SCIENCE NEWS

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CHROMIUM

CHROMIUM in steel-making has a wider application than any other alloy material. It is an essential in most modern steels. It imparts hardness, wear resistance, useful magnetic properties, and increases resistance to corrosion. In the presence of carbon it combines with the carbon and forms a very hard carbide. Low-carbon chromium steels are casehardened to give greater resistance to wear and are used in ball and roller racers, gears, pins and shafts. High-carbon chromium steels are used in bearings, files and metal cutting tools. Razor blades, springs, balls for ball-bearings, permanent magnets, dies and protective plating are made from one or another type of chrome steel alloys.

Stainless steel manufacture is the largest and best-known use of chromium. Chromium is more valuable as an alloying element in steel when used in conjunction with nickel or vanadium. It is used also in conjunction with several others. Munitions, warships, tanks, trucks, tractors and other automotive equipment are all important war users of chromium.

Chromium plating is an important industrial use of this metal. Fields of application of chromium plating are in the manufacture of turbine blades, tubing, bolts and screws. Household plumbing fixtures are often chromium plated. Chromium chemicals are used in dyeing, tanning, and in pigments. Normal American uses are now much restricted because of the need for practically all available chromium in war equipment.

The United States mines relatively little domestic chromite but uses annually large quantities. In 1941 the consumption of all grades of chromite here amounted to nearly 715,000 long tons. The same year the domestic production was less than 13,000 long tons, the imports, nearly a million tons, making an apparent available supply of over 1,000,000 tons. The imports came from Cuba, the Philippines, India, Turkey, Brazil and from Southern Rhodesia and the Union of South Africa. Some chromite was obtained from South Pacific islands. Sufficient supplies seem still available even with shipping from some former sources cut off.

ITEMS

THE eye-saving role of penicillin appears in a report by Dr. G. T. Willoughby Cashell, squadron leader and ophthalmic specialist, R.A.F., to the *British Medical Journal*. He states that "It is possible to save eyes which would otherwise undoubtedly have been lost from intraocular infection." Inflamed, crusting, scaly lids with watery discharge, present in some cases since childhood, cleared up within two weeks or less when a drop of penicillin solution was put in each eye three times a day. Cases of acute conjunctivitis improved dramatically. Ulcers of the cornea and infections following perforating injury of the eyes responded equally well to penicillin treatment. In five out of six cases of such injury, spread of the infection to all structures and tissues of the eyes was avoided.

WET but warm is a possibility for any one exposed to rainy cold weather if dressed in a fabric with a high wool content and the fabric is constructed so that as little of it as possible is in touch with the skin. The National Bureau of Standards has concluded studies which not only confirm general experiences with wet clothing, but also emphasize the superiority of fabric construction that minimizes the area in contact with the body. In the tests, various wet wool fabrics were laid on an artificial skin surface, and measurements were made of the extent of contact and of the drop in temperature of the artificial skin. Fabrics that made good contact with the surface produced considerable chilling in the skin; those that made poor contact because of the roughness of the weave caused only a relatively small drop in the temperature. Fabrics with a high percentage of wool caused less drop in temperature than those with lower wool content.

NEWLY built modern homes, generally accepted as being completely insulated, are really not so. The vulnerable spot lies behind the radiator recessed in the outside wall. With adequate insulation of this area, as much as 7 per cent. of the winter fuel can be saved, is reported by engineers of the University of Illinois. A typical brick veneer small home erected by the Institute of Boiler and Radiator Manufacturers was used for the tests. Reports state that the heat loss for each square foot of uninsulated recess equals as much as that of 16 square feet of the insulated wall. By installing in each radiator recess a one-inch rigid insulation with an aluminum foil reflective surface facing the back of the radiator, this loss can be prevented. To avoid drafts, radiators should be placed on outside walls. In this way, the air from the colder surfaces of the room is warmed by the radiator, producing a gentle circulation of warmed air. When the radiators are on the inside walls, the cold air is drawn to them across the floor, creating undesirable drafts.

The "indiscriminate" use in industry of vaccines against the common cold is reported in the *Journal* of the American Medical Association by Dr. Lemuel C. McGee, of Wilmington, Del., Dr. J. E. Andes, of Morgantown, W. Va., Dr. C. A. Plume, of Succasunna, N. J., and Dr. S. H. Hinton, of Parlin, N. J., all of them connected with the medical department of the Hercules Powder Company. Three cold vaccines to be taken by mouth and two cold vaccines for hypodermic use were given during the October to April seasons of 1941–1942 and 1942–1943 to more than 1,000 industrial and office workers. Careful records were kept of the number of colds and the number of days lost from work because of colds in these groups and in other groups not receiving the vaccines. "No evidence of clearly effective prophylaxis against either the frequency or severity (including complications) of the common cold from the use of any of the vaccines studied" was found. It is pointed out that this experience confirms the findings of three other groups of medical scientists.