METALLURGY

Silver May Substitute For Copper in Electrical Wiring

Metal Would Be as Safe in New Magnesium and Aluminum Plants as in Government Vaults and Would Aid Defense

SILVER, now lying idle in government vaults, could be economically substituted for copper in the electrical equipment of the new aluminum and magnesium plants now being built and thus help to relieve the present acute shortage of copper, declared Robert E. McConnell, chairman of the Engineers Defense Board, New York City, in an address to the American Institute of Chemical Engineers in Virginia Beach.

The Government owns 100,000 tons of silver, Mr. McConnell continued. Silver is an even better conductor of electricity than copper. It would cost very little to convert the government ingots into bus bars and wire.

The silver would be as safe as in the vaults. The plants will operate 24 hours each day. They will be guarded. Besides the wires will be alive all the time.

When the emergency is over the silver conductors can be replaced by the more conventional copper ones, and the silver put back into the vaults.

Twenty-five thousand tons of copper could be saved in this way in the new aluminum and magnesium plants, and another 50,000 tons could be saved in the same way in other plants requiring large conductors of electricity, Mr. McConnell stated.

"The shortage of copper will cause more inconvenience and dislocations than will be caused by any other shortage," he said. It has become acute in the last six months and the prospects are that it will become worse. Recent estimates are that the total productive capacity of the Western Hemisphere south of Canada will be required for military purposes alone.

Current production of new copper in the Western Hemisphere is 1,600,000 tons a year, an all-time peak. Non-defense needs run about 1,000,000 tons a year. But 1,300,000 tons are wanted for defense, leaving only about one-fifth for the normal non-defense needs.

And for many uses there is no substitute for copper. Practically the only metallic substitute is steel. In some cases glass, plastics, wood or fabric can be substituted. Mr. McConnell believes that substitutions should be made wherever possible, and further that many economies can be made in the use of copper both in defense and in non-defense industries.

Science News Letter, November 22, 1941

Make Aluminum from Clay

UTILIZING a technique never before employed in metallurgy, a new process for the manufacture of aluminum from clay instead of the mineral bauxite, of which only about three years' supply remains in this country at the present rate of defense consumption, was announced to the American Institute of Chemical Engineers, by Prof. Arthur W. Hixson of the chemical engineering department of Columbia University.

The new process is expected to make this country independent of imports of foreign bauxite. It was developed at Columbia under the direction of Prof. Hixson, assisted by Ralph Miller and Ivan J. Klein.

All processes for the production of aluminum today use only high grade bauxite ores, Prof. Hixson declared. About 3,143,000 long tons will be required annually for the defense program alone. The total reserve in the United States at the present time is about 11,000,000 long tons, according to geological estimates. Half of this has been imported. Without a method of using some other ore than bauxite, the United States would soon have to import all of its aluminum ore.

The new process uses selected high-silica clays, digests the clay with hydrochloric acid and decomposes the resulting product to get aluminum oxide. From this, the metallic aluminum is extracted by electrolysis in the usual manner. The hydrochloric acid is recovered for further use. The materials and chemicals used are abundantly available because they are by-products of other processes.

Science News Letter, November 22, 1941

After a number of failures to grow *Turkish tobacco* in Canada, a Turkish born Greek chemist reports success in western Ontario.

SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

JACKSON, Mich.—The Jackson Junior Science Club of East Intermediate High School got a great kick out of its visit to the Ford Motor Company and the Ann Arbor Observatory last year and expects to be able to repeat the trips again this year. This group held a Science Fair and also produced an assembly program, both of which were so successful that similar events will become permanent features of this club's activities. Bertha E. Slye, Science Instructor, sponsors this club.

MOUNT OLIVE, Ill.—An extremely active group is the Research Science Club of Mount Olive Community High School. Under sponsorship of Sherman Sparks, Science Instructor, this group produces material which will be of permanent value to science classes in the school. In addition, the club sponsors and underwrites nine programs including a radio quiz; a play contest, in which original plays are produced; a health and conservation feature, and holds an Open House, at which projects and hobbies are displayed. A Chemistry Show, open to the public, is given every year. The club also holds a banquet for prospective new members in the spring.

LAS VEGAS, N. M.—Radio, photography and the building of models are the topics which interest members of the Phy Chy Science Club of Las Vegas High School. According to reports they are doing excellent work under sponsorship of Charles W. Wolfe, Science Instructor.

BROOKLYN, N. Y.—Members of the Radio Club of the Abraham Lincoln High School are engaged in the study of theories and in the construction of devices to fortify belief in those theories. Included also in the club's program is the building of novel electronic devices. This club is sponsored by William Marcus, Laboratory Assistant.

NEW YORK, N. Y.—The Biology Club of Julia Richman High School, under sponsorship of Frieda Lichtman, Biology Teacher, is engaged in the laboratory study of microscopic animals and the tissues of larger animals. At the present moment the members are actively engaged in preparing for the Science Fair held annually by The American Institute of the City of New York with which Science Clubs of America is closely cooperating. Up to $3,000 in science grants is awarded annually for outstanding exhibits at this Fair which has become a national function of the Institute.