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Sodium, Light Metal, Made Cheaply

Metallurgy

IF YOU had to fill a cubic foot of space with some metal, which metal would cost least? Iron, maybe; but, if as much as a car load were bought, the now rare and very active sodium would be a few cents cheaper, a little less than \$11.50 per cubic foot.

Revelation of the fact that sodium, the metal of extreme purity, remarkable chemical activity, and low electrical resistance, costs so little by volume is made in a comparison of prices of metals in a recent issue of *Metals and Alloys*.

Nickel is the most expensive common metal by the cubic foot, that volume costing \$192.50. The same measure of tin sells commercially for \$143.75; copper \$72.50; aluminum, \$39.50; lead, \$39; antimony, \$31.50; zinc, \$22; and ingot iron and sodium, \$11.50.

Although sodium is now as cheap as iron, if more uses for it were found it might be produced in quantity for a third the present cost. Its occurrence in close chemical combinations with other elements is common. Electrical decomposition is necessary to separate it.

Unlike most metals, sodium is so active chemically that to be kept pure it is immersed in kerosene. In air a film of oxide immediately forms on its surface. It is slightly lighter than water and melts a trifle below the boiling point of water.

In spite of the fact that sodium cannot be strung from pole to pole

and, even if it could, it would be quickly eaten away by the oxygen of the air, it might actually be used as a much cheaper and more efficient conductor of electricity than copper, *Metals and Alloys* speculates. A sodium conductor need be only a third the weight of a copper conductor to carry the same electricity, though it would be three times as large. At prices for sodium which would prevail if such conductors came into use, it would cost only a fraction as much as the equivalent copper.

"If we filled a thin copper or austenitic stainless steel tube, strong enough to carry the load with sodium," the article continues, "and could make provision to avoid difficulties from the high coefficient of expansion of sodium, from the likelihood that it would creep down into the sag of the cable if we left space inside the tube of expansion, and from the danger that would ensue if such a conductor did break, and could work out the problem of making joints and connections, we should have a cheaper conductor than either solid copper or aluminum. Crazier things have been done."

Sodium is now used chiefly as a modifier in aluminum-silicon alloys and as a hardener for lead. The chemist makes it 99.9 per cent. pure; certainly the metallurgist can find more uses for such a metal, the article challenges.

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Arctic Climate Was Never Tropical

Paleoclimatology

THE old idea that Greenland and other arctic countries were once palm-filled tropical paradises is all a myth. These regions could not have been tropical, if for no other reason than that they have practically continuous night for several months each year. Even if it had stayed warm enough, the plants standing there in the dark would have starved for lack of sunlight.

This is one of the points raised in a discussion of ancient climates in the Arctic by Prof. Edward W. Berry of the Johns Hopkins University.

Prof. Berry has found, upon examining all known kinds of fossil plants from the far North, that the great majority of them belong to temperate rather than tropical

genera. In the more recent geological periods they included such trees and shrubs as alder, sweet-gum, beech, oak, elm, maple, hickory, tulip-tree and sassafras, all of which are decidedly temperate-zone plants.

Some more or less tropical trees have been found, such as fig and cinnamon; but Prof. Berry points out that cultivated figs generally ripen their fruits as far north as Baltimore, and that many of the trees that grow in tropic latitudes have their homes high up on the mountainsides, and are therefore really temperate-climate plants after all.

The plants of older periods, such as the coal age, have all disappeared from the earth, so that we cannot judge their climatic requirements.

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