

# Tooele County's Mines and Future Mineral Prospects.

In Tooele county there are at least three mining camps which have done and are still doing much towards increasing the world's supply of precious metals. These are Mercur, Stockton and Ophir. The former has produced more than \$12,000,000 in gold alone, while during the first stages of its existence, the white metal being sought most, was the camp's chief product.

Stockton, in the early days, was a noted silver camp. With its early history the name of General P. E. Conner is closely associated, as it was in the beginning of Mercur, then known as Lewiston or referred to generally as Camp Floyd, and also in the early events which took place in Ophir canyon, away back in the sixties. The

general, with his army numbering about 70 men, consisted of a portion of the Third California Infantry and the Second Cavalry. The officers and men coming from a mining state, were naturally inclined to inquire into the mineral possibilities of this section, so prospecting by the soldiers was encouraged and favored as conditions gave opportunity. General Conner figured conspicuously in the organization of several mining corporations and also in the building and successful operation of one of, if not the first smelter built in Utah. Stockton, Ophir and Mercur belong to Oquirrh mountains and to the mineralization which outcrops along the western slope of that rugged range with its deep, picturesque canyons and its sublime peaks which tower skyward to an altitude of 10,000 feet.

The vast Deep Creek country, the development of which means the addition of many millions in wealth, belongs largely to Tooele county.

## Stockton, and Its Bright Future.

Honerine Tunnel Makes Available Immense Ore Reserves.

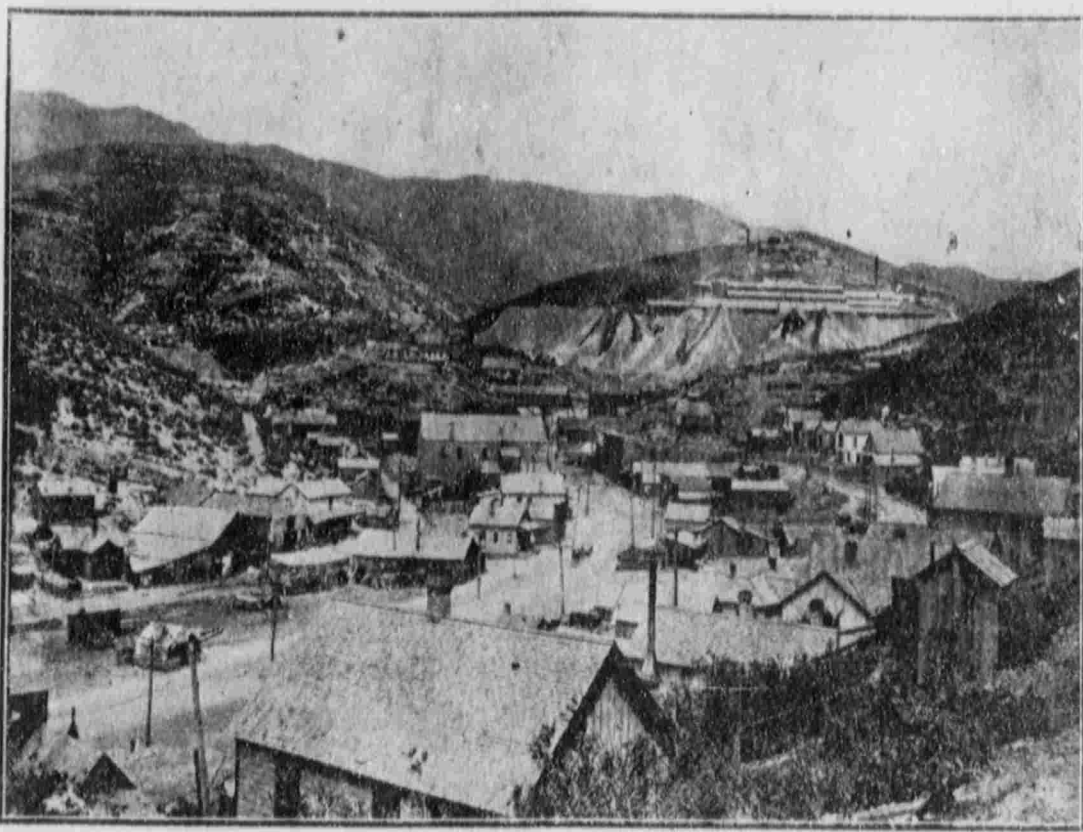
HAD it not been for the achievements of those who planned and carried into execution the building of the great Honerine drain tunnel, the camp of Stockton would be a mighty small contributor to the local ore markets today.

Next to the Ogario drain tunnel at Park City, no enterprise of a like character

company completed and placed in commission one of the finest mining plants in the state, at a cost of about \$30,000, which is handling close to 500 tons of ore daily. Concentration is the method employed in reduction.

### OTHER ACTIVE MINES.

Among other mines which have been directly benefited by the drain tunnel, and which contributed towards the expense of building it, are the Black



NEW TOWN OF MERCUR—HOW IT LOOKS SINCE BEING REBUILT.

others, a billion record of 45,000 ounces in silver is recorded; but undoubtedly a much greater amount than this was produced, as nothing like an accurate account was kept.

The presence of gold bearing ledges was not unknown when silver mining flourished in Camp Floyd. Prospectors used to find an outcrop of yellow rock which looked good enough to have assayed, and returns ranging from \$2 up to \$20 were obtained; but when panning was resorted to not a color could be obtained. This condition was looked upon with suspicion by the distrustful prospectors who were quite unable to understand how the assay could get results while the panning process proved fruitless. Their knowledge of mineralogy was not as thorough as it is now and then the cyanide process was unknown.

The presence of cinabar was also known when Lewiston prospered, which, Mr. Dorn declares, is a further evidence that the gold ledges of the district were known in that period, for while cinabar occurs in silver ledges, it does not occur in quantities, as in the gold ledges.

A report for the year 1871 states that "there is also a vein affording cinabar of low percentage." The government report on mineral resources makes fuller mention of cinabar discoveries in the district, and states that a test made on a 100-pound lot of the ore gave an average of 4 per cent quicksilver. This was evidently considered too low grade for profitable handling, or else the statement was incorrect. At any rate, quicksilver mining was not attempted. A few years later, however, the deposit again attracted attention, and on April 30, 1879, Arle Pinedo located a claim on this cinabar vein, naming it "Mercur," after the mercury in the ore. This claim he patented, and it subsequently became the nucleus of the gold camp, giving its name to the Mercur mine, as well as to the new camp, which in 1890, sprang up on the site of the defunct Lewiston.

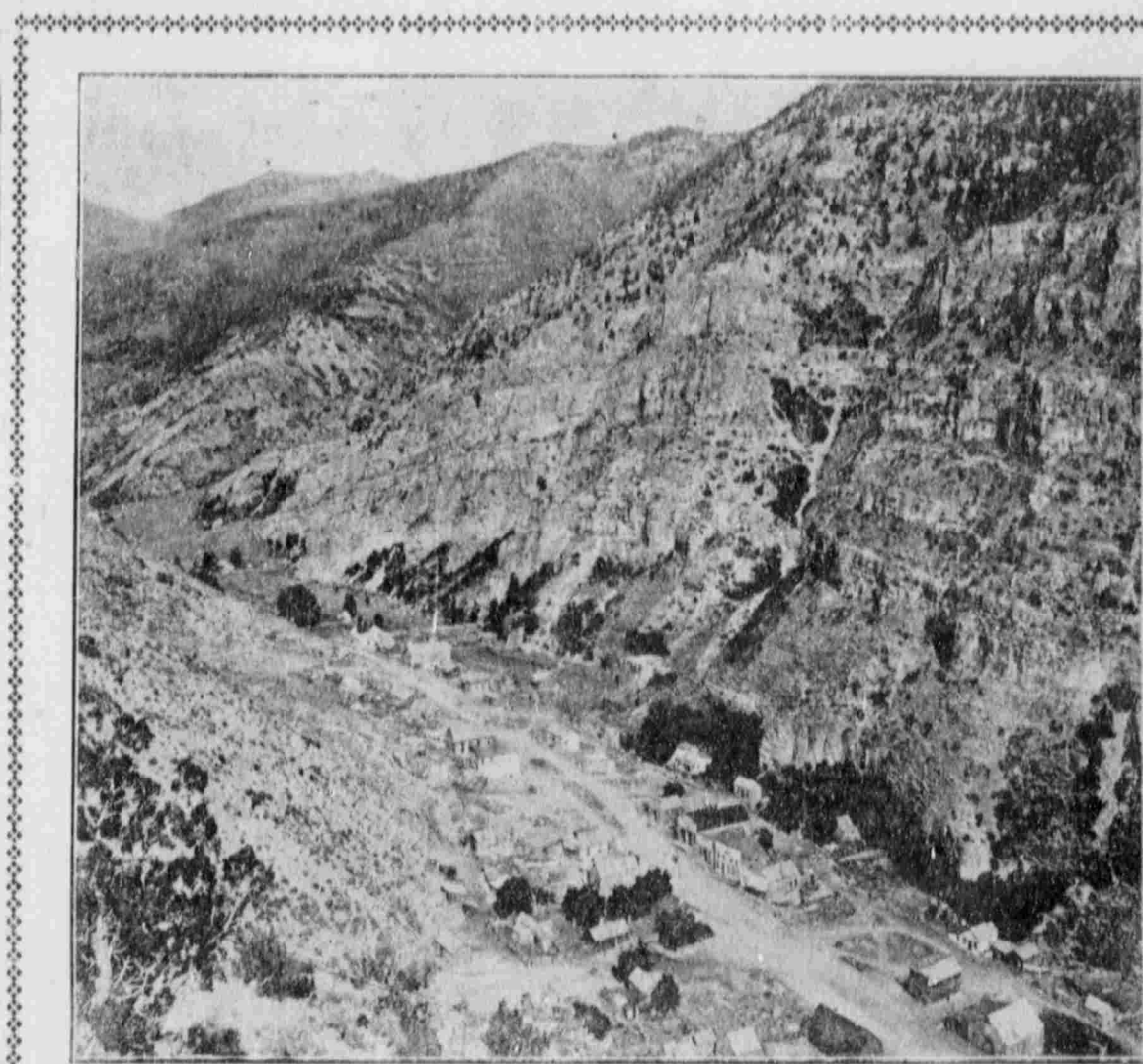
So persistent were the stories of the existence of big gold ledges in the Camp Floyd district that a syndicate of Nebraskans—among whom were John Dorn, John Heimerich and Ed H. Alris—decided to try their luck at mining. They were commonly referred to as the "Nebraska farmers," and their operations were looked upon generally in the nature of a joke. No one in Salt Lake had any idea they would succeed in the venture; that it would be another case of the "tenderfoot dropping his wad."

When the miners looked as if failure had overtaken them when it was demonstrated, in 1890, that the amalgamation mill built in the camp would not save the values which the ore contained. The Nebraskans had already spent about \$75,000, when the cyanide process, which had been used, showed that the ore was rich in gold. The success of the cyanide process at Mercur, indeed, marked the beginning of a new era for mining everywhere.

Mercur is situated in Tooele county, about 60 miles from Salt Lake City, and is reached by the San Pedro, Los Angeles & Salt Lake, and the Salt Lake & Mercur railroads.

### MERCUR'S PRODUCERS.

The Consolidated Mercur continues to be Mercur's principal producer. The only other mine that has been operated on a large scale throughout the history of the district is the Ophir, which was the Sacramento mine, a few miles away, at Sunshine, an attempt was made at the revival of the Overland gold mine which had proved a fruitless proposition in the past. The Greene Reduction Co. of New York operated the Oggar-Marion mine, a leased dump ore. At the Consolidated



OPHIR CANYON SHOWING MAIN PART OF TOWN.

ated Mercur, the deflections in the mill were remedied, and the plant has been giving quite satisfactory results during the past six months. The Moore process for the treatment of silty ore was discarded entirely, but not until after the company had expended much time and money in the attempt to apply the process to the ore, which proved an utter failure in Mercur. As a last resort, the old process of treatment, with some modifications, was resorted to and since then, the company has been paying and making a surplus each month. The cost of extraction has been reduced to a minimum, while the tailings have been brought down to about 80 cents a ton. A new sampling mill was built recently.

### SACRAMENTO AND OVERLAND.

At the Sacramento, considerable attention has been devoted to the extraction of values from the cinabar ore contained in the mine, and from this source the company has derived much of its revenue this year. The mine has not paid any dividends for several months.

The efforts displayed at the Overland have been fruitful of results, and the last month's clean-up is reported to have been extremely satisfactory. The task of solving a problem of treating the low grade ores of the mine was undertaken early in the year by E. W. Clark, manager of the Ophir-Hill mine at Ophir.

### Ophir Canyon Mines.

EXCEPTING for the few weeks during the year when the properties of the Ophir Hill Mining company were closed down, the camp of Ophir, in Ophir canyon, has

enjoyed uninterrupted prosperity. The principal operations in the camp have been carried on by the Ophir Hill, which furnishes employment for several hundred men. This mine is owned by Senator W. A. Clark of Montana, and was one of the earliest silver producing mines in the state. The ores are of low grade, but are profitable on handling them upon an extensive scale. The mill has been operated a greater part of the year on the old tailings dump ore.

The reopening of the old Buckhorn mine, another of Ophir's early and im-

portant silver producers, was probably the chief event of the year for the camp. Shipments were inaugurated recently and arrangements were made not long ago with the Ophir & E. J. management whereby a large tonnage of Buckhorn ore are to be treated there. The Montana, under the management of Pat Ryan of Salt Lake and the Ophir Queen, owned by a Michigan syndicate, have been under active development during the year.

In the Dry Canyon section of Ophir, scarcely anything has been done this year, excepting assessment work.

## The Great Deep Creek District

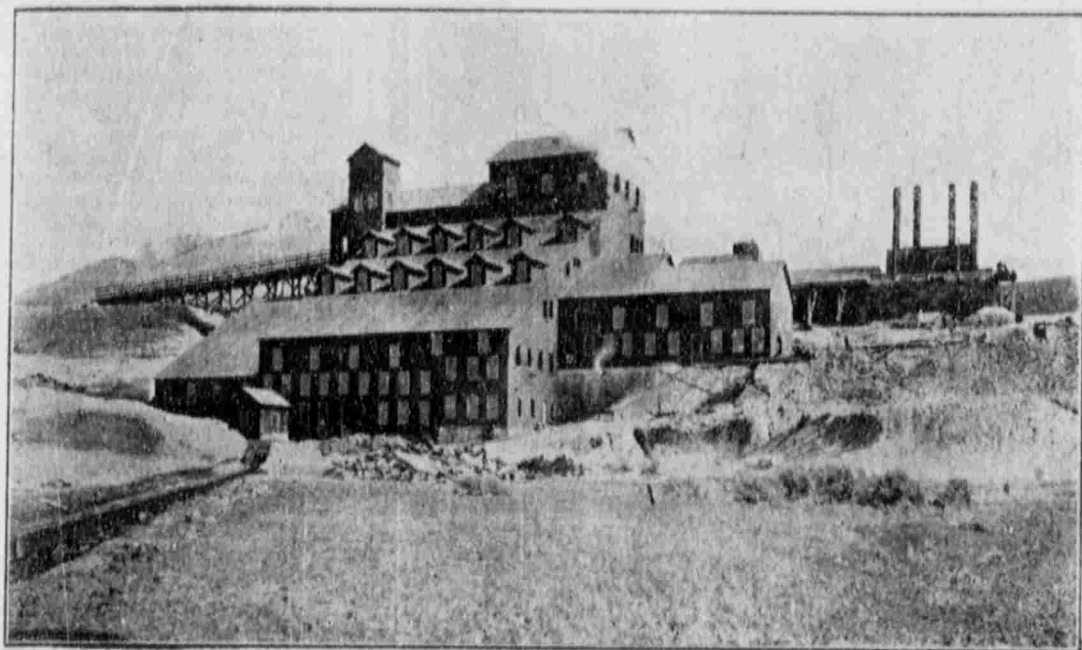
Development is Slow But Good Results are Certain.

PROGRESS has been made this year in the Deep Creek mining district, that vast unexplored mineralized territory stretching across the western portions of Tooele and Juab counties. While explorations have not been carried on extensively, nevertheless advances have been made in the right direction, and the day is not far off when the railroads will seek the traffic that is sure to come from that region.

Some may say that the story of building railroads into Deep Creek is an old one and that it has been talked of so much that it has become a cliché. That may be so. But while the question was agitated so vigorously in the past the fact nevertheless was demonstrated clearly to the railroad managers that not enough work had been done to convince them beyond any

making of surface improvements and the purchase of new equipment. A few months ago the company secured a bond and lease on the Galena mine and adjoining property, and by combining the energy generated from both power plants it is the intention of the company during the next year to explore the lower depths. Heretofore the Utah operations have been confined above the water level. By the installation of pumps to take care of the water the development of the sulphide ore zone will follow.

Of the younger properties in the Deep Creek country probably none have been developed with such a display of energy as has the one owned by the Lucy L. Mining company, located in what is termed as the Clifton section of the region. Since early last spring a good sized force of men has been employed and will be continued during the winter. The Lucy L. property shows an



HONERINE MILL AT STOCKTON, COMPLETED THIS YEAR.

The Honerine mill is equipped with gyratory crushers and rolls for coarse crushing and Chilean mills for fine crushing, with Sherman's patent settling tanks for the treatment of slimes; also fligs and concentrating tables for concentration. In conjunction with the mill is one of the most complete machine shops in the west, together with an up-to-date electric lighting plant, and power house, the latter capable of generating 600 horsepower. The power plant consists of four 150-horsepower high pressure tabular boilers, automatic stokers, one 350-horsepower compound condensing air compressor, together with the necessary feed water heaters, condensers, circulating pumps, etc.

The mill is recognized by mining men, who have seen it, as being the culmination of ingenuity in mechanical construction and economical operation.

On carbonate ores, such as predominate in the Honerine above the 700 level, the plant is making a very close saving of values.

acter can quite equal the one so successfully carried into execution in the Tooele county camp. The unlocking of the waters of the vast reservoir field back for ages by the immense porphyry dyke, not only means that Stockton is going to produce many millions of dollars in precious metals in the future, but the tunnel has made it possible to reclaim a vast area of desert land in Rush valley, contiguous to Stockton, which will support a large population endowed with comfortable homes.

### IMPORTANT FOR TOOELE.

Indeed, nothing has occurred quite so important to Tooele county in years as has the rehabilitation of Stockton, made possible by the adit which will penetrate the mountains for more than two miles. The tunnel is yet far from complete, but it has already accomplished the chief purpose for which it was built—that of draining the mineral bearing zone of the district and making available millions of tons of ore, which, under former conditions, could either not be moved at all, or else the cost was too great to render the operation of the mines feasible.

Thousands and thousands of dollars were spent, all to no avail, in the effort to cope with the situation before the tunnel scheme was conceived.

### SPENT \$1,500,000.

The Honerine Mining and Tunnel companies have spent a million and a half dollars in the Stockton undertaking, but have begun to receive their reward. Recent developments, made possible by the draining of the mine, have been important, and this stands as a shining example of what money, backed up by mature mining judgment, will do.

### NEW HONERINE MILL.

During the year the Honerine Min-

ing company completed and placed in commission one of the finest mining plants in the state, at a cost of about \$30,000, which is handling close to 500 tons of ore daily. Concentration is the method employed in reduction.

### THE STOCKTON BONANZA.

The Stockton Gold Mining & Milling company, which is under the management of J. J. Trenam of Salt Lake, has done much towards making a greater Stockton. This company, during the year, has provided its property with milling facilities, and is about to enter upon its money making career. The mill has a daily capacity of 60 tons. Since this time 12 months ago, the company has expended approximately \$35,000 in betterments. The main working shaft was put down an additional 150 feet, making it now 750 feet deep. Besides this something like 2,500 feet of exploratory work has been performed in drifts, cross-cuts, upraises, etc., and the management makes the statement that there is enough ore blocked out and ready for extraction at the present time to keep the mill going at its capacity for a period of five years.

The lowest workings of the Stockton mine indicate that the dividing line between the carbonate and sulphide ore zones has been reached, and with a little more depth the probability is that some extensive shipping ore bodies will be encountered.

While the mine is developed a long way ahead of extraction, it is not the policy to let further exploration lag; on the contrary, it is to be pushed ahead more vigorously than ever. In contemplation in the sinking of the shaft at an early date to 1,000 feet depth.

Among the improvements made during the year was the completion of a 3½-mile water pipe line; the pipe is 4 inch, and supplies the mill and camp with water from a dependable source.

The Juno and Sharp Mining companies are conducting an active campaign of development in the district.

## Mercur and Its Millions of Gold.

Difficulties at Con. Mercur Mill Have Been Overcome.

MERCUR, often mentioned as the "Johannesburg of America," is credited with having produced in gold the enormous sum of \$12,000,000. In addition to this many thousands of dollars were dug out of the rich silver deposits of the mountains in the early days of camp Floyd district, of which Mercur is a part.

The above figures represent the estimate placed on Mercur's gold output by George H. Dorn, manager of the Con-

solidated Mercur Gold Mines company, from whose properties much of this vast wealth was produced.

In 1870 and 1871, the gulch where the town of Mercur now stands, was a busy silver-mining camp. It went by the name of Lewiston, retaining its identity until mining ceased to be a profitable vocation in that camp, which became entirely deserted about the year 1880.

The Carrie Steele and Sparrowhawk silver properties, the most important mines operated in the district in the seventies and from them, and a few

or falsity of statements made, I planned an expedition to the reputed place of discovery, which lies at a point 15 miles southwest of Promontory station on the Southern Pacific railroad. The stretch of country that one has to travel over between the lake shore and this station is level, but a desert nature, greasewood and sagebrush cover most of the country. The day of our journey to the spot was cold and bleak, and as we neared it I saw that the shore line had changed, leaving the present meager line far away to the southward, and upon reaching the basaltic or igneous reef of rock that formed a rampart against the waves in the old days, I found conditions existing that upset my former opinion, based on conditions as they appeared 22 years ago. On a distance from the base of the igneous massure, there showed the outcrops of the green sandstone, and further out, where the thin sheet of salt water touches the sandy shore, scores of small islands; I might say hundreds, rise out of the lake, and each of these are like cones resembling an hills. From these there exudes the viscous asphaltum, similar to what I had seen at the Irrigation congress in Ogden.

### WAS OF HIGH PURITY.

In the autumn of 1903 I saw an exhibit of asphaltum at the National Irrigation congress in Ogden, purporting to come from the north shore of the lake. Upon examination I found it of high purity, and much resembled Trinidad or California asphaltum. Very little attention was given the exhibit. Many who saw it believed the entire story of its discovery a fake, and personally I gave but little attention to it. However, to settle in my mind the truth

and, yet there was a great outflow from each of these cones in the islands. Around each small cone there lies a circular, solidified sheet of still but half-dried asphaltum, resembling a huge pancake. And these issues, or cones, are situated in the sand, or deep water by the strong waves, and lie in undetermined quantities as huge holes of sand-mixed asphaltum at the lake bottom.

### ROCK ASPHALTUM.

The rock formation that reaches up to the base of these small islands, is what we know as "rock asphaltum," and, treated for the asphaltum contained therein, would return a distillation of about 40 per cent asphaltum. Upon carefully examining the little vents at the summit of each cone, we discovered the issue forth with the flow of asphaltum. This is soon wasted away by the waves and at many points along the southeast shore we find traces of where this black oil, carried by the waves, has left a coating on the rocks.

### IN LIQUID FORM.

I found that some five or six years ago a Frechman, associated with Mr. Truman Schenck, of Salt Lake City, located interests at this point, and to develop the property they procured a section from a steam boiler which they sank into the sand and mud until it reached the impervious clay; then, pumping out the water, they drove down a two inch pipe to a depth of about 40 feet. Through this pipe a considerable quantity of asphaltum issued forth for a time, flowing over its rim. It would seem, however, that it was but a short time before the flow was checked.

### WADED INTO THE LAKE.

Wading, with my assistants for some hours, we waded into the lake, I carefully examined a number of these small islands, none of which are wider than 100 feet in diameter, and neither is there one of them that is more than two and a half feet above the water. These islands are wholly formed of the outflow of asphaltum, and they rise as vents from the lake bottom. The weather, at the time of our visit, was

And, strange to relate, Mr. Schenck and his associates were unable to draw the attention of capital to the spot, for it seemed that they soon after abandoned the enterprise.

### STORY NOT CREDITED.

Others took it up, but the story of asphaltum existing there was not generally credited. The wild, desolate spot, far from civilized man, would certainly be an ideal region in which to announce a fake discovery of any kind by a faulty fakir. The year 1903, however, verified the existence of this most promising field. Late in the fall of this year a party of capitalists visited this locality; but, owing to inclement weather and the lack of a proper guide, they did not reach the ground that would have disclosed to them the importance of this discovery, and they went away in almost total ignorance of its value. At the time of my visit, however, I examined a number of the largest of the islands and secured about 400 pounds of asphaltum and asphaltum rock.

### THE "SEEPAGE" MINE.

The present owners of this property, known as the "Seepage," have organized a company, and shortly after my visit began to sink an oblong, vertical shaft, which was carried down to a depth of about 30 feet, and timbered. When the weather of summer comes the new sluggish asphaltum will fill this shaft, but far more vigorous work than this must be done to develop this splendid showing on the north shore.

### COVERS WIDE SECTION.

The area in which this asphaltum and oil exists is found here to be about 19

miles in length and from three to four miles into the lake. It is wholly on the west side of the great promontory, and it is but little wonder that it has been so long unknown to the people of Utah. Upon leaving the spot I felt that this was one of the greatest discoveries ever made within the confines of the great basin. Here, where the surface cap is thin, the upward pressure made by gases that overlie the oil and asphaltum measures that doubtless exist below the lake-bed area, have formed small vents and fissures, giving us the best proof of what may be found at greater depth.

### IMPORTANT DISCOVERY.

In the clays of the shoreline, west of Farmington, eight to 12 miles north of Salt Lake City, and also west of Ogden, and still farther north of Brigham City, and in the salt along the mouth of Bear river, it is now easy to find evidence of the hydrocarbons, now that we have made the actual fact known that asphaltum or oil really exists at any point in the Salt Lake basin. I took upon this asphaltum outcrop by the lake shore as a most interesting and important discovery, should it be an indication that below the lake main there exists a vast reservoir of hydrocarbon wealth. If this be so, what a tremendous source of wealth this would mean for Utah! Elsewhere in the American fields we have seen sources of oil that certainly were great, but our men of science mourn over the fact that a broken field, in almost every instance, has permitted the escape of its hydrocarbon treasures; but not so in the great basin of Utah, for here has been retained all that centuries have given to this region.

## OCCURRENCE of OIL and ASPHALTUM ALONG the SHORES of GREAT SALT LAKE.

DON MAGUIRE, the Ogden metallurgist, whose knowledge of mineralogy of this and other western states is considered to be thorough, has given considerable time to the study of the occurrence of the asphaltum oil deposits on the north end of the Great Salt Lake.

He confesses that the problem is one of the most difficult he has ever undertaken to figure out, inasmuch as there was hardly a thread to lead him into the field of true discovery. The presence of natural gas near Salt Lake City and as far north as Brigham City, in Boxelder county, gave reasons for the belief in the existence of oil and asphaltum throughout the region mentioned; but direct evidence of the presence of either had not been found.

In an article furnished the Mining Review recently Mr. Maguire declared that the formation of the great basin of Utah, the strata and anticline of the main Wasatch range are not very encouraging, if taken in the grand aggregate, especially when considered as they present themselves to the casual observer in the northern part of the basin. The faulting from the north to south that formed the Wasatch mountains, does not, in its exposed stratification, present a hopeful prospect of finding oil in this region and it was only from formations long subsequent that we might hope to find these coveted treasures.

### VASTNESS OF AREA.

In considering the vastness of the

area in the great basin the mind is confronted with the likelihood of great depth, and in the depths the probability of the existence of the hydrocarbons, the physical situation favored their presence, and, after four months' investigation, the green sandstone of a country border that was constructed from an out crop in the Salt Lake valley, convinced me that oil must exist here. Following up this proof I had the evidence also drawn from the fact that I had obtained in small quantities of asphaltum from the clay measures of Lake Bonneville, when testing for potter's use and the making, many years ago, in the bench assays of Ogden.

### DEEP TEST WORKINGS.

The most favorable site for making deep test workings was along the mouth of the Jordan river to the mouth of the Weber river, west of Ogden, but the basin of the Great Salt Lake being widest at that point, it seemed not unlikely that at great depth oil would also be found there, and from even the shallow borings made by some companies a few years ago in that region for gas, and with reasonable success, left good ground for hoping that with greater depth other measures, rich in either oil or asphaltum, or both, would be encountered.

### OZZING FROM THE ROCKS.

While thus engaged in studying this subject I was informed by some parties in Ogden, chief among them being Mr. Charles O. Wheat, one of the old Overland Express riders, that not far from the north shore of the lake and west of Promontory, he and others had recently discovered asphaltum oozing