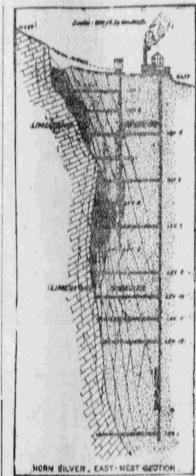
THE HORN SILVER MINE, FRISCO DISTRICT.

HE following data were furnished to the "News" by D. P. Rohlfing, M. E. Location and Topographica Features.-'The Horn Sliver mine is situated in the San Francisco Mining District, about one mile south of Frisco, Beaver county, Utah. It lies on the eastern flank of Grampion mountain, which forms the southern end of the San Francisco range, This range strikes nearly north and south, and belongs to a type to which the name o basin ranges has been given. The basin ranges occur in the Great Basin, the immense arid area stretching from the Wasatch mountains on the east to the Sierra Nevada on the west. This region is remarkable for its structure, which consists of narrow and frequently quite elevated and rugged mountain chains. with a persistent north and south

The San Francisco range is only about fifteen miles long. Its average width is about three miles, and several of its peaks attain an elevation of over one thousand feet above the adjoining valleys. These valleys are nearly level. and are about 6,300 feet above sea level. Like nearly all the basin ranges the San Francisco range has steep slopes rising rather abruptly from the valleys and ascending almost continuously from base to summit. There are no running streams in the canyons. All the water obtained in this district is found in a

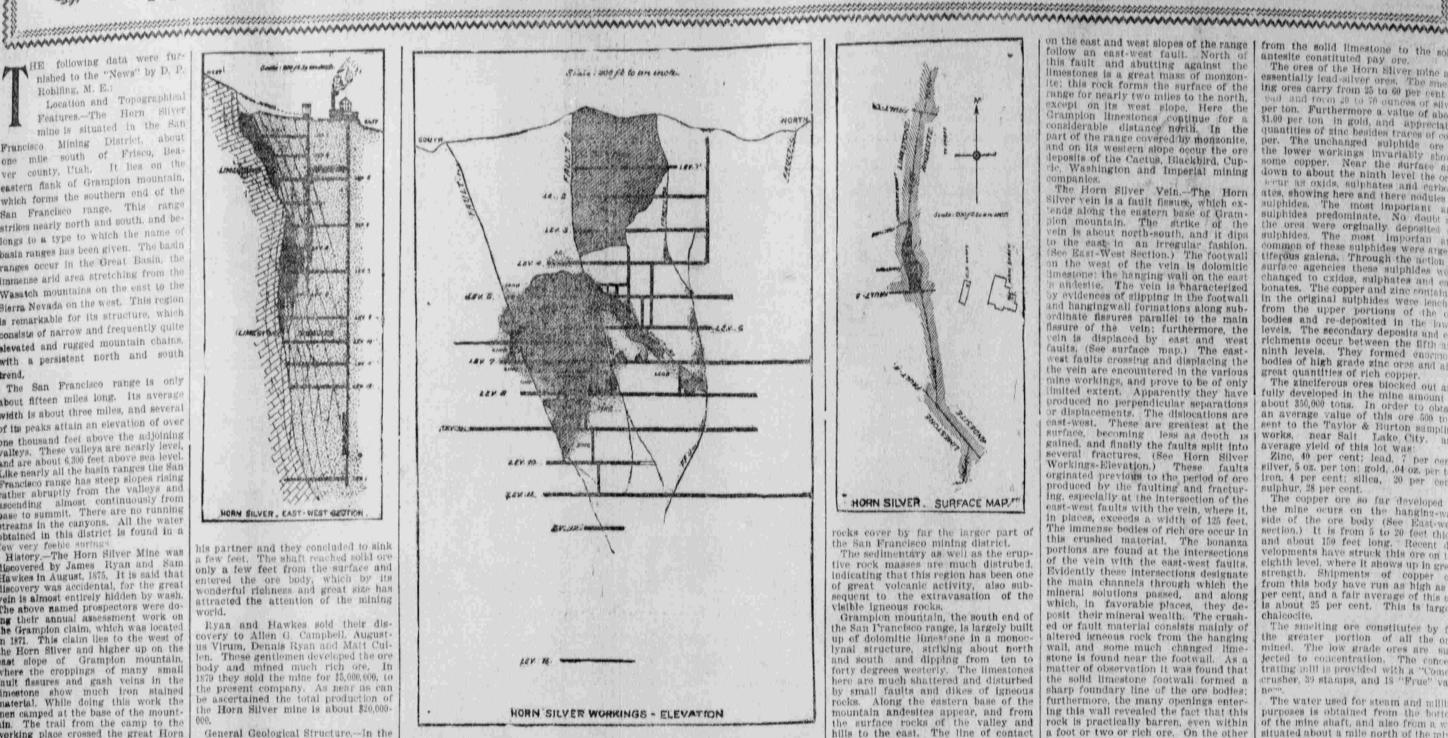
History.-The Horn Silver Mine was discovered by James Ryan and Sam Hawkes in August, 1875. It is said that discovery was accidental, for the great vein is almost entirely hidden by wash. The above named prospectors were doing their annual assessment work on the Grampion claim, which was located in 1871. This claim lies to the west of the Horn Silver and higher up on the east slope of Grampion mountain, where the croppings of many small fault fissures and gash veins in the limestone show much iron stained material. While doing this work the men camped at the base of the mount ain. The trail from the camp to the working place crossed the great Horn Silver body. One day while taking a rest on the trail one of the men turned over a boulder. The great weight of this rock attracted his attention, and on closer inspection he found it to be



his partner and they concluded to sink a few feet. The shaft reached solid ore only a few feet from the surface and entered the ore body, which by its wonderful richness and great size has attracted the attention of the mining

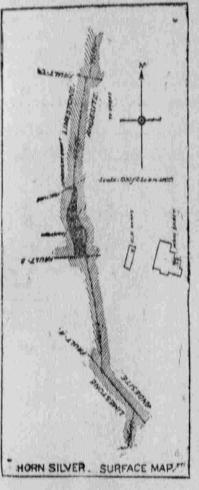
Ryan and Hawkes sold their discovery to Allen G. Campbell, August-us Virum, Dennis Ryan and Matt Cul-These gentlemen developed the ore body and mined much rich ore. In 1879 they sold the mine for \$5,000,000, to present company. As near as can ascertained the total production of Horn Silver mine is about \$20,000-

General Geological Structure .-- In the San Francisco range and neighboring valleys comprising the San Francisco mining district there are exposed sedimentary beds to a thickness of several thousand feet, consisting of limestone,



truded at different periods and from of the district. various vents masses of eruptive rocks, curring in this

ween these sedmintary rocks were in- | posed to show the geological structure curring in this district include monzonwhich in part buried the sedimentary lite, trachyte, quartz porphyry and the other portion of the range by a mine the crushed material was so fissures will lead low pass. This pass and also the canyon thoroughly mineralized that everthing other ore deposits.



rocks cover by far the larger part of the San Francisco mining district. The sedimentary as well as the eruptive rock masses are much distrubed, indicating that this region has been one of great volcanic activity, also subwent to the extravasation of the visible igneous rocks.

Grampion mountain, the south end of the San Francisco range, is largely built up of dolomitic limestone in a monoclynal structure, striking about north and south and dipping from ten to forty degrees westerly. The limestones here are much shattered and disturbed by small faults and dikes of igneous rocks. Along the eastern base of the mountain andesites appear, and from the surface rocks of the valley and hills to the east. The line of contact limestone and andesite mark the great vein upon which the Horn Silver

m the east and west slopes of the range | from the solid limestone to the solid his fault and abutting against the imestones is a great mass of mongon-ite; this rock forms the surface of the ange for nearly two miles to the north xcept on its west slope. Here the Grampion limestones continue for a considerable distance north. In the part of the range covered by monzonite. and on its western slope occur the ore deposits of the Cactus, Blackbird, Cup-ric, Washington and Imperial mining

The Horn Silver Vein.—The Horn Silver vein is a fault fissure, which extends along the eastern base of Grampion mountain. The strike of the vein is about north-south, and it dips to the control of the to the east in an irregular fashion. (See East-West Section.) The footwall on the west of the vein is dolomitic limestone; the hanging wall on the east a andesite. The vein is characterized v evidences of slipping in the footwall and hangingwall formations along sub-ordinate fissures parallel to the main fissure of the vein; furthermore, the vein is displaced by east and west faults. (See surface map.) The east-west faults crossing and displacing the the vein are encountered in the various mine workings, and prove to be of only imited extent. Apparently they have produced no perpendicular separations or displacements. The dislocations are east-west. These are greatest at the surface, becoming less as depth is surface, becoming less as depth is gained, and finally the faults split into several fractures. (See Horn Silver Workings-Elevation.) These faults orginated previous to the period of ore produced by the faulting and fractur-ing, especially at the intersection of the east-west faults with the vein, where it. in places, exceeds a width of 125 feet. The immense bodies of rich ore occur in this crushed material. The bonanza portions are found at the intersections of the vein with the east-west faults. Evidently these intersections designate the main channels through which the mineral solutions passed, and along which, in favorable places, they deposit their mineral wealth. The crushed or fault material consists mainly of altered igneous rock from the hanging wall, and some much changed lime stone is found near the footwall. As a matter of observation it was found that the solid limestone footwall formed a sharp foundary line of the ore bodies: furthermore, the many openings enter-ing this wall revealed the fact that this rock is practically barren, even within a foot or two or rich ore. On the other hand there is no sharp division between the ore and the barren crushed mater-

antesite constituted pay ore.

The ores of the Horn Silver mine are essentially lead-silver ores.

ing ores carry from 25 to 60 per cent of per ton. Furthermore a value of about \$1.00 per ton in gold, and appreciable quantities of zinc besides traces of copper. The unchanged sulphide ore in the lower workings invariably shows some copper. Near the surface and down to about the ninth level the ores even as oxids, sulphates and carbonates, showing here and there nodules of ates, showing here and there nodules of sulphides. The most important and sulphides predominate. No doubt all the ores were orginally deposited as sulphides. The most importan and common of these sulphides were argentiferous galena. Through the action of surface agencies these sulphides were changed to exides, sulphates and car-bonates. The copper and zine contained in the original sulphides were leached from the upper portions of the ore bodies and re-deposited in the lawer levels. The secondary deposits and enrichments occur between the fifth and ninth levels. They formed enormous bodies of high grade zinc ores and also

bodies of high grade zinc ores and also great quantities of rich copper.

The zinciferous ores blocked out and fully developed in the mine amount to about \$50,000 tons. In order to obtain an average value of this ore 500 tons sent to the Taylor & Eurton sampling works. works, near Salt Lake Cit average yield of this lot was: Zinc, 40 per cent; lead, 7 per cent;

silver, 5 oz. per ton; gold, .04 oz. per ton iron, 4 per cent; silica, 20 per cent; sulphur, 28 per cent. The copper ore so far developed in the mine ocurs on the hanging-wall side of the ore body (See East-west section.) It is from 5 to 20 feet thick, and about 150 feet long. Recent developments have struck this ore on the eighth level, where it shows up in great strength. Shipments of copper from this body have run as high as 40 per cent, and a fair average of this ore is about 25 per cent. This is largely

chalcocite. The smelting ore constitutes by far greater portion of all the ores The low grade ores are subjected to concentration. The concentrating will is provided with a "Comet" crusher, 39 stamps, and 18 "Frue" van-

The water used for steam and milling purposes is obtained from the bottom of the mine shaft, and also from a well situated about a mile north of the mine. It is the writer's opinion that the ore chutes so far developed extend to a mine is located.

Grampion mountain is separated from the other portion of the range by a mine the crushed material was so lissures will lead to the discovery of

Coming Richness # LaSals.

may be prepared to add to her list of many promising and productive mining camps, the district now beprominently known as the

La Sal mining region, in the southeastern part of the state. For the past five years this section has been gradually creeping out of its isolated state and can now see the daylight of prosperity dawning upon its rich and productive mountains, whose gradual development work and patient prospecting has revealed many mines of value, and which promise during the coming year to add much value to the mineral production of the state. It has probably seen and passed its stages of disparagement, and now stands prominently as one of the coming mining districts of Utah, with a fair chance of becoming one of our great producers of the pred ious metals, and aiding very materially in placing Utah at the head of the col-umn of mineral producing states.

PAST SEASON'S WORK.

The past season has been one of unprecedented prosperity for a young inin-ing section, and where work has been rosecuted to any extent the results have been of the most encouraging na-This substantial advancemen has caused capital and investors to con servatively investigate the mining requence has been that much interest is now being shown on a basis of investigation by actual development work. While Eastern capital has been "low to take advantage of these opportunities, the Salt Lake and Utah mining man has now taken hold and the work of the present year and its successful results may be credited to their judicious and talented enterprise.

MINERS' BASIN.

While there are numerous localities now showing valuable mining prospects. none are more prominently represented than the Miners' Basin locality, where the principal part of the work is being carried on this winter. There are now nine properties being worked in and around Miners' Basin, all of which are being developed by deep tunneal enter prises, which, when to their objection points, will have gained considerable vertical depth, thereby disclosing the true richness of the two mineral belts crossing through the district from the Paradox-La Sal locality from the south east to the northwest. Thus far the Basin locality, with its remarkable surface showing of auriferous copper ores on Mineral, Pilot and Gold Hill Mountains, has proven that this is the natu-ral starting point for the establishment of a mining country, only requiring the confidence and enterprise of the capital ist to make the entire La Sal country one of interest and probable value. this section as a Utah field for investment, and so far, wherever they have AREA OF DISTRICT.

The area of the La Sal country, prop-Utah, with a probable reach-over or eight or ten square miles in southwest ern Colorado, where the Paradox-La Sal mines are located simply because they are naturally tributary to this out-let, and Salt Lake is our natural market. Included in this area, are the La. Sal mountain districts, respectively, Basin, Beaver, Mill Creek, Gold Mountain, Geyser, Wilson Mesa, Mineral, Horse, Pilot. Mt. Tomaski, Mt. Wass and Deep Creek, while the surroundir mineral districts include those of Para mineral districts include those of Paradox, La Sal, Lisbon Valley (The Big Indian), White House, Salt Wash, Richardson, Fisher Valley, Huntsman, Sinbad and West Creek. Meab, the county seat, is in the extreme southwest portion of the county, and Castleton, is at the foot of the western slope tributary to the Basin and Beaver localities, More or less work is going on in all of these outside districts Discounty on the second of these outside districts Discounty. pecially so at the Big Indian and La Sal mines, but the principal work of actual mining operations by the most companies is being done in and around Miners' Basin.

MT. TOMASKI.

The Mt. Tomaski company are working a force of men driving a tunnel to cut a large vein, which promises excellent results when completed. The property is owned by Moab men, who

ITH the beginning of the new | are fully prepared to carry out their year of 1902 the state of Utah | prospective development work.

CLARK PROPERTIES. mountain are the properties of the Clark syndicate, who are developing their properties with good results, contemplating the erection of reduction works next season. Judge Bartlett of Moab, is also engaged in the develop-ment of a group of properties, that

promise excellent results. LA SAL COPPER CO.

The La Sal Copper Mining Co., on the Colorado side of the range, are working on a large scale, under the excellent management of Mr. Jas. C. McBride, who is putting in the winter to production, preparatory for shipping this way out, instead of to Placerville, Colorado, by teams, a distance of seventy-five

TAYLOR PROPERTY.

The Taylor Bros. are opening up sony fine copper properties west of Moab, near the White House station, on the Thompson Springs road, and promise by development work to have an equal showing to the famous Big Indian prop-

SALT WASH PROSPECTS.

Two properties are being worked in Salt Wash locality by Talbott & Jones, where two years ago there was much excitement regarding the remarkable copper discoveries made there. They are continuing to show valuable deposits of copper ore.

HUNTSMAN.

The owners of the Huntsman property are doing some work on a prospect-ing basis under the direction of Mr B. Walker, of Salt Lake, and continue to find values in gold and copper, such as made the Huntsman property once famous.

SINEAD DISTRICTS.

Nothing is being done in the Sinbad, Fisher and Dalores districts this win ter, but some fine copper veins have been discovered in all, and will certain-ly prove valuable when they are proper-

URANIUM DEPOSITS. Fisher and Paradox districts are

known for their valuable uranium properties, as well as having found some very promising copper mines this season, but nothing is being done so far as development work is concerned. THE BASIN DISTRICT. Present development operations in this immediate locality means much for the substantial future of the La Sal country, and it is to be hoped that the enterprise now being shown by Salt

Lake capital will be decidedly in their favor. It has taken Salt Lake men some time to realize the importance of

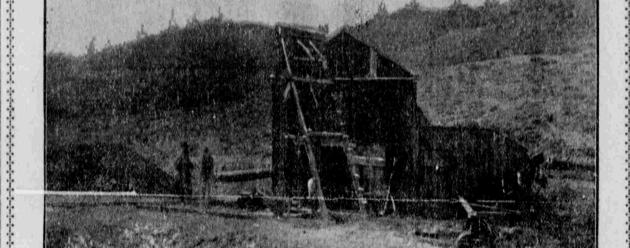
by good results.

taken hold they have been encouraged

INTERNATIONAL GROUP. The International Copper Mining company, operating in Beaver Basin, under the able supervision of Dan. H. Ferguson, has been truly fortunate in the development of their property pos-sessions. They are now making two properties-the Chimney Sweep and Fortune Teller mines-in both of which they have fine bodies of shipping are. On the Chimney Sweep they are sinking a shaft on five feet of peacock copper (covelite ore), and on the Fortune Teller, a cross cut is bedepth of 70 feet. Here they have an immense deposit of black oxide of copper ore, on the same vein. The values carrying some silver and gold. impany owns in all about twenty claims on Pilot mountain at the head of Beaver Basin, and in all they have fine surface showings of mineral of works. The company is under the financial direction of such enterprising men as Judge Sam King, of Provo. Judge Burton, of Salt Lake, and others who are going ahead in the right direction to make mines. fair shipping value to home reduction

rection to make mines. GOLD HILL MINES.

The Indiana and Tornado properties, on Gold Hill, on the south side of Min-ers' Basin, is an enterprise recently



VALUABLE OLD PROPERTY.

The old Harrington-Hickory property, which is giving a good account of itself, under the management of A. B. Lewis. It is located in the North Star district in Beaver county.

upon which a force of miners are now A shaft 100 feet in depth is being sunk at the Tornado, where they has a gold value throughout in the por-phyretic quartz formation, and as yet they are unable to know the exact extent of the ore body in the contact This shaft will be completed to the 100foot station on or about the first of the year, when more definite arrangements 'ill be made regarding future work In the Indiana, an adjoining property also bonded, a fine body of purphyretic quartz was uncovered which gave very high returns in gold. Both properties are on the order of a free milling over and to all appearances they have a mountain of this character of mineral Judge Burton is also one of the princi-pal owners of the International property in Beaver Basin, and by his enterprise much good will certainly come from the work now under his direction.

THE SKYLARK.

The Skylark is another property that is being worked for the winter. It is owned by the Wolf Brothers, and sitnated upon the south of Mineral moun-tain. They have a well defined vein of malachite and azurite ore, and are imping their entire product prepara-cerv for shipping the coming spring. They recently completed a cross cut, tapping the vein at considerable depth and are now drifting into the moun-The Skylark is supposed to be on the famous "High Ore" vein, which property is now under bond, with fair prospect of its being worked also

THE LITTLE DOT.

The Little Dot, another of the famous rich properties of the camp and owned by Sam McGraw and O.D. Lontsenhiser, is being worked under lease by Messrs. Davis, Robt. Thompson and H. B. Hammond, of Monb. A tunnel is now being run to cut the vein at a ver-tical depth of 100 feet and 60 feet in. The surface showing is a remarkable one, not only for quality of ore but for its special values in bismuth and silver ore, some of which runs as high as 1,600 ounces silver to the ton. Much interest is shown in the final opening of this property, as it is expected some-thing will be found that will startle those who have been suspicious of the richness of the mines of Mineral mountain. They will have cut the vein on or about New Years.

IOWA GROUP.

The Iowa group of properties is situated on Gold Hill, on the south side of Miners' Basin, and the west continua-tion of the Indiana-Tornado property, and on the same contact. The Iowa group is owned by Gid R. Propper and

bonded by Judge J. W. Burton, and I Iowa J. Smith, who are fully prepared for a vigorous winter's work. The Iowa tunnel has now reached a depth of 80 feet, with 40 feet more to run before cutting a large fluorine vein on the north side of the porphyretic quartz. The tunnel is being driven toward a big chimney or chute from which the fluorine ore comes, and it is expected that when they reach this vein they will have opened a rich body of telluri-um ore, as indicated by the fluorine found on the surface. They expect to cut the vein on or about the first of the new year.

GRAND VIEW CO.

The Grand View Mining company, or Horse mountain, are now pushing work on the Lincoln tunnel, expecting to cur ne of their large veins soon after th first of the year. Two shifts are being regularly employed, and have now reached a depth of 50 feet, having in yiew 500 feet of tunnel work to do before cutting through the contact, when they will have attained a vertical depth of about 600 feet. At present they are cutting through the porphyretic quarts formation, and have gold values all along the tunnel of from \$4 to \$12 per ton, but on the north vein they wi have gold and copper ores combined, as indicated on the surface. The com-pany is composed of Memphis, Tennes-see, capital, with Mr. H. B. Miller as manager in charge.

AUTOMOBILE COMBINATION.

At the head of Mill Creek, just over the Pilot mountain divide, are the workings of Mr. Alex Caldwell, an old miner from Mercur and Tintic. His Automobile Combination," where he i running a tunnel 200 feet to cut the Automobile vein. He has reached a depth of 125 feet and will continue work until the vein is reached. His ore is porphyretic quartz, carrying high values in gold, and is on the east break of the Basin contact. IN SHEAFFOR GULCH.

boiling

In Sheaffor gulch, on the south side of Gold Hill mountain, are the workings of R. B. Merkins and C. A. Schuman, on the Quaken Asp group. They are sinking a shaft on the south break of the Basin contact, and are on the slope of Gold Hill from whence it is supposed the Wilson Mesa gold float came from. They will continue work all winter cutting down through a phonolite and porphyry formation. So far they have had assays from their ore ranging from \$18 to \$36 in gold.

ON WILSON MESA. Halliday & Gardner, two Cripple Creek men are doing considerable de-velopment work on Wilson Mesa, in

search of the source of the rich gold float, which has made this locality famous on the south slope of Gold Hill. They have fine quarters established and re here to stay until the lost bonanza s found. Wakeley & Bryant are also s found. working on Wilson Mesa, with the same object in view. The discovery of rich gold float on Wilson Mesa still remains an unsolved mystery, but by the forma-tion of Gold Hill, and the indications of two upheavals, one cannot but place the origin of this rich ore from a point on Gold Hill where the Matagonda properties are located, and in time the Matagordas will be found to be the key to the origin of this mineral float. A half dozen new mining companies have been organized on property in La Sal, during the past season, and those that are now going ahead will very materially demonstrate the values and continuity of the numerous big veins in the north and south belts, within the next few months.

HE HELD ON TO HIS JOB.

Have you heard of my friend P., who used to write for the State Boys' Own?

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—I am not sure that it had an editor—offered P, a cent a word for a story of adventure, and P, agreed to write it chapters, supplying them weekly until the tale had been told. The chapers went to press as fast as they came. Presently the publisher became restive People in this story were doing extraordinary things and never getting any-P. left them in the most awful plights whenever he wrote "to be con tinued in our next." At the sixtleth chapter he was no nearer to a solution of the plot than when he had been in

The publisher wrote to P., begging him to close the narrative as quickly as most of the possible but P. replied with another long-delayed batch, which ended, like the others, with Independent.

The publisher of that remarkable paper I the bereine hanging over an abyss by the eyebrows, and the villain holding her would-be reseuer by the throat against a tree a mile away and chort-ling with shoulish glee. Every chap-ter ended like that, so there simply had to be another one to explain it and get the suffering people out of trouble. The publisher old not dare to interfere. His customers would insist on the end of

P. was an inventive cuss, and he keet that story going until the publisher's hair turned white, and he drew, under his cent-a-word contract about \$75 a week, and drank champagne. threats at last obliged him to kill off most of the characters and write the long-delayed word, Finls.-New York

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