V

Our hopes for the future should be directed first towards the discovery of new ore bodies.

It has been said with a great deal of truth that the easy mineral finds have now been made. A review of the discoveries made within the last two decades, particularly in the base metals, reveals only a few of major importance. With minor exceptions the metals are to-day coming from areas that were discovered many years ago. Only the intensive work of the geologist and mining engineer in determining the structure and extension of the known ore bodies has lengthened the active life of these mining areas. Other ore bodies buried beneath glacial or other overburden undoubtedly exist but their discovery can seldom be accomplished by surface prospecting. The lonely prospector with hammer or pan is to-day a romantic rather than a significant figure. In his place the contribution of the scientist must be brought to the rescue of the mining industry.

Already much has been done by the physicist and geologist in the use of geophysical methods of prospecting for oil concentrations. The use of the magnetometer, the dip needle and other similar devices is beginning to reveal mineral deposits hidden beneath the overburden, although their results must still be checked by physical means such as diamond drilling.

Probably the outstanding development in geophysical prospecting in recent years has been the airborne magnetometer. By this means a continuous record can be made of the magnetic intensity along the path flown by the plane. This record enables the geologist to determine areas of high intensity such as are usually associated with metallic ore bodies. The results obtained are generally as accurate as those obtained on the ground and the flying magnetometer has the advantage of speed since one hundred and fifty miles or more of magnetic profile can be secured in an hour of flying time.

Other scientific aids in prospecting for certain ores include ultra violet light, and recently in the search for radioactive materials the Geiger counter has become indispensable.

The greatest hope for fresh supplies of ore depends upon the discovery of new ore bodies in those areas as yet undeveloped. The map of the world shows vast areas of South America, Africa, Northern Canada, Asia and Australia, which have not yet been geologically mapped or intensively prospected. New deposits will certainly be difficult to find but with our constantly growing knowledge of the geological and allied sciences it may reasonably be expected that many discoveries will yet be made.

VI

The second step to be taken in our effort to postpone the inevitable date when mineral shortages will develop is the improvement of our techniques of extraction and processing. New and more efficient methods of mining are constantly being sought. In addition, we must continue to broaden the field of research in our metallurgical practices. The record of discovery in this field offers good evidence that further research will result in further refinements. The development of the cyanide process made it possible to recover gold from ores previously regarded as worthless and thus added immeasurably to the world's reserves of this metal. The change from gravity methods of concentration to froth flotation produced comparable results in the