SCIENCE NEWS

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THE PRODUCTION OF TUNGSTEN

TUNGSTEN and molybdenum, rivals for favor in the war-essential rare-metals family, are now available in sufficient quantities to meet the most important needs, among which are the 15,000 types of items used mostly in electric lamps and electronic tubes, according to the lamp division at Bloomfield, N. J., of the Westinghouse Electric and Manufacturing Company, one of the largest American producers of pure tungsten for electrical uses from imported wolframite ore. Its production of tungsten from the imported ore is now sixteen times as great as in pre-war years, and the production of molybdenum, from an American ore, has increased to about the same extent.

In pre-war years tungsten ore came principally from countries now wholly or partly under Japanese control. Chinese ore is reaching the United States, but it has to be brought by aircraft transport into India and shipped from there by boat. The United States is one of the principal molybdenum mining and smelting countries.

For use in electronic tubes and lamps, both tungsten and molybdenum must be in a high state of purity. The processing of both requires intricate and precise handling. The metals are reduced to powder form and later pressed into ingots strong enough to be drawn into very fine wire or to be formed into rods and sheets. Both these metals have high melting points, both have electrical conductivity about one third that of copper, and both compare favorably with the more expensive metals, platinum and tantalum, in their ability to resist corrosion.

Tungsten is slightly superior to molybdenum in some respects, but it is limited as to size and form, and weighs twice as much. It is one of the heaviest of all metals. It has the highest melting point of all. High-speed cutting tools are approximately 20 per cent. tungsten, and can be used on a lathe until red hot without losing hardness. Tungsten alloys, particularly steel alloys, are used extensively in many types of machines and especially in war munitions.

Molybdenum is a silvery white metal with a high melting point, and is used extensively in steel alloys to increase tensile strength, as well as in electric lamps and electronic tubes. It is also used in high-speed cutting tools as a substitute for tungsten. In steel alloys it is particularly valuable in protecting against corrosion, and especially against sulfur corrosion. It is called indispensable in vacuum tubes and all other electric equipment where high conductivity, great strength and rigidity at high temperatures are required.

ITEMS

OVER 400,000 words a day are sent out by the Army's super radio station in France, that has direct hookups with London, Washington and the Army's worldwide radio communication system. The multiple-channel 40-kilowatt station, costing an estimated $2,000,000, was sending and receiving trans-Atlantic messages 25 days after it arrived in France in 1,000 shipping boxes. The power of this station may be compared to some of the major standard broadcasting stations in the United States. Station KNX in Los Angeles, WBBM in Chicago, WLW in Cincinnati and WABC in New York are all rated 50 kilowatts, and these are among the most powerful broadcasting stations in the country.

A NEW and important library collection on military aeronautics has just been started by the Air Technical Service Command of the Army Air Forces at Wright Field, Ohio. The collection already numbers more than 3,000 volumes and is used daily by research engineers assigned to development and experimental projects. Many early books on aviation subjects, some dated as early as 1784, provide valuable historical background, while more recent technical data, American and foreign, are essential to the ATSC's responsibility for development and experimentation on new aviation equipment. Miscellaneous material, including air combat intelligence reports from World War I and back issues of aviation magazines and newspaper clippings on aviation subjects, have also proved valuable. The ATSC invites the public to contribute pertinent material to the Wright Field Library. Persons interested in making such contributions are invited to write a letter describing the documents they have. Correspondence should be addressed to: Chief, Technical Data Laboratory, ATSC, Wright Field, Dayton, Ohio.

EPIDEMICS of streptococcus sore throats and scarlet fever that threatened the technical schools of an Army Air Force were prevented and cases of these ailments reduced almost to zero by sulfadiazine prophylaxis, according to a report made by Capt. Richard G. Hodges of the Army Medical Corps in the *New England Journal of Medicine*. Cases of pneumococcal pneumonia were also significantly reduced, as were attacks of ordinary respiratory disease which the layman would call a cold. Rhinitis, pharyngitis, laryngitis and acute bronchitis were included in this group. Captain Hodges suggests that the effect of sulfadiazine prophylaxis in reducing these ailments is probably because a fair proportion of them were caused by bacteria and not by the virus of the common cold.

QUICK, easy, inexpensive and accurate is a new method, using an indicator solution recently developed, to distinguish between manganese bronze and aluminum bronze in scrap and other metal. In the past this has been largely guesswork, because of the similarity in appearance of the two alloys. The discovery was made by the U. S. Bureau of Mines at its experiment station at Pittsburgh. To make the test, a small area of the metal is cleaned thoroughly of all dirt, scale and grease by grinding. This spot is then sprayed with a sulfuric acid solution. After the acid has had several seconds to react, a drop of the indicator solution is added. If the metal is manganese bronze a grayish-purple spot appears; but if it is aluminum bronze the spot is greenish-yellow. The indicator solution consists of varied weights of ammonium-mercury thiocyanate, silver nitrate and ammonium persulphate.