



Electricity and Skeletons

ELECTRICITY, working on myriads of skeletons from which life departed millions of years ago, will do much to prolong the life of our own civilization.

This apparent paradox, which modern science makes real and even commonplace, is explained and emphasized in the new annual report of the Tennessee Valley Authority. New processes for making better phosphate fertilizers in electric furnaces promise to revolutionize the whole fertilizer industry, and with it agriculture, and with agriculture the tenure of civilization itself.

But where do the skeletons come in? In the phosphate rock. Indeed, to a very large extent, they *are* the phosphate rock—it consists of thick deposits of ancient animal skeletons, ranging from fish down to one-celled organisms, left on the bottoms of ancient seas and since pressed and hardened into stone.

Electric-furnace method of preparing phosphate fertilizer does two things: it makes a much more concentrated, effective fertilizer, that costs less in freight

from furnace to field; and it makes possible the economic utilization of lower grades of rock than can be worked by present methods, and that without the use of sulphur now required.

Even without waiting for the full developing of the electric-furnace method, TVA phosphates have been put into wide use in many places throughout the Valley and in several states outside. Distributed with the strict understanding that they are for use only in soil-restoring plantings, TVA phosphates are establishing pastures, checking erosion, and capturing six pounds of nitrogen

from the air for every pound of phosphorus, through the agency of plants which they fertilize.

Important for the power and navigation use of the river itself is the development of the Valley phosphorus program. For if the great reservoirs behind the dams fill up with erosional silt, the whole vast project comes to naught. Insuring that water for these reservoirs comes from grass-floored valleys, not from crumbling gulleys, is not the least of the tasks of phosphates from the furnaces of the TVA.

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GEOLOGY

Volcanoes Are Great Miners; Bring Wealth From the Depths

BOILING floods of lava and glowing clouds of gas are not the only products of volcanoes, geologists find. Many volcanoes have brought useful and valuable minerals—gold, silver, diamonds, or oil, close to the surface where men can get at them.

Reporting his field findings to the Geological Society of Washington, Dr. A. H. Koschmann, of the U. S. Geological Survey, told of the Cripple Creek volcano near Pikes Peak, Colorado, whose eruption 25 million years ago brought millions of dollars worth of gold into the rocks near the surface, where it could be reached by mining operations.

After the first eruptions, the crater floor collapsed, carrying leaves and tree trunks deep into the earth, where they are now found as fossils.

Near Silverton, Colorado, a similar

volcano brought 250 cubic miles of new material to the surface at about the same time as the Cripple Creek eruption. This created the famous Camp Bird mining area, which built the fabulous fortune of the late Tom Walsh, it was reported by Dr. W. S. Burbank, also of the U. S. Geological Survey. To date, more than \$270,000,000 in gold and silver have been mined in the San Juan area near Silverton, of which \$30,000,000 came from Camp Bird. After the first eruption of the Silverton Volcano, one of the craters, eight miles in diameter, collapsed, opening hundreds of fissures in the surrounding rock, which were later filled with rich deposits of gold and silver, some of them five to seven miles long.

Volcanic activity in the ancient Gulf Coastal Plain, an area which now includes Texas, Arkansas, and Mississippi, brought diamonds to Arkansas, and formed oil traps in other areas, Dr. Hugh D. Miser, of the Geological Survey, stated. Erupting eighty million years ago, the ancient volcanoes were discovered during drilling operations only since 1915.

New Mexico, a million or so years ago, had a volcanic lake in the Valles Mountains similar to the present Crater Lake in Oregon, Dr. C. S. Ross, government geologist, reported. This crater, which is the largest explosive crater known, was 17 miles long and 13 miles wide.

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New York State alone has about 500 place names of Indian origin.

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