

EXTRACTIVE METALLURGICAL PROCESSES
POSSIBLY APPLICABLE IN INDIA (*)

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All other conditions being equal, an ore deposit can be defined as an aggregate of minerals from which one or more minerals or metals can be extracted and sold at a profit.

In today's complex international market place, with balance of payment problems occurring from time to time in almost all countries, straight economic considerations are often modified by need for the material or for additional national income.

India is deficient in nickel, copper, lead, zinc, molybdenum, tungsten, vanadium, uranium, columbium and tantalum.

The balance of trade is such that India cannot afford to import these metals even though they may be vital to an integrated industrial programme.

A search must be made to discover sources of the needed metals. Radically new methods may be necessary to recover these metals from the deposits which are likely to be found.

The Airborne Mineral Surveys have conducted magnetic and electromagnetic surveys over three promising areas covering over 90,000 square kilometers and have turned up several thousand anomalies. These are now being explored by ground crews using induced polarization, magnetometer, electro-magnetic, geo-chemical and other prospecting techniques. Enough data is already on hand to keep field crews in Rajasthan, Bihar and Andhra Pradesh for several years in the future.

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The writer reviews the accepted practice and some of the newer methods which are under development or have been put into practice recently for the recovery of copper, lead, zinc, uranium, molybdenum, nickel and cobalt in the light of conditions to be encountered in India, such as difficult transportation of raw materials and finished products, inadequate power distribution and the psychology of Government and labour. Among the newer processes to be considered are: the nitric acid, sulfuric acid and ammonium carbonate cycles for hydrometallurgy, large scale pyrometallurgical processes, bacterial leaching and electrolytic processes for treatment of leach liquors. The underground leaching process as proposed by Kennecott is discussed briefly.

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