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**Abstract:** The annual meeting of the Ohio Institute of Mining Engineers was held in the office of the Inspector of Mines, in the State House, Columbus, on the evening of January 12, the Hon. Andrew Roy, President, in the chair. The Secretary, R. S. Paul, Esq., read the Constitution of the association. The Constitution was adopted. The reading of papers by members of the Institute being in order the President delivered an address on the aims and objects of the Institute.

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*ANNUAL MEETING.*

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PROCEEDINGS OF THE OHIO INSTITUTE OF MINING ENGINEERS.

COLUMBUS, O., Jan. 12, 1882.

The annual meeting of the Ohio Institute of Mining Engineers was held in the office of the Inspector of Mines, in the State House, Columbus, on the evening of January 12, the Hon. Andrew Roy, President, in the chair. The Secretary, R. S. Paul, Esq., read the Constitution of the association. The Constitution was adopted. The reading of papers by members of the Institute being in order the President delivered an address on the aims and objects of the Institute.

## ADDRESS OF THE PRESIDENT.

*Gentlemen:*—The objects which led to the formation of our Mining Institute, as defined by the Constitution of the Association, are: To promote the developement of our mineral resources, to aid in devising plans for the more economical working of mines, and for ventilation, to elevate the social status of the working miner, to secure proper and periodical surveys of mines, and to preserve the maps and plans of abandoned mines for the use of future generations.

A vast amount of valuable practical and scientific information has been disseminated in the mining districts of Great Britain and the United States by means of kindred associations, and an inviting field of usefulness is open to our Association. The objects which we seek to accomplish are calculated to inspire the best efforts of our being.

The mineral resources of the State of Ohio are practically inexhaustible. Nearly one-third of the area of the State is covered with the coal-bearing strata, containing beds of coal, iron ore, limestone, fire clay, and other rocks of value for commercial purposes. Enclosed in the coal measures are no less than forty different beds of coal, numerous beds of ironstone and limestone, offering a rich and inviting field to the capitalist of every State of the Union, and every nation of the Old World. Of the forty seams of coal, fifteen or sixteen of them are three feet and upward

in thickness, while the heavier beds, like the great vein of New Straitsville, and the Sunday Creek Valley, rise to ten and twelve feet in height. Every known variety of bituminous coal is found in the State; block, splint and dry burning coals, adapted for smelting iron in a raw state, coking and cementing coals, fitted for the manufacture of coke, flaming, or gaseous coals, rich in gas, and cannel coal, adapted for making gas, for the manufacture of oil, and prized as parlor fuels.

Although last year we raised fully 8,225,000 tons of coal from the mines of the State, and Ohio stands second in rank among the coal producing States of the Union, we have scarcely yet begun to draw upon her mineral treasures. At a very moderate calculation there can be no less than 85,000,000,000 tons of coal locked up in the coal measures of the State, an amount capable of supplying the wants of the whole earth, at the present rate of consumption, for the next four hundred years. The beds of ironstone interstratified in the coal bearing strata are more numerous than even the coal seams, and they are as rich in quality as they are abundant in quantity, while limestone beds are spread all over the whole area of the coal field. These mineral strata, formed millions of years ago along the marshy shores of the carboniferous world, are the embodiment of future wealth, and power and greatness, surpassing the wildest dreams of the imagination; and our Mining Institute can be made one of the greatest organizations in the State, for good, by properly directed effort in pointing out to the capitalist and the business man the superior advantages which Ohio possesses over all other States in the superiority and accessibility of her mineral resources.

There are now over 300 coal mines in successful operation in the State, and about 50 mines of iron ore, giving employment to 25,000 underground workmen. In these subterranean workshops, the four elements of the ancients—air, earth, fire and water—combine against the miner, to combat which, demands the exercise of intelligence of a peculiarly practical, scientific character. Fire-damp, perhaps the most fatal and dangerous element ever encountered in human enterprise, escapes from the pores and minute interstices of the coal strata; black-damp is liberated in the same manner, and formed by the decomposition of the strata in the job wastes of the mine, the combustion of the workmens' lamps, explosions of powder, and from the lungs, bodies and excremen-

titious deposits of men and animals; water is liberated from the strata or from the walls of coal themselves, and masses of dangerous rocks, often hundreds of feet in thickness, are suspended overhead.

In the State of Ohio, the annual production of coal is doubling itself every ten years, and in the United States, every thirteen or fourteen years; and for many years to come these figures will be maintained, if not surpassed. At the beginning of the 20th century, now less than nineteen years distant, the annual coal production of Ohio will reach 30,000,000 tons, while more than 2,000,000 tons of iron ore will be raised from the ore mines. In the United States, the output of coal in the first year of the 20th century will amount to fully 150,000,000 tons, giving employment to 500,000 underground workers, 70,000 of whom will be engaged in the mines of this State.

The history of the past twenty years has shown that the business of coal mining, from whatsoever cause it may arise, is prolific of discontent among underground workers; that a vast amount of time is annually lost by strikes, suspensions, or lockouts, as they are variously called, which not only paralyze the business of coal mining, but too frequently result in lawlessness and the destruction of mining property. The true causes of this discontent must be carefully and candidly inquired into and removed, or a disturbing and dangerous element may be permitted to grow up in our midst like an internal canker to arrest our commercial greatness. The social status of our miners must be elevated to avert threatened national danger. The causes, whether physical or social, which produce chronic discontent among so large and so important a class of our population should, and doubtless will, receive the most searching enquiry on the part of our Institute. Coal will soon be, if it is not already, as indispensable an article as water, and the supply must be constantly kept up.

Nearly every branch of human industry has been benefitted by the application of labor saving machinery during the past half century. Many attempts have been made to introduce labor saving machinery in mines to do the laborious and exhausting work of undercutting, and first and last, more than one hundred of these machines have been tried and thrown aside as failures. It seems to be reserved for Ohio mechanical and engineering skill to solve the vexed problem. During the past five

years, the Lechner machine, the invention of an Ohio man has been successfully applied in the coal mines of the State, and already this Ohio iron miner has found his way to the coal regions of Pennsylvania, Indiana, Kentucky, Iowa, Kansas and Colorado. It has also been introduced in England, and will ere long be introduced in the coal mines of France and Germany.

A vast amount of coal is annually wasted in the mines of this State by bad practice. Faulty systems of laying out the workings are adopted; the mines are not properly and periodically surveyed and the underground workings are in too many cases laid out without art and without science and fall in before half the territory is worked over. It can be safely stated that since the beginning of the coal trade in Ohio, 50 per cent. of coal has been sacrificed by unskillful and wasteful modes of mining. In other words, for the 70,000,000 tons of coal which have been raised from the mines during the past fifty years, 70,000,000 tons have been abandoned beyond the possible hope of recovery, because of the want of proper mining engineering skill. And I believe this statement must be equally true of every coal producing State of the Union.

It is of vital importance that some system be devised for the preservation of accurate maps or plans of mines for the use of those who may come after us. After a mining tract has been worked over and abandoned, the excavated area, as is well known, becomes filled with water or nephitic gases. In the near future, these old workings are forgotten and newer mines will cut through into them, destroying life, and entailing great expense, for which there can be no possible excuse. A properly constructed plan, known to be accurate, should be required by law to be deposited and recorded in the office of the county surveyor of the county in which the mine is situated.

I have thus briefly called your attention, gentlemen of the Ohio Institute of Mining Engineers, to the leading questions which should occupy your attention. They include questions of very great importance to the well being and prosperity of the State. The miners and operators of mineral properties and mines, the mine managers and the working miners will take a deep interest in the proceedings of our Institute, and will aid and co-operate with us with willing hands. Our State, blessed by nature with those inexhaustible stores of mineral treasures upon which the future wealth and greatness of nations are founded, together with the

proud position which Ohio has achieved in the galaxy of States, should, as it doubtless will, stimulate each and every member of the Ohio Institute of Mining Engineers to faithful and earnest endeavors to promote the vast interest which called our Association into being; and I express the confident hope that only valuable and permanent good will result to all concerned, from our meetings.

A paper by R. S. Paul on the Instruments and Methods of surveying mines, was then read.

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