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OUR MINERAL RESOURCES AND THEIR ECONOMIC DEVELOPMENTS.

BY WM. SMURTHWAITE.

With what a lavish hand has nature bestowed her gifts, in order that all the needs of the human family may be supplied, and scattered them broad-cast all over this vast continent in such a diversified manner as to subserve the best interest of all concerned.

This nation can truly boast of her fertile valleys, her rich mountains, her extended plains, her various climates; the South can boast of her cotton fields and sugar plantations; California of her gold fields; Tennessee of her mountains of iron ore; the Northwestern States of their fertile lands which produce bread for the millions; Pennsylvania of her anthracite coal and lakes of petroleum. But none of the states are more highly favored than our own State of Ohio, for deep down in her bosom are garnered rich resources of all kinds of mineral wealth waiting for the hand of industry to develop. Her hills are filled with coal, iron ore, limestone, clays of various kinds, and other material, which give advantages equal to any state in the union for manufacturing enterprises. But because we have a superabundance of mineral wealth, we ought not to neglect and study that would lead to better methods in the economy of fuel.

The true road to success in any enterprise, is competitive energy and rigid economy.

These principles should govern all classes of men, no matter what their callings may be, for in the exercise of them lies individual success. The welfare of any state or community depends much upon its morality, economy, and enterprise; and any individual who even desires to become a good citizen, must practice those principles if he would attain to such an honorable position. Economy of both time and expense gathers up the fragments that remain, that nothing be lost. Economy of time, as well as business, demands system. And the individuals, who spend their time in speculation, instead of devoting it to their special calling, may expect to go down before the pressure of some crisis; and then misfortune is generally charged over to hard times.

How different is the really industrious and economical man. He plans, and then holds definitely in mind what he has to do. It is industry, and not speculation, that quickens the world into activity.

It has been made manifest that those who have paid attention to their particular business have generally mastered all its intricacies; and such as have formed habits of economy are the parties who are able to meet the financial panics which frequently burst upon us with such alarming consequences. If these principles were fully carried out by all our manufacturers, it would soon work out a wonderful change in the commerce of our nation by enabling them to compete for the world's market. We have facilities for a great scope of business, by easy transportation to the sea board, from all parts of the State for our manufactured goods, and we have also a superabundance of all kinds of minerals in close proximity to our manufacturing establishments, which ought to enable us to secure a market beyond the narrow limits which hitherto have confined us.

Commerce is to a nation as important as the air we breathe is to the human system; without it no nation can prosper. It quickens the pulse of industry and sets into lively operation the various wheels of enterprise. It encourages every individual in the pursuit of knowledge, and stimulates every effort of ingenuity and skill, and affects the community for weal or for woe.

Therefore it is the duty of every citizen, no matter what occupation he may follow, to help to build up our growing enterprises by working and co-operating together with the manufacturer in whatever is reasonable, sharing together the benefits gained thereby, so that the interests of both capital and labor may be built up. We have all the expedients that any other country possesses, also the various kinds of mineral, and especially coal, that is put into the hands of the manufacturer cheaper, on an average, than any country in Europe can do. There is, however, a prevailing cry among the manufacturers, against the railroad companies for the high rate of freight charged, not only on the raw material, but also on the manufactured goods, which makes it impossible, at some points, to carry on business at all. It is certainly the duty of railroad corporations to foster and encourage enterprise by giv-

ing such rates as would assist the manufacturer to compete with other countries, and seek a market beyond our own borders.

We have almost an inexhaustible coal field; and, as yet, comparatively little is used for manufacturing purposes, considering our ability as compared with other countries. But what is used for manufacturing purposes is frequently used improvidently; while in Europe, the most rigid economy is practiced, so as to obtain the best possible results from a given quantity of fuel. All that science and skill can do is applied to that end. For years, in Europe, in the coking regions, where the coal is converted into coke, mechanical contrivances have been used for the collecting of gases, that escape from the burning coals, and utilized to play an important part in the lessening of the cost of the manufactured article. In the conversion of coal into coke nearly one-half of its weight is lost in the process of making, if permitted to escape, as it does in the common bee hive oven that is generally used in this country.

Now, the real fact of the matter is that we have none too much of any of the resources stored away in the great store house of nature, for the use of our industries, so that we can afford to squander away to the four winds of heaven, and not feel its consequences in the future. I am aware that the onward movement in science, as applied to manufacture, is ceaseless, and the last few years have been noted for many improvements. However, many of the inventions are very costly, and cannot be used under ordinary circumstances. Would it not be well, then, for the men of science and skill who are now engaged in the consideration of the economy of fuel, to turn their attention in this particular direction. We certainly live in an age where extravagance rules, on every hand, and without one thought of the coming generations, we pursue a reckless course.

We are warned in thundering tones that our forests are fast disappearing before the ax of our lumbermen, and it has seemed probable that the next century would have to grow its own timber. Even that is practical, after a forest has been denuded it can be replanted, and time will bring forth the giant oak again. But it is not so with the fuel that may be lost by inexperience or extravagance; it is lost, and lost forever, without ever playing any part whatever in the great hum of industry, who can estimate the

number of acres of coal that have been lost, by men who are avaricious for immediate gains, and men of experience who have, and are now engaged in the coal business; mines have been opened out without any consideration whatever, either as it regards system for ventilation, for the successful mining of the coal, or any calculation for the leaving of pillars of a sufficient strength to support the superincumbent strata that rest upon them. Rooms are turned off near the mouth of the mine, instead of leaving blocks of coal to sustain the strata above, to get coal for the market speedily, so that they may have quick returns for the money invested. The result for such a criminal way of working is but of short duration. The hill soon begins to move and, the pillars that are left, being unable to sustain the pressure, are crushed into the floor or ground to powder. The work of destruction continues; the whole mine being on a move by a "creep," or upheaval of the floor, caused by the pillars being left too weak, until the mine is completely ruined. The air ways stopped up; main roads cut off; acres of coal lost, all by the inexperience and avariciousness of men, who think it a great thing to have a certain amount of coal out after the mine has been opened but a short time.

But I am happy to state, having been informed by responsible parties, that this kind of work is abandoned, and that great improvements have been made within the last few years, in the opening out of new coal mines. Particular attention is now paid to ventilation, in order to supply the mines with plenty of fresh air, and to the strength of the pillars sufficient to support the strata above, so that the mine may be kept in good order to get from the coal field the best possible percentage of coal. There is no doubt in my mind but that we are indebted to the passage of the mining law, and the successful enforcement of all its provisions, by the the officer appointed for the purpose.

But there is yet an evil existing, to which I desire to call the attention of those who are interested in the development and economical working of our coal mines, just as flagrant as any that have ever existed; and for the last few years has been increasing in magnitude. It used to be, formerly, that the coal was separated in the mine, with a rake, with teeth about an inch apart, and the raked coal was sent out of the mine for market, and only the dust or slack thrown back into the gob. The coal business of late

years, has increased at a rapid rate, and has brought with it accompanying evils, in the wastefulness of coal. On account of smartness in competition, every effort is made by the operator to get control of the market. The desire for large coal almost amounts to a mania, not only among the manufacturers, but also for domestic uses, until the operators have been led, and I think unwisely, to erect larger screens, to meet the growing demand for the large coal. Now the miner is paid by weight for such coal as passes over a certain sized screen, and of course the miner working for his own interest, throws back into the gob all coals that he thinks will pass through the opening of the screen, and it is forever lost.

The miner certainly cannot be blamed for this state of things, as he looks from his own stand point, and uses all the available means for his own interests. The operators have the right, no doubt, to have the coal mined as suits them best, providing they pay the difference between the lump coal and that of the run of the mine.

The evil that I speak of is throwing the coal back into the gob, where it is left for waste.

I don't know, but if the same care had been taken to introduce into the market the run of the mine, as there had been the large coal, that we would have succeeded in educating the people into more economical habits in using fuel. It certainly would have set ingenious minds into operation, so as to invent some mechanical contrivance, to use all the coal just as it is mined.

True, there have been inventions that have been very successful, and are now at work, in the utilization of slack by mixing it with some chemical elements and pressing it in various sized blocks that are considered equal to lump coal. But the expense of manufacturing the slack by this process is so great to the operator, as the cost of manufacturing is greater than the cost of mining the lump coal, saying nothing about the cost of the plant.

Now if some mechanical contrivance were invented to enable the operator to manufacture the slack into blocks of coal for the difference of price paid for the mining of lump coal, and that of the run of the mine the question of what shall be done with the slack, would be forever settled.

If this can be accomplished, and I hope it will, what an abundant yield of coal to the acre, we would have over the present system; in that, all the coal would be utilized.

However, I believe that nature has supplied enough material for fuel in her realm as will serve the purposes of man through all coming time, if it is used in a proper way. Some of it may exist in such a form that at the present time we may have no conception whatever, of its utility, as it lies undeveloped in its premature and rugged state. But when the force of circumstances shall arise and necessity demands that a way be opened to carry onward the great business of life, then science will step in with her progression and tear open the vaults of the treasury and give to the world a power now lying hidden in nature's breast.
