

**MINERAL WEALTH OF MISSOURI:
TWO LECTURES DELIVERED IN
THE HALL OF REPRESENTATIVES
AT JEFFERSON CITY MO. PP. 3-62**

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C. D. WILBER

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1870

MINERAL WEALTH OF MISSOURI.

TWO LECTURES

DELIVERED IN THE HALL OF REPRESENTATIVES,

AT

JEFFERSON CITY, MO.,

STANDARD OF THE STATE, 1870,

IN ACCORDANCE WITH HOUSE RESOLUTIONS.

I. MINES AND MINING EDUCATION.

II. COAL AND IRON.

BY PROF. C. D. WHELEN, INSPECTOR OF MINING LANDS.

WITH AN APPENDIX.

FIFTH THOUSAND.

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MINES AND MINING EDUCATION.

The interest with which minerals and mineral wealth are regarded is universal. A man is only a walking cabinet of minerals—a microcosm of metalloids. Besides definite proportions of phosphates, carbonates, nitrates, hydrates, and oxides, what is he? Chemically considered, Adam was 35 pounds of phosphate of lime, distributed through 5 pails of water; while Eve required for her corporeal existence only 25 pounds, with 1 pail of water.

“Dust thou art, and unto dust shalt thou return.” This law distributes him to the sources whence he came, gathers up and restores the fragments or atoms, so that nothing is lost. The earth is our mother, and the eagerness with which we listen to her revelations, is it not inborn?

We will further say that in proportion as we recede from barbarism and advance towards civilization, our progress is marked by the discovery of minerals, the increased production of mines, and by frequent discovery of new uses of metals. Gold, Silver, Copper, Lead, Tin, and Iron—these are the pavements on which humanity marches onward—and the golden streets of the New Jerusalem are only the earnest of industrial progress continued and enjoyed forever!

With this acknowledged connection between men and minerals, let us trace some of the metallic veins up through human history, and we shall see that our zeal for metals—whether coarse or precious, most civilized, as we claim to be—is far greater than the ancients ever possessed.

While they worship metallic images we worship the precious metal itself, not atheistic nor idolatrous, but as unqualified trinitarians—devotees, acceptable and orthodox, of the American trinity,—the golden eagle, the silver dollar, and the copper cent. And

it is the force of this religion in us that will draw us back to a specie basis in spite of all the recommendations of the Forty-first Congress.

The rudest tribes of mankind have neither ideas nor uses of metals. The Boshman, Caffre, or Hottentot, appreciates a cowry above a piece of silver or gold. A Cheyenne or Apache Indian prefers a flint to a ruby, and swine prefer artichokes to pearls.

In earlier times we find the use of silver most prevalent. It was currency, or money. For the purchase of Hbron, Abraham weighed the price in silver, "current money with the merchants." Of gold and silver large quantities were used for ornaments of the person, and the adornment of temples; also for ransoms, tributes, and taxes. Sums or weights of silver and gold are noted which indicate that the mining industry of the Egyptian, Assyrian, Persian, Jewish, Grecian, and Roman empires was co-extensive with their greatness. The city of Damascus paid a tribute of 2,300 talents of silver to Babylon (a talent is \$2,000 nearly), and according to Pliny, Cyrus obtained £7,720,000,000 from the conquest of Asia. From Herodotus we learn that the yearly tribute paid to the Persians was 3,000,000 lbs in silver. During 50 years Carthage paid as tribute to Rome 9,000 lbs, Troy, of silver. Caligula ornamented the armor and weapons for his grand circus or coliseum with 124,000 lbs of silver.

The ancients obtained metals from many localities. Eschylus describes the mines of Larium as "the fountains of the silver treasure of the earth." The modes of obtaining ores, or mining and the methods of reducing them, were of the rudest sort. They were simple, involving little or no cost, and calculated to waste more than they saved.

Diodorus says that the shepherds on the Pyreneas mountains set fire to the forests, causing the silver in the rocks to melt and run down in numerous streams.

The Carthaginians employed 40,000 men to work the Spanish mines, and the Moors, their successors, continued the work; but so wastefully was it performed, that a German colony of miners, in 1571, took out \$20,000,000 of silver from the refuse of former workings.

German mining began as early as the seventh century. The Bohemian silver mines were opened in the tenth century, and the Tyrolese mines in the twelfth century. Bohemia gave laws and methods of mining, and developed a spirit of enterprise spreading north and west throughout Europe. As a consequence, the mines of England, France, Hungary and Norway were opened.

The discovery of America was a new era in the history of mining, particularly on account of the vast wealth which poured into Europe from South America and Mexico.

The Peruvians had no fixtures or machines, or knowledge of mining. They smelted surface ores and such as could be found above water. Their furnaces were scooped out of hill or mountain side, and the smelting flames were dependent upon the winds.

We cannot estimate the amount of silver thus obtained. The soldiers of Pizarro found, not far from Cuzco, three beams of silver, each twenty feet long, one foot in width, and three inches thick; probably bench planks for the portico of a nobleman's residence. Atahualpa's ransom, in gold and silver ornaments, contributed by his loving subjects, was valued at £3,500,000 of gold, and 25,805 lbs. Troy of silver.

The Pasco mines were discovered in 1680, and were worked without any order or system, except systematized cruelty. One day a portion of the mine caved in, and killed three hundred miners. The mine was named "Kill People," or Matagenti, afterwards. The amount of silver smelted at these works, from 1784 to 1827, was 4,967,710 pounds Troy.

Bolivia contains mines still richer than those of Peru. "Potosi," or Silver Mountain, discovered in 1545, has yielded £240,000,000 worth of silver, or \$1,200,000,000.

The mines of Peru and Bolivia, under circumstances most discouraging, "of wars and rumors of wars," have yielded 155,839,180 pounds Troy of silver.

Humboldt estimates the annual yield of the mines of Mexico, during their early period, at \$2,000,000 to \$3,000,000. In the eighteenth century the production was increased to \$23,000,000 per annum.

The gold and silver crop of California, since 1846, exceeds one thousand millions of dollars! and this we may consider as the mere *out-crop*.

The obstacles which everywhere opposed mining—shafting, drifting, gangue-cutting, flooding, &c., &c., led to the invention of machinery, based upon the study of mechanics and hydraulics. As necessity is the mother of invention, so mining industry has given us the engines that now perform nine-tenths of all labor. The steam engine was called into existence by the irrepresible will of miners, to force water out of the Cornish mines.

It was indeed a great triumph for a Watt engine to lift 5,590,000 pounds of water one foot, by using one bushel of coal.

Smeaton increased the duty of an engine to 9,459,000 pounds. In 1776, engines could raise 19,000,000 pounds one foot, with one bushel of coal.

In 1823 an engine raised 28,000,000 pounds. In 1843, 60,000,000 pounds. Austen's engine, eighty-inch cylinder, raised 96,000,000 pounds. So perfect and powerful are these engines now, that a farthing worth of coal will raise 2½ tons of water 600 feet.

The mining districts of England alone, produced this grand result, and contributed the steam engine to the world's industry.

The locomotive—so deservedly popular in this country—was an after-thought, and at first only an automation truck-wagon to move the increased products of mines worked by engines. But so numerous has this new born race of coal consumers become, that we are now obliged to seek and work coal in every land in order to procure fuel or food to maintain them.

Two thousand locomotives going to and fro, night and day, in the Mississippi Valley—consuming one ton of coal for every forty miles of transit, added to these three times the number of stationary engines, equally voracious—this *fact* bears strongly upon the importance of coal mining in our country. So great is the annual consumption of coal that we are already estimating the amount we have on hand, or rather in *bank* to meet both present and future demands. Already are we seeking to know *how* and *where* it is distributed and *how long* it will last.

The answer is quite encouraging. From the Alleghenies, Pennsylvania, Ohio, and Virginia; from Illinois, Iowa, Indiana, Kentucky, and Missouri, comes the assurance, not with figures of rhetoric, but of arithmetic, that we have for all these purposes enough to last 700,000 years!—beyond which limit we have no anxious care!

In the States and Territories west of the Mississippi River there is still a deep concern upon the question of fuel. It is not yet settled as regards the plains of Kansas, Nebraska, Colorado and the Indian Territory.

The headlights of another thousand locomotives will soon illumine those plains, long ago dedicated to desolation, and named by our fathers, the Great American Desert.

To welcome these missionaries of peace and prosperity, and lying in the way of every railroad to the Pacific, is the great Colorado coal-field.

It reaches from the British possessions into Mexico, 1,200 miles; and is in many places 120 miles in width, and contains five workable beds of coal from five to twenty feet thick. It is the largest and most valuable deposit of coal in the world.

It will supply for ages all the homes of herdsmen upon the plains who will utilize or occupy every acre of that tenantless domain— [a better land to-day than the country of Abraham, Isaac, and Jacob—and far better than John Chinaman ever knew.]

It will form and fashion, spin and weave, utensils and fabrics for the coming millions that will there seek and find prosperous homes.

Based upon mining industry, the country west of the Mississippi—the Western States—will, in less than half a century, exhibit a reign of prosperity unequalled in the history of the race.

" Westward the star of empire takes its way,
The first four acts, already past,
The fifth shall usher in the glorious day:
Time's noblest empire is the last."

But let us look within the borders of Missouri—a State so attractive to capital that the national Capitol has begun to march hither; and be assured that it will arrive on time! No State has been so highly favored with mineral wealth. Although little ex-