

## TO MY WIFE.

Ah, say'st thou, love, that I have changed,  
And that my moods are sad or worse?  
My darling thinks I am estranged,  
And even calls my ways perverse.  
Oh, no, thy fancy wild hath ranged,  
And in its travels found a curse.

When first I loved thee, all absorbed,  
I knew no life unfulfilled by thee;  
In thee my being was full orb'd,  
And bound as strong shore binds the sea:  
My thought, my feeling, all absorbed,  
My heart, my soul were only thee.

Dear love, we were sweet spendthrifts then  
Of hours that ne'er will greet us more:  
Oh, blame me not as cold, if when  
In daily battle's deafening roar  
With all my struggling fellow men  
I do not live them o'er and o'er.

I show my love now in my work,  
Which, all for thee, is what you see  
Lays on my brow its shadowy mark,  
And leaves me scarce a moment free;  
Yet in each fibre strained will lurk  
The pulses that still beat for thee.

So patient bear my absent look,  
Nor quarrel with my silence deep,  
Nor jealous fight my student book,  
Nor blame me if I drop to sleep;  
'Tis not neglect that thou must brook,  
But that I now must harvest reap.

I thrust my sickle in the grain  
Where years ago I sowed and plowed;  
My granaries harvest shall contain,  
And then I'll leave the rushing crowd  
Before dull care or daily strain  
Hath all my strength and courage cowed.

Bear with me, love, and meanwhile be  
Content to lift thy woman's load;  
The faces gathered at thy knee  
Will cheer thee on thy lonely road;  
And by-and-by we both shall see  
That our two lives together flowed.

## SPEECH

OF

Gov. S. H. Elbert,  
Of Colorado,

BEFORE THE CONVENTION OF TRANS-  
MISSOURI STATES AND TERRITO-  
RIES, HELD AT DENVER, COLO-  
RADO, OCTOBER 15TH, 1873.

Mr. President and Gentlemen of  
the Convention:

While it is generally known that there is a large district of country west of the Missouri river which is comparatively rainless, the fact, in all its extent of geographical area, and industrial importance; in all its relations to the pioneer citizens and his wants; to the general government and its duty in the premises, has never fully presented itself to the mind of either the legislator or general public.

Nor is this strange. The subject has assumed that broad importance which commands general attention only by virtue of its relations to the well being of civil society, and civil society in the trans-Missouri States and Territories is of but recent establishment. American civilization, reaching the region of the Great Plains, is confronted by a new want, broad in geographical extent and vital to its industrial life.

Let me state the case:

## THE ARID REGION.

The 99 meridian of longitude west from Greenwich—the meridian of Fort Kearney on the Platte river—marks a division line in the physical geography of the continent. Here the prairies merge into the great plains—here the abundant rainfall of eastern meridians ceases. Westward lies one-half of the geographical area of the United States. All of this vast region, excepting the maritime front of the Pacific, is without sufficient rainfall for the cultivation of the soil. This is the fact which lies in the pathway of our commercial and industrial progress and to which we seek to call the attention of the congress and the country.

This arid region comprises the Territories of New Mexico, Arizona, Colorado, Wyoming, Montana, Idaho, Utah, and the State of Nevada, together with large portions of California, Oregon, Washington, Dakota, Nebraska, Kansas and Texas; that is to say, one-third of the geographical area of the Republic—one million square miles of arid country.

This region exhibits a summary of all continental features: mountain masses, extensive plateaus, undulating plains, fertile valleys, rivers, lakes and springs. Two great parallel mountain chains—the Sierra Nevada and the Sierra Madre—traversing the entire domain from South to North: eight hun-

dred miles in average breadth of intervening plateau, cut and gorged by great rivers and divided into hydrographic basins of great extent by transverse mountain chains: the great plains descending by the gentlest of slopes from the bases of the Sierra Madre eastward to the prairie lands of the Missouri: rivers and smaller streams sweeping down from the mountain flanks and threading valley and plain as arteries the human system, constitute the grand physical outlines of this arid region.

In supreme grandeur of mountain masses; in intense beauty of mountain scenery; in wide expanse of fertile plain; in vastness and variety of mineral wealth; in salubrity of climate, brightness of skies, sweetness and purity of air; the entire region stands unrivalled and supreme.

The three great facts, however, which bear upon the question in hand are:

First—The region is arid.

Second—The productive capabilities of the soil, when irrigated, are unsurpassed.

Third—The water supply of its rivers, properly utilized, is abundant to redeem millions of acres which now lie waste.

The aridity of the region described is well known—agriculture without irrigation is impossible, and from it arises this condition of things in all the States and Territories mentioned.

## THE SITUATION.

The tides of immigration have flowed along the valleys of the rivers and smaller streams; the immediate bottom lands have been possessed and brought under cultivation by means of easily constructed and comparatively inexpensive irrigating canals.

But agriculture spreading from the river side to the rim of the higher plateaus, has been arrested by reason of the greater difficulty and expense of irrigation. In other words the agriculture of this region has reached its limits by the ordinary means under the control, or within the power of the farmer.

Right here the footsteps of the emigrant from the east seeking a home have been stayed. He sees before him vast undulating plains, stretching leagues away, with a soil which experience has abundantly proven is marvelous in its productive capabilities when irrigated. But how is he to irrigate it? To turn the mighty river from its course and lead it by canals along the commanding slopes that flank its natural course; is far beyond the limits of his purse, and he turns away disheartened and seeks other lands or other employments.

Hundreds have thus turned away from Colorado during the last year, baffled in their efforts to secure a home within our borders. Such is the situation. The agricultural domain of the United States subject to the operation of the Homestead and Pre-emption laws, outside of this region is comparatively exhausted. The great annual tides of emigration from the east seeking homes under the beneficent provisions of our land laws, are halted on the verge of thousands of square miles of arid country, which irrigated, are capable of supporting the densest populations of the continent. To open up a way out of this complication, to overcome and subdue this physical fact, which fetters their growth and limits their future, is the great problem which to-day confronts the people of the trans-Missouri region.

Before attempting any solution of the difficulty let me turn aside for a moment to say a word on the subject of irrigation.

## IRRIGATION.

I do so because irrigation is a subject with which the American mind is but little familiar, and impressions about it when not erroneous are ill-defined and uncertain.

The fact that agriculture by irrigation has advantages which compensate fully for all extra expense and labor, is not generally known or understood except among those who have practiced it.

Let me enumerate a few of these advantages:

First.—The average yield per acre is largely increased.

The difference in yield springs from various causes.

The agriculturist who depends on rain fall is subject to irregularities both in the quantity and time of supply. On the other hand the supply from your canal is such as

you choose to have it. Crops are checked and stunted in their growth by failure of rain for even a short period; on the other hand crops with a regular supply of water from the first impulse of spring until they ripen for the harvest, are developed to their fullest capabilities and in the greatest perfection. As a proof of this, take the average yield of crops in Colorado where agriculture is exclusively by irrigation:

Wheat, per acre, - -	27 bushels.
Oats, " - - -	55 "
Potatoes, " - -	150 to 200 "
Onions, " - -	250 "
Barley, " - -	33 "

This is the average yield and does not show the marvelous crops sometimes realized, nor the perfection and great size of our grains and vegetables. I have no hesitancy in saying that the agricultural products exhibited at the last annual fair of the Colorado Industrial Association are unsurpassed on the continent.

Colorado is a type of the entire region, and her irrigable agriculture of the last ten years proves her lands, as wheat lands especially, equal to the best lands of the Northwest or the black lands of Russia and the Danube.

Again, agriculture by irrigation is not subject to the contingencies of drought or freshet, which result in the failure of entire crops over large districts of country. These advantages are not contingent but constant, and far more than compensate for the additional expense of canal construction and manipulation of the water. The testimony of farmers who have tried both systems, is universally in favor of agriculture by irrigation.

Again, the water used in irrigation comes freighted with fertilizing matter held in solution, and replaces largely what the growing crops extract. Thus a constant system of fertilization is supplied without cost of transportation or distribution.

This fact, I am satisfied, is not fully appreciated. It forms a prominent feature in European irrigation.

A writer in speaking of the fertilizing sediment of the Moselle, a river of France, says:

"Though apparently very pure its waters are highly charged with fertilizing material in solution, which it leaves as an alluvial crust upon the stones. Below Epinal it has been made to redeem and fertilize broad gravelly beds, transforming them into beautiful green meadows yielding crops of two to four tons per acre."

A slight deposit of mud is left, which is increased with each flood in the river. After a year the meadow begins to yield. In three years it attains a full vigor, which it never loses. The meadows begun in 1827 have never been renewed, plowed up or manured, yet their crops are as good as ever."

Speaking of the same subject Reclus says: "As an instance, let us take the Durance, a French river, which has been thoroughly surveyed and studied to ascertain the plan for fertilizing its waters and sediment for the irrigation and manuring of the plains by the river side."

"According to the observations of M. Herre Mangon, which lasted from the first of November, 1859, to the 31st of October, 1860, the mass of sediment brought down by the stream during the whole year represents a quantity of near 18,000,000 tons." If spread out uniformly on the ground this alluvium would cover in a year more than 108,000 acres with a layer an inch thick. I give these two illustrations because of their figures."

Many other illustrations might be given, but these will suffice.

Now, sir, I do not pretend to say that our rivers will furnish any such supply of fertilizing matter, but what I claim is this, that the rivers mentioned are types of all rivers, and that the streams of this arid region turned into canals will freight to the arid lands over which they are poured immense quantities of fertilizing elements, which constitutes one of the advantages of irrigable agriculture.

This is local experience. The history of other countries, ancient and modern, are full of proofs of successful agriculture by irrigation. I go into this summary for two reasons. First, to show the advantages of irrigable agriculture. Second, to show that the system which has made other arid countries the gardens of the world will do the same for this.

Mr. Marsh says:

"There are few things in continental husbandry which surprise English or American observers so much as the extent to which irrigation is employed in agriculture. In Southern Europe, in the Turkish Empire, and in many other countries a very large proportion of the surface is, if not absolutely flooded, at least thoroughly moistened by irrigation a great number of times in the course of every season."

"Lombardy has a population of over 3,000,000, or 480 persons to the square mile—the densest population of Europe. Two-thirds of her population are engaged in agriculture, and it is the best cultivated country of Europe."

"Irrigation, for which the streams flowing from the Alps afford ample facilities, is universally and skillfully employed. The quantity irrigated in 1856 was estimated at 1,100,000 acres. The water of the rivers is so distributed by canals that there are few farms without a copious supply. The purchase and sale of water for irrigation forms a business of much importance. The state claims the water of all the rivers of Lombardy, and in the Venetian Territories all the springs and collections of rain water belong to the government. The use of the water is rented out at a certain price by the hour or the half hour, or for so many days at certain seasons. Irrigated lands rent for one-third more than other lands. In Piedmont, in the intense heat of the summer, the plains become so scorched that crops are only saved by irrigation, which is developed to great perfection. Over half a million acres are scored with artificial channels, and for the privilege of using the water a tax is levied. The increased rental of irrigated lands in Lombardy and Piedmont is estimated at \$1,500,000.

"Thus districts once waste and inhabited by a scanty and impoverished population, have been reclaimed and support the densest population of Europe."

The main stream of the Po has been utilized by the construction of the great Cavour canal, of which Reclus says:

"Since the above date (1833,) the great Cavour canal has been opened—a perfect artificial river—which requires for itself alone 144 cubic yards of water a second. Starting from Chivasso below Turin, this river, which is not less than fifty-five yards wide at its commencement, spreads its fertilizing water on both sides in the already fertile plains of Lomellina. It receives en route numerous streams—the Elro, the Sesia, the Agogna, the Terdoppio—and at Turbigo empties into the Tesino all that remains of its liquid mass after having irrigated more than 494,000 acres. Next to the great canal of the Ganges in Hindostan it is the most important operation of this kind accomplished in modern times. There can be no doubt that the Po, once so dreaded on account of its sudden floods, will ultimately become in conjunction with the other water courses of Lombardy a scientifically arranged system of agriculture."

Irrigation is practiced extensively in France, and irrigated lands rent at about \$21 per acre, while other lands only bring \$16—the value of irrigated land, is about 50 per cent. more than unirrigated land, other things being equal.

In 1856 the irrigated lands of France amounted to about 247,000 acres, and such are the advantages of irrigation it is estimated that this area will be quadrupled before the end of the present century.

The irrigated lands of Granada, Murcia and Valencia are regarded as the gardens of Spain. Her irrigated land amounts to about 500,000 acres. In 1866 she enacted an elaborate "law of waters" framed with great liberality, with the view of inviting the investment of capital in irrigating canals.

In India canals and reservoirs for irrigation exist in immense number, and of great size and extent: constructed by the English government at great cost.

The fresh water canals constructed and constructing in connection with the works of the Suez canal, will not only restore the long abandoned fields east of the Nile, but add to the arable soil of Egypt hundreds of square miles of newly reclaimed desert.

"Upon the Nile you hear the creaking of the water wheels, and sometimes the movements of the steam pumps through the whole night, while the poorer cultivator unceasingly plies the simple 'Shaduf,' or bucket and sweep, laboriously raising the water from trough

to trough by as many as six or seven stages, when the river is low."

Thus Egypt, with a cultivable area of 17,000 square miles, is estimated as capable of supporting a population of 8,000,000 of people.

Irrigation was practiced at a very remote period of antiquity.

The Plains of Assyria and Babylon were covered with an immense system of canals, some of them hundreds of miles in length.

Palestine, Asia Minor, Armenia, Idumea, Assyria, Persia and India all had vast and comprehensive systems of irrigation that evoked for their arid wastes an unsurpassed fertility, and supplied with food the densest populations. They existed in ages of which we have no written memorials.

Mr. Marsh says:

"There are in ancient Armenia extensive districts which were already abandoned to desolation at the earliest historical epoch, but which in a yet remoter antiquity had been irrigated by a complicated and highly artificial system of canals, the lines of which can still be followed. There are in all the high lands where the sources of the Euphrates rise, in Persia, in Egypt, in India, and Chili, works of this sort, which must have been in existence before man had begun to record his own annals."

The irrigating canals of the interior plateau of Mexico impeded the march of the invading army of Cortes, and its irrigated fields and gardens greeted the vision of his wearied soldiery as the realization of their dreams of the storied Eldorado.

Prescott thus describes the vision of wealth and beauty which met the eye of the Spanish invader of Peru, where it scarcely rains once a century and where irrigation at an early day was carried to the greatest perfection.

"Every inch of ground was tasked to its greatest power of production, while the most unpromising spots were compelled to contribute something to the subsistence of the people. Everywhere the land teemed with evidences of agricultural wealth from the smiling valleys along the coast to the terraced steps of the Sierra, which, rising into pyramids of verdure, glowed with all the splendors of a tropical vegetation."

"Canals and aqueducts were seen crossing the low lands in all directions and spreading over the country like a vast net work, diffusing beauty and fertility around them. The air was scented with the sweet odor of flowers, and everywhere the eye was refreshed by the sight of orchards laden with unknown fruits, and of fields waving with yellow grain and rich in luscious vegetables of every description that teem in the sunny clime of the equator."

Such is the brief and hasty sketch of irrigation and its results in other countries and times. Such, sir, are the lights of history and experience. By such modes have other countries with similar conditions of climate and soil, taken first rank among the productive countries of the world and swayed the sceptre of commercial wealth and power.

## THE WATER SUPPLY.

Irrigation being the remedy, the question presents itself, what are the means at our command? What is the extent of the water supply and what area will it irrigate?

To this question no exact answer can be given. Careful surveys and examinations by skilled and experienced engineers alone can determine.

It involves as its main features:

A survey of each river basin and a careful estimate of the area capable of economical irrigation.

An estimate of the maximum, minimum and average water supply in each stream.

An estimate of the extent to which surplus water can be stored in reservoirs and utilized for irrigating purposes.

An estimate of the amount of water required per acre and the amounts required by different grains.

Until such surveys are made we must content ourselves with general approximations.

But this much is known, that there is sufficient water in the numerous streams of these arid areas, some of them equal to the Rhine, the Po and the Durance, to reclaim and make fruitful millions of acres, of what are now arid lands. This is sufficient to support the proposition for government aid and justify