

MINING

USSR Leads Prospecting

The Russians are 14 years ahead of U. S. in chemical prospecting. Progress in this country has been made since 1946, particularly in tracking down deposits of zinc.

► THE U. S. Geological Survey is quietly distributing to American mining companies, and to any one else who wants one, a 103-page blue-covered document. The booklet is virtually the only evidence available that Russian scientists may be out ahead of the world in developing new chemical techniques of prospecting for metals vital to modern warfare.

Title of the publication is **SELECTED RUSSIAN PAPERS ON GEOCHEMICAL PROSPECTING FOR ORES**. Translated by two top U. S. geochemists, Herbert E. Hawkes of the Geological Survey and Dr. V. P. Sokoloff of Johns Hopkins University, the six articles it contains are dated from 1939 to 1946.

They reveal that since 1932 the Russians have carried on systematic investigations of soil, groundwater and plant life as a way of locating buried deposits of such minerals as tin, lead, zinc, copper, molybdenum, chromium, nickel and tungsten.

Mr. Hawkes, chief of the Geological Survey's geochemical prospecting division, said the Russians were 14 years ahead of scientists in this country. It was not until 1946 that the first large-scale work along these lines was begun by the U. S. Government.

Translation of the six Russian articles was done more than a year ago, and two copies were placed in the Survey's files. A brief notice was sent out to mining journals that the Russian data could be inspected by any one interested.

In the next two months, 75 requests came in from American mining engineers and prospectors. The demand for photostats was so great that this spring the Survey decided to reproduce the translations for general distribution.

The report shows that Russia achieved great success in its first experiments in tracking down underground metals by their chemical traces on the surface.

The Soviet scientists found that an underground mineral sometimes formed a "dispersion halo" or "dispersion train" of metallic decomposition products which could be followed much as a bloodhound follows a trail by scent.

Quick, fool-proof chemical tests were developed which could be used in the field. Thus was eliminated the need for sending countless rock and soil samples back to a laboratory for complicated assay tests.

One of the articles describes a "lumino-scope," a gadget for locating tiny amounts of rare metals in the soil by ultraviolet light. Other papers give comprehensive summaries of Russian progress up to World

War II in soil and water analysis. Equipment for a portable field laboratory is even listed, down to "one tablespoon, aluminum."

Four of the articles were written by E. A. Sergeev, senior scientific associate of the Soviet Union Geological Institute. Other authors are A. P. Solovov, E. A. Ratsbaum, N. I. Tikhomirov and S. D. Miller.

After 1946, only a few brief items about geochemical prospecting appeared in scientific journals coming out of Russia, the Geological Survey experts found. Since 1948, the prospecting journals themselves have stopped coming. The Iron Curtain slammed down, shutting off all information on further Russian research in the geochemical field.

In the U. S., government and private geologists alike have been racing to catch up. But Russia, the articles reveal, has many more large-scale field projects to its credit than have yet been tried in this country. Already notable progress has been made, particularly in tracking down new deposits of zinc.

Some 15 private U. S. companies are known to be carrying on private research in geochemical prospecting. But under traditional American competition, whatever has been learned has become closely-guarded trade secrets.

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ASTRONOMY

Less Glow on Spring Nights

► HOW dark the night, you say. You may be right. Discounting any light from the moon and stars, the sky in the spring seems to be darker than during the cold nights of midwinter, the American Geophysical Union was told in Washington.

A new instrument developed by the Naval Research Laboratory is being used from Alaska to Greenland to measure the brightness of night sky. With it, scientists hope to learn more about the soft night glow which comes from the upper layers of the atmosphere even on moonless nights.

One finding, Prof. Carl A. Pearson and M. J. Koomen reported at the geophysical convention, was that the Maryland sky on nights near the end of March has less glow than in December and January. They said the data seemed to show there is seasonal fluctuation in the darkness of the night.

The researchers are not sure yet whether it is lighter at night the farther north you go. Observations at the University of Alas-

ka's Geophysical Institute showed more night glow than that found in Maryland, John B. Wilcox of the university said. Although the readings were taken when the Northern Lights were not active, the higher overall glow was ascribed to the polar aurora borealis.

Other scientists, reporting on parts of the study were Dr. Edward O. Hulburt, Dr. Richard Tousey and L. Dunkelman of the Naval laboratory and Dr. B. W. Currie of the University of Saskatchewan, Canada.

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ENGINEERING

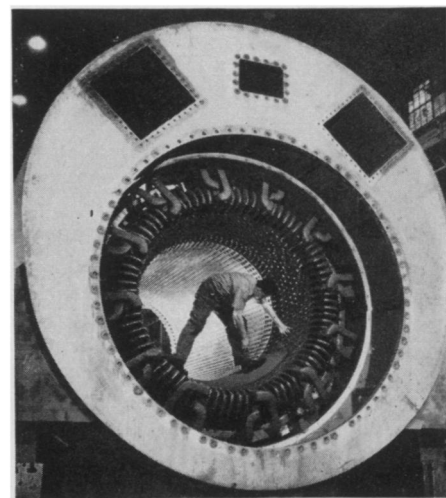
Mica and Resin Base of Insulation

► MICA flakes and a synthetic resin are the base of a new insulation material which makes possible the construction of bigger generators to supply increasing demands for electricity.

A development of Westinghouse Electric Corporation, it is known as Thermalastic because of its high heat resistance and its ability to expand and contract with the generator coils on which it is used.

The new insulation, also tough and resistant to chemicals, will last at least ten times as long as previous insulations under conditions of severe electrical stress, according to Graham Lee Moses of the Westinghouse staff. Mica flakes are already in use in earlier insulation materials but they are bonded with either shellac or asphalt. They do not meet the conditions now encountered in giant electric generators being constructed.

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WHALE OF A GENERATOR—
Largest generator equipped with Thermalastic insulation is this 100,000 kilowatt "whale" which seems to be in the act of swallowing the Jonah who is checking the Thermalastic-impregnated coils in the generator's stationary outer frame.