

"(1) Agricultural products, if ordinary care is given to our soils, will be supplied continuously by annual crops. But as regards mineral resources the case is different. Our mines can produce only the one available supply; this one supply must meet the future as well as the present needs of the Nation; and a century's experience has clearly shown that our use of the more important of these resources, such as mineral fuels, precious and other metals, and potash and phosphate deposits, will increase much more rapidly than will our population.

"(2) Although certain of our mineral resources, such as the metals, are destroyed rather slowly in use, other essential resources, such as coal, oil, and natural gas, are consumed or destroyed beyond recovery.

"(3) In the utilization of certain of our mineral resources such as natural gas, petroleum, coal, zinc, and some of our other metals, there are large losses or wastes that are believed to be unnecessary, and it is a wise duty of the National Government to aid in the prevention of such wastes. These wastes now exceed \$1,000,000 per day.

"(4) And more important than all the above in their appeals for the larger aid of the Federal Government are the hazards of the mining industry—the accidents that yearly result in such large losses of life and the unfavorable health conditions in many mines and metallurgical plants which affect adversely the vitality of employees. None of these conditions is encountered in agriculture, but they are in a peculiar way characteristic of the mining industry; and these conditions alone more than justify additional expenditures from the Federal Treasury."

Still another reason why federal aid should be extended to the mining industry is found in the fact that few countries are independent and self sufficing in their production of minerals and ores. This fact is brought prominently to the front at the present time, by the interruption to the world's commerce occasioned by war. In speaking of this situation, the Director of the United States Geological Survey uses the following language:

"I believe the mineral wealth of the United States is in largest measure the foundation of the marvelous growth of the last few decades. Industrial America! Think to what a degree the industries of America are based upon our ores and mineral fuels, or figure if you will the percentage of railroad tonnage that originates at the mine.

"Not only is our country a world-leader in the output of such essential minerals as coal, petroleum, copper, zinc, iron, lead, phosphate—and in three of these it exceeds all other countries put together—but as far as such things can be measured or estimated we are blest in the possession of the largest reserves of many of the more important of these minerals. No other country can in any sense compare with the United States in the degree of industrial independence afforded by the possession of these mineral resources. The raw material is at hand to enable us to win and maintain supremacy as a manufacturing nation.

"Yet, under this most-favored nation clause, the catalogue of our mineral resources is not the complete list of minerals essential to modern civilization; a few items are missing, others are present apparently only in insufficient quantities, and the quality or locality of the deposits of still other minerals may be unfavorable to present day utilization. Thus it happens that the nation is not wholly independent in its mineral industry. The list of what we lack is short. We are wholly dependent on other countries for only four principal items—tin and nickel, potash and nitrate. Among the minerals of which the United States has a deficient supply are manganese, platinum, gems and asbestos. Still other minerals it has been more profitable to buy abroad than at home, such as chrome ore, barytes, flint pebbles, magnesite, mica and graphite. * * *

If it is then important for the people and government of the United States to aid and encourage the development of its own mineral resources, how much more important should such efforts be for those nations which have not the generous provisions of nature in the shape of easily won mineral deposits. Nor is it alone the federal government which should evince an interest in the working of mines. Every state and province should do its share, and instead of looking upon mines as something to be taxed to the very limit or beyond, should feel that **it is of intimate and vital importance to every citizen of the state or province that its mines and quarries be worked to the highest stage of productivity of which they are capable.** Far greater than the value of the taxes paid into the state treasury is the benefit derived indirectly from great institutions for the production and working of minerals; and the operation of steady mines and metallurgical plants in a community is of incalculably greater importance than the derivation of direct revenues to enrich and often debauch the public treasury. For concrete examples of the truth of this statement look at Chile with its nitrate deposits paying millions yearly to the government and then turn to Sweden and observe its wise policy of encouragement of the development of its iron mines. The former country has not only not aided in the nitrate industry, but has done its best to turn it into cash for the government treasury, much to the disadvantage of public morals; the latter country has given its lands freely, has appropriated large sums for railroads and for other necessities to those who would develop an industry which would afford permanent employment to large numbers of laborers.

Full discussion of this subject would involve consideration of the bearing of mineral production on all lines of industry; it would necessitate a study of modern civilization and industrial development in all lands. For those who are already students of the subject, such elaboration is superfluous; to those who are not, it would be tiresome and unread. Enough has been said to indicate its importance. In conclusion, the following propositions may be taken as established beyond question:

1. **From the dawn of civilization to the present time national standing has been dependent on and conditioned by mineral wealth and consumption.**
2. **Next to agriculture no industry so deserves the sympathy and aid of governments.**
3. The attention of legislators, should not only be invited but compelled to the necessity for wise and sympathetic legislation in connection with the mining industry.
4. It is incumbent on every engineer and mining man, and indeed upon every citizen to insist that our mining laws shall be most carefully framed so as best to promote the interests of the mining industry, and hence of every industry throughout the entire length and breadth of the land.

According to General Manager James MacNaughton of the Calumet and Hecla Mining Co., the use of the Carr bit has resulted in an increased output per miner equivalent to his total output of a few years ago, thus not only decreasing costs but making available tremendous tonnages of low-grade ore that would not otherwise be commercial.

The decision of the British Admiralty to give Nova Scotia coal a thorough test will probably result in the removal of the prejudice in favor of Welsh coal and give a new outlet for the coal of Cape Breton.