

000 compared with \$4,500,000 for the Department of Industrial and Scientific Research and the Medical Research Council. And some of the industrial and scientific research expenditures are as much for military as for industrial purposes, such as those for aircraft design.

With photographs of destroyed Spanish universities to drive home the point, the science frustration exhibit comments that scientific research to improve warfare is a strange and indirect sort of suicide for the scientist.

In military research the internationalism of the scientist disappears and this contributes markedly to inefficiency. Not only is there no free interchange of information across national borders, but a British commentator says "it is found necessary to segregate the worker from the rest of his scientific colleagues by forbidding mention of his work outside his laboratory."

Science News Letter, October 8, 1938

PHYSICS

Corrosion Wastes Exceed World's Wartime Budgets

THE war-basis budgets of the nations of the world reach staggeringly large figures but the most costly single item which the United States, or any other nation, faces is the cost of corrosion and its prevention.

This is the estimate of C. E. Heussner, materials engineer of the Chrysler Corporation, who computes the world cost of the corrosion damage of metals alone at some \$5,000,000,000 each year.

Each year a quarter of all the iron in the world returns to oxides or ores from which it came, Mr. Heussner states in an American Society for Testing Materials summary.

Much of the iron thus corroded is lost permanently, for while it is theoretically possible to send the iron oxide back to a plant and convert it into commercially pure iron again, the iron rust is so scattered that it is economically useless to collect it and start over again. It is only economical to try and collect the un-rusted parts of scrap metals. Hence the place of the junkman in modern society.

Speaking rather loosely, we talk of rust-proof metals and corrosion-resistant materials but in actual fact all metals and protecting surfaces fall down in special cases and what is good for one job is useless in another. Everything depends on a metal's environment, the conditions under which it will be used in service.

Ordinary steel, as one example, needs

plenty of protection. It rusts in moist air and dilute nitric acid. But if steel is immersed in concentrated nitric acid—a potent solvent—it will not dissolve. The steel becomes passive and acts like a

noble metal. In this environment steel is a noble metal, H. W. Gillett of the Ohio State University's Battelle Memorial Institute, observes in another part of the report on corrosion.

Science News Letter, October 8, 1938

GEOLOGY

Cession of Silesia to Poland Involves Famous Teschen Coal

Also Included in Czech Portion of Silesia Are Important Railway and Industrial Establishments

POLAND's nationalists, who added to the sound and fury over Czechoslovakia by their demands for the cession to Poland of Czech Silesia, will get more than just another 80,000 Poles if they have their way.

They will add to the already extensive high-grade bituminous coal deposits of Polish Silesia the famous coking coal of the Czech Teschen district itself. They will become also the possessors of the Czech half of the iron ore veins that cross the frontier just to the west of Teschen.

The border runs through the city of Teschen, 18,000 persons inhabiting the western portion of the town allotted to the Czechoslovak government. The ancient duchy of Teschen straddles the boundary determined in 1920 by the Council of Ambassadors set up in the general settlement following the World War.

The famous Teschen coking coal is a vital necessity to both Czech and Polish industry. A large part of the coke has been exported to Poland since the two governments were established. Formerly the industrial district which depends on Teschen coke was entirely within the Austro-Hungarian monarchy.

Also included in the Czech portion of Silesia is the strategic Oderberg-Jablunkov railway, which might go to the Poles in a new settlement.

The district is heavily industrialized and its transfer to Poland will add significantly to the Polish industrial plant. Poland is still predominantly agricultural, though industry has made rapid strides since the World War.

Glass, bentwood furniture, leather, steel, machine belting, flax, hemp, textiles and pottery are some of the products turned out in this busy district. No exact figures indicating the value of these products were immediately avail-

able in Washington, however, for figures on Czech industry and trade customarily cover only the entire country without differentiating among the different districts.

"We were always accustomed to dealing with our country as a whole," a secretary at the Czechoslovak legation remarked sadly in response to an inquiry.

The major parts of Silesia were handed over to the German and Polish Republics in the post-war boundary marking spree, the Czechs retaining only a few thousand square miles of the province.

Science News Letter, October 8, 1938

METALLURGY

Manganese Produced From Low-Grade Ores

MANGANESE, highly important in the manufacture of alloy steels, can now be produced cheaply from low-grade ores by a new process developed by the U. S. Bureau of Mines. The process involves first roasting the ore, then chemically treating it to remove various impurities, and finally separating out the metallic manganese by electrolytic extraction.

The manganese thus obtained is 99.63 per cent. pure, Bureau of Mines metallurgists state. They have produced several hundred pounds of it for experimental purposes, and the Bureau has published a pamphlet in which the process is described in detail.

Manganese is exceedingly important in the iron and steel industry. Manganese steel, containing up to ten per cent. of manganese, is very hard without being brittle, and resists corrosion better than ordinary steel.

Compounds of manganese are also used in the glass, pottery, dyeing, paint, and chemical manufacturing industries.

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