628

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CONTROL OF RAW MATERIALS IN WAR

by

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Last year when I had the pleasure of being with you I attempted to bring out the fact that the perfectly natural end reaction of commercial competition is war. I think the events of the last year have indicated vividly the importance of mineral raw materials from the standpoint of international peace, especially have those occurring during the fall shown the United States to be in a position whereby our responsibilities for world peace have been greatly increased, and what we do with our mineral raw materials will so affect international affairs that it may well mean the rise or fall of our present-day civilization.

The wealth of the United States, viewed from the standpoint of its natural resources, places the states in a very enviable position What we do with that wealth affects every industrial nation throughout the world, and what they might attempt to do to us brings out the problem of national defense from the standpoint of the insured continuance of our Democracy. The efforts being made by nations deficient in raw materials to maintain and advance their industrial development, is only to be expected. In the last few years they have built up, in their opinions, means by which they can ultimately force the more favored nations to relinquish in part or to turn over to them their natural resources

I believe it would be fair to say that the average citizen of the United States never gives a thought but rather takes as a matter of course the fact that in theory at least, municipal, state, and federal taxes are contributions for the protection of individual property. The necessity of having a force to police citizens is due largely, in my opinion, to the action of the "Have Nots" against those "Who Have " Broadly, it may be stated that an overwhelming majority of us would prefer living without working and would enjoy living on the other fellow. Thanks be to the protection furnished by government, we are, in part at least, protected from unrestricted pillage, although I must say there are devious ways of accomplishing this objective To me the San Francisco disaster did not mean as much from the standpoint of loss of life and property as did the behavior of those who "Had Not", practically immediately or coincident with the disaster when police protection for a short time was non-existent As you well know, pillaging started almost at once. How far this ghoulish trait of humanity might have gone, no one knows The action of General Fuston, then stationed at the Presidio,

was a bit of unwritten history, for which I believe the Army should be proud. Immediately following the outbreak of fire, San Francisco was placed under martial law and during that period petty crime ceased. A lesson to be drawn from the illustration cited is that if you have anything that is greatly desired by someone else, the only reason that it is not taken from you is that you have through government of one type or another, the force necessary to protect your property rights.

I think this thought applies to our nation as affecting its mineral raw material resources, and if we are to protect our heritage, we must take every means conceivable to maintain our present-day social standards.

Just as the strength of a chain depends upon its weakest link, so does the security attained by national preparedness impinge upon our ability to provide mineral raw materials. Without certain materials, should the United States be attacked at present we would be defeated to all intents and purposes on the day that hostilities commenced

In order to provide means of obviating such a disaster, Congress in 1922 charged The Assistant Secretary of War's Office with the problems of national defense The procurement of deficient minerals is certainly a part of the foundation upon which any practical scheme must be built. The difficulties involved in obtaining and maintaining a constant flow of those mineral raw materials which must be obtained from foreign sources are manifold, as you can readily see It would seem that in a democratic form of government, its citizens inhibited the accomplishing of the purpose outlined rather than rendered it any assistance

As you well know, the World War made it evident that the United States was not self-sufficient in mineral raw materials, and in order to supply this deficiency the United States had to rely, in part at least, upon the protection given by the British Fleet. I believe that it would be evident to any student that had the war continued, many steps would have had to be taken to eliminate what from a military viewpoint would be considered non-essential uses of minerals. There can be little question that the grade of steel produced would have been greatly inferior as time rolled on. The experience of Germany towards the close of the war indicates some of the consequences which must follow an inadequate supply of mineral raw materials.

In an attempt to indicate the importance of deficient minerals in peace and war, I am going to review, in part at least, the history of the manganese industry of the United States and its bearing upon national defense.

In the early development of the steel industry, there was scattered over the Atlantic seaboard a great number of small manufacturing concerns The amount of material used even in the aggregate was negligible in comparison to our present-day needs. The larger part of the steel manufactured was by the Bessemer process, and not until the open hearth process was developed was there any great demand for alloy steels. When it was found that a more uniform product and one of better grade could be manufactured by the introduction of manganese into the steel, ores were developed in some of our eastern states. At one time the United States actually exported a large quantity of manganese ore.

With the development of our country and the necessity for greater amounts of steel, the small manufacturer was driven out of the market by tonnage production and the industry was centralized at Pittsburgh The discovery of the Lake Superior iron ore ranges, as well as the close proximity of the plants to metallurgical coke, were the main considerations given by the then steel industry in selecting a locality for their industry. As output increased, the resources of manganese were found to be inadequate to meet the domestic demand and ores were imported from India and the Caucasus. Our country was combed over for high-grade manganese deposits and a great deal of money was spent I believe I am correct in saying that the only really successful mine was one operated by the Carnegie Steel plant at Crimora, Virginia This property was first developed in 1867, and since then has produced upwards of 200,000 tons of metallurgical ore With the exception of the period from 1880 to 1893 when the property was operated by the Carnegie Steel Corporation, by far the larger part of the production was made at a financial loss. The production during the Carnegie operation amounted to over 138,000 tons With the commercial exhaustion of the ores of the Crimora, Carnegie purchased largely from Russia and Brazil.

For many years prior to the World War the average price of manganese ore having a tenor of not less than 47 percent was approximately $10 a ton. The domestic production for more than twenty years prior to 1917 was less than 10 percent of the country's requirements.

Simultaneously with the declaration of war by the United States, efforts were made by certain Government agencies to stimulate domestic production of manganese ore as it was recognized that the resources of the United States were inadequate, at any reasonable price, to produce but a fraction of the war requirements. Fortunately, there was a considerable tonnage of high-grade imported ore held by the U S. Steel Corporation, also that this corporation, in order to fulfill its contracts for the manufacture of war munitions for England and France, had spent a considerable sum of money in rebuilding and equipping the Wigg Mine in Brazil This mine lies some 300 miles from tidewater and it was necessary to practically rebuild the rail connection During the eighteen months of war, more than 500,000 tons of high-grade ore were imported from Brazil. Ferromanganese was also purchased and imported from Great Britain. Notwithstanding these imports the grade of the domestic production was so low that it was necessary to mix high-grade foreign ores with low-grade domestic product and also to reduce the standard ferromanganese specifications I am sure you all know that manganese as used by the steel industry must first be converted into either spiegel or ferro. Standard spiegel contains 20 percent Mn, standard ferro 78 percent plus. In the case of ferromanganese, the grade was reduced to 65 percent. This, of course, entailed a modification of general furnace practice.

Immediately upon the close of the war, claims were filed against the Government for losses entailed by the then producers of manganese. The result of this was the War Mineral Relief Commission, which had paid out to the manganese producers more than $8,000,000, I believe.

Owing to the war-time experience and to an imagination almost equivalent to a Baron Munchhausen, the domestic producers were able in 1922 to obtain a tariff, this on the plea of establishing and fostering a domestic industry The advocates of the tariff claimed that in two or three years at the most, 70 percent of the domestic needs could be supplied and in a comparatively short time the entire requirements of the United States could be met from domestic sources. These claims have never been substantiated and with varying prices from 1922 up to the present, domestic production of metallurgical ores has never supplied but a fraction of the needs of the United States

The war-time demand was met in part by the production of manganese mines in the Butte, Montana, area More than

50 percent of the total production of manganese ore in the United States during this period came from this source Shortly after the tariff of 1922, these ores were beneficiated and since then the reserves have been greatly depleted. As Butte lies distant from centers of consumption, the freight rate is a material part of the cost of its production It is extremely doubtful if production could have been made from this area had it not been for the 1922 tariff. Thus we have depleted a limited resource which might have been of inestimable value in time of stress and its product has been dissipated.

As I see it, the present manganese situation is far less secure from the standpoint of national defense than it was in 1917 There have been no developments throughout the United States, no new mines opened up, and no new metallurgical processes evolved which would in any way assure the United States of an immediate supply of this basic raw material should a period of stress develop.

The only qualification to the statement is the development of the Cuban ores. The policy pursued by the United States in reference to this development seems to me to be a very short-sighted one. It is claimed by some that a going concern may be rapidly expanded and production greatly increased in a far more rapid manner than the development of a property from the grass roots. This is, of course, quite true for from a national defense standpoint nothing could be better than a thriving permanent industry. There are many problems in the handling of Cuban ore which have not as yet been solved commercially. The present method of handling the ores does not require any special type of machinery. Practically all equipment can be bought from current designs and in time of stress and at price, it is believed that a large part of the requirements of the states could be met from this source I do not feel that it is necessary to subsidize the Cuban Manganese Company in order to have a going concern over an indefinite period of time at the expense of the domestic consumer. All available evidence points to but one way of insuring the safety of our nationals during a time of stress of relative security and that is by purchasing the highest grade material available and stocking it under the jurisdiction of the Army and Navy Munitions Board

One of the great difficulties of accomplishing this desirable purpose is that there has been a great deal of confusion in the minds of many as to the problems involved in national defense versus the subsidizing of a domestic industry. Of course it is but human to try to get as much as possible

for nothing, and I believe the activities on the part of the American Manganese Producers Association illustrate this point.

In the coming controversy in reference to the acquisition of stocks of strategic raw materials, may I attempt to emphasize upon you the necessity of purity of material. It must be of such a grade as to meet all the manifold uses for which the material may be normally used. The purchase of inferior material and the knuckling down to political influences, in my opinion, are selling your country down the river.

Since the drafting of the Thomas Bill, with which I am sure you are all familiar, already many schemes have been evolved, some of them actually being put into practice for, in my opinion, pillaging the United States Treasury to the detriment of the security of our country.

Possibly tin illustrates this as clearly as any other metal. During the entire history of the United States, some 1,600 tons of tin have been produced from domestic sources. The normal annual domestic consumption as represented by that of the last twenty years, is about 75,000 long tons. We are the largest consumers of tin in the world. The United States draws its requirements largely from the Federated Malay States, Netherland East Indies, and Bolivia; and to a minor degree from Nigeria, Siam, and the Belgian Congo.

During the war, in order to relieve a threatened shortage of tin, a smelting industry was established at Perth Amboy, New Jersey, and as the war closed this plant was on a productive basis of 20,000 tons a year; the raw material being drawn largely from Bolivia. Bolivia, because it has no fuel, has had to export its product for many years, in the form of concentrates containing on an average of about 60 percent tin, to England for smelting and refining. Owing to the many sources that England is able to draw upon for its crude ores of tin or concentrates, the English smelters are able to take relatively impure ores, mix them with purer ores from the standpoint of deleterious impurities, and produce a product of uniformly high-grade material at a cost which can not be equalled by the smelting of the impure ores by themselves. For this reason at the close of the war smelting of tin in the United States ceased and once again Great Britain dominated the world smelting situation. The Bolivian tin industry is a relatively recent one and at price, owing to the occurrence of the ore, this source may be counted upon for some production over a period of many years.

The first serious attempt to establish a tin smelting industry in the United States occurred in 1903 At this time the Standard Oil Company was using a large quantity of tin plate in the fabrication of containers for petroleum products. Vessels carrying these products to the Orient were unable to pick up much cargo for the return trip. It was thought that the establishment of a tin smelting industry in the United States not only would provide cargo for the returning ships in the form of tin concentrates from the Malay Peninsula, but also would provide the company with a supply of tin and thus enable it to deal more advantageously with the tin plate producers. Accordingly, the International Tin Company was organized A supply of tin ore was contracted and a smelter erected at Bayonne, New Jersey, with a capacity of 50 tons of ore per day, or approximately 10,000 tons of metal per year.

Before the plant was completed, however, the Federated Malay States, seeing in this new development a threat to their own smelting industry, imposed a prohibitive duty on tin ore exported to non-British countries. Similar restrictions had already been imposed on exports of ore from the Dutch possessions in Malaya. The smelter at Bayonne, deprived of its ore, never operated. Subsequently an attempt was made to secure Bolivian ores but apparently terms that would permit profitable operation could not be obtained. The United States was unable to meet the competition of Great Britain and Germany for the Bolivian ore supply

At the outbreak of the World War the market for Bolivian ores in Germany was completely cut off and the smaller French and British smelters were forced to shut down The resultant lack of competition left the large British smelters free to dictate terms. Smelting charges were greatly increased and only the best ores were accepted. Shipments from Bolivia declined sharply and since tin ore is an important factor in Bolivia's export trade, the country was embarrassed by the lack of foreign credits. Large stocks of tin ore accumulated. Some relief was accorded the tin miners by the depreciation of Bolivian currency but eventually the Bolivian Government sent an agent to the United States to urge the establishment of a smelting industry to be supplied with Bolivian ore. The American Smelting and Refining Company announced in 1915 that it would build a tin smelter at Perth Amboy, New Jersey. The first tin was produced in March 1916 At first the capacity of the plant was about 7,500 tons of pig tin per annum This was later increased to 18,000 tons but full-scale operations were never realized. The company's tin production rose from 4,522,000 pounds in 1916 to 19,868,000

pounds in 1918. Thereafter it declined until the plant was finally abandoned in 1924 and subsequently dismantled. Smelting was accomplished in reverberatory and blast furnaces from which a crude tin was obtained. This was refined electrolytically and the final product was of very high purity.

Construction of a second large tin smelter was started early in 1917 at Jamaica Bay, Long Island, but owing to delays in obtaining material the plant was not put into operation until November 1918. The plant was owned by the Williams Harvey Corporation, of which the National Lead Company of New York, Williams Harvey & Co. Ltd. of England, and Mr. Simon Patino of Bolivia each had a third interest. Data on the capacity of the plant are not available but at one time it was reported as the largest plant in the United States. The plant operated exclusively on Bolivian ores which were smelted in reverberatory furnaces. The process used was approximately the same as had been used in England for many years. The tin produced at this plant was not as pure as electrolytic tin but was acceptable to many consumers. The plant was shut down in 1923.

Other tin plants of minor importance that operated during and immediately after the war include the following:

Andes Electin Co., South Brooklyn, N Y.
Eastern Metal and Refining Co., Boston, Mass.
Norton Laboratories, Inc., Lockport, N Y.
Seaboard Metal Corp , Arlington, N. J.
American Tin Smelteries, Inc., Matawan, N J.
Richards and Co., Malden, Mass.
Standard Smelting Co , Pittsburgh, Pa

The combined production of these plants was negligible and all of them had been shut down by the end of 1921.

From time to time small-scale smelting operations have been attempted at domestic tin deposits located in South Dakota, Texas, and California. None were successful, and the total metallic tin produced was negligible.

Thus the active tin smelting industry of the United States began in 1916 and ended in 1924 The total production during this period was as follows

	Short tons		Short tons
1916	2,261	1921	11,542
1917	6,065	1922	9,108
1918	10,284	1923	7,466
1919	12,236	1924	486
1920	17,652	1925	none

Virtually all of the above output came from two smelters. the American Smelting and Refining Co.'s plant at Perth Amboy, New Jersey, and the Williams Harvey Corp plant at Jamaica Bay, Long Island.

From a miner's standpoint one of the most remarkable rises from obscurity to high places is that of Senior Patino of Bolivia I believe I am correct in saying that he was part owner, as well as clerk, selling merchandise in a relatively obscure store. Through this source he obtained title to what has proven to be one of the great bonanza mines of the world. Almost literally he sat down on a property that has given him over $100,000,000 The ore was of such high grade that even though he was not educated as a miner it was almost impossible to make a failure. After the production of an enormous sum and when the mine, in his opinion, was reaching a point of exhaustion, the property was incorporated under the laws of the State of Delaware and the dear American public was allowed to subscribe to the stock Like every other property, as depth was attained and water encountered the cost of mining increased each year.

Bolivia has had a very difficult time in meeting its tin quota under the arrangement of the International Tin Cartel, and without any personal knowledge of the resources of that country it would appear to me as if at the present time Bolivia's tin industry was suffering from a near approach to commercial exhaustion. This does not mean that there is no tin in Bolivia, but that it cannot be produced in tonnage volume in competition with other sources For this and other reasons, there has been a great deal of agitation brought on by a group of our nationals for the United States Government to enter into some agreement with Bolivia in order to establish a tin industry At the present moment there is on foot a scheme whereby the United States is to place a 6 or 8 cent duty on imported pig tin, and as a subsidy to the proposed smelting industry, concentrates or barilla will enter free of duty, that a smelter is to be built with a capacity of not less than 10,000 tons of refined tin a year, and that the United States Government is to guarantee the taking over from this source of 40,000 tons of tin for stock pile purposes Such action would, of course, increase the price of tin to the domestic consumer The newly established industry might or might not be able to produce tin of a sufficient grade to meet industrial requirements.

The promoters of this plan, however, have been able to have written into the recent reciprocal trade agreement of Great Britain and the United States, a clause whereby Great Britain agrees to annul the present export duty on Nigerian concentrates when shipped to other than British possessions. Nigeria produces approximately 10,000 tons of tin a year. Just how the promoters for the establishing of a domestic tin smelting industry hope to get a portion of this output is a question as most of the large tin mines of Nigeria are owned by either The Anglo-Oriental Mining Corp. Ltd interested in mining as well as owning a smelting plant in England, or with companies affiliated with the smelting company. In other words, inducement would have to be offered the Nigerian miner whereby he would receive a greater sum of money for his output than is being received through present channels. A tentative proposition has been made to the Netherland Government by our nationals for the purchase of concentrates from the Netherland East Indies. As the Netherlanders have completed in the last few years one of the most modern of tin smelting plants at Anheim, Holland, with a capacity sufficient to take care of their entire output, I doubt very much whether the Dutch Government would divert the concentrates from this plant to one to be established in the United States unless they were able to obtain a price that would give them a material profit.

I have cited this example in order to try to impress you with what I believe to be a fact that should the Thomas Bill pass, and it would seem that a bill of this type will be passed by Congress, the agency charged with the procurement of mineral raw materials faces a very difficult situation and can only carry out the duty to its country involved by the establishment of such specifications as to tenor of ores as will insure the obtaining of usable material.

The problem, though a bit new, differs merely in name from those which have existed in the past in the manufacture or procurement of any materials necessary for the Army and Navy I am quite sure that neither branch of the service would buy shoddy goods for clothing, nor would they buy food that was not up to standard specifications, nor accept from a contractor a battleship unless specifications had been rigidly adhered to.

If anyone should doubt the importance of minerals in time of peace or war, I would suggest that they make a study of the mineral resources of Continental Europe. To

me the treaty that has just been signed between France and Germany is a mere breathing spell which allows Germany a free hand in accomplishing what unquestionably is their purpose.

When here last year I remarked that Germany would unquestionably acquire the various countries lying between its then political boundaries and the Caspian Sea I am now more than ever convinced that Germany will attain its objective, and after a few years will find that the natural resources acquired are not sufficient to maintain its then industrial demands, and unless checked will, if it has the power, force the nations that have to give a portion, if not all of their resources, in order that the then German Empire may maintain its place in the sun

Not to repeat, but to emphasize, it is impossible for me to think of either the Japanese situation or the German situation without being on one hand appalled at what seems to be pure cupidity, and, on the other hand, of having a sinking feeling over the stupidity of it all, as it still lies within the power of the United Kingdom, France, and the United States to destroy, if they so desire, the industrial objectives of Japan or Germany. Thus bringing out with greater emphasis the important part played by mineral raw materials in time of peace and war.