CASCADE COUNTY'S RESOURCES

The Mining and Immigration Society's Meeting—Resolutions and Valuable Papers Read.

M. S. Parker, C. E., Recites the Facts Concerning the Great Water Power of the Missouri.

The meeting held in Great Falls on Thursday last to permanently organize the Cascade County branch of the Mining and Immigration association was a most successful gathering. The papers read on that occasion were so interesting and valuable that many who heard them were anxious to see them printed and circulated so that those who had not an opportunity to hear them read might still become familiar with the facts therein contained. In answer to many requests THE TRIBUNE this morning prints all the papers delivered in full.

Prior to the reading of the papers, the committee on resolutions reported the following resolutions, which show the scope of the work laid out by the association, and which were passed unanimously:

Be it resolved, by the Mining and Immigration convention of Cascade county, Montana:

That this convention is in hearty sympathy with the purposes for which the state organization was formed;

That we believe that Montana (especially this section of it) offers unexcelled inducements to capital and to bona fide settlers upon our bread acres;

That we would discourage in every way any efforts to induce an influx of laborers or mechanics, knowing that they will come with the natural demand for their services created by the establishment of industries and the development of the country's great and varied resources; but it is realized that to create a demand for labor, the natural resources of the country must be developed and utilized by a combination of capital and energy, and to obtain these they must be sought by persistent presentation of these advantages and a concerted solicitation of capital seeking investment;

Therefore, be it further resolved

That this assembly and the committees it may elect should and will unite in placing before the world, through public and private channels, the diversified resources of Cascade county that await profitable development by men and money, and that the co-operation of every citizen having the prosperity and growth of the county and state at heart be and is hereby urgently solicited.

C. M. WEBSTER,
L. M. PASCHAL,
O. M. HOLMES.

Water Power of Great Falls.

The progress that has been made during the past decade in electrical development is bringing the water powers of our country into a prominence hitherto unknown. Small water powers that have long lain idle and undeveloped, are now being eagerly acquired and improved. Many of of the large water powers long considered inaccessible, are now, through the introduction of electrical transmission of power, being rapidly developed, and the energy of the water that has so long been running on its undisturbed course, will now be turned to the use of industrial enterprises. With the perfection of devices for the long distance transmission and storage of electrical energy, every available water power in the United States will be utilized to its fullest capacity.

Niagara, with its immense volume of water, is destined to reach enormous importance in the commercial world. Probably the present generation will see its power extended over all of Northern New York. Among the large water powers of this country the falls of the Missouri river in Cascade county, Montana, unquestionably rank second only to the falls of Niagara.

The full development of this great power would naturally, under other conditions, be slower of development than that of Niagara. The surrounding country is not so thickly populated, and diversified manufacturing is not so general as in the state of New York. The city of Buffalo alone has a larger population than the entire great state of Montana, with its area of 145,310 square miles. There are, however, certain commercial enterprises that require very large units of power in conducting business, that are entirely independent of thickly settled communities. These enterprises seek large sources of cheap power. The population comes with the demand. We have an instance in our midst in the works of the Boston & Montana Consolidated Silver and Copper Mining company. The amount of power used by this one company alone in its reduction works at Great Falls, is equal to one-half the power consumed in running all the spindles of Manchester, N. H., or Lowell, Mass., the largest water powers of New England. These latter cities have grown great in wealth and population from the water power that nature has placed within their grasp. These cities could not have grown to their present proportions had they been called upon to supply power for enterprises desiring to use it in such amounts as demanded by the large ore reduction works of the present day. It requires a Niagara or a falls of the Missouri to furnish power in such quantities and not be exhausted at the first demand. The falls of the Missouri can furnish many such demands upon its resources and still have ample power in reserve wherewith to build up Lowells and Manchesters along her course.

The falls of the Missouri proper are a series of cascades and rapids extending over a distance of 16 miles, from the crossing of the river by the Great Northern railway bridge at the head to the mouth of Belt creek. The principal cascades in the order in which they occur are called Black Eagle, Rainbow, Crooked, and the Great falls, names given them by the early explorers, Lewis and Clarke. Between these falls and below the last named are series of smaller cascades and rapids capable of development into what would be considered large powers in sections of this country less favored by nature with respect to water power. I will not go into a detailed description of the various cascades and rapids that can be developed for power purposes. (To any one wishing this information, I refer them to an article, by the writer, on this subject, published in the Engineering News, July 19, 1894.) It is sufficient here to state that the total descent represented by the falls of the Missouri is 502 feet. This fall, if utilized for power purposes, would give a minimum power, for the year, of about 250,000 gross horse power. About double of this amount can be relied upon for at least six months out of the year. This is so great that one can hardly realize its possibilities for commercial industry. Compare this power with the water power of Lowell or Manchester, having each 12,000 horse power, developed at great cost, and contemplate the possibilities of the falls of the Missouri, with its 250,000 horse power, of which but a small fractional part has thus far been developed for use. The Black Eagle falls, the first in the series, has been partially developed, affording at present 15,000 horse power that can be increased somewhat at small expense, as the demand for power requires.

When we consider that the minimum flow of the Missouri river at these falls is more than double the flow of the Mississippi river at Minneapolis, and that the head or fall developed at Minneapolis is practically the same as that obtained by the present development of the Black Eagle falls, you can form some idea of the value of the water power of the entire falls of the Missouri for the building up of great manufacturing and commercial industries not only to Cascade county but to the whole state of Montana. The undeveloped power shows the future resources of Cascade county for power to be unlimited. I have stated before that the development of the falls of the Missouri might be possibly slower than that of Niagara, but this, however, is not necessarily a true prediction. The resources of Cascade county and the surrounding county, both agricultural and mineral, are such that the demand for power to improve them may far exceed our expectations in the realization.

The vast deposits of valuable mineral bearing ore in Cascade county and the surrounding country are all tributary to this great source of power for treatment. The immense deposits of first grade Bessemer iron ore found in Cascade county will ere long find their way to these falls for treatment. With lime stone, silica sand, fire clay, coal and coke, all at hand, what is to prevent a great iron industry springing up here that will supply this great empire west of the Mississippi river with all the iron and steel needed within her limits? The gold, silver and copper ores that must come to these falls for treatment need not be mentioned. This is a self-evident proposition. At present but one of the large works of Montana for the reduction of of copper ore is located at Black Eagle falls on the falls of the Missouri. The success that this company is achieving in the cheap reduction of its ores cannot fail to attract the attention of the mine owners to the desirability of obtaining a foothold at this source of cheap power and unlimited water supply.

I dare predict that the time is not far distant when the banks of the Missouri river along the entire distance of the falls will be occupied by works for the treatment ores, and factories for the manufacturing of the products of these ores, together with others for the manufacture of the various articles needed throughout the country. There is room for all and power for all—although it may be many years before northern Montana will be as thickly populated as northern New York. It will not be many years before the advantages of all this cheap power to be derived from the falls of the Missouri will be fully realized, and the works of both large and small consumers of power will be located along its banks, and the largest inland city between the great lakes and the Pacific ocean will have been created, through the influence of the limitless water power of the falls of the Missouri.

M. S. PARKER.

POSSIBILITIES OF IRRIGATION.

S. B. Robbins, C. E., Tells of the Possibilities for Irrigation in Cascade County.

Secretary Morton, chief of the department of agriculture, says that this country has reached the limit of arable and productive farm areas. Facts do not support this statement. Look at the vast stretches of now vacant land in this great state of Montana alone, to say nothing of the millions of acres similarly situated in other western states, which await only the vivifying effect of water and the plow of the farmer to make them blossom into fruitfulness and furnish homes to thousands of families and add many millions to our wealth.

In the census year, ending May 31, 1890, there was a very insignificant proportion of Montana's land brought under cultivation and still less under irrigation, there being 3,706 irrigated farms out of a total of 5,664. The total area upon which crops were raised by irrigation was 350,582 acres, about four-tenths of one per cent of the whole area of the state, and in addition to this there were approximately 217,000acres irrigated for grazing purposes alone.

Of course, we all know there is a vast amount of land in this state that can never be cultivated, and will be good for nothing but stock range; and there is a very large proportion more of the state that is mountainous; but, still, according to conservative estimates, there remain good 20,000,000 acres of arable land that could be profitably irrigated, if the local conditions were favorable, and to a very large extent they are, for Montana is the best watered state of the whole arid region.

How many families would that area support, and how well does that back up Secretary Morton's statement? Allow 150 acres to a family, and half that would easily support one in many locations throughout the state, under thorough, intense cultivation, and allow five persons—a general average—and we have 125,000 families of a total of 625,000 persons who could find homes on the farms of this state.

Great Britain and Ireland, Belgium and the Netherlands together contain an area almost exactly the same as the state of Montana. The aggregate population of these countries is about 52,000,000 people. Montana has about 150,000 to 200,000. The population to the square mile in the countries just mentioned is about 360. There are thousands of square miles in northern Montana which, under proper systems of irrigation, could support as great a population as that. There are in Cascade county about 3,050 square miles. Suppose only one-tenth of this area, or about 10 townships, could support such a population, this would give a population of a hundred thousand people.

So much for the limit of arable areas, and it is not necessary for me to say anything about the productiveness of these farms when once settled on and brought under cultivation. Others have covered this point. It is enough to say that for yields per acre they cannot be beaten, if equalled, in any part of the United States. There is no doubt at all about that.

For comparison of the advantages accruing to this city and the surrounding country from certain investments of capital, let us assume that the Boston and Montana works can be credited with bringing into Great Falls, directly and indirectly, 8,000 people, which is probably a very generous estimate. Suppose one-half their investment were available for expenditure upon the development of the irrigation system taking water from Sun river and reclaiming the vast tract lying between that stream, the Teton river, and the Missouri. If this were possible, and it certainly is practicable, as surveys and estimates have demonstrated, a permanent population of at least 30,000 persons, at an exceedingly low estimate, could be brought into this farming district, no point of which would have more than 40 miles from town and the nearest point would be the town itself. Thirty thousand agricultural population tributary to town would do away with the present great importing of farm products, would give a surplus for export, and a home market for the consumption of various manufactured articles which are now imported from the east but which could be made at a profit here if the population was large enough to afford a home market. The home market being assured the increase in manufactured articles would continue and soon an export trade in these lines would also grow up.

Great Falls needs this farming population tributary to it, and the conditions in this locality are such that hundreds of farmers can obtain homes and the water with which to irrigate their farms.

While we all desire to see the payrolls in our smelters and manufactories increase, and no idle men on our streets, still, generally, this kind of a population is very largely a floating one, here today and gone tomorrow. We need more home owners, taxpayers, permanent residents. There is no class of citizens better for a community than the farmers; particularly if they own their farms—are proprietors, not renters.

Under favorable conditions, a town the size Great Falls now is, or, perhaps, somewhat larger, can be built up on agriculture in a densely populated region if near a good market and with good transportation facilities. But it cannot grow much larger than this. On the other hand, a large town cannot possibly be built up without a good, well settled farming region in its immediate vicinity. To continue to ship out of our own vicinity all the money we make for food to live on will keep us poor.

The opportunities for an individual to select a tract of vacant land to take up under the government land laws, irrigate and reclaim it himself, are very limited in this vicinity. But there are several opportunities within 20 or 30 miles of Great Falls, where, by the co-operation of thirty, forty, or more, farmers excellent land may be acquired from the government and an ample supply of water may be conveyed upon it.

Co-operation in irrigation has been thoroughly proven to be more advantageous to the farmer in a majority of cases than private construction and operation. In this manner a larger system can be put in, usually in a better location, the first cost is smaller, the water supply better, the maintenance expense is smaller, the amount of land reclaimed by a given stream greater on account of a greater carrying capacity of a large ditch with less evaporation and seepage, and one of the most important features is that neighbors are nearer, schools, church privileges, stores, postoffice, etc., are practicable, creameries, canneries for vegetables, and potato starch factories, and similar means of converting farm products into more merchantable and profitable forms can be established, and the great objection of loneliness upon the farm, so prevalent in America, is done away with.

The streams in this state have been measured in many localities, and the results in the case of the Missouri river and the application of the census statistics may well be mentioned. Before the value of the water flowing in the rivers can be discussed it is necessary to make some assumption regarding the duty of water in Montana; that is, the relation between the quantity of flowing water used by the irrigator and the area of the land upon which he employs it. Water duty in this state is very low; that is, far greater quantities are used than are necessary. From the examination of the data at hand it is safe to assume a duty of 100 acres per cubic foot per second. At Craig the mean flow of the Missouri is 4,715 second-feet, which at 100 acres per second-foot would irrigate 471,500 acres.

According to the statement of farmers, the average first cost of water throughout the state is $4.63, and the value now placed upon this water is $15.04 per acre. The difference between these, $10.41, may fairly be assumed as the value of the flowing water to the farmer in excess of the cost; in other words, the water sufficient to irrigate one acre is worth $10.41 beyond the original cost of bringing it onto the land. If one cubic foot per second flowing throughout the year will irrigate 100 acres, its value, according to these assumptions, will be $1,041—and the Missouri will be worth $4,715,000—annually. These figures are given merely to exhibit the great value to be derived from the water now flowing to waste, which value can be realized only by the expenditure of considerable sums in the construction of irrigation systems.

The aggregate cost of these works would be very great, but the cost per acre benefited, which is the proper method of comparison, would be small. These figures are for the Missouri river alone, taking no account of the smaller streams like Sun river, Deep creek, etc., which would add immensely to the total valuation. Along many of these smaller streams there is now a considerable amount of irrigation practiced, and it has always, where intelligently done, been of great value to farmers using water.

In these times of depression for two of our great industries—silver and wool—these things are well worth considering carefully, for, no matter what political party is in the ascendancy, the rains and snows will continue to fall upon the mountains and the sun will continue to shine and melt the snow, bringing the waters down to the canals, and by its warmth bringing the crops to maturity. Nobody is so nearly independent of outside effects as the irrigation farmer, for, with a good farm, a sufficient supply of water and energy, there is no reason why his crops should fail—they are as near a certainty as anything can be. And he is in a position to raise a greater variety of products than one dependent upon the rainfall, which allows him to cater to the markets and have the kind of produce that is in demand at the highest prices.

In all the hard times and financial crises of the last three years there has been no instance where an irrigation project doing a legitimate business, with watered canals instead of watered stock, has failed. Why should they fail? There is no reason for them to, with the sun, snow and rain on the mountains, and the sun, seed and farmer on the agricultural land.

Montana, particularly northern Montana, offers homes to thousands of homeless people, offers proprietorship to the rent payer, and offers a chance for a higher average prosperity for the masses of humanity than can probably be found elsewhere. The census of 1890 showed a per capita wealth in Montana of $3,429—which is the largest showing of any state, and more than triple the average for the whole United States, and the grand total wealth in this country is equal to the combined wealth of Great Britain and Russia.

The opportunity is here, waiting to be embraced, but the man who embraces it will find that his measure of success will be proportionate to his effort. The injunction, "In the sweat of thy face shalt thou eat bread," is as true today in Montana as when Adam first heard it on the outskirts of Eden.

S. B. ROBBINS.

Receives His Pension.

D. K. Hodges, a veteran of an Illinois regiment, Saturday received notice through his attorney, John A. Hoffman, that he has been allowed a pension of $6 per month from July 17, 1890; of $8 per month from Oct. 27, 1892; and of $12 per month from March 21, 1894. The back pension amounts to $1,000, which Mr. Hodges will soon receive, and he will also have a maintenance for life, which he deserves, as he is nearly blind.

Gay Sentenced.

HELENA, April 10.—William Gay was sentenced this morning to die on the gallows May 25. Col. Sanders, the prisoner's attorney, asked for the longest time possible, that the case might be appealed to the United States supreme court.