SHIPPING NICKEL TO GERMANY

The United States is the greatest consumer of nickel, but depends almost entirely on Canadian ores for its supply. It can export nickel only by importing from Canada more than it needs for its industries. We have been advised by the Federal Government that satisfactory arrangements for preventing Germany from obtaining Canadian nickel have been made, and we are advised by newspaper despatches that nickel is piled on the Deutschland's pier ready for shipment. The spectacular trip of the submarine has again directed attention to the nickel question and particularly to the various sources of nickel used in the United States.

According to the official report of the United States Geological Survey for 1914, the latest final report available, no nickel ores were mined as such in the United States during that year, but an equivalent of 845,334 pounds of metallic nickel, valued at $313,000, is understood to have been saved as a by-product in the electrolytic refining of copper. A part of this nickel was marketed in the form of sulphate and part as electrolytically deposited metal. Mr. Frank L. Hess, the author of the report, says: "It is impossible to tell how much of this nickel was derived from foreign ores, but a considerable part—possibly one-third to one-half—was produced from domestic ore."

During 1914 there was refined in the United States a small quantity of rich matte imported from Belgium and obtained from the smelting there of New Caledonia ores.

When it is borne in mind that Canada exported to the United States in 1914 matte containing 36,015,642 pounds nickel, the American sources other than Canadian appear almost negligible. The amount of nickel produced from the United States ores, even if it should all come into the hands of German agents, constitutes no great menace.

There are other sources than the refineries that have to be considered, however. It is reasonable to assume that since the war began German agents, experiencing difficulty in purchasing nickel at first hand, would be able to purchase no mean amount from those having on hand stocks of raw and scrap nickel accumulated before the Canadian arrangement went into effect.

The appearance of this nickel on the Deutschland's pier emphasizes the necessity of guarding against leaks. It does not prove, of course, that the agreement with the International Nickel Company is not being lived up to. The episode shows, however, that in spite of the fact that the Canadian Government acted promptly in arranging to keep nickel from the enemy it would be very much to our advantage if the refining of the matte were done in Canada.

The episode also reminds us that many months have elapsed since the nickel company promised to erect a refinery in Canada. It emphasizes also the advisability of having that refinery of sufficient capacity for handling all the matte produced.

There is small comfort in the fact, if it is a fact, that the nickel to be shipped on the Deutschland is not of Canadian origin. There should not be allowed to be shipped to the United States more nickel than is needed there. If any is to be exported to Europe we, the chief producers, should export it ourselves.

Unfortunately we must for the present, since we have no refinery here, be satisfied with shipments being made to the Allies from the New Jersey refinery instead of direct. If, however, the nickel company senses the feeling of Canadians it will not much longer delay the erection of a nickel refinery in Canada and it will look forward to doing all its refining here.

MINING AT GREAT DEPTH

Compared with the temperatures at the surface the temperatures met with in most Canadian mine workings are moderate and fairly uniform. At the depth of a few hundred feet the miner is protected from extremes of cold and heat, and can work efficiently at any time of the year. Experience in many parts of the world has shown that many mines are hot at comparatively small depth and that all very deep mines are hot. Some mines are hot because of purely local conditions, while heat at great depth is common everywhere.

An unusually interesting example of increase in temperature in depth is afforded by the world's deepest mine—the Morro Velho mine, situated in Brazil. An article on the ventilation of the Morro Velho was published in our Aug. 1, 1915, number. Additional information is contained in the recently issued report of the St. John Del Rey Mining Company.

The Morro Velho is a gold mine which is producing nearly $200,000 per month. Most of the ore is coming from a depth of over 4,000 ft. below the surface, and the shafts have reached a depth of 5,826 ft.

The company has made a very careful investigation of conditions at depth. It has been found that the increase in rock temperature in the Morro Velho mine is 1° Fahr. for every 125 ft., while the increase in air temperature, resulting from compression of the air as greater depth is attained, amounts to 1° Fahr. for every 180 ft. At the bottom level during the hottest months of the year the temperature averaged 107 degrees.

Commenting on the temperature in which the miners work at the bottom level, the superintendent, Mr. G. Chalmers, says that the men, being used to high temperatures at surface, do not seem to mind it, and that "they are invariably only too anxious to work overtime if the opportunity is given them." Mr. Chalmers is, however, making many improvements in ventilation and plans to overcome further increase in temperature by cooling and drying the air going into the mine and by drawing off the air after allowing it to pass over only one or two stopes instead of allowing it to pass up through several stopes.