

1911

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## Recommended Citation

Richards, Joseph William, "A Plea for the Inventory of the Coal Supplies of the World" (1911). *Early Publications of the Lehigh Faculty*. Paper 231.  
<http://preserve.lehigh.edu/early-faculty-publications/231>

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# A Plea for an Inventory of the Coal Supplies of the World\*

By PROF. JOSEPH W. RICHARDS.

I will take a few minutes of your valuable time to speak on this subject from the standpoint of the metallurgist—the man who uses the ore which the geologist describes and which the mining engineer takes out of the ground.

I cannot agree with some of the detailed conclusions of the very valuable report presented to the Congress upon The Iron Ore Reserves of the World. For instance, the 250,000,000 tons of Lake Superior iron ore carrying between 35 and 50 per cent of iron are placed neither in the actual reserves nor even in the potential reserves and yet this enormous quantity of ore, averaging much better than the "Minette" of Luxembourg, should in my opinion be placed under the actual reserves of ore in the United States. The reason for this statement is that this ore is not now worked simply because we have, at present, all we need of the richer ore, on which we make a larger profit, but if we did not have this richer ore we would certainly be working 40 to 50 per cent ore, and working it at a profit. I believe that within twenty years this immense quantity of ore, which the report does not consider as ore at all, will be the principal supply of iron ore in the United States, and will furnish us ore for many centuries to come.

Aside from the above criticism, I wish to support the points raised by M. DE LAUNAY and Professor KEMP, to the effect that metallurgists are continually improving their methods, and that the improvements which are certain to be made as time passes will enable metallurgists to work poorer and poorer ore at a profit. In twenty years we will be making pig iron from 40 per cent ore as cheaply as we now make it from 50 per cent ore; this is very certain and so I believe that improvement in metallurgical processes will more than compensate for the decreasing richness of the ores.

This very valuable report on iron ores of the world has therefore made it very clear to the metallurgist that there will never, in all the future history of the world, be any scarcity of iron ores for the metallurgist to work upon. Certainly, some localities will become exhausted, and the centers of production may change from place to place, but there will always be enough iron ore in the world to supply its needs.

A much more important question is the quantity of coal in the world with which to reduce this ore. This necessary material will be the real criterion of our future iron supply. Even at the present time the countries which have the most coal are dominating the iron supply of the world.

As already indicated by Prof. KEMP, the International Geological Congress would perform a very great service if it would call upon eminent geologists in all countries to make a

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\*An address delivered before the International Geological Congress in Stockholm, Sweden.

careful inventory of the actual and potential coal reserves of the world. Such a report would not be more difficult to make than the present report on the iron ores, but probably less difficult, and it would be a splendid and highly valuable supplement to the report before us, giving us more real information about the future supply of iron and its localities of production. I wish the Congress would take up this task, and give the world this much-needed information.

However, in the distant future, when coal is exhausted, the world must produce iron by the use of the energy of waterfalls and electrical reduction, with charcoal from wood as the reducing agent. Here in Scandinavia, with no coking coal, you have already begun this era, you have been the first to show the world the economic possibility of producing pig iron electrically, using only water-power and charcoal. With your very pure ores, cheap water-power and abundant supply of wood, you will develop in Scandinavia a large electro-metallurgical iron industry. It is not a matter of the distant future for you, but within twenty years your iron industry will have been revolutionized and have become electrical. I congratulate Scandinavia on being in the lead in this new era of metallurgy, just as it has always led the world in the production of the purest commercial iron.

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