

Improvement Done At Automobile Camp

Extensive improvements recently have been completed by T. O. Williams, proprietor of the Oasis auto camp on the Salt Lake highway.

New cabins have been built and gas mains laid to all cabins. Gas stoves and fixtures are in the cabins as well as individual hot and cold water showers. Hot water is available day and night, according to Mr. Williams.

About 120 acres of land, adjoining the camp on the north, have been subdivided and streets and lots laid off.

The United States trade with the Latin American countries last year amounted to \$1,780,000,000.

Belgium imported from the United States last year \$116,201,318 worth of goods against exports of \$72,240,477.

Of a once numerous species of American wild-fowl, the heath hen, there is today only one known surviving bird.

Ely Football Team Will Visit Site Of Boulder Dam

A trip to the dam site today will partially take the edge off of the disappointment in failing yesterday to win the Southern Nevada high school grid title, when the husky Ely football players go to see the Colorado.

A party of about thirty, including J. C. Kincaid, general manager of the Nevada Consolidated Copper company and other officials of the company, with their wives, will make the trip to the river and the boat ride down to the site of Boulder dam.

It is expected they will leave for Ely Sunday morning.

AIRWAY FARES CUT

LONDON, Nov. 23. (U.P.) Air fares between London and Paris over the Imperial Airways line have been reduced for the 8 a. m. airliner from \$22.75 to \$15.50, thus for the first time becoming actually cheaper than the first-class railroad and boat fares between the two cities via the Dover-Calais route.

Bureau of Mines Reports on Mineral Resources of Southern Nevada

This article, which was started in the last previous issue of the Age is a summary of a bulletin recently issued by the Nevada Bureau of Mines to give an authoritative idea of the quality and quantity of mineral resources near Boulder Dam, and to give an idea of the effect of the construction of the dam on the development of these minerals. The article is herewith concluded.

Magnetite
Magnetite occurs in the vicinity of St. Thomas as large deposits of sedimentary magnetite. One of these sedimentary beds roughly parallels the railroad between St. Thomas and Moapa to the southwest and is about four to six miles away.

Another occurrence of similar magnetite lies about seventeen miles southeast of St. Thomas and across the Virgin river.

Glass and Foundry Sands
Sandstone beds of great thickness occur in southern Nevada, especially in the vicinity of the Valley of Fire. It is a deep red fantastically eroded sandstone that gives the Valley of Fire its name.

Within a few miles of the Union Pacific railroad from Las Vegas to Moapa, also on the branch line from Moapa to St. Thomas, and probably more extensive than this, are beds of sandstone of a creamy white or slightly yellowish color composed almost entirely of pure quartz grains of uniform size.

The growing glass and foundry industries of southern California have caused, in the last two to four years, a search for suitable sands in southern Nevada to compete with imported Belgian sand, sands from southern California and other localities in the United States.

As a result, several trial shipments have been made, and at the present time one pit is being operated four miles west from a spur on the railroad south of Overton. A shallow overburden is removed, the sandstone is loosened by explosives,

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pulled by a drag line into auto trucks, and hauled to the railroad where it is disintegrated, screened and washed before shipment.

Sand, Gravel, Construction Rock.
There are beds of sand and gravel near the railroads, highways and towns but generally they are covered with surface soil and somewhat mixed with it. There are pits all along the Arrowhead trail.

At present there is no large producing high-class washed sand and gravel, but sufficient demand will bring this about. Las Vegas wash, lying approximately between Las Vegas and Black Canyon, is an old stream-bed area that can probably furnish an unlimited source of sand and gravel for concrete work.

There are both igneous and sedimentary rocks close to the railroad that can be quarried for large scale concrete work.

The dolomite in the high cliff now exposed above the railroad at Sloan, in the U. S. Lime Products quarry, gives an ultimate compression test in 3-inch cubes of around 12,000 pounds per square inch.

This subject of sand, gravel and rock will be thoroughly investigated by the United States Government before building the Black Canyon dam, and at wherever points these materials are obtained there also will be developed sources for future use.

Bauxite, Alunite, Alums and Clays.
Bauxite is the aluminum mineral that is commercially used for the production of the metal aluminum in connection with cheap electric power. Unlike in past years, the discovery of a bauxite deposit at the present time in southern Nevada would be of commercial value in view of the coming cheap electric power from the Boulder Canyon project. In past years discoveries of bauxite have been claimed, but no definite records kept, and at the present time there is no deposit on which development work is being done.

Alunite, the hydrous aluminum sulphate containing soda or potash, is found in southern Nevada. It occurs in some quantity just over Railroad Pass, 20 miles out on the road from Las Vegas to Black Canyon. As alunite was one of the mineral associates of the rich gold ores at Goldfield, quite extensive underground development work was at one time carried on at this Las Vegas deposit in the hope of finding gold ores in paying quantities.

Water soluble alums also occur in southern Nevada. About nine miles beyond Railroad Pass on the road to Black Canyon and then three miles southerly, there is a most interesting occurrence of soluble

alum salts, with some sulphur, in weathered igneous rocks in two belts, 300 to 600 feet wide, having an easterly and westerly strike.

Clays occur in considerable abundance in southern Nevada. Certain deposits on the Tonopah and Tiedwater railroad are being worked quite extensively for use in the oil industry for oil clarification.

Borates
Borax ores in the form of colemanite deposits occur in commercial quantities in southern Nevada in close proximity to Boulder Canyon.

Both the Pacific Coast Borax company and the American Borax company at one time held or worked deposits here, but the premier deposit of colemanite in this vicinity, and that of the Pacific Coast, also, was purchased and put on steady production by the West End Chemical company. It is now handicapped by recent low prices for borax products. Due to increased production from Seales Lake brines, and the Kern county water soluble borax mineral, kernite.

In this connection, there are between Virgin Valley and Black Canyon certain bitter springs, sink holes, and old lake beds that suggest their geological study with the idea of drilling test holes in search of beds of soluble salts.

One of these lake beds ten miles from the railroad on the West End Chemical company's trucking road, has a remarkably extensive surface deposit of selenite.

Salt
Beds of rock salt occur in the lower end of Virgin Valley below St. Thomas. Those close to the Colorado river may eventually be flooded by the impounded waters of the Black Canyon dam. The deposit of the best commercial value of St. Thomas on the west side of the valley, just above the proposed shore line of the future lake that may cover St. Thomas and extend up to Kaolin near the large manganese deposit.

This glimpse into the future of this salt deposit on the shores of a large inland lake is particularly interesting when one visits the salt caves in it that bear the marks and evidence of the prehistoric mining of this salt by the pre-Pueblo Indians, the remains of whose villages may cover St. Thomas and extend up to Kaolin near the large manganese deposit.

Another deposit of large size lies beyond the Bitter Springs Hill, southwesterly from this deposit, and there is a probability of other deposits still closer to Boulder Canyon. These salt beds may be of much greater economic importance with the coming low-cost electricity, for the reason that the electrolysis of salt solutions to obtain sodium hydrate and chlorine is a rapidly expanding chemical industry.

Both sulphur and massive iron pyrites are important as a source of sulphuric acid, which acid is the most used of all acids in chemical industries.

There are quartz veins carrying a high percentage of iron, pyrites in the Key West and Bunkerville districts.

Barite
Barite has been reported at Goodsprings. The recent use of the formerly useless colored barite for oil well heavy specific gravity mud should stimulate prospecting for off-color barite along the Union Pacific railroad.

Sulphur and Pyrites
There were two producing companies holding adjacent claims on practically the same outcrop. The claims were located in 1917, but a very limited amount of development work has been accomplished, as all early efforts were centered on shipping, followed by a complete shutdown after the war.

The ore is 8 to 19 feet thick, with a flat pitch and a well-defined strong hanging wall, all of which is conducive to cheap mining. The workings resemble a coal mine in appearance and method of mining. The type of experimental work that best applies to this particular ore is that of reduction in the elec-

Feldspar
A feldspar quarry has recently been opened up just within Nevada, six miles from the railroad at Nippon, California. This deposit is in granite, and is about 200 feet wide and exposed for considerable length.

Other Non-metals
Other non-metals such as phosphates, graphites, asbestos, mica, talc and fluorapatite have not been reported as yet in any promising quantity in the southern end of Nevada.

Nitrates, and Fixation of Nitrogen
Commercial deposits of nitrates are known in Southern Nevada. Small local impure beds probably occur in the neighborhood of Death Valley.

The present source of nitrates, outside of Chile, is not from natural deposits of nitrates, but by either recovery from distillation products of coal or from the fixation of nitrogen from the air. This latter method has been made commercially possible through the use of cheap electric power for air liquefaction to obtain nitrogen and for the electrolysis of water to obtain hydrogen, and from the two to obtain ammonia.

With the growing agricultural and chemical industries on the Pacific Coast and with low-cost power at the Black Canyon power plant without transmission costs, the future prospects of nitrogen fixation plants and electrochemical and metallurgical plants in Nevada near the power plant should be bright enough to cause their careful investigation by interested capital. This listing of the Nevada mineral resources close by is made with the hope of aiding such investigations. These plants may not be erected even in the first decade following the completion of the power plants, but the Boulder Canyon project, like the Panama Canal, is not only to serve this generation but the generations to follow.

Farsighted corporations will obtain a foothold as soon as practicable. The excess or "dump" power of the early years of operation of the power plant may be a deciding factor in the early establishment of such industries.

Although the maximum year-round steady supply of power for over a long period of years from the proposed power plants can be safely set at only 550,000 horse power of electric energy, the power plant is to have sufficient units to generate a million horse power. Until the upper basin states begin to utilize a large share of the Colorado river basin waters allotted to them, and until auxiliary dams are erected below the Black Canyon dam to supply the wide variation in seasonal demand for irrigation water, until then, it is estimated that the power plants will generate a great excess of power over the 550,000 firm horse power. The sale of this firm horse power at 2 to 2.5 mills per kilowatt hour at the power plants, along with other sources of revenue, is estimated to produce sufficient revenue to pay all operating costs, along with interest and amortization of the investment.

Under this condition it is a matter of interesting speculation as yet as to how low a figure this excess or "dump" power could be contracted for.

Manganese Ores
Many loads of manganese ore were shipped from Las Vegas during war times. The producing mines were only 17 miles southeasterly from Las Vegas.

The grade of ore shipped averaged over 35 per cent manganese, with a very low iron content and quite a high silica content of 9 per cent to 15 per cent. The ore contained also 1 per cent to 2 per cent lead and 1 to 2 ounces of silver.

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trical furnace, due to the closeness of the deposit to the future power plant at Black Rock Canyon, only 10 miles away. This source of cheap power and the size of the ore deposit justify experimental work on the ore.

While production was limited to the one locality at the Three Kids and International mines, other discoveries and locations were made in the same vicinity, and a deep well drilled for Senator Miller about 5 miles westerly was reported to have gone through a thick bed of similar "black ore" at 600 feet in depth. With the closing of the producing mines interest in manganese died out, leaving an unproven territory worthy of prospecting and developing at some future time when the present ore bodies can be profitably treated.

Nickel Ore
The one occurrence of nickel reported in southern Nevada is in the copper-nickel-platinum ore of the Key West mine, about 15 miles south of Bunkerville and east of the Virgin Valley.

Tungsten Ore
No tungsten ore has been reported from the southern end of the State. During the World War there were operating tungsten mines as far south in the State as Mina on the western and Pioche on the eastern side of the State.

Vanadium Ores
The occurrence of vanadium minerals has been reported from several mining districts in the southern end of Nevada. These minerals are usually of secondary importance to other minerals in the same ore, but at the Ewing mine and in its neighborhood, which is about nine miles westerly from Goodsprings and close to the state line, the vanadium minerals occur in sufficient quantity to be considered of primary importance, and the ore is termed a vanadium ore.

Cobalt Ores
Cobalt has been reported as found both in the Goodsprings and Key West districts in minor quantities associated with other metals. Shipments of cobalt ore have been made from Goodsprings.

Platinum
The presence of platinum in mining districts is so often heralded but so seldom proven to be there. Two authentic occurrences of platinum have been found in the southern end of Nevada. The Boss mine at Goodsprings made shipments of a gold-platinum-palladium ore of high value, but as sufficient amount of the ore could not be found to make it a profitable mining venture.

Zinc and Lead Ore
Zinc and lead ores are here considered together, because in southern Nevada they occur generally in the same districts. One marked exception is in the Groom mine, 100 miles north of Las Vegas, that, to its present depth of mining, is shipping a lead-silver ore free of zinc. The Bristol or Jack Rabbit district, near Pioche, has been a consistent producer of lead-silver-copper ore with a negligible amount of zinc, and in 1923 was the largest producer of lead in Nevada.

Pioche has been known as a lead camp. The surface ores worked in the seventies were very rich gold and silver ores, giving a production totalling many millions of dollars. Production of the base ores did not start until after 1900.

From 1900 to after the war a million tons of lead ores, mainly oxidized, were shipped to Utah smelters.

In 1923 Pioche was the largest producer of zinc in the state, and the camp is quite active. The mining and smelting of the ore is carried out at present mainly in Utah. Cheap electric power in the future might be quite a determining factor in extending mining and milling operations in the camp.

The Goodsprings, Yellow Pine, or Potosi district at Goodsprings, has been, since 1900, the premier zinc producing district of Nevada, reaching a peak production of over 30,000,000 pounds of zinc a year during world war times, with about a third as much lead. Outside of the sulphide ore bodies of the Potosi mine, the ore is mainly mixed lead and zinc carbonate ore. The camp has been at a low ebb for over a year now, but the possibilities of differential flotation followed by the concentration of the zinc concentrates to marketable zinc oxide right on the ground has resulted in the resampling of most of the mines. The main expense of the treatment of the carbonate concentrate will be for fuel, and cheap electric power will probably not be a determining factor.

The Potosi mine has large reserves of low grade sulphide ores, mainly zinc. The newer combined acid and electrolytic method of treating zinc concentrates, depending largely on low cost for electric power, is applicable to sulphide concentrate such as the Potosi would produce, and that the Tybo mine north of Tonopah is now producing and shipping to Idaho for treatment.

It is apparent that low-cost power will stimulate the development of the mineral resources of southern Nevada, and conversely these mineral resources will furnish the necessary raw materials for many future industries attracted to Nevada by the low-cost power from the Boulder Canyon project.

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From Age Files Of Years Ago

October, 1909

Sewer Bond Election:
Setting of November 8, 1909 as the date for election in the matter of a proposed \$30,000 sewer bond issue was recommended in a petition prepared at a meeting of citizens in Judge Lillis' office for presentation to the county commissioners.

Mania Injures Heaton:
J. M. Heaton, station agent, was attacked by a powerfully built man while talking with Special Officer Frank Black. The man stabbed him, inflicting a gash about two inches deep in the right side of the abdomen. The man ran away, slashed his own throat and tried to drown himself.

U. P. Shop Under Construction:
Progress is being made in the construction of the new U. P. machine shop being built here. The power house is also being started.

Ten Years Ago

October, 1919
Slot Machines Back:
Following the decision of the supreme court that slot machines are not a lottery, several are in evidence in Vegas again.

Henderson Board Member:
A. S. Henderson last Friday week received from State Superintendent Hunting his appointment as a member of the Board of Education for District No. 2. The board as now constituted consists of Mrs. Helen J. Stewart, Mr. J. M. Ullom and Mr. Henderson.

Legion Elects:
Col. J. G. Scragham was again elected head of the American Legion of the State at the convention of delegates at Reno last Saturday.

Griffith Yell Leader:
"Bobbie" Griffith, yell leader at the University of Nevada in 1919, had charge of a monster athletic rally held in Reno.

November, 1919
Virgin Valley Irrigation:
Col. J. G. Scragham, state engineer, returned Sunday evening from the Rio Virgin valley, where he went to confer with the people on the water situation. He reports the people there favor the idea of forming an irrigation district.

Road Surveys Made:
A state highway surveying party is making survey of the proposed road route between Bunkerville, Mesquite and the Arizona line, including the bridge across the Rio Virgin between Bunkerville and Mesquite. The bridge will consist of two steel spans of 125 feet each with piling trestle approaches. It will carry the Bunkerville pipeline.

Women Hold Most Jobs In This County

SHELTON, Wash., Nov. 23. (U.P.) Mason county, center of logging activities, is a place "where men are men" but a survey shows that it is also a place where women are public officials.

The position of county auditor is held by Ida Rex Loughman; county clerk, Dora Fredson; justice of the peace, Susie E. Pauley, and Shelton postmaster, Jessie Knight.

Members of the sex head the county school board, library board and several Shelton business firms, including the county credit association.

Both of Shelton's schools and the city high school have woman principals. An only bus, running from Shelton to its suburbs, is also run by a woman.

Even doctors are feminine.

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