Divining Rods Probe Earth's Riches

Geology

Probing into the depths of the earth, inaccessible to the miner's eye or drill, the geologist is now determining the location of valuable oil and minerals through the use of instruments and methods that up until a few years ago were not known outside of scientic laboratories.

Engineers at sessions of the American Institute of Mining and Metallurgical Engineers in New York discussed the application of these modern "divining rods" to the discovery of new mineral riches.

Gullible miners and landowners have been fooled and humbugged in past years by unscientific diviners who claimed to be able to locate hidden oil, coal, and minerals by rods or devices that they held in their hands. Farmers have hired these rural mystics to determine where to dig wells. Such methods of prospecting have been discredited. Through the use of the principles of physics, however, the geologist has realized the wishful claims of the impostors and now by an array of complicated instruments can advise the mining engineer where to drill or dig in order to try for oil or metal.

Prospecting by geophysical methods is possible because the rocks and other deposits in the earth have different physical properties which can be detected by suitable apparatus at the surface, Dr. Hans Haalck, scientific expert for German and American exploration companies, told the engineers. Geophysical prospecting is now possible practically by gravimetric, magnetic, seismic, and electric methods.

Masses of light or heavy materials within the earth affect the gravitation of the earth nearby and can be detected with a pendulum or gravity balance, like the Eotvos torsion balance. Such information about internal structure aids the geologist to determine where to drill for oil, for instance.

Various kinds of rocks have different degrees of magnetization and consequently vary the magnitude and direction of the earth's magnetic field. Refined forms of the compass and similar instruments allow the geologist to measure any magnetic irregularities and speculate upon the cause.

Artificial earthquakes can be caused by small explosions and recorded on seismographs in order to determine the difference in elasticity of the underlying rocks. This information gives clues to mineral deposits and formations in some instances.

Electric currents passed through the earth sometimes give valuable information since different kinds of rocks have differing conductivities.

Other methods not yet in wide practical application include: Radioactivity measurements, transmission of radio waves, temperature records, measurement of natural earth currents, etc.

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More Mineral Research

Geology

More knowledge of how nature laid down mineral riches within the earth is needed in order effectively to maintain the great mining industry of the United States which produces metals to the annual value of $1,400,000,000, Dr. Waldemar Lindgren, Chairman of the National Research Council's division of geology and geography and Professor at the Massachusetts Institute of Technology, told the recent meeting of the American Institute of Mining and Metallurgical Engineers.

The United States is falling behind in the investigation of metallic ores, necessary for the discovery of new depostis and for the effective exploration of known deposits, Dr. Lindgren declared. Close investigation in the distribution and geological relations of ore deposits is needed as well as research into the composition and structure of ores.

Experimental work to ascertain the physical conditions of ore deposition was also suggested by Dr. Lindgren as a method of study as important as describing the actual mineral deposits themselves. He urged the mining industry to establish a research laboratory and spend for research a mere one ten-thousandth part of the value of the metals that it mines annually.

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New Buoyant Fiber from Mexico

Botany

Kapok, the light, buoyant fiber now imported from the East Indies by the thousands of tons for use in life preservers and mattresses and for many other purposes, may soon have to meet with serious competition from an even lighter and more waterproof fiber grown under the American flag.

Pochote is the name of the new fiber. It is the product of a Mexican tree, and has long been harvested from wild specimens by the Indians and used in a small way. But the possibilities of the long silky hairs that pack its seed pods have now been recognized by the U. S. Department of Agriculture, and according to Lyster H. Dewey, fiber specialist, experimental plantings on a large scale are now being made in Porto Rico.

In an experiment performed in the Department of Agriculture laboratories, a pochote float was loaded with fifteen times its own weight in lead, and left in a vessel of water 189 days without showing any signs of sinking. A similar load sank a kapok float in 25 days.

The fibers, of which four or five pounds can be harvested from a tree, are stiffer and smoother than those of cotton, so that they can not be woven into cloth or matted into felt. Instead, they spring apart, forming an exceedingly light, fluffy mass. It is this quality that makes them valuable for cushions and mattresses.

It also makes them exceedingly useful for packing the walls of refrigerators and for other heat-insulating purposes, and it is partly at the instance of manufacturers interested in heat-insulation that the experimental plantations are being set out in Porto Rico.

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Cadmium in Solders

Metallurgy

Cadmium, chemical brother to zinc, is finding a useful place in industry as one of the components of special solders, according to Carl E. Swartz, metallurgist of Shelby, Calif. Lead, tin and zinc are the metals in such common solders as those in sealing tin cans, but where lithographed labels are used on tin cans a special solder containing cadmium is now used because its lower melting point prevents discoloration of the lithographing.

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