

STORIES of New Jersey

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ZINC FROM THE JERSEY HILLS

More zinc is mined from the stubby, ragged hills of New Jersey's Sussex County than from any other state in the nation. Only an area in the mid-West, including parts of Kansas, Missouri and Oklahoma, has a greater output than New Jersey. Under the stimulus of recent scientific discoveries articles containing zinc are found in home and office, on farms and in factories, in automobiles, airplanes and machines. Iron utensils are coated with zinc--galvanized--to make them rustproof; zinc is used in making hardware and even in cosmetics; and paint made from zinc is as common as the well-known white lead.

Like gold, silver and lead, zinc is a chemical element. It is never mined in a pure state but always combined with certain chemical impurities such as oxygen, sulphur and silicon. The New Jersey ore looks like pieces of rock, composed of tiny black, red, orange and yellow crystals. Only experts can distinguish some of these from other rocklike substances.

The "Horsehead Special" metallic zinc, which is refined from ore mined in Sussex County, is famous throughout the world for its quality--99.9 percent pure. The metal is soft and plastic enough to be rolled into thin sheets for making stair treads, fruit jar tops, eyelets for shoes and many other items. Most articles made of zinc alloys, such as automobile door handles, instrument board equipment and carburetors, are cast in sand molds, or die-cast. They contain from 93 to 96 percent of special high-grade zinc. Other metal products, which may look like iron, steel, aluminum, chromium, tin or lead, may really be zinc alloys. Typewriter frames, lawnmowers, golf club heads, refrigerators and toys, for example, all may contain zinc. Zinc dust, which is essentially zinc metal powder, is used for rust-resisting paint, textile bleaching and smoke screens.

The most important zinc compound is zinc oxide, a combination of the metal with oxygen. This white solid is used in a variety of paints, rubber goods, false teeth, paper, glass and medicinal products.

Zinc must have been known to ancient Europeans; for a zinc idol, the oldest known piece of the metal, has been found in the remains of a prehistoric settlement in Transylvania. Archeologists, digging on the Island of Rhodes, found two silver-covered zinc bracelets dating from 500 B.C., and at the ruins of Pompeii there was uncovered a fountain partly plated with zinc. The Romans as early as 20 B.C. melted zinc oxide with copper to make bright yellow brass. Only a few men knew how to separate metallic zinc from the zinc ore, but they kept the process hidden for their secret work--the formation of gold.

These men, called alchemists, apparently believed that copper could be changed to gold by combining it with zinc because the gold-colored brass had been obtained in this way. This dream led the alchemists to hide their researches and to falsify their statements on zinc. About the middle of the 16th century, however, Georgius Agricola, famous for his study of metals, accidentally