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Group Map

SHOWING HEART OF

DIVIDE**MINING DISTRICT**

ESMERALDA COUNTY NEVADA

PUBLISHED BY

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PUBLISHER OFFICIAL DIVIDE MAPS

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Two New Strikes Revive Public Interest in Divide District

DISCOVERY OF A LONG-LOST OREBODY in the Divide Extension mine and the finding of ore on the 1000-foot level of the Tonopah Divide have focused attention on this silver lode which is gradually emerging from the haze of conflicting opinion as to geology and ore deposition as work progresses. The work underground has demonstrated that extensive faulting has occurred at Gold Mountain and unlooked for conditions are being found. Official announcement has been made that ore varying in value from \$30 to \$50 a ton has been cut in the southeast drift on the 1000-foot level of the Tonopah Divide. The drift is following as nearly practicable the hanging-wall of the lode. Values were first encountered in stringers

at 270 feet from the crosscut and directly below the orebody on the 585-foot level, as reported two months ago in this correspondence. The two succeeding rounds carried the drift into the muck and muck samples averaged \$30 a ton. Values increased in the next 20 feet to \$51 a

Adolph Knopf of the United States Geological Survey in a bulletin recently issued on the Divide district,

which is based upon an examination of two weeks made in 1919, describes the Tonopah Divide orebody as pitching sharply to the south. Development has demonstrated that the lode is not enriched throughout, but that separate shoots of ore occur. The drift on the 800-foot level was reported in ore at about 240 feet out from the shaft crosscut and it seems probable that the ore struck on the 1000-foot level is continuation of this orebody, and that the orebody on the 585 level, referred to as being vertically above this discovery, will be found some distance ahead.

The discovery of ore on the 1000 level is particularly gratifying for the reason that the character of ore deposition, secondary enrichment through the agency of descending waters, led some eminent engineers to question whether the rich shoots would be found at this depth. One of the most interesting parts of Adolph Knopf's report is the description of the manner in which the rich orebodies were formed; first by the breaking down of the primary sulphides and the migration and secondary deposition of the silver in the form of "sooty" argentite; and later the changing of the sulphide to a

chloride. As yet no evidence has been found in the lode of the existence of an old water level, nor has water been encountered in the mine workings. While the extent of enrichment of the primary sulphides is a matter of some doubt and can only be determined when they are reached below the zone of oxidization, it is reasonable to believe that secondary enrichment has occurred to the then existing water level.

The best proof of the extensive mineralization of the Tonopah Divide lode is found in the production sheets of the mine. Shipments to Tonopah mills were commenced two years ago and have been maintained regularly, at the rate of 30 tons a day until December of last year, when the output was increased to 50 tons. The average per ton value has been about

\$26, which is a remarkable record for any mine. Production has provided funds for extensive development and costly equipment and at the same time large reserves of ore have been created. It is stated that the shaft will be continued to a further depth of 200 or 300 feet unless water level is reached above these depths. When this work is completed it is reasonable to assume that reduction works will be con-



Caldwell Shaft, Divide Extension Mine, Looking Northeast

structed at the mine; or, if the ore is to be milled at Tonopah, that an aerial tramway will be built. The fact that President Clyde A. Heller of the Belmont is a large stockholder in the Tonopah Divide and recently has been elected a director of the company has led to much conjecture as to ore reduction. The Belmont has a modern cyanide mill of over 500 tons capacity within less than four miles of the Tonopah Divide, and a mine that in spite of present surprising conditions may be considered to be nearing its end. It is pointed out by sagacious observers that the Belmont might easily devote two-fifths of its mill to the Divide mine at profit to itself and save Tonopah Divide the large investment that would be required to build its own mill. The views of President Brougner of Tonopah Divide and President Heller of Tonopah Belmont on this matter have not been communicated to the public. It may safely be assumed, however, that ore reduction has been given careful consideration and that when the time is ripe plans will be worked out.

New Strike, Divide Extension

Recent discovery of high-grade ore in a raise from the 200-foot

level of the No. 2 (Caldwell) shaft of the Divide Extension is of great importance, not alone to that company, which already is shipping ore to a Tonopah mill, but to the Tonopah Dividend, which has a shaft down 400 feet a short distance north of the Caldwell shaft.

There is presented herewith a map showing the areal geology of this part of the district which was prepared by Divide Extension engineers for the Nevada Mining Press in June, 1919, shortly after two bodies of rich ore had been opened at a depth of 45 feet. The discovery, and recent development work in Divide Extension and the No. 2 shaft of the Dividend, open large possibilities for both mines in the development of this north-south fault orebody, which has been found to contain some of the richest silver-gold ore yet found in quantity in the Divide district. Specimens from the new strike, in a raise 42 feet above the 200-foot level, show a mass of silver when roasted and the gold content is unusually high. The first 20 tons shipped to the MacNamara mill from the raise, which included some waste and low-grade material, assayed \$75.41 a ton. The ore now going to the mill is estimated to average better than \$100 a ton.

The ore was first found in No. 2 raise 42 feet above the 200-foot level and at last reports this raise and a stope that has been started from it showed 5½ feet of ore assaying \$279. The orebody has been opened for a length of 120 feet through two other raises, opening 65 feet of backs on the dip of the vein to the 100-foot level. Assays last week as reported by company officials were as follows: No. 1 raise, 4 feet, value \$35 a ton; No. 2 raise, 5½ feet, \$279; No. 3 raise, 3½ feet, \$1008.40.

Discovery of the Caldwell vein came about in May, 1919, in a peculiar manner. An old prospector who had been befriended by Zeb Kendall, president of the company, told him he had found high-grade ore on the surface near the center of the company's claim and agreed to pilot Kendall to the locality and show him the find. At the appointed time Kendall showed up accompanied by two mining engineers and others who were interested. The old-timer was diffident and endeavored to put the trip off to some other time, but finally yielded to Kendall's urging and escorted the party to the place. Samples taken, however, failed to assay more than a few dollars per ton. Pressed by Kendall for the truth, the old fellow finally admitted that the sample of rich ore which he had exhibited did not come from the Divide Extension. He had been influenced by a desire to help Zeb keep the stock up. It was decided, however, that the prospect was worth developing and a shaft was started and sunk 45 feet in the prevailing rhyolite breccia that carried low values throughout. At 45 feet crosscuts were driven east and west. The result of this work is well told by Adolph Knopf of the U. S. Geological Survey, who visited the mine shortly after the strikes were made. Mr. Knopf says:

Divide Ex. Ships 145 Tons \$62 Ore To Tonopah Mill

The following telegram received Wednesday morning from B. A. Rives, secretary of the Divide Extension Mining Co., sets forth conditions at the mine on that date:

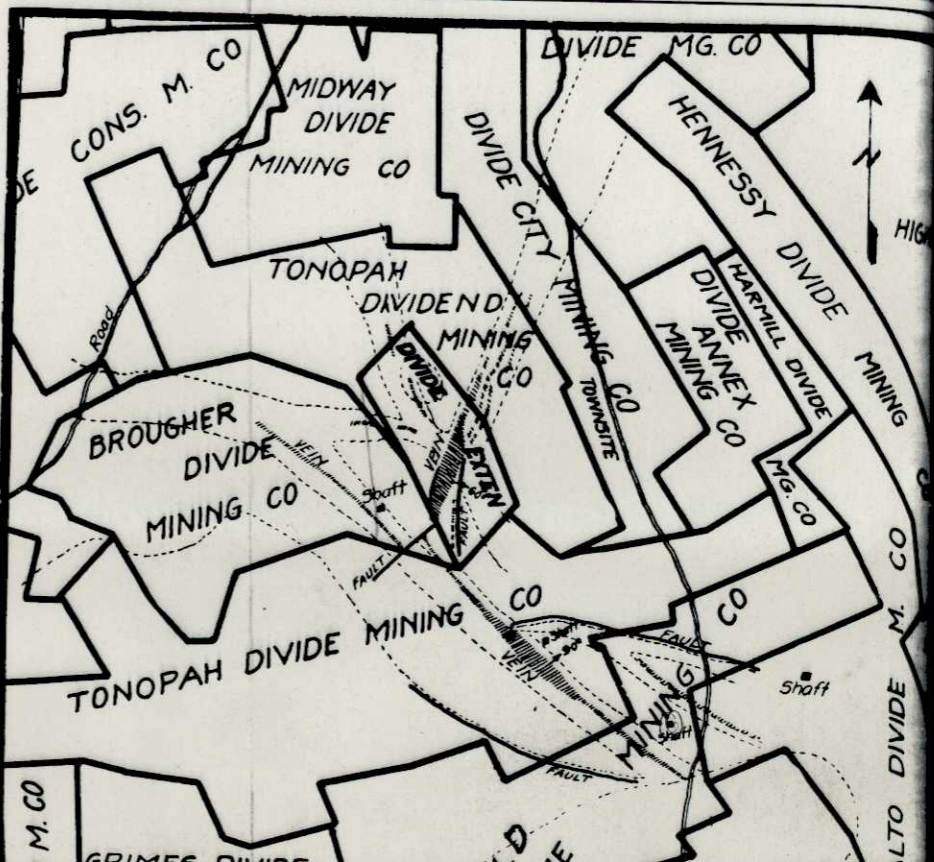
"During the week the mine shipped 145 tons of ore, average value \$62. Orebody has been proved for a length of 135 feet with 75 feet of backs by four raises from 200 level. Ore of good grade shows in both faces north and south so full extent of orebody has not been determined. We are now crosscutting in two places from 400 level to pick this ore up at lower depth. Vein originally dipped 55 degrees east but faulted 20 feet below the second level and is now standing almost vertical, hence not found on 400 by past work.

great good fortune, however, it was found at this time, when the Tonopah Divide lode had thus been shown not to traverse the ground of the Divide Extension Mining Co., disproving the supposition under which the company had been organized and named, that a wide ore zone, unknown when the company had been formed, crops out several hundred feet north of the Kendall shaft. This mineralized zone or lode trends N. 10° E., making therefore an angle of 60° with the course of the Tonopah Divide lode.

The country rock is typical Fraction rhy-

olite breccia, and the outcrop of the new covered lode, consisting of somewhat and iron-stained rhyolite breccia, resembles all respects the similarly unpromising material of the Tonopah Divide lode. A shaft called the Caldwell shaft, was sunk in the middle of the outcrop of this lode; in 1919, it had reached a depth of 100 feet and was being deepened. A crosscut, at a depth of 45 feet, was driven west and at 20 feet the shaft reached 7 to 9 feet of ore against a well-defined wall, supposedly footwall of the lode. A crosscut was also eastward to the hanging-wall, where 7 feet of ore carrying 40 to 60 ounces of silver a ton was cut. The intervening rock between these two belts of ore on the footwall hanging-wall averages 2 ounces in silver the ton. The total width of the lode, shown by the crosscuts, is 50 feet, indicating a thickness of 40 feet; but as crosscuts not been extended into either wall it is certain that the full thickness of the mineralized zone has been determined.

On the 100-foot level a crosscut was east, intersecting a body of ore that was reported to assay \$200 a ton across 12 feet. This body of ore is probably the downward extension of the hanging-wall belt of ore found on the 45-foot level; if this supposition is proved true by further development work, then the orebody dips 57° E. A shaft was sunk here, six feet deep at the time of visit, and ore rich in sooty argentite was found. The lode was developed for 30 feet along the strike, the width being 16 feet on the dip 60° E. Although argentite, which is associated with pyrite, was found in the ore as already mentioned, the prevailing ore is highly oxidized, and the silver occurs as argyrite. The lode is traversed by many well-defined slips that strike and dip in various



Cash Boy Cons. Brings Suit Against Tonopah Ext. for A Valuable Ore Body

RENO—Suit has been filed in the Federal court at Carson City by the Cash Boy Consolidated Mining Co. of Tonopah against the Tonopah Extension Mining Co. which involves extra-lateral rights to a valuable orebody. The complaint alleges that the Cash Boy Cons. Mining Co. is the owner of the Cash Boy claim and that the Tonopah Extension Mining Co. has trespassed thereon and extracted ore therefrom. The court is asked to adjudge the plaintiff corporation to be the owner of the veins and lodes within its lines and that the defendant corporation be forever enjoined from trespassing thereon or extracting ore

from within the boundaries of the Cash Boy claim. Both corporations have agreed to permit representatives of each to visit and inspect the workings in both mines and development work will proceed as before the suit was filed. The Cash Boy has retained Albert Burch of San Francisco and E. A. Byler of Goldfield as its engineers. Hoyt, Norcross, Thatcher, Woodburn and Henley of Reno are attorneys for the plaintiff and Cooke, French and Stoddard of Reno for the defendant. Mr. Thatcher and Mr. Burch visited the Cash Boy mine last week and spent several days underground.

Mineral County Commissioners Employ Electrical Engineer for Power Line

HAWTHORNE—At a special meeting of the county commissioners held Monday to consider plans for the new Mineral county electric power line, Joe Beane, electrical engineer of Reno, was employed as consulting engineer. Mr. Beane was the constructing engineer on the Nevada Valleys plant and power line and was superintendent following its completion until he resigned to mine tungsten during the war. He has a thorough knowledge of electrical engineering and the purchasing end of the business.

It is the intention of the commissioners to speed up the work as fast as possible. The county is authorized to purchase the Lundy-Hawthorne power line from the Nevada-California Power Co. and to extend the line to the mining camp of Simon in eastern Mineral county via the towns of Luning and Mina. A great deal of preliminary work must be done before construction can be commenced. The first task will be securing and surveying the right-of-way and clearing it of brush and setting the pole line.

south. Superintendent W. H. Hart, who has been on a vacation in southern California, has returned and will give close attention to the work.

future. At present the company is extracting 20 tons or more of rich ore every day which is being milled at Tonopah and from which it is deriving a good revenue.

Charlie Wilkinson to Superintend Silver Hills; Inspects Silver Horn

Charles D. Wilkinson, former consulting engineer for the Silver Hills in Tule canyon, arrived in Reno Wednesday and left the same evening for Tonopah where he will join President W. J. Loring, who came out Tuesday from San Francisco, and Harry Stimler, for a visit to the mine. Mr. Wilkinson will take charge of the mine for the company and superintend construction of the cyanide addition to the mill, which will employ a process of decantation from Devereaux sliming tables that he has used with success. Mr. Wilkinson has just returned from the new camp of Silver Horn near Pioche with C. A. Bennett of the Rochester Silver Corporation and expresses the belief that the district will make some good mines. The principal operators are Weir Brothers & Co., New York brokers, who are said to have secured abundant funds for development of their properties. The best showing is along a shear zone where phenomenal values have been found over a wide area. The source of mineralization Mr. Wilkinson believes may have been found on a lime-schist contact.

START STAR OF WEST MILL

A letter from Robt. B. Todd, manager of the Star of the West mine at Gold Park, southern Lander county, says that the whistle blew at the company's new mill on Saturday, March 19. The machinery is operating and adjustments are being made preparatory to the commencement of milling.

cons, evidently having been formed by slow movements of adjustment within the localized zone.

crosscut was being driven from the bottom of the Kendall shaft—the 425-foot level—on this lode on its projected strike and 10° E. and 50° E.

the following report of conditions on the 425-foot level is taken from the Nevada Mining Press of July 25, 1919:

Divide Extension struck the ore Sunday on the 425-foot level and the orebody is much richer than it was on the 45-foot level. The foot-wall vein flattened out and extended through the shaft about 18 feet below the 425-foot level but the shaft continued in the breccia. At the 100 level crosscuts extended both east and west but no ore appeared in the west crosscut. In the west crosscut the foot-wall orebody, which on the 425-foot level was west of the shaft, was reached Sunday. Samples were taken in sections of the first $3\frac{1}{2}$ feet of the vein and assayed as follows:

Upper part, north side of crosscut, \$122; lower part, north side, \$305; gouge streak, \$385. Lower part, north side, \$54; three feet lower, \$345; bottom on bottom north side, \$272.50; 10-inch streak, \$2687.58. Average of first 12 feet of crosscut, \$197.50. The crosscut passed through 24 feet of vein material of which the first 14 feet was high-grade ore, the last 10 feet low-grade.

Subsequently the Caldwell shaft was sunk to the 200-foot level and much prospecting was done but the ore could not be found. On the 435-foot level of the No. 1 shaft a crosscut was driven out to and beyond a point where the orebody but the ore was not found. On the ground at that depth was found to be cut by numerous slips. Shaft No. 1 is 580 feet from the Caldwell shaft and the Caldwell vein is 57° in that direction.

An interesting condition is shown on the geological map, where two faults appear in Divide Extension and Brougher ground. The Brougher fault cuts the Tonopah Divide vein at right angles and forms the vein or lode known as the Caldwell vein. Enrichment of this fault apparently does not extend into the Brougher ground. As extensive exploratory work on the 177-foot level of that mine failed to open up, although some high-grade stringers were found. The other fault, and which was considered of importance at the time the map was drawn, strikes northwest from No. 1 shaft of the Divide Extension and was cut on the 300 level but was not prospected. The plan of development outlined in June by Roy A. Hardy, then consulting engineer for the company, was to cut this fault on the 420-foot level of No. 1 shaft and drift on it to the junction with the Caldwell vein. The ore recently found 42 feet above the 200-foot level south of the point where the two fault fissures should join.

Tonopah Dividend Chances

The discovery in the Caldwell shaft influenced the Tonopah Dividend Mining Co. to prospect that section of its ground adjoining Divide Extension. After extensive surface trenching which disclosed stringers of high-grade a point was selected near the foot of the low hill which shows in the picture that appeared to be at or near the junction of the two fissures. This shaft was sunk 400 feet and exploration work will now be conducted through it guided by conditions in the Divide Extension. This part of the Dividend is considered mighty likely territory viewed in the light of the late strike 400 feet to the

When the ore was first struck on the 45-foot level of the Caldwell shaft the large size and high values of the two orebodies created much interest and excitement and naturally attracted the attention of mining engineers, who were intensely interested in the geological features. At the time H. G. Humphrey was a large stockholder in the company and was represented on the ground by Roy A. Hardy and Alex Wise, both of whom are now directing large mining operations on the Comstock. On June 20, 1919, Mr. Wise stated to a representative of the "Press" that Mr. Hardy, George H. Garrey, chief engineer for the Tonopah Belmont, Supt. Bevis and himself had carefully sampled both hanging-wall and footwall orebodies and that the average across 7 feet, the width of each, was \$75. The intervening 35 feet Mr. Wise stated averaged \$3 per ton, and he said that the average of the entire vein, including both ore shoots on the walls, could be relied upon to mill \$15 per ton.

During this period there was great excitement on the stock exchanges and Divide Ex., which had been sluggish at around 55-57c, shot up to \$1.50 in a few days. The top price was reached in the latter part of July when the stock sold in San Francisco at a high of \$3.67½. Eastern interests bought heavily at private sale and one deal for 100,000 shares was reported at \$3.25, the market price for the day. Part of this was treasury stock and the company's treasury in July, 1919, was said to contain \$130,000.

Whether or not Divide Extension will make a great mine can only be determined by the

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Deep Mining is Test in Divide; Two Shafts Seek Depth

THE HURRAH OF BOOM DAYS gone by Divide has faded down to the earnest development of half a score of properties on and around Gold Mountain and Hasbrouck. They give promise of fulfilling the faith of the men who are speculating. There is still distrust in the minds of speculators who were carried away with the excitement incident to the boom of the district, but the careful buyer of mining stocks is looking with care reports of development in several properties.

age expressed the belief that primary sulphides would be reached at greater depth and advised sinking the shaft to the water level. The discovery of sulphide ore on the fifth level, which is at a vertical depth of about 581 feet, tends to support Mr. Garrey's belief.

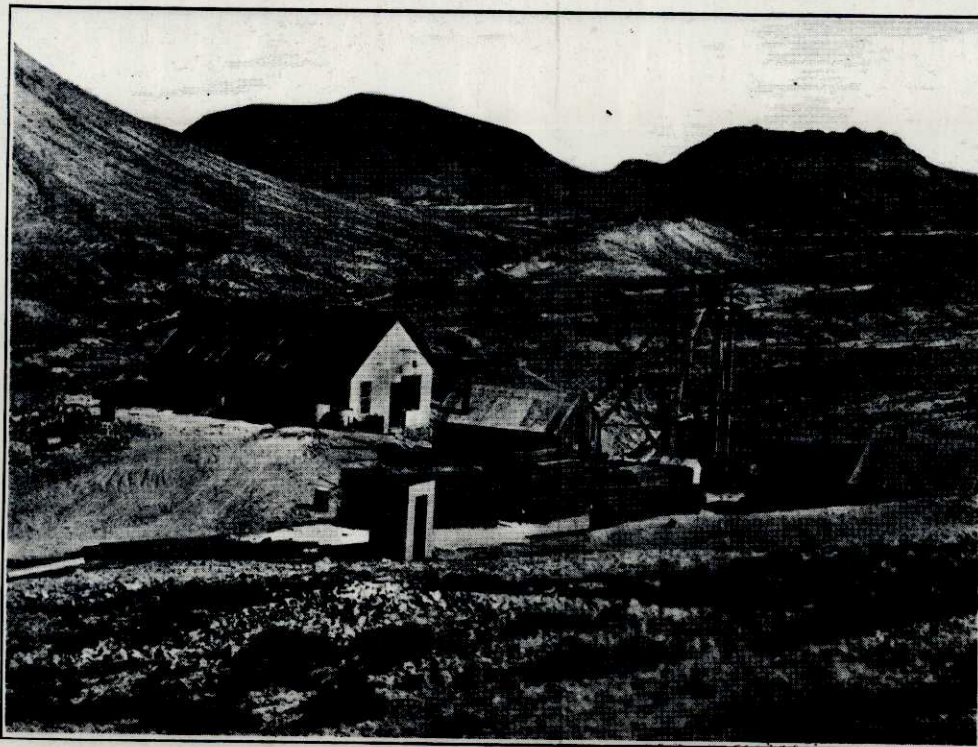
The new strikes on the fourth and fifth levels of Tonopah Divide were made in the southeast section of the mine, toward the Gold Zone. Taken in connection with development in the Zone, where ore was found

continuously for 150 feet in a winze sunk from the 500-foot level, they appear to bear out a theory advanced some time ago by some engineers, that the ore bodies rake to the southeast. If this theory proves true, the Gold Zone stands a good chance to develop into a mine. The company has sunk the main shaft to the 700-foot level and is well out toward the vein with a crosscut that will do much to demonstrate the value of the property.

The collapse of the Divide boom resulted in the closing down of a number of prospects, but several of the more substantial companies are still operating and results have been obtained at a

number of points that are regarded as encouraging. From the Gold Zone north through the Tonopah Divide, Brounger Divide and Dividend, thence northwest, on the trend of the Victory-Belcher vein and farther west on the Kernick and Hasbrouck, work has continued without serious interruption. Disinterested authorities declare that physically the district has made good, considering the limited amount of development work outside the one proved mine.

Distrust and suspicion were aroused in market circles as a result of the great disparity in estimates of ore reserves in the Tonopah



Tonopah Divide Mine, Alto and East Divide in Background

depth of less than 500 feet, would have been considered rather less spectacular market conditions. Since the Julian public, about the last of April, there have been im-

the mine
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trend

Divide mine, and protracted labor troubles, questionable promotion methods and exaggerated boosting reports all contributed to the inevitable slump. Companies that had been provided with adequate working funds, however, were enabled to operate with little interruption and the results obtained, in the opinion of expert authorities, fully justify a thorough system of development work at a number of widely separated points.

In the western part of the district the Kernick Divide Co. has undertaken a deep mining project that will affect in important measure the future of this part of the district. The main Kernick shaft, now down 550 feet, is being sunk to a depth of 1000 feet, where lateral development will be extended over a wide area, including parts of the Revert, Western Divide, Hasbrouck, Divide Annex and Tonopah Hasbrouck. Two shifts are employed in sinking this shaft and the manager reports progress at the rate of six feet daily, a set of timbers having been placed every day recently. A marked change in formation indicates the passing of the upper rhyolite and entry into the lower breccia of the district. Seams and narrow stringers of ore, assaying as high as \$15 per ton in silver and gold, have appeared in the shaft below the 500-foot point. The Revert Divide vein is expected to show in the shaft at about 800 feet.

The Kernick Divide Co. has taken a three-year lease on the Revert Divide property, adjoining on the north, excepting the Desert King claim, the most westerly of the group, and the Kimball lease on the west end of the Polo claim. This gives the Kernick 55 acres of the Revert ground, embracing territory formerly worked by lessees who found some rich ore in shallow workings and who made several high-grade shipments to Tonopah mills. When the shaft has reached a depth of 1000 feet, crosscuts will be extended north into the Revert ground and west into the Western Divide, the Hasbrouck Annex and under Hasbrouck Mountain, to cut the main fissures opened on the other side of the mountain.

The Kernick Divide ground was regarded during the boom as one of the select points in the district and upon the incorporation of the company in April, 1919, some of the most prominent mining men in Nevada became large stockholders or directors. The directorate, which was headed by the late George A. Kernick, includes the names of H. C. Brougher and George Wingfield, president and vice-president of the Tonopah Divide Mining Co. A. A. Codd is secretary and treasurer and A. A. Busey is superintendent. The property is well equipped for deep mining and the company is reported to have a substantial cash reserve in its treasury.

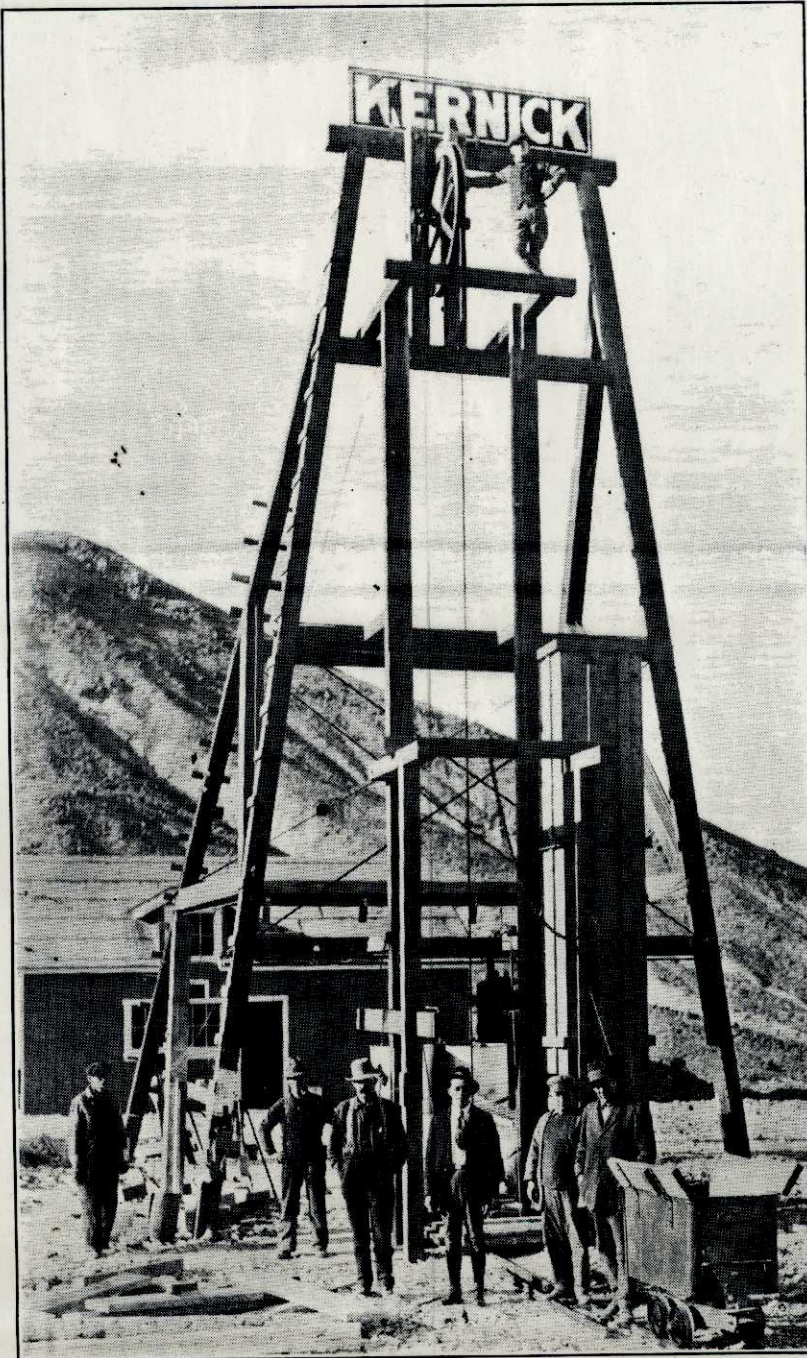
On the Tonopah Hasbrouck property work is centered at present

on the 200-foot level from the main shaft, or 260 feet below level, where a crosscut is being driven east under the mountain the so-called tunnel vein, from which a considerable quantity of shipping ore was stoped at the tunnel level. Some ore of high grade remains in sight in the tunnel, and the main shaft, which was sunk with the object of exploring this vein at greater depths, Hasbrouck was the first property in the Divide district to be worked on an appreciable scale. It was worked in 1903 by John W. Kernick, who made a fortune in Tonopah, and later was purchased by the Kernick, who organized the present company and expended a considerable amount of his own money in developing the property.

The property consists of four of which are opened in the Belcher

Ore of shipping opened in the Belcher extension, in the No. 2 the center of the property a small quantity was the West End mill. The company's output reported at one time of a sufficient tonnage to ensure continuous production the ore-shoot produced and it became apparent considerably more must be secured to uniform grade. The stock will be reorganized Work has been until funds can be an assessment.

Belcher Divide is locally the same as the Belcher Extension to be reorganized in similar lines. Pay ore in encouraging drift on the 85 feet Extension shaft, the boundary between the two properties was found also on the trend of the or fracture belt an old prospect both these instances was greatly crushed regular in value, started on the 100 feet from the main shaft to cut the latter but no ore of value as a result of the work on the properties the ing breccia been penetrated depth is required



Main Shaft Kernick Divide, Now Sinking to 1000 Foot Level

any definite knowledge of the deposition.

In the Victory Divide, lying between the Belcher Divide, an ore-shoot of considerable promise has been the 200-foot level and subsequently on two levels below a winze. Late reports indicate that the vein flattens level, but high-grade ore is said to have been found to the vein from the bottom of the winze, at a depth. Several shipments of milling-grade ore have been

(Continued on Page 14.)

Deep Mining is Test in Divide; Two Shafts Seek De

(Continued from Page 4.)

the ore-shoot was opened on the 200 level. The Victor has three distinct veins or fracture zones, forming a triangle with the main shaft near the east corner. Good assays were obtained in prospecting the northwest vein on the 200-foot level. The Butte vein, extending northeast and intersecting both the main Vicory-Belcher vein and the smaller northwest vein, has not been prospected by work other than surface cuts.

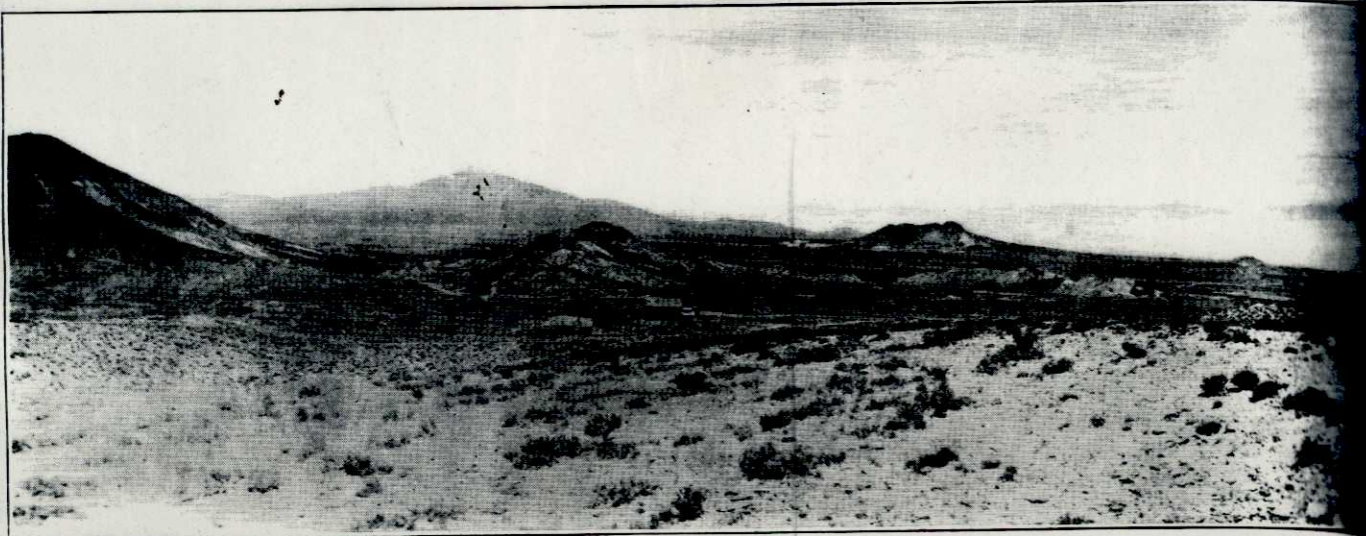
Development work has continued on the Brouher Divide, now under the direction of Gust Hanson, first superintendent of the mine. Recent developments are said to have been more important than any since work

level. The rake of the Tonopah Divide ore body to the southeast materially affects the prospects of the Gold Zone at depth, and if important ore bodies are found in the sulphide zone in this vein, engineers believe the Gold Zone will prove to be a rich mine at deep levels.

Work of the Tonopah Dividend Co. has been confined to the main shaft for some time, in territory north of the Brouher Divide. The shaft has been sunk to a depth of 850 feet and crosscuts started east and west to prospect for veins opened on upper levels. The ground to the east is regarded as promising. On the eastern part of the property, east of the Divide Extension, two shafts were sunk 75 and 200 feet to prospect

ment work on the 400-foot level and several points has exposed large quantities of low-grade ore.

A station has been cut at the level of the Sutherland Divide shaft and lateral work at this depth. On the 400 levels some prospecting was done while many good assays were secured. The vein showed much leaching. The Sutherland divide is working a property at Ute, Pershing county, near the old Arizona mine, one of the early-day bonanzas of the district. Equipment has been provided and work is being advanced. A raise from the tunnel is said to have opened five



PANORAMA SHOWING REVERT DIVIDE AND VERDI DIVIDE, WEST OF GOLD MOUNTAIN, DIVIDE DISTRICT

was started on the property. On the 500-foot level a crosscut to the southwest is reported to be in ore averaging \$12 per ton for a width of 15 feet. Ore of about the same grade was found in considerable volume in opening the main drift in the Brouher vein and a drift to the northeast, following an off-shoot of the main vein, exposed a seam of sulphide ore, from one to two feet wide and yielding assays as high as \$40 per ton. A winze was started on this ore, but was discontinued when water was encountered. The new discovery to the southwest is of particular significance, as it is immediately under a point where some work was done and good assays were secured on the vein croppings.

Good progress has been made in sinking the main shaft of the Gold Zone Divide from the 500-foot level and the latest report states that the crosscut on the 700-foot level has advanced 100 feet toward the ore-shoot opened at the 500 level and followed down 150 feet by a winze near the north boundary line. When sinking was resumed at the 500 level it was announced by the management that the shaft would be sunk to the 800 foot point before new lateral work was started, but in view of the good showing at the bottom of the winze from the 500 level, it was deemed advisable to drive to the ore on the 700-foot

fissures in which seams of ore were found and which appeared to be related to the ore found on the Divide Extension. Some ore of good grade was found here, but the managers decided that considerably greater depth would be necessary to find ore in commercial volume.

The Florence Divide ground, in the northern part of the district, is not being worked, but the company has taken over and is operating the Carmen mine in the state of Sonora, Mexico, having purchased this property with funds realized from a lease on the Florence property at Goldfield.

The East Divide and Alto Divide, under the same management and ownership, have closed down for the present. Both have exposed pay ore at a depth of 400 feet, the vein in the Alto showing in places from one to two and one-half feet of sulphide ore assaying \$40 per ton. These companies started active work some time before the beginning of the Divide boom and were liberally financed by Nevada and eastern men, but their funds have been nearly exhausted and rather than attempt to market their remaining treasury stock at current low prices, they decided to shut down and the principal stockholders hope to raise additional funds without assessing the stock. The East Divide has done a considerable amount of develop-

ore, which will be treated in the future by the Arizona company, a shaft is being sunk away. The West Divide, across the divide to the west and at the foot of the Divide Extension, has resumed after a brief shut-down. A 100-foot shaft exposed ore of good grade and drifts followed this ore for a considerable distance. A tunnel is being cut this ore more than 150 feet from the shaft workings.

Reports on the condition of the Divide mine continue to be favorable. On the fifth level two ore-shoots have been opened and for long time the main drift is said to be in ore. Under the former management the drift was extended southeast to connect with the workings of the Gold Zone, but it was found that this drift followed a low-grade vein at some distance from the main vein. Superintendent William Watkins has ordered two crosscuts to the southwest from the main vein, entering the main vein and exposing ore. Drifts on the third level continue to be assaying from \$30 to \$100 per ton. The shaft is nearing the bottom point and will be continued to the 800 level before another crosscut is made in the vein.

Tonopah Divide Strikes Gold Vein; Many Mines are Developing

DIVIDE—In opening the Tonopah Divide mine at depth three features that have developed during the past few weeks are considered important. Argentite is a component of the ore taken from the fifth level; wide seams of sulphide ore of good grade have been cut in the shaft; and the northwest drift has entered the so-called gold shoot, showing marked improvement over the conditions at the fourth level. In a recent lecture dealing with the Tonopah Divide mine, Professor Lincoln, head of the Mackay School of Mines of the University of Nevada, pointed to the appearance of argentite as one of the most significant of developments in the mine.

The main shaft of the Tonopah Divide has been sunk 700 feet and a station is now being cut at about the 680-foot point, or approximately 100 feet below the fifth level. In cutting the fifth level station a seam of sulphide ore was found assaying \$40, principally in gold. Another seam of the same material was cut in driving from the shaft to the silver vein on the fifth level, and others of similar character, some wider and of considerably higher value, were exposed in the shaft between depths of 640 and 670 feet. Below the latter point the largest seam, yielding assays up to \$70 per ton, dipped away from the shaft and boulders of granite were found in further sinking.

Whether these sulphide seams are related to the main silver vein has not been shown. Their trend is in no instance parallel with the silver vein, but more directly south, and they may prove to be independent fissures, originating in movement below water level. At this depth they are apparently of no immediate commercial value. A drift was extended for a short distance on the wide seam exposed by the shaft crosscut on the fifth level and a small quantity of ore was saved from this work, but the ore proved too narrow to mine profitably. From a point in the fifth level southeast drift, 250 feet from the shaft crosscut, a crosscut was driven northeast to prospect for this ore-seam, but nothing of value was found and the crosscut has been discontinued.

In driving northwest in the silver vein, away from the main silver orebody, the drift entered the so-called gold shoot, exposed on the fourth level, and has advanced in good ore for over 60 feet. A raise is being driven in ore to connect with the fourth level. No crosscuts have yet been driven in this ore and the drift has exposed only the hanging wall. The face of the drift, five feet wide, has

Treasure Lease to Ship 50 Tons Ore

Superintendent Thomas Bosanko is getting out a shipment at the Treasure Divide lease on the Revert Divide, which is due to go the mill about February 10. The shaft is down 70 feet and the ore body has widened to four feet on the east end and over three feet on the west end. The high grade streak on the hanging wall persists but it is no longer necessary to strip the ore before shooting, so the rich ore is shot down with the lower grade, making a product running about \$35 a ton. The company has seven sacks of high grade stored, which probably will be mixed with the mill shipment. The smooth slip that is being carried as the hanging wall is highly mineralized and where broken into the rock shows horn silver. There is every indication that the shaft is in an ore body that may develop into large size. The shaft is nine feet by five in the clear. The company has a gasoline hoist and secures air for its drills from the adjoining lease.

samples in places over \$40 per ton, nearly one-half of the value being gold. On the fourth level the ore in this area is of shipping grade, but a raise from this level showed extensive leaching of the vein at and below the third level. At the fifth level the ore is more solid and uniform in character and value, lending encouragement to the belief held for some time by the superintendent, Charles C. Starr, that further improvement will be found as this ore-shoot is opened on deeper levels.

Ore reserves have been greatly augmented since former Consulting Engineer A. I. D'Arcy estimated the positive ore at something over \$9,000,000 gross. The estimate did not include anything above the third level beyond a point 160 feet southeast from the shaft crosscut, the limit to which the vein had been prospected on the second level; it counted a length on the vein of only 400 feet, extending only to the fourth level, and took no account of the separate "gold" vein or of the so-called gold-shoot, since discovered at the northwest in the main vein. Shipments to the McNamara mill at Tonopah have continued at the rate of 30 tons daily, the present capacity of the mill. With the

sixth level station completed, the shaft will be continued another 100 feet which is in view of all present indications, but well within the sulphide zone.

The Gold Zone reports a good showing of a winze that is being sunk from the 500 level near the Tonopah Divide line. It may be the cross fissure that was opened at the surface several months ago by means of driving post holes for a power line.

Divide Ex. Sinks Winze

Divide Extension has shipped 14 tons of ore to the West End mill that brought a price of \$241 per ton, which had accumulated in the small ore bin at No. 2 shaft. Part of this lot was \$40 ore that was extracted from the 100-foot level some time ago. The winze, which ran over about \$400 a ton, was extracted in development work on the 200 level. The ore shoot on the 200 proved to be short and the ore of erratic value. For further development of the vein a winze is being sunk at the north end of the ore shoot, which would be impracticable to save the high grade ore if the winze were sunk in the ore. It is planned to drift into the ore at intervals of 100 feet. The crosscut from No. 1 shaft to the 425-foot level is out 60 feet and is making rapid progress. This crosscut is being driven on contract and is intended to cut the downward extension of the vein opened by No. 2 shaft on its easterly dip. It will require about 100 days to complete this work.

Belcher and Belcher Ex.

Development at the Belcher and Belcher Extension is progressing through the near the common line between the two properties, and from the prospect shaft at Belcher Extension and the main shaft at Belcher, with gratifying results. In the No. 1 shaft, near the common line, the east drift on the 85-foot level, had left the vein, was turned until it entered the fissure and is in a full face of the grade quartz ore of which four feet are \$17 a ton. The face of this drift is more than 100 feet west of the powder magazine where the rich shoot was first picked up at the surface, and at a point where the outcrop is practically barren.

On the 300-foot level from this shaft a drift is being extended southwest along the foot-wall of a fault that outcrops on the



Panorama Showing, Right to Left, Main Shaft Belcher, No. 1 Shaft Belcher Extension and No. 2 Shaft Belcher Extension

Belcher and Belcher Extension Work From Three Shafts

of the shaft, with an easterly dip. On level the fault was cut a few feet of the station. The drift is progressing point of junction with the vein, which is enclosed by surface tranching, and is near its objective. The face shows ore of low grade that probably is the from the vein.

enrichment of the ore bearing fissure in Belcher and Belcher Extension appears due to the occurrence of minute fissures across the vein, which dip to the east. This condition is apparent in the prospect on the Belcher Extension, which passed the high grade at about 80 feet in. A drift is being driven to the east at a depth of 110 feet to catch the ore shoot on dip.

the Belcher No. 1 shaft on the east end of the Belcher Divide crosscutting is under the west to prospect the main fissure.

Victory Reports Ore-Faces

A winze sunk from the 200-foot level of the Victory Divide, west of the main shaft in the Victory-Belcher vein, has exposed ore of good grade. Superintendent Bob reports assays across the width of the vein as high as \$40 per ton. The ore in the vein is more silicious than that of the Victory Divide.

A short distance east of the shaft, on the 200-foot level, a cross vein was exposed, with a trend of north. A drift has been advanced north on this vein and at several points has shown seams of fairly good ore. The object of this work was to reach the junction where this vein and the Butte vein meet, north of the Victory shaft. The Butte vein having a northeasterly trend. During the past few days indicate this junction has been reached and state the drift has exposed a face of high grade ore.

The work at this point has not advanced sufficiently to determine if the ore is present in appreciable volume. At other points in the territory the ore has proved erratic in its distribution, lending support to the general belief that greater depth is required to find ore of any magnitude.

At the main shaft of the Revert Divide a crosscut is being driven west on the 300-foot level and under the ore opened some time ago in the Baggett lease. The Verdi is drifting on the 300 in a 12-foot ledge of mill ore.

Pay Divide Crosscutting

New blood has been infused into the Pay Divide and rapid progress is being made under the superintendency of R. E. Smith, who represents San Francisco men who have taken control, on which they have made substantial payment. The objective is a mineralized zone lying south of the main shaft in which two mineralized fissures have been opened and prospected on the surface. It now appears to be the extension of the main shaft of the Polo claim of the Revert Divide, which the Treasure Divide and two other shafts are working in ore.

The Pay Divide shaft is 90 feet deep and a crosscut now being driven is out about 100 feet. The face shows mineralization and will soon reach the first of the two fissures.

On the surface this fissure is 22 feet in width and contains a seam of reddish iron stained breccia that assayed 128 ounces silver and \$14.60 gold. The southerly fissure, upon which more dependence is placed, is 165 feet from the shaft and the crosscut will penetrate



TRENCH ON ORE, PAY DIVIDE MINE

it at a depth of about 125 feet. On the surface, which has been trenched for 200 feet, samples across 30 inches assayed from \$8 to \$28 a ton. One small seam contained ore that assayed 411 ounces silver and \$19.90 gold.

The Pay Divide owns 1500 feet on the strike of this mineralized zone, running up to the west end of the Revert Divide. On the east end of the Pay Divide "Rocky Mountain George" has a lease 400 feet in length and extending across the claim, in which he has opened some seams of high grade ore.

L. R. Robins, superintendent of the Tonopah Belmont and A. G. Raycraft of the First National bank of Tonopah were the leading spirits in the incorporation of the Pay Divide

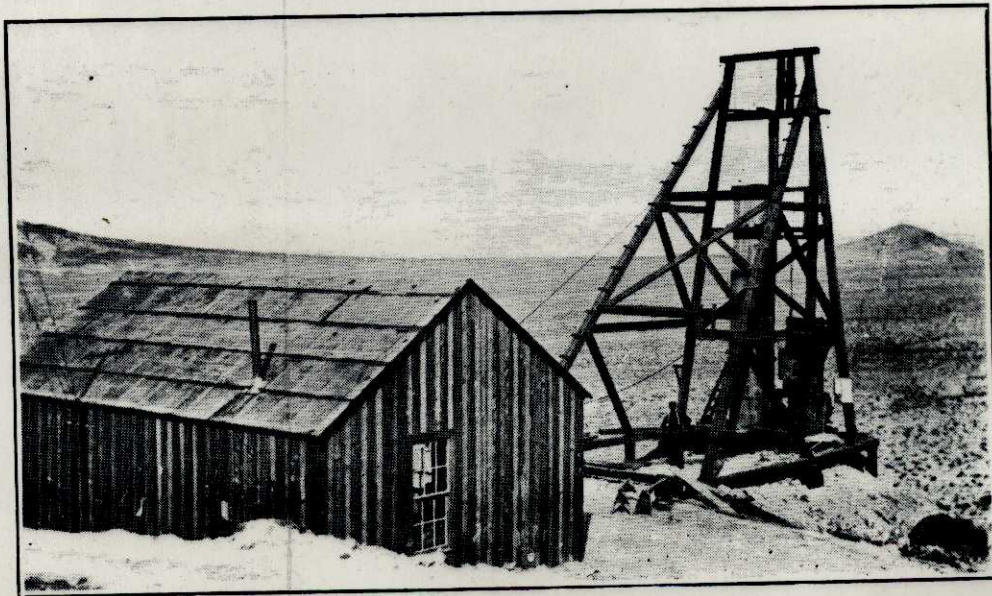
and Robins located the shaft and started the work. The property is well equipped with machinery. F. M. Malone secured the option on control and with R. E. Smith interested the San Francisco men, who have financed the treasury for the work now being done. Whether or not they exercise their option on the stock probably will depend upon the result of this work. The prospect is one of the best in the Divide district, and well merits the expenditure of money in development.

Other Properties

A winze is being sunk from the 500-foot level of the Brougner Divide, in a vein that branches from the Brougner vein and has a trend slightly east of north. The winze has followed a seam of sulphide ore from 12 to 20 inches wide and sampling from \$25 to \$35 per ton in silver and gold. The east crosscut on the 175-foot level has shown some fractured areas, but nothing that can be definitely correlated to veins on the adjoining Divide Extension.

At a depth of 400 feet the East Divide is driving a crosscut east to reach a fracture zone that marks the contact between the breccia and hard rhyolite, under the great blow-out east of the shaft. The south drift on the vein exposed 130 feet east of the shaft exposed only low-grade ore. The Alto Divide, under the same management as the East Divide and using joint air supply plant, is developing on the 400-foot level and has exposed seams of sulphide material of low grade 165 feet south of the shaft. The crosscut is being driven for a vein that shows at the surface a short distance farther north.

A raise is being driven from the Tonopah Hasbrouck main tunnel at a point where horn-silver is present in considerable quantity. The crosscut on the 200-foot level from the shaft has exposed the Kernick vein, opened by the tunnel 260 feet above. The vein has an easterly trend. On the 360-foot level crosscuts are being driven north and south. The south crosscut has entered the McKane vein and a drift is following the contact between hard rhyolite and breccia.



MAIN SHAFT OF THE PAY DIVIDE MINING COMPANY

No Sensational Discoveries Mark Development Divide Mines

DIVIDE—Ore is being hoisted from the fifth level of the Tonopah Divide mine and the results of recent work on this level, at a depth of 581 feet, are declared to be satisfactory. The main shaft now nearing a depth of 650 feet, is being sunk to the 800-foot point, in the belief that the water level and sulphide zone will be found at about that depth. A summary of present operations affords fewer sensational features than when work was confined to the high-grade area, but with the advance of development work on the second, third, fourth and fifth levels, conditions have been revealed that must have an important bearing upon the future of the mine.

Drifts and crosscuts are being extended far beyond the area embraced in the earlier work of the company. A notable result of this work has been the opening of the so-called gold shoot on the fourth level, beginning at a point 175 feet northwest of the shaft, where a rhyolite dyke intersects the main vein or breccia zone. The ore differs in character from anything found before in the mine. The metal content, which is mostly gold, is found in a solid rhyolite, marked by an absence of the shattered condition found elsewhere in this ore-channel. A drift and crosscut beyond this point have been in ore of good grade and a raise is being driven to develop the ore-shoot and for air connection.

This raise, 200 feet from the shaft crosscut, has reached a point where the assays are lower and the vein shows a high degree of leaching. Similar conditions are shown on the third level, above this point, but whether the ore rakes to the southeast has not been established. These conditions, however, are believed to point to a concentration of the metals at greater depth and this area will be explored at once by means of a drift on the fifth level. The ore opened in this ground has averaged better than milling grade and the discovery is regarded as one of great significance. At the southeast, on the fourth level, the drift has been advanced to a point 450 feet from the shaft crosscut, far beyond the big sill floor on the third level, in what has been known as the "big bulge."

On the fifth level the main southeast drift has been driven over 300 feet, with crosscuts at intervals of 50 feet. At the 300-foot point a crosscut is being driven to the east, into the hanging wall country, for the purpose of prospecting what appears to be an off-shoot from the main vein, in which some ore in the form of sulphide has been found. The drift to the southeast is to be extended and, as before noted, a drift will be advanced to the northwest to develop the gold shoot.

From a point near the big sill on the third level a crosscut is being driven southwest to cut the gold vein, already opened on the second level and from which the early-day production of high-grade gold ore was made. This crosscut is 300 feet south of that on the second level and it is expected to afford a solution of the problems met with on the level above, where the vein was found to be faulted. This vein has a trend nearly due east and the faulted condition was revealed in driving east on the vein from the 200 level crosscut. The

drift followed ore of good grade up to the point where the vein faulted and work was stopped there. The vein dips north and the fault apparently has a northeasterly trend. The 300 level crosscut should reach the vein at no great distance from this fault.

On the second level, about 250 feet south-east of the shaft crosscut, a sill floor has been opened approximating in size and value of ore of the big chamber beneath it on the third level. By a series of raises from the fourth level to the surface the workings are well ventilated and the same system will be carried out in developing the big vein northwest of the shaft. A peculiar feature on the second level is that about one-half of the ore exposed in opening the big sill is sulphide, containing some molybdenum in the form known as powellite. Sulphide ore appears on all levels but the first, but nowhere in large bodies excepting at the bulge in the vein on the second level, and below this level the molybdenum content of the vein is negligible.

Shipments of ore to the MacNamara mill in Tonopah have not yet reached the volume maintained prior to the strike and are nearer the minimum provided for in the milling contract, but this has been due to milling difficulties and it is sad that additional charges in settling equipment will be necessary before the former rate of 60 tons daily can be re-established. The output was further curtailed for a short time recently by storms and resulting bad roads. The company's motor trucks are capable of making five trips daily to the mill, carrying nearly six tons of ore.

200 Level Puzzles Engineers

Working four machine drills and two shifts of miners the Divide Extension management is rushing development work on the 200-foot level with all possible dispatch in an endeavor to solve one of the most complex problems of vein structure and position of an ore-shoot that has been encountered in the district. The workings are examined daily by engineers and mining men, among who no doubt is entertained that the rich orebody opened on the 100-foot level will be found below. They are apparently in accord regarding the dip of the vein, but are not so certain on the question of rake of the ore-shoot.

On the 45-foot level high-grade ore was exposed on both sides or walls of a fractured zone 50 feet wide. At a depth of 100 feet the footwall vein has produced some sensational returns, the north drift showing ore of high grade for a length of 70 feet, and a winze from this level containing in rich ore to a depth of over 30 feet. This discovery was made near the surface and at a point several hundred feet north of the main shaft, now down 425 feet.

In the search for the ore at the 200-foot level it was soon shown that the vein had a flatter dip at this depth than above, but this was only the first of a series of confusing developments. Surveys of the footwall indicated that the vein had a trend north 21 degrees east. A crosscut was started north of west to reach the hanging wall and evidence was found that this wall extended north 20 degrees or more west. The crosscut exposed what was at first believed to be the hanging

wall vein, but subsequently was recognized as a slip that appears on the 100-foot level, parallel with the vein. Along this slip were found seams and small areas of high-grade ore.

Beyond this point the crosscut continued in low-grade material, until it became evident that it was advancing nearly parallel with the wall, and lately it was turned to the west and now the hope is expressed that it will cut the vein within the next few days. Consulting Engineer Hardy and Superintendent Bevis do not pretend to have solved the problem, as they are faced by two walls diverging at an angle of over 40 degrees, but between these walls they have no doubt that the rich orebody will be found on the 200 level.

With this work farther advanced and a solution of these problems in sight, the company will resume the driving of the 425-foot level from the main shaft, already extended to a point nearly under the new shaft.

Interest centers at present on the operations of the Divide Extension because of its position in eastern market centers and its association with the names of well-known eastern financiers. It is pointed out that any important developments in the property are likely to go far in rehabilitating the market and in stimulating eastern investment in Nevada mines.

Development in Belchers

At a depth of 90 feet the new shaft of the Belcher Extension is still in the vein and latest returns gave an average of over \$100 per ton across the width of the shaft. The work has not advanced sufficiently to prove the width of the vein. For a distance of 30 feet above the 70-foot point the daily samples taken from the shaft by Consulting Engineer Walz averaged over \$100 per ton and at about this point the value of the ore fell off to \$60 but higher assays were reported in further sinking. Many persons have taken samples from the dump and the assays obtained have as a rule surpassed the figures given out by the company's engineer; assays from \$150 to \$225 have been reported in several instances.

The point of this discovery, now known as the No. 2 shaft, is approximately 700 feet west of the main or No. 1 shaft, situated near the Belcher-Belcher Extension boundary, and is in line with the trend of the vein extending through these two properties, a few degrees north of west. East and west of the new shaft the vein has been stripped for a distance of over 800 feet by a series of trenches and open cuts and appears to be unbroken and uniform in structure. The ore dump contains more than 100 tons of shipping grade ore and Manager Ed Roberts, who has been urged to ship at least a carload of the high-grade product, now has this plan under consideration.

In prospecting the cropping of the Belcher vein at the point where the new shaft was started the ore was found, yielding high assays within a few feet of the surface and having a width of only 15 inches. At a depth of 60 feet the ore is five feet wide, with still greater depth indicated by the appearance of the hanging wall. Assays taken across the five feet of ore have at no time shown less.

(Continued on Page Twelve).

NO SENSATIONAL DISCOVERIES MARK DEVELOPMENT DIVIDE MINES

(Continued from Page Nine).

than \$35 per ton. As depth is gained the ore appears to be making out into the breccia from the fault fracture, particularly at the 70-foot point in the shaft, and at a depth of 90 feet the full width of ore exposed is reported to be assaying over \$100 per ton. This shaft is following the dip of the ore and is in ore all the way. Drifts are to be extended on the vein both east and west at the 100-foot level.

From the main Belcher Extension shaft a drift is being extended east into the Belcher property by the Belcher Divide company to prospect a part of the vein that gives good promise in cropping not far from the western boundary of the Belcher. This work is at the 85-foot level and is designed to serve as a guide to deeper work in this territory. The Belcher Extension has started a crosscut south from this shaft on the 300-foot level which will cut the main vein within a short distance. The Belcher company is driving north and south from its main shaft at a depth of 200 feet.

The Victory, adjoining the Belcher on the east, is driving east and west on the 200-foot level and has cut a promising cross fissure, extending west of north. A drift is being advanced on this vein to reach the junction with the Butte vein, which has a northeasterly trend and is traced through Victory ground. The Victory-Belcher vein has been opened on the Thomson Divide and Pay Divide properties on its course to the west.

OLYMPIC WILL REBUILD MILL AT OMCO DESTROYED BY FIRE

J. E. Greenan, secretary of the Mina Bureau of Mines, who was in Reno last week, states that officials of the Olympic Mines company have announced that a new 100-ton mill will be built in the spring, to replace the plant that was burned in November. The company carried \$60,000 insurance on the mill, which will be applied to the cost of construction. The process used is the counter current decantation method of cyanidation. A few days before the fire a new vein was opened in the mine and the miners have continued at work developing the new orebody.

NEVADA DOUGLAS OFFICIALS HOLD CONFERENCE IN RENO

Henry I. Moore, assistant manager for the Nevada Douglas Consolidated Copper company was in Reno Friday last en route from Salt Lake City to San Francisco. He was joined here by G. E. Mainhart, general superintendent of the company's mines, C. A. Chapman, auditor, and Superintendent Cox of the Copper Belt Railroad, who came up for a conference with their chief. Mr. Moore reported good progress in the refinancing of the company, which plans to install a flotation mill early in the spring. The mines of the Nevada Douglas are in the Mason Valley district, Lyon county. The Bluestone, a neighboring property, is operating a flotation mill, which lately has been increased in size, and the Mason Valley Mines company plans to install a similar plant.

Son of Mine Operator Weds Daughter of Mine Operator

Winfield C. Higgins and Miss Phoebe King were married in Reno December 15 by Rev. Brewster Adams and have gone to Smith valley to live, where the bridegroom has a ranch. Higgins is the son of Charles C. Higgins, well known Reno mining man, who is operating a property in Rochester. Mrs. Higgins is the daughter of E. W. King, former Rawhide operator, now on the staff of the Simon Silver-Lead Mines company.

Ralph A. Meyer, Tonopah mining engineer, spent Sunday in Reno en route to San Francisco and Seattle, where he will spend the holidays. He is consulting engineer for companies operating in the Arrowhead district, 70 miles east of Tonopah, and has an abiding faith in the future of the new camp.

January Jones Is Back at Mining

January Jones, who came, saw, but never attempted to conquer any oil, is again up to his eyes in the mining game in Nevada. That is his original and only business. The other day a friend was heard to question: "January, have you made any money?" "Yes, but I lost it all last week." January has his headquarters at Reno. When asked how Charley Spilman, one time with the California Oil World, was getting along with his mining paper. "Oh fine," he replied. "He has a machine, a flying machine I've heard, and consequently is everywhere and yonder at the same time; Oh, yes, he is a great skylarker. He has a 'ell of a good paper."

January does not know much about the oil excitement in Carson Sinks.—California Oil World.

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SKETCH MAP SHOWING WORKINGS OF BELCHER AND BELCHER EXTENSION

Sulphides in Tonopah Divide Shaft Interests Mining Men

DIVIDE—Development work in the Tonopah Divide mine has been for the most part outside the ore-bearing zone, affording no sensational assays of ore-faces, as when the drifts were being advanced in the huge silver-gold orebody. Results of recent work, however, have not been without significance. Most interesting of recent mine developments, in the opinion of managers, engineers and miners, is the appearance in the shaft, now over 740 feet deep, of many seams and stringers of sulphide material, yielding assays as high as \$60 per ton, the greater part of which is gold. The shaft is 140 feet from the silver vein.

In cutting the station at the fifth level of the Divide shaft, at a depth of 581 feet, a four-inch seam of sulphide was disclosed assaying \$40 or more in gold and silver. These ore seams do not constitute anything of commercial value, but, as pointed out by E. A. Julian, consulting engineer, and other officials of the company, they are interesting as "indicators," pointing to a concentration of metals at and below water level and providing evidence of the near approach to the water level and sulphide zone.

On the fifth level, the deepest lateral work in the mine, work with objectives in two directions is likely to yield interesting results in the near future. A drift northwest on the main silver vein should soon be nearing the so-called gold shoot, opened on the level above, while an east crosscut is being advanced from the southeast drift, at a point 250 feet from the shaft crosscut, to prospect a wide seam of sulphide ore exposed in driving from the shaft to the vein. A short drift on this seam from the shaft crosscut produced some ore of good grade, but the fissure at this point was narrow.

Of interest equalling the further sinking of the shaft is the opening on and below the fifth level of the ore-shoot northwest of the shaft crosscut, known as the gold shoot. On the fourth level this orebody was developed for a distance of over 60 feet, from a point 150 feet from the crosscut, and a raise was driven in the ore to connect with the third level. Sixty feet above the fourth level intense leaching was shown and the ore was of less value, a condition shown also in the drift on the third level. In the drift, raise and crosscut on the fourth level the ore was of good grade, from \$30 to \$50 per ton, and the gold value considerable exceeded the silver. Whether this oreshoot has any pronounced rake has not been established, but the leached condition of the vein above stimulates the belief that on the fifth level this deposit will prove to be valuable. Shipments from the Divide mine have averaged below 30 tons daily of late, owing to the inadequacy of settling capacity in the MacNamara mill. Upon reaching water level and determining the character of ore at this depth, the company will proceed to make plans for its own reduction works.

Development at Divide Ex.

A survey of workings of the Divide Extension property was completed a short time ago, when Zeb Kendall, president of the company, visited Divide for the purpose of outlining

Horn Silver Ore In Lease on Revert

One of the richest specimens of horn silver ore ever seen in Reno was exhibited here last week by President Al Revert of the Revert Divide. It was three inches thick and literally filled with horn. Estimates of the value of the ore ran from 2,000 to 5,000 ounces per ton. The ore came from a depth of 58 feet in the Bosanko shaft of the Treasure Divide lease, on the Polo claim of the Revert Divide. "It looks like the lease is on the tail of an important and rich body of ore," said Mr. Revert. The shaft was sunk on a seam of high grade and the ore has widened gradually with depth. The rich streak at 58 feet down the shaft is about three inches wide and in addition there is about eighteen inches of ore that assays better than \$100 per ton. The horn silver is being sacked and will be shipped direct to a smelter. The lower grade ore will be milled at Tonopah.

and expediting development work. The north drift on the 425-foot level from the No. 1 shaft is now being pressed forward and should according to Mr. Kendall's computations, reach within six weeks the ore-shoot exposed in the No. 2 workings.

The 200-foot level in the latter is said to be showing a high-grade vein from two to three feet wide for a length of over 30 feet. This ore is said to assay from \$300 to \$500 per ton, with narrower seams assaying several times this figure and with ore of shipping grade exposed in places for a width of 10 feet. This area appears to be greatly fractured, offering complex problems in determining the trend, dip and rake of the ore, but the work on the 45, 100 and 200-foot levels is rapidly clarifying the situation and Engineer Walz and his associates now pronounce the trend of the vein or fissure zone to be slightly west of north. Officers of the company say it is likely that shipments will be resumed shortly, the ore going to the West End mill under a favorable treatment rate.

Ore in Belcher Extension

Pay ore is exposed in the Belcher Extension at two points separated by a distance of 900 feet. The more recent discovery is in a south crosscut from the main shaft, on the 300-foot level and not far from the eastern boundary line. One report stated that the crosscut had progressed for 16 feet in ore, similar in character to the ore on the second level of the Tonopah Divide mine and containing a small quantity of molybdenum. Other reports say that the ore differs from that of the Tonopah Divide, showing more quartz. This condition is found also in the No. 2 workings of the Belcher Extension, 900 feet west of the main shaft, where the ore is largely in quartz and ore of high grade has been exposed continuously in sinking 100 feet. A drift at this depth to the east has shown

ore of varying width assaying from \$30 to \$100 per ton. The No. 2 shaft is being stopped to the surface from the 100-foot level where the vein was lost by reason of fault. Old workings told of futile attempts to up the vein and Mr. Roberts set himself to task that had baffled the early operators. Local tradition said to have been the Healy estate. Mr. Roberts' theories appear to have worked out successfully, as the vein was found within a short distance, showing three feet of good ore and dipping toward the main shaft. A crosscut is being driven at the 200-foot level to cut this vein.

Belcher Opens Old Shaft

On the Belcher property an old shaft, a short distance west of the main shaft, and known locally as the Hearst shaft, reopened lately by direction of Manager Roberts. It was found that ore had been stopped to the surface from the 100-foot level where the vein was lost by reason of fault. Old workings told of futile attempts to up the vein and Mr. Roberts set himself to task that had baffled the early operators. Local tradition said to have been the Healy estate. Mr. Roberts' theories appear to have worked out successfully, as the vein was found within a short distance, showing three feet of good ore and dipping toward the main shaft. A crosscut is being driven at the 200-foot level to cut this vein.

Dividend Starts New Shaft

Developments on the Tonopah Divide have been nearly as encouraging, if quite confusing for a time, as those on the Divide Extension, adjoining and a short distance to the southwest. With the first discovery of the No. 2 shaft of Divide Extension, a prospect shaft was started on the Dividend line with what was then believed to be trend of the Divide Extension vein and what is still believed to be a cross fissure trending from the Extension orebody. At a depth of 75 feet a crosscut was driven from the new Dividend shaft and scattering ore of ore were found. At a point east of shaft this ore appeared to make into a solid form and at one point a face of seven feet wide and assaying around \$300 per ton was reported. In order to reach the vein more directly and to provide a means of developing this area a new shaft started and already is nearing the depth at which the ore was exposed. Prospecting the main shaft has continued on the 300-foot level, in quest of the Extension vein at north.

Find Ore in Victory Divide

A seam of ore on the 250-foot level of Victory Divide has stimulated interest in property. Superintendent Bob Wilson in sinking east on the 200-foot level found a vein extending west of north. Following the vein and the drift has shown from eight to three feet of ore assaying \$10 to \$30 per ton. The drift is being advanced to reach intersection of this fissure with what is known as the Butte vein, trending northeast. Operations on the Revert property have exposed some high-grade ore at a depth of 60 feet. The Sutherland Divide will resume work soon as funds are made available from first assessment. The Myra shaft is being sunk to greater depth. The vein at 250 feet is of good appearance, but nothing of value has been found. The Rosetta is crosscut on the 300-foot level for the vein opening the old shaft. Gold Zone had some assays recently from a winze below the 300-foot level. The Brough 500-foot level has a considerable quantity of mill ore.

MINING

NEAR-NORMAL CONDITIONS PREVAILING AT DIVIDE

Latest Advances Show That Total of Companies
Now Working Has Reached Close
to the Forty Mark

WHILE stock manipulators succeeded during the week in creating some rumblings concerning an alleged disposition on the part of miners in the Divide district to go again on a strike this time for a fifty-cent-a-day raise in pay, a close investigation of the situation showed that while the men have indicated that they desired such a raise they did not intend to go to the extent of laying off work to get it. A meeting of the operators was held in Tonopah on Thursday and in turn the entire matter was gone into thoroughly, the decision being to let it rest over until Saturday. Governor Boyle is strongly urging that voluntarily the raise of fifty cents be granted and this view is backed up likewise by a number of the operators. It is argued that this in no wise would constitute a capitulation to I. W. Wism, this in view of the fact that the strike itself has already been broken, and that a more stable condition would be created by such a determination.

One of the interesting features of the week in the Divide district was the announcement that the Tonopah Divide management had determined to sink its shaft to water level, wherever that point might carry the working. Eminent engineers are of the mind that below the water level a new and increased enrichment will be encountered rendering the property of even much greater value than at present. However, as heretofore one hundred-foot levels will be established and development work in the orebodies thus far disclosed will be sent forward with as much energy as possible. Regarding recent development in the district the Tonopah Miner gives the following account:

Interest in Divide mining affairs has been stimulated by local and outside investment circles by ore discoveries of recent date at the Dividend, Hasbrouck, Revert and Rosetta properties, and by the very satisfactory mineral conditions at the Kernick, Smuggler, Brougner, Aladdin, Giant, Lone Mountain, Divide City, Sunbeam and other properties. Tonopah, the gateway to Divide, is again filling up with mining men from abroad and the streets and hotels once more portray scenes of activity similar to those of last spring, when beds were at a premium, and, to paraphrase ex Warman's picturesque verse anent the mining camp of Creede, 'Twas day all day in the daytime and there was no night in Tonopah.

The strike commanding the most attention is that made a few days ago at a depth of fifty-four feet in the new Dividend shaft, located on the White Caps claim within a few feet of the end line of the Divide Extension property. Precious metal values continue to average about \$60 a ton across a width of six and one-half feet, and as the shaft is deepened it is daily becoming more evident that it is being sunk in an ore shoot in the continuation of the rich Divide Extension ledge. It is generally conceded that the Dividend will soon be numbered with the shipping mines at Divide and that its ore production future is equal to the Tonopah Divide and Divide Extension mines. Hoisting machinery has been set up at the Dividend shaft and plans made to open the ore body at depth. The strike of the latter is directly toward the new Divide Extension shaft, 400 feet distant, where high grade silver ore was opened several months ago on the forty-five and 100-foot levels.

At the Divide Extension mine the southwest crosscut on the 400-foot level in the old workings is within a few feet of the continuation of the ledge opened in the new workings, and is showing seams of quartz and the blue breccia that is the ore-maker at Divide. The distance from the

new workings to the old workings is 600 feet and once the ledge is tapped in the latter the Divide Extension will have a proven ore shoot between the two points. The northeast crosscut on the 400-foot level in the old workings is being driven along a small vein trending toward the Tonopah Divide mine, with values increasing somewhat as it is advanced. In the new workings work is confined to shaft sinking below the 100-foot level, as the mills in Tonopah are not prepared to treat Divide Extension ore pending the completion of machinery repairs and alterations.

The body of ore carrying horn-silver and sampling as high as \$200 a ton, opened of late in the Kernick ledge in the Tonopah Hasbrouck tunnel, has widened from four and one-half feet to eight feet, is breaking an average of \$18 a ton and appears to be the feeder of an ore shoot of much higher value. The present showing, from a mineralogical standpoint, is the most satisfactory ever opened in the tunnel workings, although in the main ore shoot there the silver values range as high as \$35 a ton. Shipments will go out from the Hasbrouck as soon as the mills at Tonopah are prepared to treat the ore. On the nearby Revert property the leasers on the Polo claim continue to mine and sack for shipment ore having a value of from \$500 to \$2,400 silver a ton. The southeast trend of the Revert ledge is toward the Kernick property, adjoining. The management of the latter is deepening the shaft with the object of crosscutting to the Revert ledge at a depth of 150 feet.

A full face of \$18 ore prevails in the north crosscut on the 300-foot level in the Rosetta main workings. The crosscut entered the ledge a few days ago and is now being driven toward a vein intersection, now less than forty feet distant. Where opened at surface and nominal depth the juncture referred to gave values as high as \$97 a ton. It therefore appears certain that a shoot of high grade ore will be found when the crosscut reaches its objective. The shaft on the nearby Giant property is in the ore-making breccia and General Manager Crumley is preparing to crosscut to the ledge.

The Sunbeam shaft is breaking an average of \$6 a ton at a depth of 134 feet. At a depth of 175 feet a crosscut will be run to the ledge. Patent surveys are being made of the Western Divide, Kernick Divide and Hasbrouck Divide Annex, each of which is located in the productive area of the camp and is in line to develop into a shipper at a depth of from 150 to 250 feet.

Many Properties Resume

Following is a list, completed up to recent date, showing the properties in the Divide district which report securing crews of miners and the resumption of work. It is believed that other companies have resumed or are about to resume.

(Continued on Page Eleven.)

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REPORT OF NEW STRIKE DISCREDITED AT

Officials of Tonopah-Divide Miners' Union Issue Statement
No Such Action Contemplated

REPORTS of an impending strike in the Tonopah and Divide districts have been discredited by statements issued by officials of the new union, in which all the miners of the districts are included. This action is described as follows by the Times:

Reports of an impending strike in the Tonopah and Divide districts have been spread by members of the I. W. W. brought to an abrupt end Thursday morning at a meeting of the Tonopah-Divide Miners' Union. After the meeting a signed statement was issued by Byrne, president, and J. A. L. secretary of the union.

"Reports are being circulated among miners of the Tonopah and Divide districts that they are going on strike Saturday. This statement, at a meeting today, was unanimously passed. No action was taken or discussed and no action will be given the local press for publication."

L. D. Townsend, president of the Tonopah Trades Assembly, who returned yesterday night from Austin, issued the statement on behalf of the assembly.

"The crafts unions of Tonopah and Divide have not contemplated any time and have not discussed any time to do not contemplate striking. All the contrary are erroneous."

At the meeting of the miners and general discussion regarding the problem resulted in a determination that no action would be taken until Governor Turner. During this discussion it was pointed out that the by-laws provide that no action can be enacted until after the expiration of two weeks after the demand is made. During this period discussions would be carried on with the operators if they were unsuccessful in coming to an understanding, it would then be for the union to publish in the local notice of intention to strike at least before the strike actually takes place.

The newly organized union is working diligently toward increasing its membership and about twenty members were present last night.

Joseph B. Lord, Federal mediator, addressed the meeting and was respectfully applauded.

A prominent laboring man from San Francisco spoke at length and expressed himself as being greatly surprised at finding the union so well organized and a union.

(Continued on Page Eleven.)

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OF NEW STRIKE EDITED AT TONOPAH

(Continued from Page Six)

He said the scattered element in Arizona was not that this new union operators union which he absolutely untrue. About 200 men were present at the meeting adjourned with a feeling of optimism on the part of the workers.

Hasbrouck have constituted one of the interesting features of the Divides. Mounting rapidly on reports of development in ore, very shortly thereafter tohoggan and as the approached had declined thirty-nine cents. There of some strength, however, close on Friday and it though the issue was on some of the strength earlier in the week. Recent development in the Tonopah Miner

development in the mine made since the development was resumed in the tunnel, have been gratifying to the man following along the found to have widened and spots of exceptional ore have been encountered being thickly placed rock. Two crosscuts run across the vein and some extent has been to the hanging wall and. Within the past week as determined by the widened to at least and gives every indication of continuing to increase in

holes taken across the drift, which is now along the footwall, resulting in a high degree of \$19 per ton, the cut holes being taken across foot width of the drift. were delayed for a day the drills got stuck in the working, but operation progressing at regular

broken in the drift on consists of fine looking giving a high degree of values, as across the entire six-foot drift.

developments in the mine a great demand for the there is a report current are the insiders adding but that a group of one of the biggest states in the West is the control of the which, under the man George A. Kernick, one successful of the early of Goldfield, has been developed into one of the producers of the Divide

grade samples which such a sensation when Tonopah, were encountered the time that the drills the face of the drift, the rock, which was the usual mud result drilling operations, diff away from the regular an, but when being was invariably found thick and large sized silver. Picked samples, the mine was closed just, and special sampled in the face of the drilling work was re-

sumed in the tunnel works, have run as high as \$2,000 per ton, the principal contents of the ore being silver.

"The Hasbrouck mine, the Tonopah Divide and the Divide Extension constitute the principal shippers of the Divide district, although it is reported the leasers on the Revert and Verdi have ore ready for shipment.

NEAR-NORMAL CONDITIONS PREVAILING AT DIVIDE

(Continued from Page Six.)

but they have not yet reported the facts to the Operators' Association: Arizona Divide Mining Company. Alto Divide Mining Company. Apex, Hur Divide Mining Company.

Bevis Divide Mining Company. Butte Divide Mining Company. Dividend Divide Mining Company.

Divide Extension Mining Company. Divide City Mining Company. Divide Annex Mining Company. East Divide Mining Company. Goldsmith Divide Mining Company.

Grimes Divide Mining Company. Giant Divide Mining Company. Gold Reef Divide Mining Company.

Gold Zone Divide Mining Company.

Homestake Divide Mining Company.

Jim's Divide Mining Company. Knox Divide Mining Company. Mammoth Divide Mining Company.

Myra Divide Mining Company. Pyramid Divide Mining Company. Polo Divide Leasing Company. Queen Divide Mining Company. Rosetta Divide Mining Company. Revert Divide Mining Company. Royal Divide Mining Company. Syndicate Divide Mining Company.

Silver Divide Mining Company. Sutherland Divide Mining Company.

Silver King Divide Mining Company.

Tonopah Divide Mining Company.

Tonopah Hasbrouck Mining Company.

Toggerly Divide Mining Company.

Verdi Divide Mining Company.

Hennessy Divide Mining Company.

A total of thirty-four companies working. All the principal companies in the Tonopah district are equipped with crews, but in the majority of cases the men are engaged in putting the mines in shape for a resumption of activity on a normal scale.

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THE DIVIDE MINING DISTRICT,

By FRANCIS CHURCH LINCOLN, E. M., Ph.D.
Director Mackay School of Mines, University of Nevada

NEVADA IS RIGHTLY CALLED THE SILVER STATE. Born in the days of the Great Comstock Bonanza, here history has been marked by a succession of rich mineral strikes, amongst which discoveries of silver ores have always played an important part. With the market prices of all metals save silver at low ebb, the eyes of America have naturally turned toward Nevada. The Silver State has not disappointed them. Tonopah, its largest silver camp continues to prosper; its small silver mines are flourishing; Rochester has just effected a combination of interests which augurs well for its future; long and patient exploration on the Comstock Lode has been rewarded by the disclosure of the best ore showing in years; and last, but by no means least, the important new silver camp of Divide has sprung into well-deserved prominence.

There are two stages to prospecting, — search and exploration. Search ends with the discovery of ore, but such a discovery is valueless unless exploration proves that enough ore is present to make a mine. The Divide District was discovered as far back as 1901; but it was not explored to a sufficient extent to disclose its possibilities until 1917. Runge and Rochelle found the gold vein on what is now the Tonopah Divide Mine in 1901. In July, 1902, the Tonopah Gold Mountain Mining Company was organized to operate the property. A little development work was done, leases were let, and a few shipments of ore were made; but the booms at Tonopah and at Goldfield drew the general interest away from Gold Mountain, and by 1910 the company had become financially embarrassed. In 1912, George Wingfield and H. C. Brougner took over the property and reorganized under the name of the Tonopah Divide Mining Company. Shareholders in the old company were given an opportunity to come into the new one at 3 cents a share, but few took advantage of the offer. The new company made little progress, although some

good ore was shipped by leasers, until Brougner bought out Wingfield in 1917.

Recent History As soon as Brougner obtained control, he sunk a 165-foot shaft as the base of Gold Mountain below the gold and silver veins, and started a 600-foot crosscut designed to cut the gold vein at a point 400 feet below the leasers' workings. Up to this time, all work had been concentrated upon the gold vein, and the silver vein had been consistently neglected, although there was a 15-foot shaft on it in which a stringer of ore running 168 ounces in silver was exposed. At 145 feet from the shaft, Brougner's crosscut entered the silver vein and proved it to be 20 feet in width and to assay over \$50 per ton. Wingfield was given an opportunity to buy back his interest in the mine, and upon the advice of his engineer, A. I. D'Arcy promptly did so. Further exploration showed the Tonopah Divide to be a great silver bonanza. The success attending the exploration of the Tonopah Divide Mine drew the attention of the whole mining world to the Divide District. Two hundred mining companies were incorporated and upwards of 30 companies began extensive exploration work throughout a wide surrounding area. New ore-bodies were discovered in various parts of the district and both new finds and known deposits are now being explored so intensively as to promise the opening of a number of good mines.

Situation The camp of Tonopah on the Tonopah and Goldfield railway, lies in the midst of a group of low mountains. From these hills the highway running from Tonopah southward to Goldfield emerges, crosses a narrow flat, and passes into a second irregular group of volcanic peaks which includes Gold Mountain at the base of which the Tonopah Divide Mine is situated. The mine is six and one-half miles south of Tonopah, just to the west of the highway at the point where it crosses the divide whence the mine and district take their name. To the southward the road crosses the flat for a distance of twenty and one-half miles to Goldfield. The Tonopah Divide Mine lies at an altitude of approximately 6100 feet above sea-level, and Gold Mountain rises behind it some 500 feet higher; while one peak in the Divide Mountains, like one in the Tonopah Mountains, exceeds 7,000 feet in elevation.

Extent of District The Divide District may be considered as comprising the area occupied by the Divide Mountains, which have an extent in a north-south direction of about 4 miles and in an east-west line of about 6 miles. Thus defined, the district includes the Sutherland Divide Mine, nearly 2 miles north of the Tonopah Divide; the Rosetta Divide, about 2 miles south; and extends easterly from the Tonopah Divide Mine some 4 miles to the Ben Hur Divide and westerly some 2 miles to the Tonopah Hasbrouck. Beyond these limits exposures cease and outcrops sink beneath the wash, and while it is altogether possible that the mineralization extends out under the flats, it has not as yet been proved. So potent with the investing public has the name "Divide" become, that there is a strong tendency to apply it to more or less distant districts. Thus Southern Klondyke 5 miles

to the southward becomes "South Lone Mountain, 10 miles to the west," dubbed "West Divide", and Hasbrouck 10 miles to the eastward is re-christened "Divide"; while a prospect even to the northward is called "North Such". A re-naming of mining districts warranted by facts and misleadings is extreme. Every effort should be made to confine the use of the word to the district bounded essentially lined at the beginning of this paragraph.

Geological References The geology of the District was briefly by J. E. Spurr in Bulletin of the United States Geological Survey on page 87, (1903); while S. H. Brougner mentions it in Bulletin 308 (1907). Since the recent rise of the district to prominence, A. I. D'Arcy has a brief article on the "Geology of Gold Mountain"; and F. L. Sizer described the geology of the district in his description of "The Divide District" in the Engineering and Scientific Press for May, 1919, while Jay A. Carpenter has given details in his article on "The Divide District" which appeared in the Engineering Journal, May 17, 1919.

Rocks The rocks of the Divide District are a series of Tertiary volcanic breccias, and tuffs with intrusions similar to the rocks of the Tonopah Series. The bonanza at the Tonopah Mine is in a coarse-grained rhyolite. The rocks overlying this breccia exposed in the crosscut to the west of the 265-foot level of the mine. The rhyolite breccia comes a rhyolitic tuff, (called by D'Arcy "red rhyolite" showing flow structure) comes a thin layer of rhyolite, finally a fine-grained rhyolite. The rock forms the top of Gold Mountain. The country rock of the gold vein crops there, and has been faulted along the line of the crosscut together with the gold vein which it encloses. At Hasbrouck, and adjoining property, the country rock is apparently more in character since the large quartz crystals to be seen in the rocks at the Tonopah Divide Mine were not observed in the rhyolite. The Tonopah Divide shaft and the Divide shaft to the northwest of it sunk in this breccia. The Gold Mountain to the southeast of the Tonopah Divide to penetrate a deep capping beneath the breccia, and many other districts will have to do likewise. It is in error when he states that the breccia is everywhere capped by

Geological Structure The Tertiary volcanic tuffs, and breccias of the District lie roughly parallel to each other but their junctions are irregular and faulting has displaced them in places. The principal veins of the district including the Tonopah Divide silver vein, a northwest-southeast strike. The Tonopah Divide gold vein, however, is an east-southwest strike. Unmineralized dikes of some of which are normal and a little to the north of west. Rhyolite dikes cutting the other rocks also observed. Careful geologic



Dr. F. C. Lincoln

TORY, ITS GEOLOGY, ITS MINES

is necessary before a satisfactory description of the geological structure

The ore-body at the Tonopah Divide Mine occupies a shear zone in the rhyolitic breccia. In this zone there is one very pronounced north-east slip with a vertical dip, and a great number of minor slips with strikes and dips. The ore occurs side now on the other side, and on both sides of the main slip; lateral extent appears to be generated by minor slips, which as noted are not usually parallel to the main one. In one instance where the both sides of the main fault, it

and the faults would intersect the Divide vein between the Divide and Gold Zone workings. The Brougner and Gold Zone workings are probably on the Divide lode, but if faults and dikes have given rise to any considerable lateral movement, these workings may be upon parallel veins and not upon the main Divide vein. The Divide Extension is upon a lode parallel to the Brougner lode.

The ore in the Tonopah Divide Mine is of good average grade,—and in places of very high grade,—sometimes exceeding \$2,500 per ton. The ratio of silver to gold in the ore is about 100:1 by weight, (5:1 by value), on the upper level and decreases with depth. The or-

iginally absent in the Tonopah Divide. On the 165-foot level, oxidized molybdenum minerals constitute an important portion of the gangue. The molybdenum content of the lode decreases with depth. The molybdenum occurs in the form of the rare mineral, powellite, molybdate of calcium. Small amounts of iron are present as limonite and hematite at the surface and as pyrite with depth.

Origin of Primary Ore

In Tertiary time, the Divide District was the scene of a series of volcanic eruptions. The earlier eruptions formed the tuffs, breccias and flows now found in the area; while the later ones fractured the



The Extension has recently come into its own. At a depth of but forty-five feet rich ore was encountered and this shoot under development has proved up as one of the sensations of the district. At the point shown in the photo the shaft is down some 400 feet and immediately a crosscut will be started to connect with the downward extension of the orebody encountered to the north at the forty-five foot point.

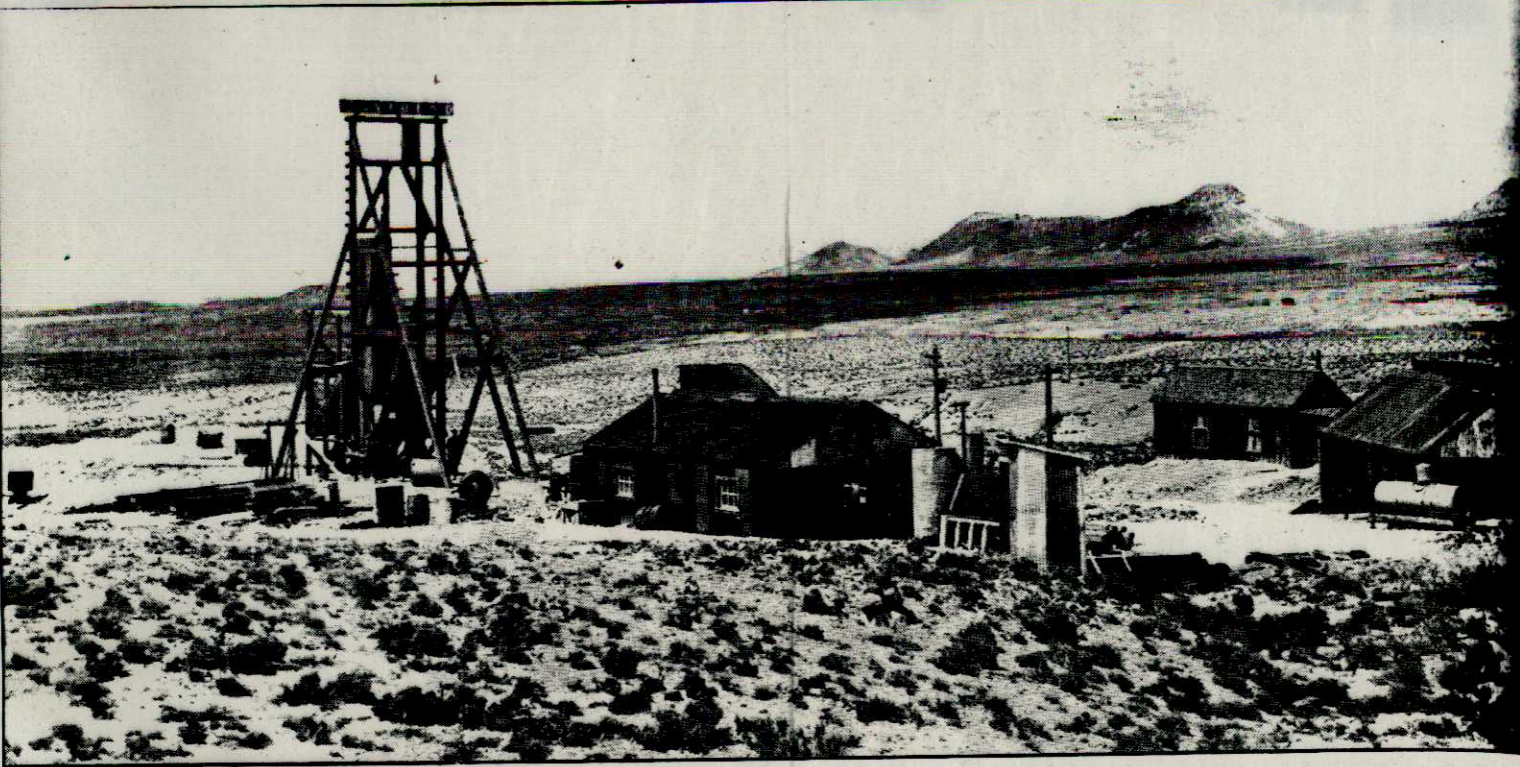
width of 90 feet, but on the average to 25 feet in width. The outcrop is 100 feet in width by 300 feet in length and consists of altered rhyolitic breccia stained with red and yellow iron. It is not presenting an especially attractive appearance, although there is one seam in which horn silver may be found. A rhyolite dyke with a more vertical strike than the lode intersects the northwestern end of the 365-foot level. A crosscut to the gold vein occurs at the faults striking about north 75 degrees and dipping southerly about 75 degrees. The overlying formation is as previously described. As the dike strikes as the faults it is possible that it becomes a fault fissure of the same type as the two faults. The dike is between the Divide and Brougner workings,

and the faults would intersect the Divide vein between the Divide and Gold Zone workings. The Brougner and Gold Zone workings are probably on the Divide lode, but if faults and dikes have given rise to any considerable lateral movement, these workings may be upon parallel veins and not upon the main Divide vein. The Divide Extension is upon a lode parallel to the Brougner lode.

Divide Gangue

The gangue of the Divide ore is mainly kaolinized Divide breccia. The kaolinization is very marked, but scarcely any silicification can be noted. Silicified vein matter with low silver values occurs on the Brougner and other properties in the District but is prac-

tically absent in the Tonopah Divide. On the 165-foot level, oxidized molybdenum minerals constitute an important portion of the gangue. The molybdenum content of the lode decreases with depth. The molybdenum occurs in the form of the rare mineral, powellite, molybdate of calcium. Small amounts of iron are present as limonite and hematite at the surface and as pyrite with depth.



Here is shown the surface workings and a portion of the ground of the Dividend, which now looms as one of the most promising in the Divide district, this for the reason that it stretches across immediately to the north of the Divide Extension, which has but lately developed into a leading property of the district. The Divide Extension orebody is calculated to pass through the Dividend as it moves north.

says: "The mineralization" (of the Tonopah rhyolite-dacite veins) "is then probably the same in time, nature, and origin as that at Gold Mountain, 4 miles south of Tonopah, and very likely similar to that in the newly discovered camp of Goldfields, about 28 miles south of Tonopah." The Divide mineralization is now known to differ in at least one important respect from that of Tonopah and of Goldfield, and that is in its molybdenum content.

Origin of Secondary Ore The rocks now exposed at the surface in the Divide District were far below the surface at the time Divide veins were formed. While these rocks were gradually wearing down as a result of weathering processes, the contents of the veins

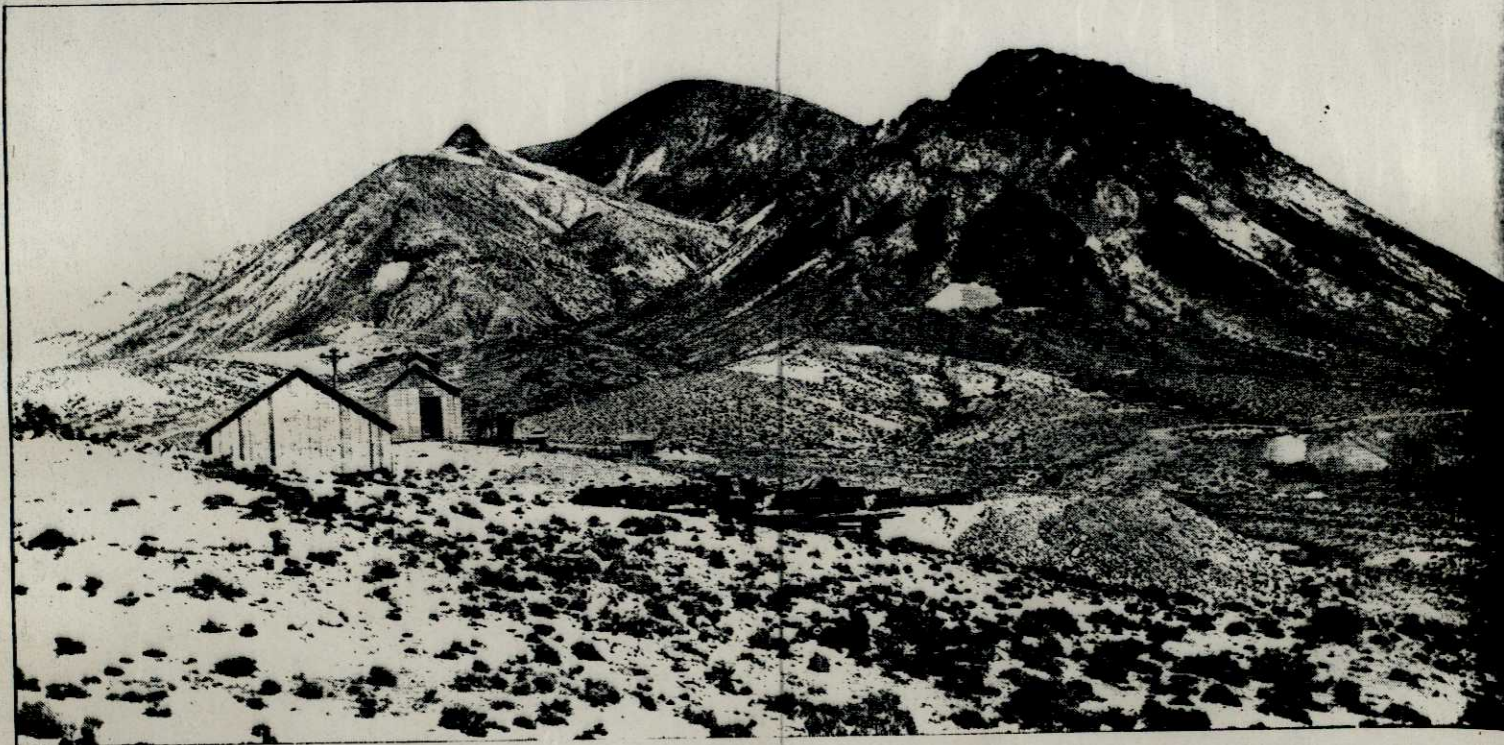
were being rearranged by the oxidation of some of their constituents and the solution and percolation downward of part of these oxidized substances including some of the gold and silver. The dissolved gold and silver were precipitated in and near the original veins at greater depths and have brought about what is known as "secondary enrichment." The high grade ore containing silver chloride and native silver found in the Tonopah Divide Mine has been produced in this manner. The depth to which this secondary enrichment extends has not as yet been determined.

Exploration Work

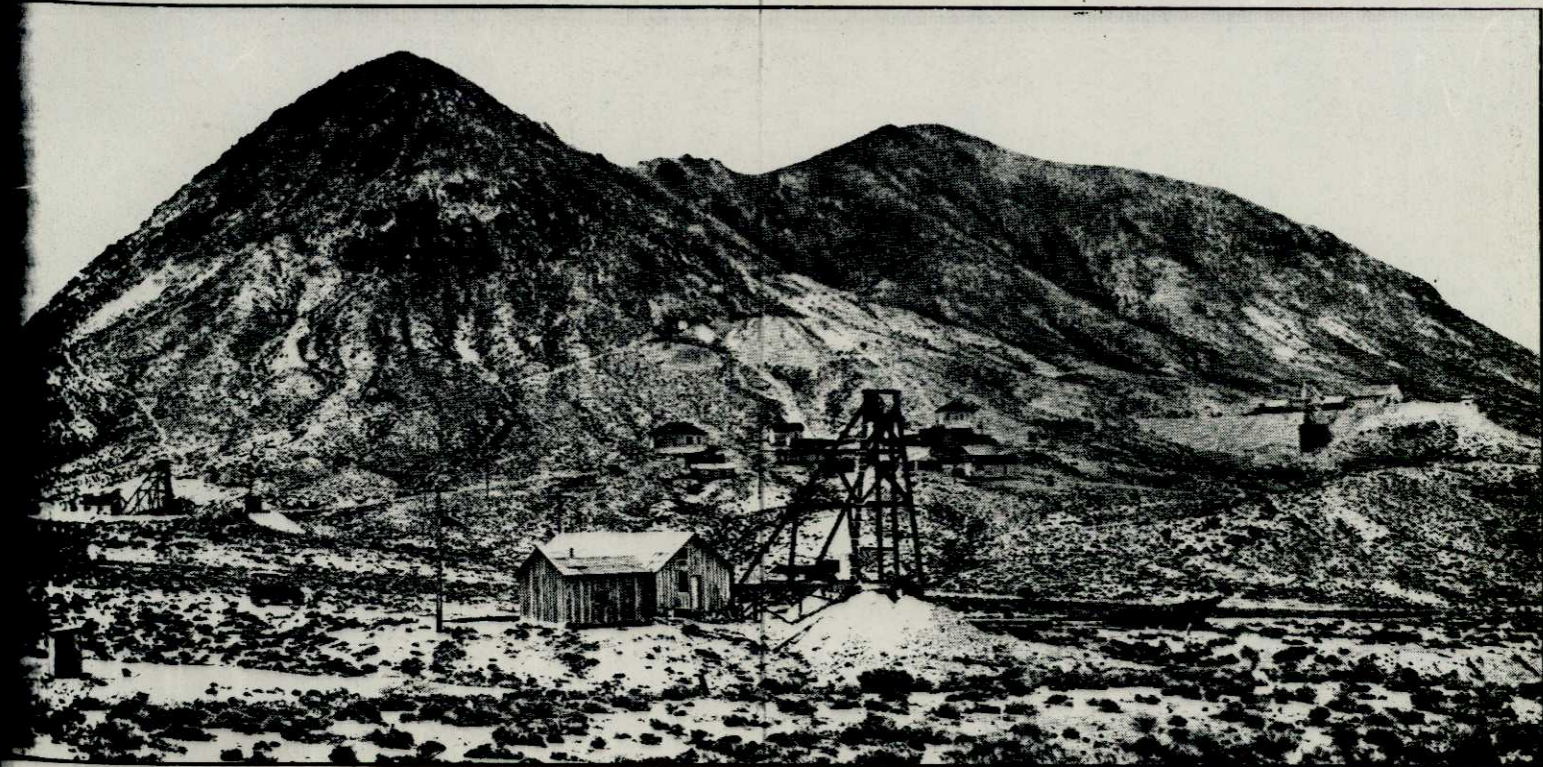
While it is hardly within the scope of the present article to give details of the exploration work undertaken by the thirty

odd companies operating in the district, still it seems advisable to base upon some of the more important facts. The district as a whole is most favorably situated for rapid exploration within easy transportation by going to the old established camp of Tonopah, crossed by an electric power line.

Tonopah Divide The Tonopah Divide levels at 165, 265, 365, 565-foot depths and is 665 feet. The vein is from the shaft, and crosscuts have to it and drifts on it at the upper level while the 565-foot level crosscut is approaching the vein. All drifts on vein have disclosed good ore in. The 265-foot level crosscut was



The Revert and the Verdi are looked upon by Mining men as among the most valuable holdings in the Divide district. In the photo the Revert is in the foreground and the latter nearer to the big blow out. On the Revert several sets of leasers are operating to advantage.



of the headframe and surface workings on the estate of the Alto Divide, one of the most likely looking pieces of ground in the district. To the left can be seen the Gold Zone and to the right, the Tonopah Divide.

beyond the silver vein, to the gold a drift also run upon the latter is here encased in rhyolite. It is that this vein will not be valuable in the breccia in depth. The drift silver vein on the 465-foot level is forward in ore. A 1200-cubic compressor has recently been installed result that in the future progress much faster than in the past.

The property of the Brougner Divide adjoins that of the Tonopah Divide on the northwest and and its shaft is sunk near the Divide ground and is probably ex-Tonopah Divide lode. Its 177-

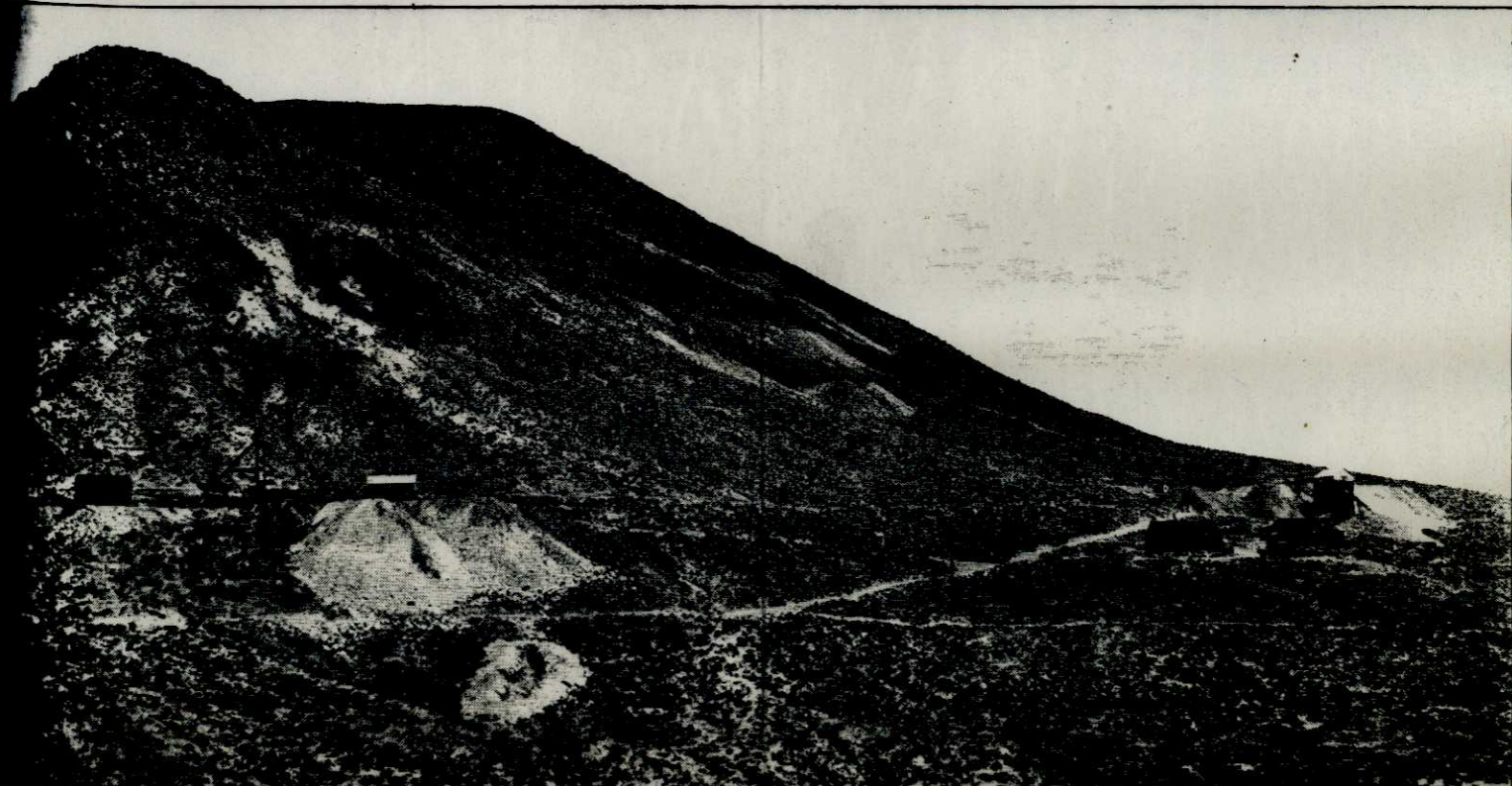
foot level corresponds in elevation to the 265-foot level of the Tonopah Divide mine, but no ore has been found on it although silver assays up to \$10.80 have been obtained. On the 505-foot level, low grade milling ore has been discovered. This company has just installed a 40-H.P. electric hoist and a 35-H.P. 10x10 Erie compressor.

Gold Zone The property of the Gold Zone Divide Mining Company adjoins that of the Tonopah Divide Mining Company on the southeast. Its shaft is in line with the Tonopah and Brougner shafts and it appears to be working upon the same lode. Instead of starting in Divide breccia like the Tonopah and Broug-

ner shafts, the Gold Zone had to sink through a rhyolite capping some 300 feet thick before entering the breccia. No large ore-body was encountered upon the 295-foot or 500-foot level, and new machinery is now being installed to sink to 800 feet.

Divide Extension The Divide Extension claim adjoins the Tonopah Divide and Brougner Divide ground on the north. It has a 300-foot shaft with a level at 150 feet. This level cuts a seam striking like the Tonopah Divide lode and evidently a parallel vein, but the values in this seam are low. In a line with this and 600 feet away on the surface, good silver

(Continued on Page Forty-Four)



Brougner "runs into money" on the stock market and is doing the same underground. It promises to develop into one of the biggest mines of the district. To the left may be observed the location of its shaft and dump; to the right its tunnel site.

DICKERSON ON THE GREAT SILVER CAMP

(Continued from Page Thirteen.)

rock of the Tonopah Banking Corporation, and he found himself in pretty much the same fix as did the underfoot who caught a bear — wanted some one to help him let go. Banking was not in his line of business and he found the duties of bank president irksome, annoying and exasperating, so he sent for his old associate, Wingfield, who had a thorough banking organization, with a corps of well trained men in the banking business, and asked him to take the bank off his hands. In consideration of which, Wingfield was to receive half his (Brougner's) Divide stock at a remarkably low figure, considering the then developed stage of the mine. Wingfield accepted the offer; and this is probably one of the most remarkable transactions in the business history of the state. In a deal involving more than a hundred thousand dollars, no agreement was drawn up and not a scratch of a pen was made. Brougner made a proposition and Wingfield accepted it and the word of each was sufficient to the other. This will smack somewhat of a fairy tale to readers unacquainted with these men, but it is the gospel truth and its relation will cause neither comment nor surprise to those intimately acquainted with the principals in the transaction.

At any rate out of all grew the further development of the Tonopah Divide mine and today that property stands forth as probably the richest silver holding in America and, as the fellow says, "with more to come." Wingfield and Brougner are together in ownership and development and the world's wealth is going to be the bigger by it—bigger to an extent that is intensely gratifying.

DR. LINCOLN ON THE DIVIDE DISTRICT

(Continued from Page Seventeen)

assay was obtained and a new shaft is being sunk. This has already encountered high-grade ore at a depth of 45 feet.

The Tonopah Hasbrouck property lies near the western boundary of the Divide District. It has a 900-foot tunnel which cuts a vein 500 feet from its mouth. This vein strikes north 75 degrees east magnetic and dips 57 degrees northerly. It is a narrow vein of pyritized breccia material consisting of ore of milling grade and is encased in rock of andesite appearance. There is also a shaft 400 feet in depth with a 700-foot drift on the 200-foot level and some work on the 400-foot level, all of which was done some 15 years ago. The company is now at work cleaning out the 200-foot level, which is believed to contain milling ore; and later proposes to run a crosscut from the bottom of the shaft to the vein which it expects to find in the more favorable Divide breccia, since this rock makes its appearance in the shaft some distance above its bottom.

The Divide breccia in the Tonopah Divide mine is soft and breaks readily, and yet it is strong enough to stand well and even shaft stations may be left without a stick of timber. Regular mining operations have not as yet been inaugurated, but a steady output of ore is being made from that broken in

exploration work. There is as yet no water in the district, and it is thought that water-level will be at least 700 feet deep. Pending the development of water, a contract has been made with the MacNamara mill at Tonopah to cyanide from 40 to 60 tons of Divide ore daily. The molybdenum in the ore on the upper level was highly detrimental to the cyanide process, but with the decrease of molybdenum content occurring with depth, the ore has become readily amenable to cyanidation. The Divide ore requires greater settling facilities than does the Tonopah ore, so the MacNamara mill has had to increase its settling plant.

The only other shipper in the Divide District at the present time is the Tonopah Hasbrouck, which is mining about 10 tons per day from its tunnel level; and, like the Tonopah Divide, is shipping to the MacNamara mill.

THEY WHO DUG AND WHO DUG DOGGEDLY

(Continued from Page Eighteen)

had a chance to buy any stock at all. Of the many things I have witnessed in connection with this Divide district I consider this the finest tribute to the camp—that most of the leaders of the day put up an ante before anyone outside was permitted to chip in the pot. And while this circumstance has been extolled to a very small extent it has had its reward in the attitude of the speculating public, which could not but buy freely where men of vast experience and sound judgment were risking all their possessions on the future of their properties.

Time will tell whether or not there have been too many promotions in this one camp. There seemed a surplus of capital, however, when the silver-lead excitement near Mina made its appeal a few weeks ago, and it is certain that other portions of Nevada will be making claim for

attention within the next few months. It seems impossible that the first shaft sent to moderate depth should have dropped squarely on the only great silver vein in all that vast mineralized region. All the laws of average are against such an assumption and one by one the other companies are beginning to show its fallacy.

Looking ahead a few months, and having in mind some of the peculiarities of the mining market, let us summarize the situation in Divide as we might review briefly some other business condition.

First and foremost, the district has one mine with veins so wide and rich that they have not been equalled in many years.

Secondly, there are the records of ore exposed or shipped years ago far to the north, south and west of this property.

Thirdly, there has been a series of examinations by competent engineers upon whose advice big interests are becoming involved.

Fourthly, all of the companies, are

financed for adequate development. Some of work three shifts for the

Fifthly, the stocks of red or more Divide ore which I have record are scattered broadcast. On Nevada and San Francisco are surprisingly small, not yet interested, nor exist in New York, Boston, Philadelphia, even a reminder of the chances that exist in the Divide district. This knowledge is sirable from a Nevada to be sure, but the Divide still a narrow one, some millions of shares issued of three months. And of this good gospel of the district I consider part of all Nevada publications, a serious appeal of the old time no longer is heard in the ing the truth tersely and is the method best in bringing the capital that other storehouses of such as Divide is producing

CAMPBELL & TOPP BROKERS

TONOPAH, NEVADA

WE make a specialty of Divide Stock Properties. Write us for Divide market letter and advice about any Nevada

Condensed Statement of Condition of

Washoe County Bank

RENO, NEVADA

At the close of business on May 12, 1919

As made on general call of State Bank Examiner

RESOURCES

Loans and Discounts	\$2,485,510.79
U. S. and Other Bonds	352,548.50
Cash in Vault and Due from Banks	641,339.04
Customers' Liability on Acceptances	50,500.00
Bank Building, Annexes, Vault and Equipment	177,000.00
Other Real Estate	21,784.18
Other Resources	35,416.00

\$3,764,098.51

LIABILITIES

Capital Paid in Full	\$ 500,000.00
Surplus	100,000.00
Undivided Net Profits	16,067.50
Acceptances for Customers	50,500.00
Rediscounts	20,655.00
Deposits	3,076,875.00

\$3,764,098.51

Accounts of individuals, professional, salaried and business men, firms, corporations and banks invited. Both large and small are welcome.

CALL OR WRITE

By DR. A. H. ELFTMAN
Mining Geologist

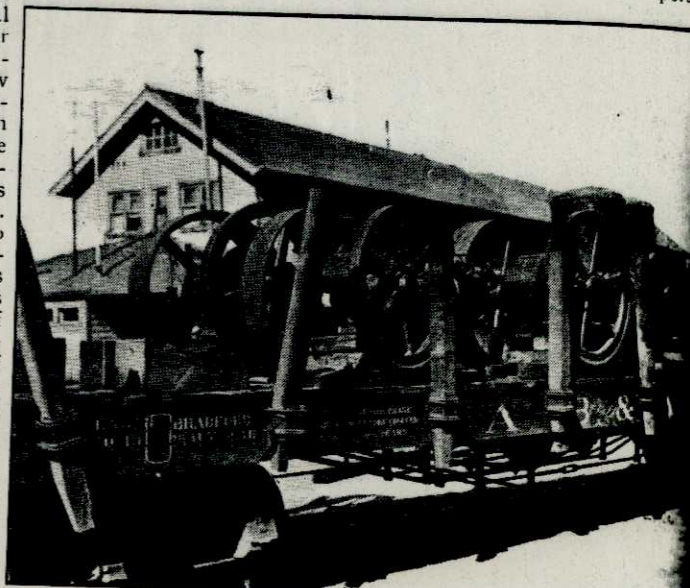
Mining Geologist

As the merits of any undeveloped mining ground in the Divide district must be judged largely from the general geology of the camp and not by the customary sampling of veins at the surface or in the cap rock, it is necessary to consider fully the salient geological features, upon whose interpretation an engineer's judgment may be based in this district.

At the present depth of develop-

cia and a number of flows of a hard brittle glassy rhyolite. This formation is called Tonopah rhyolite and has a thickness of several hundred feet. The Tonopah rhyolite surface flows gradually past into and becomes known as the Siebert lake beds of tuffs.

the overlying Tonopah tufts. On account of the breaks through them it is a wide zone of shattering fractures which are very Taken individually the definition and persistence



Carload of hoisting machinery arrives at the Tonopah bound for the mining fields of the Divide district.

After an extended study and comparison of the Divide and the Tonopah formation, it is evident that the formation here called the Divide breccia is the same formation called the Fraction dacite breccia, by Spurr in his geology of the Tonopah district in 1905. In 1910 Spurr made his final revision of the geology of Tonopah and then included the Fraction breccia as part of the Tonopah rhyolite formation. In Tonopah this breccia is over 750 feet thick. The recent development in the Divide district has demonstrated that the Divide breccia is an extensive formation and that instead of being included in the Tonopah rhyolite it is a distinctly separate formation between the Midway andesite and the Tonopah rhyolite and of equal importance.

Veins

After the deposition of the Tonopah rhyolite and the Siebert lake beds the Divide district was subjected to a period of intense faulting and movements. Some of these faults are attended by intense crushing and grinding, and show a wide zone of movement. In places this movement spread itself out into ones several hundred feet wide, instead of being confined to narrow veins. Most of these very strong and striking faults are unsilicified and are marked by soft gouge and have the appearance of wide shearing done, in the Divide breccia. These fault planes are the veins in this district and all of the ore and values so far found here are in these faults. The faults extend up through

may disappear by passing into a silicified or may be cut off along fractures. Taken collectively, we have found that these veins defined zones which are and appear as prominent parts of the district, the southern part.

Extensive work has been done in the valley, the values of the veins being high. The veins are composed of quartz, pyrite, chalcopyrite, and magnetite, which have been found in the "Cap Rock" are spotted in gold. The ore is also proved in the ore shoots are found in the breccia, the vein is mineralized throughout and dominating values are in the usual ratio being one ounce to 100 ounces in silver ore and values found in the cap rock serve only where pay ore bodies may be found. The vein reaches the Divide breccia. This is situated in the Divide mine. In the cap rock are large and spotted. In the Divide breccia below, the ore is confined to regular ore bodies. The mine has developed on a depth of 465 feet on the shoot is over 350 feet. The averages about thirty feet. The full length has not been determined, and the faces of the ore on the four levels, to all in ore. The ore is estimated as averaging \$30 per ton, much ore running \$150 per ton of silver and gold. This is the largest ore bodies ever found in the southern Nevada.

The main view so in the district is the Dis which runs northwest. It has been traced for four miles. While the displacement in evidence that the formations on have been relatively fault plane dips very north. The course of curving toward the with the convex side northeast. West of the



To the left in this photo appears Branch Smith, President of the Bi-Metallic Mining Company and heavily interested in other Divide companies; to the right, A. H. Elftman, mining geologist, author of the accompanying article, who aided materially in the development of the Divide district.

plane losses its identity and appears as five distinct which gradually disappear west by becoming then showing only as in the rock which finally disappear. For a mile and a of the Divide mine represented by a belt of rock which crosses hills. Beyond this is where the upper cap rock rhyolites have the Divide fault plant as well defined veins on the ground of the Ro- make and Gold Wedge towards the southeast gradually lose their de- and become mere which finally disap-

of the main Divide fault and running roughly it are two other ap- planes which have so fully developed. The structural and min- conditions similar to along the Divide vein. to the northeast is all mile distant from the This runs through the and Golden Cycle prop- other to the northeast is fault vein which runs and southeast and has up for a mile in length have been formed during in which the Divide veins were made.

is conclusively proven deposits were formed in nes or veins, it does not pay ore shoots will be very part of these exten- or faults. It has been the ore shoots occur in ns only where the cross ect or merge with the The ore bodies also ex- the cross veins for some from the main veins. shown in the Divide the large ore shoot is

in the main Divide fault vein and where a number of cross veins enter it from the south. Other develop- ment in the Divide fault shows that values and ore appear only where cross veins are in evidence. When the large fault planes were formed, the whole district was more or less disturbed and many other fractures and veins were formed throughout the district. Some of these show strong mineralization, especially where a number of intersecting veins occur.

Summary of General District Conditions.

The development of the Divide district so far has shown that the Divide breccia in which the pay ore shoots occur, is covered by a cap rock formation up to seven hundred feet in thickness. The veins which carry the ore break through the cap rock but do not carry pay ore bodies in the cap rock. Therefore it is necessary to sink through the cap rock, whether it is fifty feet or seven hundred feet deep, before ore of commercial quality may be expected. Any ore encountered in the cap rock is only an indication or justification for sinking into the Divide breccia. It is probable that some pay ore bodies will be found in the cap rock, but it will not pay to look for or expect ore in this zone. The approximate depth of the cap rock at any point in the district, may be determined from the rock formations themselves, and this depth varies in the different parts of the district. The values in gold and silver occur along prominent fault veins, usually where numerous veins intersect or unite with the same. The most favorable places to expect ore bodies is in the Divide breccia below where the areas of cross-fissuring contain the strongest mineralization. I have discussed the geological conditions of the district at some length as these conditions are not generally understood and no attempt has been made to describe them from a geological standpoint.

THE DIVIDE DISTRICT; A NEW CONCEPTION OF MINING

WHYLOCK, Mining Engineer

DIVIDE DISTRICT in proximity to Tonopah has its career under con- sideration could hardly be more Over five miles of splen- roads numerous automo- Tonopah with Divide suburb. In this relation- enjoys the advantages of connection by wire and the outside world, its ex- service housing facili- conveniences, refresh- and all the professional, and social organizations to make a complete as are these advantages probably no less valuable to is the experience of men grown with the develop- Tonopah mines, many of now directing mining in Divide; to this must milling facilities that are ating successfully on Di- Compared with other the desert it must be ad- Divide has been unusual- This list of advantages would not be complete dding to them the work competent geologists who ed faithfully in the mines of Tonopah, from whose we gather that while the nes of Tonopah may not ed, the general features

are readily traceable into Divide, and later development may prove that the geological conditions of Divide may differ no more from the geological conditions of Tonopah than the structural details of one part of Tonopah differs from the structural details of another part of Tonopah.

The Eufaceous lake beds extend from Tonopah to and thru Divide; these are pierced by rhyolitic intrusions that were followed by chemical, thermal and dynamic forces incident to alternate periods of eruption and quiescence. Faulting in this district has already been noted by Dr. A. H. Elftman in his "Geological description of the Divide District"; recalling the violent periods in the geological history of Tonopah and noting the evidence of similar disturbances in Divide, faulting may safely be anticipated and surely will be responsible for some of the problems that will ultimately face those responsible for mine development.

The Transition Period

In its present stage of development Divide is in that transition period between financing and actual mining; claims and groups of claims have been looked over, boundaries checked, titles investigated and incorporations perfected which may be classed as the stage of the investor. A time-honored custom by investors in a new mining field has been to seek tangible proof of the

existence of ore before interest could be aroused or money advanced; a "specimen" would be asked for, if received, carefully examined then returned with the inquiry, "is it float, or ore in place?" Districts that have yielded high grade float are partly responsible for this attitude as also is the business instinct of "playing safe". It is refreshing to note, therefore that instead of insisting on every ore body having an outcrop, and that cropping a glittering index of its total value, investors are becoming reconciled to facts proven in many mines, viz; that veins or ore deposits are often concealed and may occur in any shape or position, so that the proof of its existence in one place may justify the application of all known data in sinking elsewhere in the neighborhood for an extension of a vein or ore deposit not exposed on the surface. Reasoning in this direction however, may be forced to absurd limits, which in turn may be regulated in a measure, by exercising the same care and caution that one must observe in any matter involving a business risk.

Profiting By Experience

The readiness with which investors are making use of the experience of other camps may be instrumental in proving that Divide is destined to introduce a new conception of mine promotion and development.

Should the ultimate growth and success of Divide justify this procedure, the state of Nevada is about to write the greatest page of its mining history.

J. E. Spurr in his "professional Paper No. 42" notes the similarity between the Comstock Lode and Tonopah Deposits; he also points to "many striking peculiarities in common with Tonopah," Silver City and De Lamar Districts in Idaho, which

are studies that lead to his conclusion concerning his "Petrographic Province of the Great Basin," of which he writes as follows, "The whole region southward into the Mojave Desert, together with a portion at least of the Sierra Nevada, constitute a petrographic province, that is to say, it is underlain by a single body of molten magma which has supplied at different periods, lavas of similar composition to all the different parts of the overlying surface."

Ore was found in Divide before Goldfield was proven. When the wealth of Goldfield became known Divide was forsaken by all but a few

Today Divide has an established record.

When Tonopah was discovered there was a mad rush of prospectors from the neighborhood of Reese Springs in the hills at the south end of Lone Valley, then that section was deserted.

Numerous similar incidents could be cited to show how worthy districts have been denied the attention they deserve by a stampede to exposures of high grade. The logical conclusion from the above line of reasoning would be that in districts such as Rawhide, Hannapah, Gold- dyke, Duluth, Phonolite, Glendale and other still farther afield the practices inaugurated at Divide may prove the importance of Mr. Spurr's Petrographic Province.

Divide is being well supported by the investing public. Those interested are basing their judgment of the value of a claim or group of claims on their position relative to some other better known claim or group of claims, and not on ore specimen; furthermore they are prepared to sink hundreds of feet which mark one of the most important advances in methods of mine promotion.

ARGONNE DIVIDE MINING COMPANY

OWNERS OF

Gold Wedge Nos. 5, 6, 7 and 8
and Homestake

THIS LARGE GROUP ENDLINES THE ROSETTA

OFFICERS AND DIRECTORS:

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The well known Alaska-California Millionaire
mining man.
CHARLES W. TAYLOR Vice-President
Prominent mining man of Goldfield
THOMAS A. FRAZIER Secretary-Treasurer

ADDITIONAL DIRECTORS:

CHARLES KIELHOFFER
Pioneer Divide mining man
R. W. CATTERMOLLE
Chief Engineer Tonopah and Goldfield R. R.
HUGH HENRY BROWN
Prominent Lawyer of Tonopah
A. H. ELFTMAN
Noted Geologist, is Consulting Engineer for
the Company

Mining Engineers Finance Leases on West End Revert Divide

Al Revert, president of the Revert mine, received word from the mine Friday morning leaving Tonopah on the night train that the main shaft had entered a vein of ore. Values have not been determined but are still in ore according to a telegraph message received here Saturday night.

75 feet. At the Belcher Extension the 400-foot shaft is being retimbered. The vein dipped out of the shaft at about 200 feet and a crosscut will be driven to it from the 400 when retimbering is completed. The property is equipped with electric hoist and air compressor.



AL. REVERT

Hasbrouck Ships Car Ore

The first car load of ore from the Hasbrouck mine was hauled to the MacNamara mill ten days ago and another shipment will

be made this week, from the tunnel level. On the 200-foot level of the shaft a drift is being driven on the vein, which will be crosscut every 50 feet. It was found that there was but one crosscut in the first 200 feet of the vein, driven sixteen years ago when the property was being operated by the late John McKane, which made it impossible to get a line on the average value of the ore. From this point on the old drift, which was run in the footwall, is caved. Instead of cleaning it out, the drift will continue in the vein. The old drift was driven by hand and avoided the hard quartz composing the vein.

On the 400-foot level a crosscut has been started to the north to cut the same vein.

Other Properties Working

South and southeast of Gold Mountain shafts are going down on the Grimes, Divide Junior, Reno Divide, Jim's Divide, Silver Divide, Gold Reef, Toggery, Bevis Divide and a number of other properties. The Jim's Divide will soon crosscut for the junction of two veins. Bevis Divide has its electric hoist and compressor in operation and is down 75 feet, sinking on an east-west vein. Ore assaying \$5.80 per ton was found at a depth of 35 feet and the vein is streaked with seams of hematite that carries values.

Rosetta Looks Good

The Rosetta is again attracting attention in the southeast part of the district. The main shaft entered the Murphy vein at 100 feet and samples have been improving for the past twenty feet. The shaft is 200 feet deep and late assays from the muck run from \$9.85 to \$23.

In this section the Gold Wedge is down 160 feet. A small compressor was installed recently and is run by the hoist engine. With air drills better progress is being made. It is the plan of Superintendent Hellier to sink to 300 feet, from where crosscuts will be driven to two veins.

The showing on two leases on the west side of the Revert Divide is the attraction on the west side of the divide. The Ruffles-Sizer lease has a shaft 50 feet on a good showing of ore and is equipped with a hoist that has been purchased for it. The shaft is located on the west wall side of a wide fissure that contains several seams of rich ore. Sizer, a mining engineer, expresses the belief that the entire vein, which is 60 feet wide, will yield mill ore of good grade, and he is planning to mine on an extensive scale. The lease has \$25,000 in its treasury.

The Ruffles-Sizer lease and adjoining the Whytock lease, of which another lease, P. R. Whytock of Tonopah, is managing this block trenching has been done on a considerable area, with results similar to the Ruffles-Sizer lease. A shaft is now being sunk near the west end-line of the Whytock lease. An old shaft about thirty feet deep was sunk years ago by Ruffles, who had the job of doing the assessment work on the ground was patented. This shaft was recently and averaged \$14.60 per ton.

W. Higgins, a well known mining engineer, has been appointed superintendent of the Revert Divide and Verdi Divide. The working shafts on both properties are equipped with electric hoists and a compressor at the Revert Divide supplies both mines.

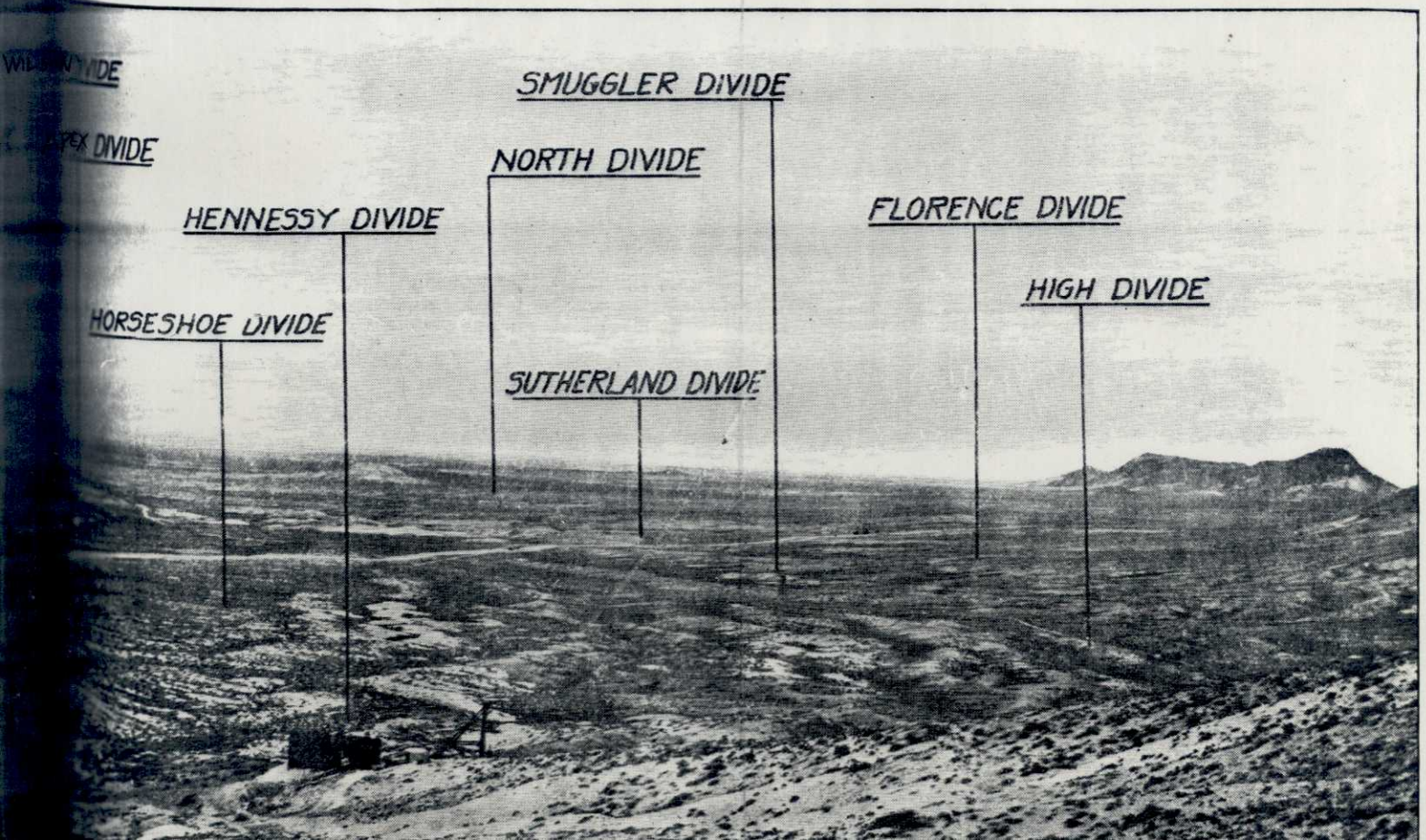
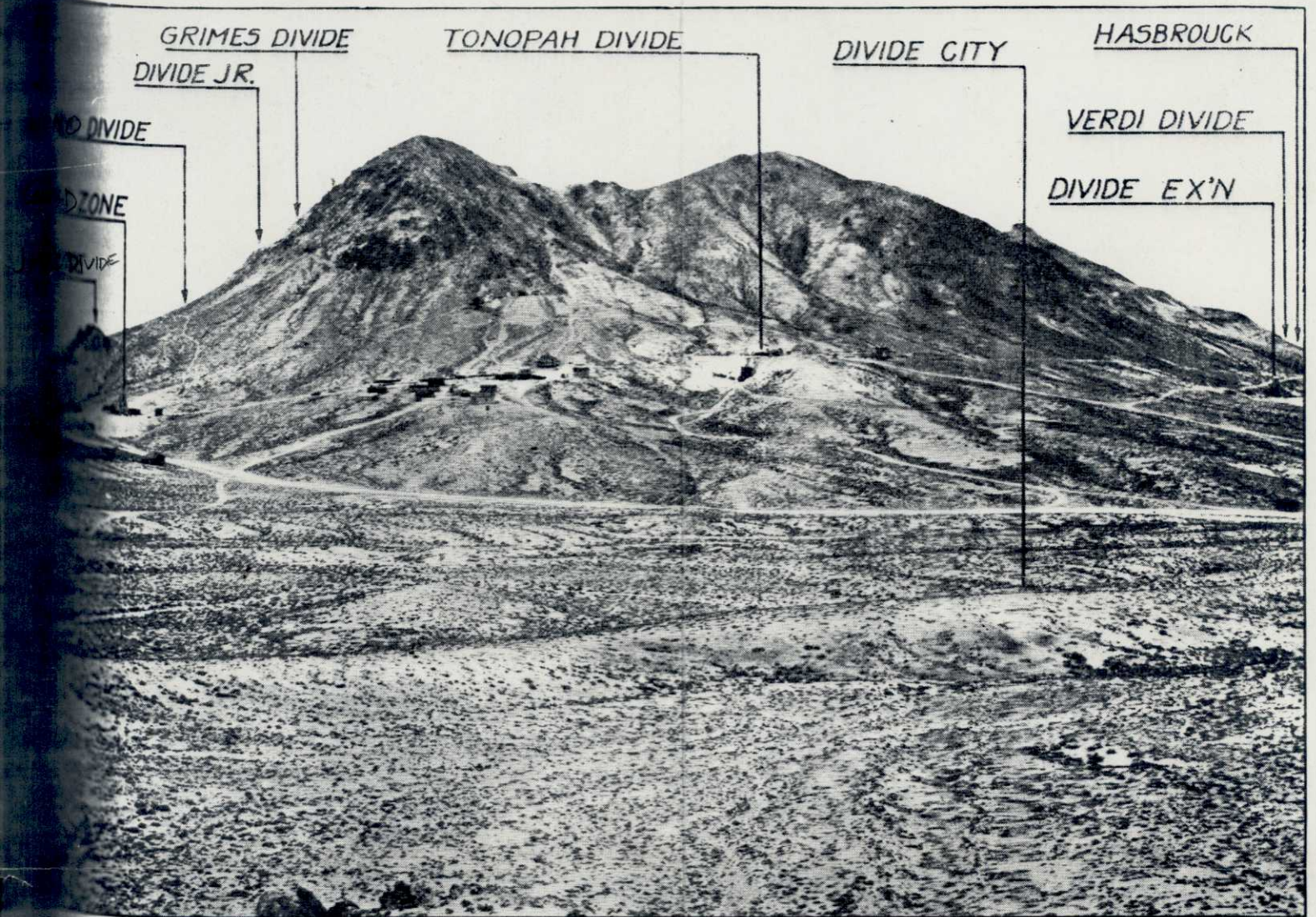
Belcher and Victory Sinking

Work is under way at both the Victory and Belcher shafts. The Belcher is down



CENTER, VERDI DIVIDE AND REVERT DIVIDE; RIGHT, BUTTE DIVIDE, BELCHER DIVIDE; EXTREME RIGHT VICTORY DIVIDE; HASBROUCK MOUNTAIN ON LEFT

RIGHT. LOWER SECTION IS A CONTINUATION OF THE UPPER SECTION. AS FAR AS WAS POSSIBLE WITH-
ERA. THE "LAY" OF THE PRINCIPAL PROPERTIES IS SHOWN, THIS BY WAY OF PRINTED CAPTIONS.



ANORAMIC VIEW OF DIVIDE MINING DISTRICT IN TWO SECTION

