

GEOPHYSICS

Radar of Little Value in Finding Mineral Deposits

► IN spite of popular belief, radar probably will be of little value in locating hidden minerals in the crust of the earth, the American Mining Congress meeting in El Paso, Texas, was told by Dr. Henry R. Joesting of the U. S. Geological Survey. Microwaves have practically no depth penetration, he said.

Plane-borne radar could be used for rapid mapping of rock outcrops and of variations in soil and vegetation, which are often indicative of deeper-seated conditions. But comparable information can be obtained more simply and more cheaply by ground observation and aerial photographs.

Dr. Joesting described the instruments used by geophysicists in locating underground minerals, and predicted new electrical devices. Geophysics plays a major part in petroleum exploration, he declared, but for other minerals it has not been a spectacular success in this country. The petroleum industry spends annually more than \$50,000,000 in the United States on geophysical exploration and on research in geophysical methods. The amount spent for the same purpose by other mining enterprises is relatively insignificant.

Geophysical exploration techniques have benefited from recent developments in electronics, metallurgy, chemistry and in almost all fields of physical science, but it is doubtful if any entirely new techniques will result from these developments, nor is it likely that basic principles will be radically changed. Lighter, more powerful equipment will result, equipment that will use automatic recording and computing instruments.

The war-developed magnetometer is finding practical application in mineral surveys, he stated. The air-borne instrument, flown over great areas trailing a plane, has a ground version that is used in a car-towed trailer. The helicopter is also being used for detailed magnetic surveys.

An electric method, that offers future promise, involves the induction of current in the ground by a primary alternating current flowing through an insulated coil; and the measurement of the resulting electromagnetic field at the surface by means of a second coil and an amplifier. The method has been little used in America, but is in use in Sweden, Finland and Russia.

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