

with mineral development to be of more assistance to the average prospector and small mine operator is due primarily to one essential factor.

The organic arts creating both the Geological Survey and the Bureau of Mines contain inhibitions designed to prevent the use of these government agencies to promote private or corporate gain.

These very inhibitions, designed to protect the public interest, have often operated to prevent the highest usefulness of the government bureaus concerned, especially when applied to the vast areas of public domain in Nevada.

There are two distinct theories relating to development of our mineral resources. The one generally adhered to in the west was admirably stated by Abraham Lincoln in one of his messages to congress. He said:

"The immense mineral resources of the country ought to be developed as rapidly as possible. Every step in that direction improves the resources of the government and lessens the tax burdens of the people. Extraordinary measures should be adopted to promote such development."

A contrary point of view is held by a large number of influential people. They hold to the theory that insofar as possible the mineral requirements of the nation should be obtained from abroad in exchange for surplus agricultural crops and manufactured products, improving the markets for such and preserving our own undeveloped mineral resources for uses of posterity.

This school of thought seeks rigorously to discourage new prospecting for minerals on the public domain and to prevent any material governmental assistance to development of any new ore bodies which may be discovered.

For this reason, nearly every move to improve the position of present-day western prospectors has been more or less vigorously opposed by representatives of old settled areas and conservative populations of the nation.

Nevertheless, much has been accomplished. An annual increase of \$38,000 has been provided during the past three years for development of geophysical methods of locating hidden mineral bodies.

For a similar period an annual appropriation of \$10,000 per year has been made to provide for a study of possible extensions of mineralized areas on the Comstock lode and in other favorable districts in Nevada.

The existence of numerous occurrences of underground water at comparatively shallow depth has definitely been demonstrated in places where no surface water supplies were available.

Largely through the painstaking and thorough work of Dr. F. W. Lee of the U. S. Geological Survey, the science of geophysics, as applied to prospecting, has made great advances in recent years.

A trial of some of the instruments developed by Dr. Lee was made in the Groom district, on the Nye-Lincoln county line, two years ago, which clearly showed the location of a strong vein of galena ore which had been lost by the mine operators through faulting of the earth structure.

This ore body was recently opened by prospectors who largely acted on the evidence given by the geophysical instruments. A new mineral producer of some magni-

Ruth Copper Pit A World Wonder

Second in volume of ore production among American porphyry copper mines, the properties of the Nevada Consolidated Copper Corporation at Ruth and Copper Flat, together with its 18,000-ton mill and smelter at McGill, in White Pine county, typify the progress that has been made in economic metal recovery from low grade ore.

Prospectors were led to an outcrop of a gold-bearing vein in the district by Indian John in 1867 and

tude may be the result.

There are two promising occurrences of tin-bearing ore known to exist in northern Nevada, one in Lander and one in Pershing county. In Clark county there are indications of an extensive belt of nickel bearing ore.

Both tin and nickel have become of increasing importance as strategic war minerals, in view of the threatening war situation abroad, and a geophysical exploration of the above mentioned areas might well result in the development of supplies most valuable to this country in case of international conflict.

Another valuable undeveloped industry for Nevada lies in the manufacture of the two metals, manganese and magnesium. Large supplies of low grade manganese ore have long been known to exist in many parts of the state.

The recent development by the U. S. Bureau of Mines in the Nevada experiment stations of a successful and cheap method of beneficiating these low grade ores into a high grade product is one of the real achievements of that organization.

Very large deposits of magnesium bearing material in the form of brucite, near Luning, and of magnesite in the Moapa Valley and other places, will soon be investigated by the Bureau of Mines experiment stations, looking to the future industrial production of the metal magnesium and magnesia refractories in this state.

The rapid increase in the use of air conditioning and cooling devices has created a market for one of the best of heat insulators, known as vermiculite, a micaceous material that expands greatly on being heated. The largest now developed deposits of vermiculite are located in Montana.

This material weighs an average of six pounds per cubic foot after expansion. Samples from ledges recently discovered in southern Nevada weigh only 3½ pounds per cubic foot when similarly treated and are a correspondingly better insulator. If these deposits can be opened to a commercial size, another new industry seems possible of development.

Lack of space prevents further discussion of numerous other interesting lines of mineral investigation in the state.

Through appropriations inserted in the fiscal measures of the interior department by the writer, most of the above mentioned results have been accomplished and a number of experimental efforts are now contemplated, or are being made by governmental agencies to locate and determine the extent and industrial possibilities of other even less known mineral occurrences in Nevada.

for many years thereafter only small scale work was conducted on gold, silver and lead prospects. It was not until around 1905 that interest was attracted to the copper potentialities of the Copper Flat and Ruth areas.

Whereas mining of copper ore from the world's largest copper porphyry deposit to be developed, that of the Utah Copper Co., at Bingham Canyon, Utah, involved the grading-down of a mountain, the reverse problem was presented in mining low grade ore in the Ely area.

This has involved excavation by a series of benches, making the world's largest man-made pit or open cut, now over 800 feet deep at the lowest point, a mile long and a half-mile wide.

This great pit is said to have produced considerably more than 175,000,000 tons of material, in-

cluding nearly 80,000,000 tons of porphyry copper ore, as against early estimates of a total of 26,000,000 tons in the entire copper belt, eight miles in length and a mile to nearly two miles wide.

Although the ore contains little gold and silver, the enormous tonnage treated has made the Nevada Cons. one of Nevada's largest producers of precious metals. Nevada Cons. Copper Corporation is a subsidiary of the Kennecott Copper Corporation. Daniel C. Jackling is president and J. C. Kinnear is general manager, with offices at McGill.

Counterfeit paper money is more than 800 years old, and samples of the first "phonies" will be on display at the 1939 Golden Gate International Exposition at San Francisco.

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