conducted under the sub-humid conditions of Alberta and in the semi-arid states of the Union, demonstrate the fact clearly, that the preparation of a soil reservoir at a good depth for months before seeding, the suitable selection of crops, the seed of which has been grown under dry farming conditions, all largely determines the success of farming operations with a limited rainfall where irrigation cannot be practiced.

The strong point of Alberta Red winter wheat, is its excellent drouth resisting qualities. Experience up to date would justify the positive assertion that the rainfall of Southern Alberta has never been so low in any season that a satisfactory crop of winter wheat could not be grown and matured. The present period may appropriately be called the "era of dry farming." The conservation of the natural rainfall is the greatest and most important aim of agricultural investigation to-day. Winter wheat of the Turkey Red variety is being produced in the arid portions of the United States where a few years ago no one thought it possible that any agricultural product could ever be raised.

In the foregoing a brief comparison has been made between Spring and Winter wheat growing. With further reference to this subject, it may be stated that the cost of winter wheat production in Southern Alberta per acre is very much less than in most of the other wheat producing sections of America. The yield in the Red River Valley, North Dakota, is from 5 to 35 bushels per acre. The cost of raising a 35 bushel bumper crop is \$7.50, which means that the net profit upon an acre of 60c. wheat in the Red River Valley yielding 35 bushels per acre, is \$13.50 per acre. In Alberta, the cost of producing wheat ready for market is from \$6.50 to \$7.50 per acre. Instances without number are on record where fields of wheat in Alberta have yielded over 50 bushels per acre.

Profits in Winter Wheat Culture.

Mr. T. H. Woolford, of Spring Coulee, produced 6,000 bushels of wheat on 100 acres, being at the rate of 60 bushels per acre. The gross income was \$3,600, the cost of production \$7.00 per acre, amounting to \$700.00; the net income in this

instance amounting to \$2,900, being a profit at the rate of \$29.00 per acre.

The year 1907 was distinctly an off season all over Western Canada, and to some extent the Western States. While there were no actual crop failures, the yields were uniformly far below the average for the past decade. Nevertheless, Mr. Sarcho, of De Winton, had an average yield of 48 bushels of winter wheat to the acre; S. Elliott, of De Winton, 58.33 bushels per acre; W. F. Hoose, De Winton, 47.90 bushels per acre; J. Smith, Nanton, 50 bushels per acre; G. D. Sloan, Cayley, 64.20 per acre; J. Robinson, of Cayley, 53.25 per acre; W. L. Busher, of Mosleigh, 58.28 per acre. These yields were, of course, far above the average for that season, but demonstrate the possibilities, even in an unfavorable year, where good farming methods prevail, of obtaining satisfactory results.

These are cases where "the exception proves the rule." The above named farmers had no special monopoly on high yields, nor were their farms any better than thousands of others. They simply had their land well prepared and their seeding and other work done at the proper time.

Reports are just now coming in from points in Southern Alberta, giving threshing results from the winter wheat crop of 1908. Mr. A. E. Burnett, of Nanton, sowed 71 acres on the 20th of September, 1907, on summer fallowed land which had raised one crop previously. He has just threshed 4,280 bushels of winter wheat, being at the rate of 60¼ bushels to the acre. The straw averaged six feet six inches in length. Mr. C. Nathe, residing some 40 miles from Mr. Burnett, sowed 60 acres of land to winter wheat, which yielded a crop of 3,100 bushels. The wheat weighs 63 lbs. to the bushel, which makes a yield per acre of 64¾ bushels. Mr. P. A. McAually, of Crossfield, some 14 miles north-east of Calgary, in the Bow River Valley, threshed 596¼ bushels of Alberta Red winter wheat from 9 acres. The wheat graded No. 1, and was sold at 76c. per bushel, making a return of \$49.35 per acre.

A few years ago R. B. Bower came to Southern Alberta and settled on a farm located some 25 miles south-west of Strathmore and east of High River. In the year 1904 he broke 41 acres of sod, sowing Alberta Red wheat thereon. The following year he harvested 1845 bushels, which he sold for seed at \$1.00 per bushel. In the spring of 1906 he carefully ploughed and sowed the same patch of 41 acres to oats, and threshed 2,460 bushels in the fall, which he disposed of at 40c. per bushel. In the year 1907 he summer-fallowed the same area, seeding it to Alberta Red in August. Last week he completed threshing, and the field averaged 50 bushels to

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the rate of the acre, which he sold at 75c. per bushel. A careful survey was made of the field by a trustworthy man, and it has been found to contain exactly 41 acres.

To summarize the result of Mr. Bower's efforts during a period of four years, from this particular field of 41 acres, we find that he received \$4,376.50, which is made up as follows:—

1905—1,845 bushels at \$1.00 per bushel . . .	\$1,845.00
1906—2,460 " " 0.40 " " . . .	984.00
1908—2,050 " " 0.75 " " . . .	1,537.50

Total \$4,376.50

The above indicates that during the course of four seasons, Mr. Bower realized \$106.25 per acre.

This, however, is not the entire record of Mr. Bower. He had a field of Alberta Red Winter Wheat this year, measuring 229 acres, from which he has averaged 45 bushels to the acre. The grain is of extra good quality, weighing 65 lbs. to the bushel from the machine. He also has a record-breaking oat crop. From 80 acres seeded to oats, he threshed 8,000 bushels, weighing 40 lbs. to the bushel. Mr. Bower also had a few acres of barley, which, however, only threshed a good, fair average. To sum the matter up, from his present crop off 400 acres, Mr. Bower garnered the enormous total of 22,000 bushels of grain, from which he estimates that he will make a net profit, after paying all expenses, of over \$10,000.

The above is an absolutely truthful record of Mr. Bower's achievements. This gentleman has no land for sale, and is not particularly interested in "booming" Southern Alberta. Mr. Bower is prepared to make affidavit to the facts as recited.

Mr. M. Bolinger, who purchased lands from the Canadian Pacific Railway Company, near Gleichen, in 1907, completed his threshing on October 17th, 1908. His wheat went 50 bushels to the acre, graded No. 2 hard, weighing 66 lbs. to the bushel, and sold at 78c. Mr. Bolinger estimates that this one crop will pay for his land.

Lasting Qualities of Bow Valley Soils.

(From "Calgary Herald," 19th September, 1908.)

"Seventeen years ago the yield from this field off 38 acres was 117 bushels of oats per acre, and to-day we have completed threshing the wheat crop off the same area, with the result that the tally shows 53 bushels to the acre."

The above statement was made yesterday to a "Herald" representative who had journeyed to the farm of D. D. Davidson, some 12 miles from Calgary, and one mile from Shepard. A wonderful and encouraging record for Alberta, and more especially for Calgary lands.

A Large Farm.

The splendid farm consists of 1,500 acres, and this year 525 acres were under crop, consisting of all fall wheat, barley and oats, and plans are being laid for largely increasing the area under crop.

A large part of this year's wheat is off land that was broken in June and July of last year, and the yield from this land is going to average at least 40 bushels to the acre.

The portion going 53 bushels to the acre was, of course, off old land, and goes to show what this country is capable of once proper farming methods are introduced. The barley which was raised on last year's wheat lands went 44 bushels to the acre. The wheat has been sold at 79c. for No. 1 and 76c. for No. 2, and in conversation with grain men it was stated that little or none would go below grade No. 2.

In the course of a chat with J. S. Belyea, who, in company with his father and two brothers, runs the large farm, it was learned that they expected at least 10,000 bushels of wheat this year. His talk was as follows:

"When we undertook to look after this project we found only 100 acres broken. In 1906 we had only 12 horses, but now that number has been increased to 20, and it will be necessary to increase this number or secure a steam plowing outfit of our own.

How It Figures Out.

"We figure that the cost of this crop, including labor, seed and all other incidental expenses, is between \$10 and \$11 per acre. So from that you can readily figure out the returns that are being made off this farm. Apart from our grain we go in for hogs extensively, and this year up to the present time, we have turned off \$1,321 worth of bacon, besides keeping ourselves supplied with fresh pork, and we now have over \$800 worth of porkers fitting themselves for the market.

"Our barley has returned us 5,242 bushels off 125 acres, which is a creditable record for this country."

The Winter Wheat Areas of the United States and Canada.

A COMPARISON.

The majority of the winter wheat producers of the United States are located within the "Inland Empire" of the Pacific States of the Union, and, as has already been pointed out, these pages are naturally chiefly addressed to them. Our aim has been to show them that it will pay them to sell their high-priced lands in Idaho, Washington and Oregon, and transfer their interests to the Canadian Pacific Irrigation Block. There is, however, some danger of a certain amount of misapprehension dwelling in their minds as to the quality of the winter wheat lands of Southern Alberta, which we desire to clear up.

The winter wheat lands of these states are generally covered with sage brush in their natural state, presenting all the characteristics of arid or semi-arid lands, and, in some cases, they resemble the lands embraced in the Great American Desert. The lands of Southern Alberta are of a totally different nature. During the summer season they are generally covered with a thick coat of green grasses, testifying to the admirable quality of the soil, and bearing no indications of semi-arid conditions.

It is instructive to compare the statistics bearing upon winter wheat production of Southern Alberta, with portions of the United States where land values are extremely high. The highest yielding winter wheat farms in the United States are located in the Pacific division, where the yield per acre is often twice as great as in any other portion of the Union. First class winter wheat lands throughout Washington, Oregon, Idaho and California, would range in value from \$50 to \$100 per acre, and it would appear that these farms are able to pay interest on their capitalization. This company is offering winter wheat lands for sale at prices ranging from \$10.00 to \$15.00 per acre, and we propose to show that a larger revenue can be made out of this Company's lands than from similar lands in the Pacific States.

The first item for consideration is cost of production. Elsewhere it has been shown what the cost is in Southern Alberta. If the same methods were adopted here as prevail in the winter wheat producing states of the Pacific slope, there can be no question that the cost of harvesting a crop in Southern Alberta will cost slightly less than there. Our soil works up a little more readily, the price of labor in Southern

Alberta is somewhat less, and at the present time we can purchase horses a little more cheaply in Canada than on the American side. Taxation per acre is vastly smaller in Southern Alberta than on the other side of the line, and other items entering into the cost of production will show a small balance in favor of Southern Alberta. So much for cost of production.

We will now consider results. A glance at the rainfall statistics incorporated in the last part of this booklet, reveals the fact that during the growing season we will receive an average monthly rainfall east of Calgary of 3.46 inches. During the growing season, that is from May to August inclusive, the average monthly rainfall at Moscow, Idaho, is 1.40 inches; Lewiston, Idaho, 1.09 inches; Walla Walla, Washington, 0.99 inches; Spokane, Washington, 1.04 inches. The total annual average rainfall for Spokane is 18.22 inches; Walla Walla, Washington, 18.27 inches; and Lewiston, Idaho, 15.54. The average annual rainfall for the Calgary district has been 19.6 inches. These figures are all based on the most recent 10 year period. The above would seem to indicate that Southern Alberta crops would have decidedly the best of it. In dealing with final results, we find that our expectations are realised, as the following table will show:—

Average Yield Per Acre of Wheat, 1902-1906, for the Pacific States and the Calgary District.

	1902	1903	1904	1905	1906
Idaho	22.1	21.1	22.9	28.2	24.4
Washington	22.2	20.3	22.2	24.6	20.8
Oregon	20.0	18.2	19.0	18.6	20.0
California	10.9	11.2	10.8	9.3	17.1
United States	14.5	12.9	12.5	14.5	15.5
Calgary District	24.02	23.40	28.67	32.18	26.0

Further on in this volume will be found statistics covering a nine year period. Comparison here has only been carried back as far as 1902, for the simple reason that prior to that time there was little or no winter wheat raised in the Calgary district, the production being confined solely to spring wheat, which, of course, materially reduced the average yield per acre, and, therefore, would not apply in a comparison of purely winter wheat production.

Sufficient has been said to establish clearly in the ordinary mind, that the Winter Wheat lands of Southern Alberta are even more productive than those of the Pacific States, and as little or no difference exists in regard to the value of the

wheat on the Canadian and American sides, the question naturally arises: "Why are winter wheat lands worth \$50 to \$100 per acre in the Pacific States, while more productive lands can be purchased at prices ranging from \$10 to \$15 per acre in Southern Alberta?"

One important reason for this paradoxical state of affairs is not far to seek. Years ago the value of Oregon, Washington and Idaho wheat lands were not very much in excess of the prices at which Southern Alberta wheat lands are now offered for colonization. It is evident that wheat production in the Pacific States has reached its limits. In 1906 the area under winter wheat in Oregon was 712,000 acres. In 1881 it was 738,000 acres. This shows a shrinkage during the past quarter of a century. The area under winter wheat in the State of Washington has steadily increased and reached the maximum in 1904. In 1906 there was a shrinkage of over 200,000 acres. The State of Idaho had a greater area under winter wheat in 1905 than in 1906 by 30,000 acres. The State of California had a greater acreage producing winter wheat in 1871 than in 1906.

The burden of the above argument is simply that agricultural lands never reach their maximum value until all available arable lands in any particular state or district are brought under cultivation or otherwise utilized, when it becomes a mere question of the average net profit per acre such lands are capable of producing and what valuation such profit represents interest on. This factor almost entirely fixes the value per acre of a farm in the fully developed district. "Inland Empire" farms apparently pay interest on a \$50 to \$100 valuation per acre, and there is no more new land to bring under cultivation, hence this valuation.

Southern Alberta, on the other hand, is in its very infancy of development. No matter how productive her broad acres might be, she does not, at the present moment possess the other conditions that fix the value of lands on a basis of its productive capacity. The law of supply and demand comes in. Southern Alberta has more land than her present population can occupy, and, consequently, a premium must be offered to induce population to come in and settle on the land. The premium offered to colonists by the Canadian Pacific Railway Company for the occupation of its winter wheat lands is a considerable one. It is no less than selling lands worth at least \$75 per acre, on a basis of productive capacity, at prices ranging from \$10 to \$15 per acre. This is a business proposition that will appeal to the practical farmer anywhere in the United States, but especially those of the "Inland Empire," who realise the large profits that are to be made in winter wheat farming and who have previously reaped the benefit

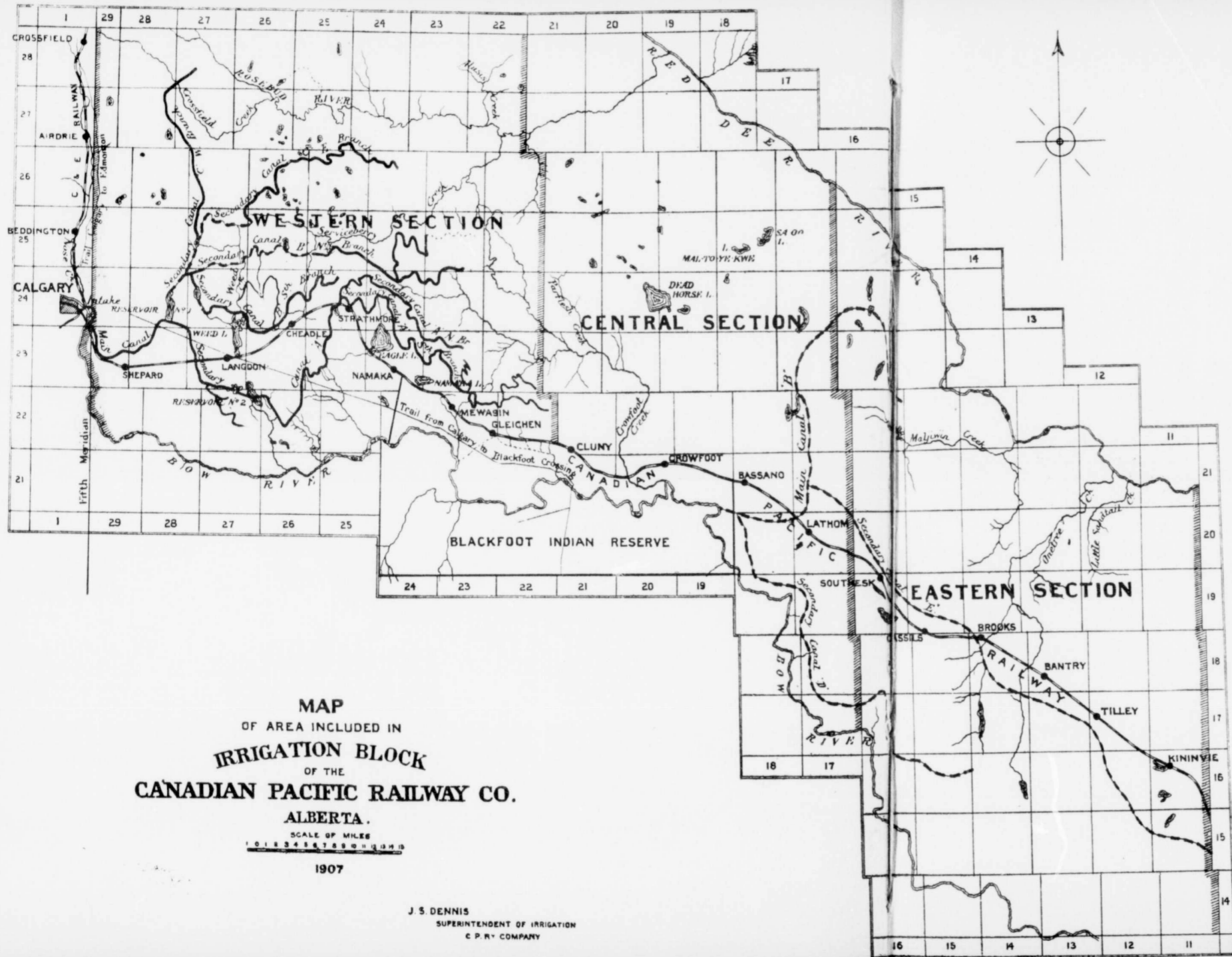
of enormous advances in land values such as will unquestionably take place in Southern Alberta within the next few years, when the country gets filled up.

Winter Wheat Production and Irrigation.

Sufficient has been said in the preceding pages to convince the most sceptical reader that winter wheat can be and is being most successfully produced on the non-irrigable areas of the Canadian Pacific Railway Irrigation Block. Winter wheat in Southern Alberta is essentially a non-irrigated crop. Nevertheless, while we are anxious that no misapprehension should exist in the mind of the prospective colonist in regard to the fact, that the non-irrigable areas of Southern Alberta are undoubtedly the most productive and cheapest winter wheat lands on the continent of America to-day, we do not, by any means, desire to go on record as maintaining that the production of winter wheat under irrigation is not also a paying proposition.

Having water available for distribution on the land, possibilities arise in winter wheat culture that cannot be realised on non-irrigated lands in Southern Alberta or elsewhere. In common with all agricultural countries of the civilized world, Southern Alberta during occasional seasons receives a rainfall insufficient in its total volume, or so irregular in its distribution, as to preclude the possibility of producing a first class crop. This is the fate of all agricultural countries almost without exception, where irrigation is not available.

Again, every good farmer aims at perfection, and while in most years he will harvest an excellent crop of winter wheat, yet it is seldom that an additional yield of a few bushels per acre could not be added by the judicious application of water just at the critical time when the farmer feels that a good soaking rain would mean hundreds of dollars to him, and the much desired shower does not come. On the irrigated farm he has rain "on tap." Some years irrigation of winter wheat would not be of any advantage at all. Most years one application of water would be a profitable practice, and when the drouth demon makes his appearance, as he does everywhere, sooner or later, two or three applications of water saves the situation, and would simply transform an indifferent crop into one giving perhaps the highest yield per acre on record. When the rainfall is slight, the weather as a rule is warm, and it will be readily understood that with extremely hot weather and an



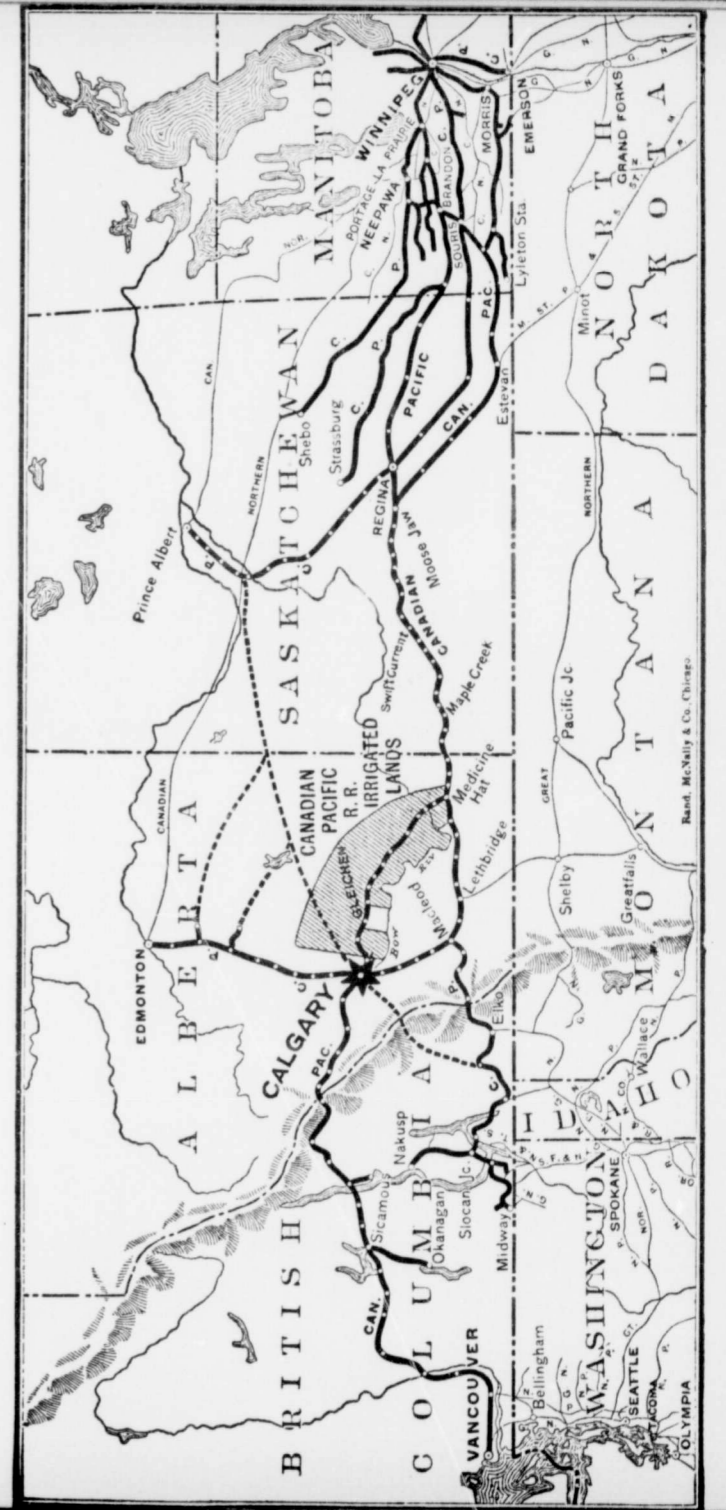
MAP
OF AREA INCLUDED IN
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OF THE
CANADIAN PACIFIC RAILWAY CO.

ALBERTA.

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1907

J. S. DENNIS
SUPERINTENDENT OF IRRIGATION
C. P. R. COMPANY



unlimited supply of water, the conditions for a record yield of winter wheat would be about perfect.

We do not, however, wish the reader to misunderstand the situation. Irrigation of winter wheat is practised purely and simply as crop insurance, not as a necessity. Winter wheat without irrigation in Southern Alberta is generally considered one of the safest and best paying crops in America. Winter wheat under irrigation introduces the element of insurance at a small cost, and the highest returns might, therefore, be confidently expected every year, no matter whether the rainfall be over or under the normal volume.

Winter irrigation, or the application of water during the non-growing season, has become recognized in many parts of the Western States as a most potent factor in agricultural development. Experiments have shown that water can be stored in the soil for some time by proper methods of cultivation. There cannot be any doubt that the irrigation of fall planted grain in the autumn and again in the following spring if necessary, cannot fail to be most beneficial.

The general agricultural practice throughout the Western States and the Prairie Provinces of Canada is tending more and more towards confining crop production to summer-fallowed lands. It has become the universal practice throughout all the Pacific winter wheat producing states, in fact, wherever farming under light rainfall conditions prevails. Upon the winter wheat farms in Southern Alberta, the summer-fallow practice is also in vogue, as has already been pointed out. The introduction of the summer-fallow principle has absolutely revolutionized farming operations in the sub-humid belt of Western America, where the average annual rainfall ranges below 20 inches, to which belongs the greater part of Western America, including the prairie provinces of Canada. The chief object is simply to store in the soil two seasons' rainfall for the purpose of producing each crop. The land lies idle during the year preceding the crop, and is treated to periodical surface cultivation. The general introduction of summer-fallowing will practically remove the danger of crop failure through drouth, such as is apparent in a good many portions of the West to-day. With an abundant supply of moisture available by artificial means, however, the main object of summer-fallowing largely disappears. It, therefore, follows that summer-fallowing will be eliminated on irrigated lands, thus leaving the whole crop area available for production each year, instead of only one-half of it. This is an important feature of the irrigated farm.

While the irrigation of cereal crops is not expected to be a leading feature of the development of the irrigated areas of Southern Alberta, for the very simple reason that the irri-

gated field can be made to produce crops that will give a much larger return per acre than wheat, oats or barley, no reason exists why even cereals cannot be successfully produced under artificial watering and at a lower cost per bushel than on non-irrigated lands.

An objection often raised is that the cost of water per acre and the application thereof would be prohibitive in the case of winter wheat. This is a fallacy. The difference in cost per acre between conserving moisture by means of summer-fallowing and providing it by irrigation in Southern Alberta, is largely in favor of the latter. The cost of proper surface culture of fallow lands would not be less than \$2.00 per acre for the season. The cost of water would be 50c. per acre, and the application thereof not more than another half-dollar. This shows a considerable margin in favor of irrigation. The cost of an irrigated acre within the Canadian Pacific Irrigation Block ranges up to \$25.00, the non-irrigated winter wheat lands up to \$15.00 per acre. It is, therefore, clear that an acre of irrigated land requires a smaller capital outlay than two acres of non-irrigated lands, which would be required under the summer-fallow system. On top of this is the **certainty** of results under irrigation **every year**.

Experiments conducted in the State of Wyoming, where conditions are somewhat the same as they are in Southern Alberta, showed that the value of the artificial watering of winter wheat was about \$2.35 per acre. This is a most conservative estimate.

The opinion seems generally to prevail amongst those acquainted with the subject, that it is somewhat unusual to grow winter wheat under irrigation. This is an entirely erroneous conclusion. In the State of Montana, the total area in winter wheat annually, up to the last census, was 92,132 acres. Out of this area, 37,710 acres were produced under irrigation. This amounts to over 40 per cent. of the total, and similar figures can be quoted from other irrigating states. It should be remembered that agricultural conditions in the State of Montana and those in Southern Alberta are very nearly alike, and in view of that fact, it is reasonable to suppose that what is good farming practice in Montana will be equally as profitable in Southern Alberta.

The Company's Development Policy.

The general literature issued by the Company, makes it clear that the whole aim and object the Company has in view in expending millions of dollars upon canal construction and

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colonization efforts within the Irrigation Block is to create there "the densest and most prosperous agricultural community in Western America." The Company is hardly a land selling or a water selling concern, in the strict sense of the word. The selling of land and water for irrigation is merely a means to an end, the end being the creation of railway traffic.

In pursuance of this object, the Company has naturally laid itself out to facilitate to the greatest possible extent the early development of all lands sold. In order to accomplish this, a special department of the Company's service has been created, which has for its object the performance of work for its clients upon lands purchased by them, prior to their going into occupation thereon. This department is in the hands of men well qualified to obtain the best services for clients at the minimum cost. As this somewhat novel departure has particular bearing upon winter wheat culture, we call attention to it here.

All work entrusted to this Company will be done under contract with responsible parties. It is the intention of the Company that the personal services of our development staff shall be given free of charge to our purchasers. It is realised that a great many purchasers are not in a position to move on to their lands at once, and would prefer to have the preliminary work done by contract, so as not to lose any time, and to enable them to get a crop growing and a cash revenue from the farm shortly after going into occupation, in time to take charge of the crops. The Company's development department stands for the best farming practise only, and does not encourage purchasers of land to break the same after the end of July nor to seed down to winter wheat after the 1st of September.

In order to convey some idea of the cost of farm development work where it is done by contract, we may say that our average contract prices have been as follows:

Breaking, 3 inches deep	\$3.00 per acre
Breaking, 5 inches deep	\$4.00 per acre
Harrowing, each operation	25c. to 35c. per acre
Discing, three times	\$1.50 per acre
Seeding, not including seed,	50c. per acre
Seed, per bushel	Market price
Fencing, per mile, 3 wires	\$110 to \$125
Fencing, per mile, 4 wires	\$120 to \$140

Hauling seed grain from nearest station to land, per mile per bushel, $\frac{1}{2}$ c.

Treating grain with bluestone or formalin, 3c per bushel. But not less than \$2.00.

Upon application at the Company's offices at Calgary or at any of our agencies, a circular may be obtained outlining in full the conditions upon which farm development work will be undertaken by us in behalf of purchasers of lands within the Irrigation Block.

Transportation and Land Values

Every practical farmer, and particularly every wheat farmer, realizes the enormous importance of reducing the cost of transporting the wheat from the farm to the shipping point. The statement has frequently been made that a farmer can better afford to pay \$25.00 per acre for a farm for wheat production located within a few miles of a shipping point, than to accept a similar area of land, of the same quality, as a free gift 20 to 30 miles from shipping facilities. The explanation is obvious. The cost of hauling the wheat from the greater distance would, in a very few years, more than cover the price asked for the land lying close to the station. The perpetual transportation charge against every bushel of grain produced by the wheat grower far removed from shipping facilities, is so considerable that it would in itself represent a good profit on a year's transactions.

Some of the foremost experts in farm economics have devoted considerable attention to investigating the cost of hauling crops from the farm to the shipping point. Statistics have been worked out, which bring the actual cost down to a fraction of a cent. The cost of hauling wheat for 14 miles to a shipping point in the State of Idaho, carrying a load of about two tons, is estimated at 14c. per 100 lbs. The cost in Washington is about the same. The cost in Oregon of hauling wheat 10 miles represents a cost of 9c. per 100 lbs., taking a load of two and a quarter tons. The cost of hauling wheat in the State of California, carrying a load of wheat of three and a half tons for 10 miles, amounts to 7c. per 100 lbs. The cost in Utah of hauling a two ton load twenty-two miles amounts to 18c. per 100 lbs. The cost of a twelve mile haul in Colorado of a two ton load of wheat amounts to 12c. per bushel, and the cost of a $13\frac{1}{2}$ mile haul of one ton and a half in the State of Montana figured out at 17c. per 100 lbs. These figures furnish food for serious thought on the part of any wheat farmer, whose aim it is to conduct his business on a sound basis, and who is anxious to take into proper consideration every item that enters into the cost of operating his place.

Statements have been made in the preceding pages to the effect that Southern Alberta will produce more winter wheat per acre than any portion of the United States. If proof is still wanting of this fact, we propose to submit it presently in the shape of actual comparative statistics. Granting, however, that the statements in question are correct, the Canadian Pacific Railway Company would still be unable to interest a considerable number of farmers in a wheat growing proposition within the Irrigation Block, unless the Company were in a position to show that satisfactory transportation facilities are available to carry the crop out, and that the market conditions are such that the grain can be disposed of at a profit. It would be very small consolation to the farmer, who produced 50 bushels of wheat to the acre, if he had to haul it thirty to forty miles to a railway station, and in the end accept a small price for his product.

When the Canadian Pacific Railway Company decided to expend millions of dollars for the purpose of distributing the life-giving waters of the Bow River over the contiguous valley, it was with the full expectation that the traffic resulting from this project would reach such proportions that the investment would be amply justified. The Company is, as has been pointed out previously, in the land selling business only in order to colonize its land holdings. The permanent business of the railway is to carry traffic. It will, therefore, be readily understood that it would be short-sighted policy indeed for that company to omit to supply the most satisfactory transportation facilities, where its development investment, with traffic in view, is as great as it will be in the Irrigation Block.

Concurrently with outlining the project for the construction of the Irrigation Canals, a very complete system of railway branch line construction was also taken into consideration to take care of the traffic that will be created, and it is safe to say that, with the dense settlement now taking place in this area, railway extension will follow more rapidly than in any other portion of Canada. The point of the argument is, that the Canadian Pacific Railway is not liable to create traffic at enormous expense, without also creating facilities for taking care of it. If that Company failed to provide the necessary transportation facilities, other railway companies would, no doubt, avail themselves of the opportunity to take care of this profitable traffic by extending their lines into the Irrigation Block, which would distinctly be bad policy for the Canadian Pacific Railway Company.

As is fully explained in the Company's general literature, the whole of the Irrigation Block is traversed from south-

east to north-west by the main line of the Canadian Pacific Railway. All lands offered for sale at the present time are thus within easy distance of the most important artery of communication Canada possesses. As quickly as new branch lines are decided upon, the approximate routes of such extensions are shown on the maps from which the Company is now selling its lands. While the complete net-work of branch extensions obviously cannot be provided long in advance of settlement, it is absolutely a safe proposition to state that just as soon as the traffic is available, there will be railway lines all through the Block to take care of it.

There is perhaps no field of human activity more replete with apparently contradictory propositions and bewildering practise than that of transportation. The lowest railway rate per ton per mile on certain commodities is that in vogue between New York and San Francisco and Montreal and Vancouver. Yet, this abnormally low transcontinental rate is based entirely on the ocean rate between the above points around the Horn. An ocean rate for five times the distance has lowered the railway rate to the point where it scarcely pays operating expenses. This shows how insignificant the cost of ocean transportation of grain is compared with rail, and suggests the importance of the Pacific ports for grain shipments.

The distance from the Irrigation Block to the Pacific Coast is only about 640 miles, via the main line of the Canadian Pacific Railway. This line will within the next couple of years be the most economical grain route to tide waters in Western America. With the completion of certain revisions now under construction, the grades all the way through will be such that heavy west bound traffic can be handled most economically. These developments will facilitate grain traffic to Pacific points, and materially aid the Alberta grain grower.

Any remarks upon the subject of transportation facilities within the Irrigation Block would necessarily be incomplete without some observations regarding the beneficial effect the completion of the Panama Canal will have upon the winter wheat lands situated within this block. The completion of this undertaking will cut Pacific ocean rates to Europe in two, and will bring the Southern Alberta wheat fields so close to the British market that they will practically be the nearest considerable grain producing areas to that market on the American continent in point of cost of transportation. The construction of this canal will absolutely transform the wheat growing business on the Irrigation Block by materially increasing the value per bushel of all wheat produced therein.

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This gain will have such a marked effect upon land values, that those who purchase land now may confidently look forward to an enormous appreciation in their investment within a few years when the west bound traffic from the Irrigation Block will have the choice of the European and Oriental markets, with practically an equal cost of transportation, if anything a little in favor of European market points.

The Handling of the Winter Wheat Crop.

Closely allied with the question of transportation is that of handling. The more easily and economically the wheat can be handled, the smaller is the cost of production, which includes the labor attendant to handling the crop until it is delivered on board cars at the nearest station, and, to some extent, takes into consideration the cost of handling the product until it is delivered to the ultimate purchaser.

Early in the history of grain production on the Pacific Slope of the United States, an effort was made to open up a market in the Orient. The steamers that carried the grain to the Oriental points, and for that matter to European points, were not specially adapted to carrying grain in bulk, and no terminal facilities in the way of elevators were then available at the Pacific Coast or at the receiving points in the Orient. Under the circumstances it was necessary for the Pacific Coast farmers to deliver their grain sacked, and this again led to the introducing of a system of handling grain in sacks at the farm.

Winter wheat production on a large scale in Alberta is, comparatively speaking, of recent development, and in inaugurating the grain trade there, the tendency naturally was to introduce the most advanced handling facilities that had proved successful elsewhere. The grain trade from Minnesota, the Dakotas, Manitoba and Saskatchewan, is entirely a European trade, the handling of which has been developed along the lines most economical and approved. Grain elevators are provided at terminal shipping points, the grain carrying boats on the great lakes are specially designed for the purpose, and the point has now been reached when the loading of wheat at lake ports is a purely mechanical operation, practically until it reaches the consumers' hands in the

British market or elsewhere. This method was adopted in connection with developing the handling facilities for winter wheat grown in Alberta. The grain is handled exclusively in bulk at the elevators at inland points in such a way that the farmers can haul their grain from the thresher or from the granary, and upon the arrival of their wagon at the elevator it is weighed and unloaded without shovelling. The handling at an elevator of a hundred bushels of wheat requires no manual labor and can be performed in less than three minutes. From the elevator the grain is loaded in cars entirely by machinery, and without any expenditure for manual labor. The grain elevators at terminal points receive the grain in bulk, and it is unloaded and cleaned by machinery in the shortest possible time, and these terminal elevators are again equipped with machinery for loading the grain direct into ocean going vessels.

As has been observed above, the Pacific Coast grain trade is on a basis of sacked grain. The cost of providing the sacks is about 4c. per bushel. At terminal points the grain has to be unsacked, cleaned and re-sacked, and it can readily be imagined how much greater the cost of handling these sacks by truck will be, in comparison with the cheap and efficient method of handling the grain in and out of the cars and elevators by means of steam or gasoline power. It is evident that the difference in the cost of handling wheat entirely by machinery, as against the primitive method of handling by manual labor, would undoubtedly be practically the same as applying advanced methods in handling any other commodity or material in comparison with manual labor. Of course the cost of handling the grain in sacks must necessarily fall upon the producer. The value of the grain to the producer in any other country will be export price, less the freight, commission and handling charges. This being the case, the cheaper the handling charges can be made, the higher must be the value of each bushel of wheat to the farmer.

In purchasing winter wheat lands in Alberta, the farmer may thus rest assured, that he will always reap the benefit incidental to a grain trade based upon the most economical manner of handling his product, all the way from the farm to the ultimate destination. It is clear that this represents an additional value upon every bushel of wheat produced in Southern Alberta as compared with that section of the continent where the above described primitive methods of grain handling prevail. This is no unimportant point to bear in mind in considering the advantage offered to the winter wheat farmer within the Canadian Pacific Irrigation Block.

Markets.

After everything has been said in regard to the productive capacity of our winter wheat lands, and the modern facilities for transporting and handling the crop, the most important point in connection with winter wheat production in Southern Alberta still remains to be considered, namely, the price that the farmer may expect for his crops. All through these pages comparisons have been made, more or less, with the winter wheat areas of the Pacific States, as these districts contain the nearest considerable area of winter wheat lands to Southern Alberta, and the same comparison naturally suggests itself when dealing with the subject of markets.

Generally speaking, the Pacific States produce a vastly greater quantity of wheat than can be absorbed at home, and the same conditions prevail in Southern Alberta, and will for many years to come. It, therefore, follows that the export wheat from the Pacific States and from Alberta meet in the common markets of Europe and the Orient, and the value of the wheat in the export market, therefore, fixes the price to the farmer at home. Consequently, other things being equal, the value of a bushel of wheat of a given grade, will be precisely the same in Vancouver, Canada, as at Portland and Puget Sound points. Owing to the more economical facilities for handling on the Canadian side, it is even reasonable to suppose that the value would be slightly higher at Canadian Pacific ports, were it not for the fact that the inland transportation from Southern Alberta points to tide water will be a little in excess of the average mileage from the winter wheat fields of the Pacific States to the Pacific Coast. The one, however, should offset the other.

In making comparisons of the prices that prevail at inland points in Washington, Oregon and Idaho, as against the prices in Alberta, it is quite possible that under certain conditions local prices may be a little higher in the states mentioned than in Alberta. On the other hand, the opposite may very easily be the case. When both countries are on a strictly export basis, elevator prices in Southern Alberta will be slightly higher than elevator prices at inland points in the Pacific States. It is a curious fact that in the season of 1907, Washington White winter wheat was being imported into the city of Vancouver and was being purchased there at local prices, the producer on the other side of the line having to pay a duty into Canada amounting to 12c. per bushel. This is proof positive that during that season, at least, the farmers in Alberta must have been receiving a far better price for their wheat than the producer in the States comprising

the "Inland Empire." No reason whatever exists why a bushel of wheat should not, almost at any time, be worth as much in Calgary, Alberta, as in Walla Walla, Washington, or at any other inland wheat centre tributary to the Pacific Coast, and it is probable that if statistics were examined, it would be found that wheat will generally be worth more in the City of Calgary than at inland points in the State of Washington.

It is a very difficult matter to establish a fair comparison in regard to the wheat prices of two countries, where the grades are not established on the same basis. It may, however, be of some value to those interested in Southern Alberta winter wheat lands to give quotations at Calgary for each month of the year ending at the present time of writing (August, 1908). The Calgary prices quoted are for No. 1 Alberta Red, the standard wheat produced in Alberta. The prices at interior points in Washington, Oregon and Idaho are on No. 1 Turkey Red, exactly the same class of wheat:—

Date of Quotation.	Interior points in Wash., Ore. & Idaho.	Interior points in Alta, Canada.
Aug. 1st, 1907	68c. per bushel	70c. per bushel
Sept. 1st, "	70c. " "	72c. " "
Oct. 1st, "	72c. " "	82c. " "
Nov. 1st, "	75c. " "	80c. " "
Dec. 1st, "	70c. " "	74c. " "
Jan. 1st, 1908	73c. " "	82c. " "
Feb. 1st, "	69c. " "	77c. " "
Mar. 1st, "	70c. " "	82c. " "
Apl. 1st, "	72c. " "	77c. " "
May 1st, "	74c. " "	75c. " "
June 1st, "	75c. " "	73c. " "
July 1st, "	No quotations.	

A further feature in regard to the market conditions for the Southern Alberta winter wheat crop, as compared with that on the other side of the line, is the fact that Alberta wheat to-day commands a premium in Oriental markets over that produced in Washington, Oregon, Idaho and California. The wheat raised in the Pacific States has always been of the soft variety. Consequently, the enormous mills established years ago at Portland, Tacoma and Seattle, were designed entirely to handle wheat of that nature. These mills were the pioneers in the Oriental flour and grain business, and succeeded in establishing in those markets a demand for that class of flour. They do not handle the hard wheat at all, as they have not the necessary machinery available for doing

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so, and it was, therefore, left to the Alberta flour millers and grain dealers to do the missionary work in Oriental markets in regard to introducing hard wheat.

The first exportations of Alberta Red made to the Orient met with keenly disappointing results. The hard wheat flour was naturally of a darker color than the soft wheat flour that had been imported for years, and the conservative Oriental mind failed to grasp the fact that there was more nourishment in a pound of hard wheat flour than in a similar quantity of soft wheat flour, and that it would, therefore, pay them to give the higher price for the former. Their patrons had been accustomed to flour from the soft wheat, and anyone unacquainted with the milling industry cannot appreciate fully the difficulties to be overcome when an attempt has to be made to convince a bread maker against his will that any new and different flour is better than, or as good as, the old product that they have been used to for years. The miller does not deal directly with the consumer, but through his customer, the retailer, who is not always in the best position to explain the situation. The Alberta millers and elevator companies, however, persisted in their educational work in the Orient, and results to-day are most gratifying, their efforts having at last been crowned with success. The Oriental millers and flour merchants will now actually pay a premium for "Alberta Red" winter wheat and flour produced therefrom, and it is safe to state that Southern Alberta, which is now making rapid strides in the production of hard winter wheat, will, within a comparatively few years, control the very cream of the Oriental wheat and flour trade, the ultimate extent of which the ordinary mind can scarcely grasp. Populations in the Orient being estimated by hundreds of millions, a demand for flour from even five per cent. of these people would cripple the resources of the whole continent of America, and send wheat prices soaring.

Expert Opinions

The rapid development of Southern Alberta's winter wheat lands has naturally attracted almost world wide attention, and, as a result, this country has been visited by a large number of men prominent in the commercial and agricultural world, who have made contributions to the press expressing their views of what they saw.

Professor Shaw Speaks.

Reference has already been made to the commanding position occupied by Professor Shaw, for many years con-

nected with the faculties of various State Agricultural Colleges, and later editor-in-chief of the "Minnesota Farmer," and editorial writer for the "Orange Judd Farmer." The following is an extract from his report upon Western Canada generally and Southern Alberta in particular:—

"But great as has been the development in the past, it is my conviction that it is comparatively insignificant compared with development the coming season. A great army of settlers will invade the country this coming year. They will be attracted with the report of the one hundred million bushel wheat crop and the \$10.00 per acre virgin lands.

"The agricultural future of this country is in itself a great problem. To the student of agriculture it is one of profound interest. The production of 100,000,000 bushels of wheat seems large, and so it is, but what will the production be when all the available land becomes tilled?

"But to my mind the most astonishing feature in the development of these provinces is the growth of winter wheat. Two years ago it was 30,000 bushels. The present year (1905) it is 700,000 bushels. There are good reasons for believing that it can be grown over practically all the tillable areas in Alberta. An empire is thus furnished for the growth of winter wheat in a region where half a dozen years ago its successful growth was looked upon as an impossibility. Happy North Western Canada. It seems unfortunate in a sense that the old Jewish custom of tithing the first fruits was not in force in these provinces this year. What a magnificent tithe would be in store for benevolent and charitable use. It is consoling to think that the reign of that portion of your citizens who persisted in slandering this fair country is drawing to a close. They have persisted in saying that this section and that would never be anything but a ranching country, while the echoes of their statement still linger, men are coming in and breaking up the range and growing crops. If my judgment is correct, the only permanent range countries in these provinces are the portions that are underlaid with gravel, or that consist of sandy soil. All the other areas are going to be tilled, even in the dry sections."

President Jackson's Opinion.

Soon after winter wheat production commenced to assume large proportions in Southern Alberta, those engaged in the grain trade naturally became interested in the commercial end of the proposition. Samples were submitted to Mr. William S. Jackson, President of the Chicago Board of Trade, who recently visited Western Canada, and has had

very considerable experience in the handling of Western winter wheat. His report was as follows:—

"The samples of red and white winter wheat from Alberta have been submitted to our large millers, to Chief Grain Inspector Smiley, to the expert buyers of our elevators, and unofficially to the grain committee of our board. It was the judgment of all that the wheat was exceptionally fine, and would grade No. 1 in this market, which, commercially, is an almost unknown quality. Many here were aware that experiments in growing winter varieties of wheat had been made in the great Canadian Northwest, but few were aware of the results. The samples excited a good deal of interest, and several parties expressed a desire to own land producing such a quality of grain."

Official Report of Professor Ten Eyck.

Kansas to-day easily ranks as the greatest winter wheat producing State of the Union. She has attained this position within the past decade. The farmers in Kansas have, however, found that their wheat deteriorates in quality, and the introduction of first class seed is, therefore, one of the greatest questions of the day, and the grain experts of that State are spending considerable time and money on finding a convenient source of supply. In pursuance of this policy, A. M. Ten Eyck, Esq., Professor of Agronomy, was sent by the Kansas State Agricultural College to Southern Alberta for the purpose of investigating conditions there. Below will be found his report. Coming from an entirely unbiased quarter, Professor Ten Eyck's statements should carry weight and convince even the most sceptical that as a winter wheat country Alberta is without a peer. This report was published as Press Bulletin No. 157 of the Agricultural Experiment Station, Kansas State Agricultural College:—

"In accordance with the order of the Board of Regents of the Kansas State Agricultural College and Experiment Station, in carrying out the provisions of the Seed-Wheat Bill passed by the State Legislature last winter, authorizing the investigation and importation of seed wheat, the writer visited the province of Alberta, Canada, and made a study of the growing of winter wheat in that province.

"The territory known as Alberta is situated in Western Canada, and is an immense tract seven hundred miles in length north and south, with an average width of two hundred and eighty miles. The province is bounded on the south by the State of Montana, on the west by British Columbia, and on the east by the province of Saskatchewan. The Rocky Mountains extend along the entire western

border of the province, and the best winter wheat lands lie along the base of the mountains, usually within view of the perpetually snow-capped peaks. Winter wheat is most successfully grown in the area bordering the mountains, one hundred to one hundred and fifty miles from the southern boundary line. However, the Hon. Frank Oliver, Minister of Interior, Ottawa, Canada, makes the published statement that winter wheat has been tried and may be grown successfully in many districts in Western Canada, from the one hundred and tenth meridian to the foothills, and from Edmonton, three hundred and fifty miles north, to the international boundary line. Spring wheat, and in fact all of the common cereal grains, may be grown successfully throughout this region. The writer saw fields of oats, which he estimated would yield eighty bushels to the acre. Spring wheat is as yet much more extensively grown in Alberta than winter wheat, but the growing of winter wheat is rapidly increasing; in fact, the acreage has increased from a few thousand acres in 1903, to several hundred thousand acres in 1907, while the total winter wheat production of Alberta in 1906 was in the neighborhood of six million bushels. There is no question but that certain parts of the province of Alberta are well suited for the growing of winter wheat.

Soft winter wheat was first grown in Alberta some twenty years ago, and seed from this original sample has been successfully planted and matured every year since its introduction.

Hard winter wheat has been grown in Alberta only six years, but the acreage planted each year has increased rapidly and the hard wheat is now largely replacing the soft wheat. In fact, most of the winter wheat growing area of Alberta is much better adapted for growing hard wheat than soft wheat, since the soil and climate favors the development of hard wheat of excellent grade and quality. The writer has never seen hard red winter wheat superior in quality to that grown uniformly almost throughout the winter wheat growing area of Alberta. Also very large yields are secured. The following farmers in Alberta vouch for producing over fifty bushels to the acre in 1906: Thos. H. Woolford, Frank Leavitt, Pitcher Bros., Jas. Neilson, Johanas Anderson.

"The writer examined large fields of wheat in the Cardston and Spring Coulee districts in Southern Alberta which he estimated would yield forty-five bushels per acre. The present crop is not considered quite equal to the crop of last season on account of the cold, late spring, characteristic of the whole of the United States as well as Canada.

"In 1902, Mr. E. E. Thompson, a Nebraska farmer, who settled at Spring Coulee, Alberta, imported a carload of

Nebraska or Kansas grown Turkey wheat. This was the ordinary Turkey wheat bought in the general wheat market, and was not very pure in type, and a very poor grade of wheat, according to Mr. Thompson and others who sowed it. However, the grain produced the first season was superior in quality to the original seed, and the wheat has continued to improve. The grain has become larger and plumper, darker in color and harder in texture than the original sample, until 'Alberta Red' as it is called, has made a class of its own in the Canada wheat market, and is recognized as one of the world's best bread wheats. The manager of the Alberta-Pacific Elevator Co., Calgary, Alberta, informed the writer that his company handled over fifty cars of Alberta Red wheat in 1906, every car of which graded No. 1 hard.

"There is only one variety of Alberta Red. All of the hard red winter wheat grown in Alberta to-day, so far as the writer could learn, has come from the original Thompson importation. Although the Alberta Red is wheat of excellent quality, yet there are objections to it as seed wheat for Kansas. (1) It is originally nothing more than our ordinary Kansas wheat of the Turkey type, but not so pure as some of the varieties we are growing to-day, such as the Turkey No. 4 Kharkof, and Malokoff. (2) Again, the Alberta Red has become mixed with a smooth headed, soft winter wheat, called the Odessa. This mixture with soft wheat does not usually affect the commercial grade of the wheat, but it injures its value as seed. I found no fields of Alberta Red which did not contain some of this mixture of Odessa, the percentage of mixture varying from one to twenty-five per cent. This mixture has occurred from volunteer wheat, by sowing the Alberta Red in fields where Odessa wheat had been previously grown.

"By a careful selection of the field it is possible to secure Alberta Red seed wheat which contains only a small amount of the Odessa wheat. Doubtless, also, if there is a demand for small wheat for exportation to this State the farmers of Alberta will take greater pains to select pure samples of Alberta Red wheat for future planting. Meanwhile, W. H. Fairfield, Superintendent of the Experimental Farm for Southern Alberta, has already secured from this station thirty bushels of Kharkof and Turkey No. 4 for planting this fall in Alberta, with the purpose of securing pure seed of our best producing varieties of hard red winter wheat, not only for distribution in that province, but for the production of a superior grade of pure seed wheat for exportation to Kansas and other States.

"On account of the long distance and slow transportation it was found to be impracticable to import any large quantity

of Alberta wheat for general seeding in Kansas this fall. The writer secured a bushel sample from several of the more noted wheat growing districts. This will be shipped by express as soon as the wheat is threshed, and the grain will be planted in the experimental plots at Manhattan and Ft. Hays, in order to make a comparison of the Alberta wheat with our best home grown varieties. If it seems advisable, Alberta wheat may be imported in large quantities for general distribution next fall.

"The soil and climate of Alberta is admirably suited for the production of the best quality and highest grade of hard red winter wheat. The soil, a dark, deep mellow loam, is abundantly fertile. The climate is ideal for the production of hard wheat. The winters are colder than Kansas winters, yet not severely cold, being tempered by the warm 'Chinook' winds, which blow over the mountains from the Pacific Ocean. Again the summers, though fairly long, are not hot, being moderated by the perpetual snow-capped mountains to the west. The wheat grows for a long period, matures slowly and develops fully, making large and plump grains. There is no rust, the straw being perfectly clean and bright. There is considerable smut in Alberta wheat, however, which point must not be forgotten if importations are made. Great care should be taken to secure seed wheat from fields where no smut appears. Winter wheat is usually sown in August, the seeding often preceding the harvesting. Thus it is not possible as a rule to grow two crops of winter wheat in succession on the same field. There is some danger, also, that wheat may be injured by early fall frosts, but the danger is not so great with winter wheat as with spring wheat.

"Again, the climate is dry; the average annual rainfall in the winter wheat belt varies from twelve to twenty inches at the different localities where records have been kept. The rainfall gradually increases from south to north, and is greatest near the mountains, gradually decreasing as the distance from the mountains increases. Although the State has not been able to import Alberta wheat for general seeding this fall, private enterprise has made greater progress, and two cars of Alberta Red wheat have been imported and are now being distributed to Kansas farmers by the Ellsworth Mill and Elevator Company, Ellsworth, Kansas, and the Walnut Creek Milling Company, Great Bend, Kansas. The wheat was collected and shipped by the Pacific Elevator Company, Calgary, Alberta, and the writer was assured by the manager of the company that the wheat was the best he could secure, and, judging from the samples of each car which have been received at the Agronomy Department office, the wheat is excellent quality. This seed wheat is being sold at

\$2.00 per bushel—a fair price considering the cost of transportation and the price paid in Canada, \$1.00 per bushel. There is also a duty of 12c. per bushel on seed wheat imported from Canada. If the planting of Alberta Red wheat proves to be to the best advantage of Kansas farmers, this duty on seed wheat should be removed.

"The writer wishes to see a general test made of this Alberta wheat in order that data may be secured by which we may conclude whether to import largely again next fall."

A. M. TEN EYCK,

Professor of Agronomy,

Manhattan, Kan., Sept. 11, 1907.

Alberta Red at Portland Exposition.

In 1905 an International Exposition was held at Portland, Oregon, to commemorate the Lewis & Clark Centennial. This exhibition was held in the very export and commercial centre of the great winter wheat producing area of the Pacific States. An exhibit of Alberta grown winter wheat was made by the Canadian Pacific Railway, not for competitive purposes, but merely as a part of a general exhibit to attract the attention of the farmers in the winter wheat growing states of the Union, who would naturally patronize an exposition held in their midst. In these expectations the Company was not disappointed.

At the last moment, however, the Company's representative agreed to enter the wheat exhibit for competition, with the result that it was awarded the Gold Medal for quality and the Bronze Medal for general arrangement. This wheat competed against the finest winter and spring wheat samples that could be found in America.

The following are the official notifications of the awards made, and on the last page of this booklet will be found a facsimile of the Gold Medal Diploma sent the Company.

LEWIS & CLARK CENTENNIAL EXPOSITION.

Division of Exhibits.

Portland, Oregon, Oct. 9th, 1905.

The Canadian Pacific Railway Co., Alberta, Canada.

We beg to inform you that the jury under Group 84 awarded your exhibit a Gold Medal, on collective exhibit of wheat as per entry.

(Signed) HENRY E. DOSCH,

Director of Exhibits.

LEWIS & CLARK CENTENNIAL EXPOSITION.

Division of Exhibits.

Portland, Oregon, Oct. 9th, 1905.

The Canadian Pacific Railway Co., Alberta, Canada.

We beg to inform you that the jury under Group 12 awarded your exhibit a Bronze Medal, on general arrangement of exhibit.

(Signed) HENRY E. DOSCH,

Director of Exhibits.

It is perhaps superfluous to mention that the Board of Judges who made the above awards were selected from amongst the leading millers and grain experts on the continent of America, and the decision therefore speaks volumes for the quality of Alberta grown winter wheat.

Rainfall Statistics

Having soil and sunshine in Southern Alberta, all that remains to insure crops in this favored region is moisture. The following meteorological statistics, compiled by the Dominion Government are for twelve years, and show an average rainfall of 19.6 inches for that period:—

Year	Inches.	Year.	Inches.
1896	16.05	1902	35.71
1897	20.58	1903	21.98
1898	16.79	1904	11.16
1899	23.01	1905	16.51
1900	15.41	1906	16.14
1901	21.31	1907	16.45

While the foregoing table gives the annual precipitation for the past twelve years, a few comparisons with other districts south of the International boundary line will doubtless be of interest to those who are either looking for land here or in the Western or Southern States. And that this comparison may be of the greatest value to the reader, the rain-

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WESTWARD THE COURSE OF EMPIRE TAKES ITS WAY

OREGON

WASHINGTON

IDAHO

CALIFORNIA

UTAH

MONTANA

ARIZONA

WYOMING

1805

Lewis and Clark Centennial
1805-1905

American Pacific Exposition and Oriental Bazaar
PORTLAND, OREGON

Authorized by Act of each State's Legislature
SUPERIOR JUDY OF AWARDS

IN WASHINGTON, FEBRUARY 1905. UNDER THE AUSPICES OF THE
U. S. DEPARTMENT OF THE INTERIOR, LAND AND WATER COMMISSION, COMMISSIONER
GEO. W. WHELAN, LAND OFFICE. DIRECTOR, G. B. WELLS, BUREAU OF COMMISSIONERS
DIRECTOR, FRANKLIN, SECRETARY.

DIVISION OF EXHIBITS

FOR

Gold Medal
AWARDED

To *Canadian Pacific Ry. Co., Calgary, Canada*
For *Exhibits of Timber & Fuel from the Province of Alberta, Canada*

Wm. & A. G. Williams
President, U.S. and Ore. Exhibition
George, Seattle, Wash. State

Henry Wood
Secretary, U.S. and Ore. Exhibition
Seattle, Wash. State

Sydney J. Farrell
Secretary, U.S. and Ore. Exhibition
Seattle, Wash. State

AGRICULTURE
HORTICULTURE
FLORICULTURE
LIVE STOCK
FORESTRY
FISH & GAME
HAIRYING
AMERICAN
ATHLETICS
AERONAUTICS

FINE ARTS
EDUCATION
SOCIAL ECONOMY
LIBERAL ARTS
MANUFACTURES
ELECTRICITY
TRANSPORTATION
MINING & METALLURGY
PHYSICAL CULTURE

COLORADO

NEBRASKA

NORTH DAKOTA

MISSOURI

ILLINOIS

NEW YORK

MASSACHUSETTS

MAINE

1905

BRITISH EMPIRE

FRANCE HOLLAND

GERMANY

SWITZERLAND

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RUSSIA TURKEY

NORWAY SWEDEN

AUSTRIA

HUNGARY

CASCAIA

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fall for the growing months only—the months that generally make or ruin the crops—will be taken into consideration.

As the statistics compiled by the United States Department of Agriculture cover the years 1895 to 1904, inclusive, the comparison will be made for those years only.

	May.	June.	July.	Aug.	Aver.
Paullina, N.D.	2.42	3.75	2.74	2.44	2.84
Bismarck, N.D.	2.50	3.25	2.60	1.80	2.75
North Platte, Neb.	3.00	3.20	2.40	2.40	2.54
Dodge City, Kan.	3.40	3.90	3.50	1.50	3.08
San Antonio, Tex.	3.40	2.00	2.80	1.50	2.43
Moscow, Idaho	2.88	1.26	.70	.76	1.40
Lewiston, Idaho	1.82	1.60	.47	.48	1.09
Walla Walla, Wash. ...	2.00	1.11	.46	.40	0.99
Spokane, Wash.	1.45	1.49	.71	.52	1.04
CALGARY, CANADA.	2.76	4.04	3.51	3.50	3.46

It will be noted from the foregoing table that, with the exception of the month of May, Calgary had a greater average rainfall during the ten years under consideration than any of the other districts mentioned. But what the figures do not show is that during that period of time most of these states had at least two dry years with their attendant crop failures, and that there were many months in these districts when the rainfall amounted to less than one inch. While these districts to the south were having dry years that killed off the small fruits, the alfalfa and the trees, the Calgary district was blessed with abundant crops.

The open character of the country in this portion of the Province of Alberta, its clear, dry atmosphere, the abundance of sunshiny days, its elevation, from 1,400 to 3,400 feet above the sea level, and the fresh breezes that blow across its plains, all tend to make it one of the most healthful countries in the world. There is an entire absence of malaria, and there are no diseases peculiar to the country.

Canadian Crop Returns

	Wheat:			
	Spring	Winter	Oats	Barley
New Brunswick	10 yrs. to 1901—14.1	14.8	25.8	21.6
Nova Scotia	" " —15.2	13.4	25.8	23.5
Ontario	" " —17.5	19.6	32.6	27.5
Prince Edward I. ...	" " —17.5	—	27.7	23.1
Quebec	" " —14.1	13.7	24.9	24.3
Manitoba	" " —18.30	—	18.5	19.1
Saskatchewan	" " —19.88	—	34.98	24.45
Alberta	1898 to 1905—20.69	21.03	35.67	26.50
	1904—	18.33	32.58	26.12
Alberta	1905—	21.03	35.67	26.50
	1906—	23.34	40.80	29.04
CALGARY DISTRICT...	1904—	28.67	39.79	31.42
	1905—	32.18	43.41	32.01
	1906—	26.00	49.00	31.00

Comparative Crop Statistics

Average Yield per Acre of Wheat, 1898-1906, of the Principal Wheat Producing States of the Union, Compared with the Calgary District.

State of Territory.	1898	1899	1900	1901	1902	1903	1904	1905	1906
	Bush	Bush	Bush	Bush	Bush	Bush	Bush	Bush	Bush
New Jersey	17.4	14.5	19.1	16.8	16.0	14.0	13.3	16.4	18.3
Maryland	15.3	14.1	19.5	17.2	14.7	12.5	13.4	16.3	16.0
West Virginia	13.8	9.3	9.8	10.9	7.7	10.2	10.1	12.3	12.7
Ohio	16.9	14.2	6.0	15.3	17.1	13.7	11.5	17.1	20.4
Indiana	15.6	9.8	5.3	15.8	16.0	10.0	9.2	18.3	20.7
Michigan	20.8	8.4	7.6	11.1	17.7	15.5	9.8	18.5	13.1
Wisconsin	18.0	15.5	15.5	16.1	18.1	15.6	15.5	16.6	16.3
Minnesota	15.8	13.4	10.5	12.9	13.9	13.1	12.8	13.3	10.9
Iowa	16.7	13.0	15.6	16.2	12.7	12.4	11.6	14.2	15.7
North Dakota	14.4	12.8	4.9	13.1	15.9	12.7	11.8	14.0	13.0
South Dakota	12.4	10.7	6.9	12.9	12.2	13.8	9.6	13.7	13.4
Nebraska	16.4	10.3	12.0	17.1	20.9	15.7	13.6	19.4	22.0
Kansas	14.2	9.8	17.7	18.5	10.4	14.1	12.4	13.9	15.1
Texas	14.8	11.1	18.4	8.9	9.0	13.4	10.7	8.9	11.5
Wyoming	23.7	18.8	17.6	24.5	23.6	20.9	22.1	25.4	28.7
Colorado	26.3	23.7	22.6	24.1	18.0	26.6	22.8	25.0	32.5
New Mexico	23.8	13.8	21.0	21.5	17.1	18.4	12.8	22.2	25.0
Utah	28.0	20.7	20.9	20.5	21.2	22.6	26.6	26.4	27.4
Idaho	31.0	24.2	20.8	21.2	22.1	21.1	22.9	28.2	24.4
Washington	24.2	22.7	23.5	29.1	22.2	20.3	22.2	24.6	20.8
Oregon	20.5	19.2	13.8	21.1	20.0	18.2	19.0	18.6	20.0
California	9.1	14.1	10.3	13.0	10.9	11.2	10.8	9.3	17.1
Calgary District....	21.48	21.31	21.96	22.60	24.02	23.40	28.67	32.18	26.0