

## CORRESPONDENCE.

[We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. All letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.]

The Batopilas Mines, Mexico.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Will you kindly permit me to point out some mistakes in a report which you placed under Mexico in your columns of General Mining News in the issue of May 28th.

This report is given by a correspondent of the New York World upon the Batopilas mines, of which ex-Governor Shepherd is the Vice-President and General Manager.

A great many statements about the Batopilas mines have appeared from time to time in various papers, but as it is not to be expected that newspaper men, as a rule, are acquainted with mining matters, misstatements, I suppose, are to be expected and excused, the more so as these articles are generally intended to serve as light literature and not to give exact information.

The article I refer to is one of this kind. One naturally asks after reading it: Why would it be a matter of satisfaction to every one if the ore did not go down? Why do the natives break, or attempt to break into every mine that Shepherd has, and why should there be such lively skirmishing about this if the mines are all gutted. I scarcely think, however, that it was intended to have questions asked about details.

The mines of Batopilas are native silver mines, and can not be worked without an immense amount of prospecting; but prospecting inside the mine does not show on the surface, and newspaper correspondents are not likely to notice it or to hear much about it, unless they take more trouble than is necessary to write an interesting article for a daily paper.

People interested in mining always want to know what the mine is going to produce and how much ore there is in sight. Unless these questions are answered with large figures the mine is "no good." They reason: if there is not much ore in sight then no prospecting can be going on, then it can not be that the ore goes down, then the mine must be gutted and the mode of working must be ruinous.

The Batopilas veins are, as a rule, steady fissure veins, and, as far as is known, continuous in depth, but these veins only hold rich silver ore in places and not throughout. They do not even hold second class or low-grade ore throughout; this also is only found in bunches or deposits.

The veins often do hold galena, blende, pyrites, etc., but these minerals are not worth taking out unless there is silver ore amongst them.

High-grade ore is general y accompanied by larger quantities of low-grade and base minerals. Some of the latter serve as indications to the miner where to look for silver, but they themselves are poor.

I should have mentioned that the rich ores sometimes hold as high as 80 per cent silver, and have to be cut to pieces with chisel and sledge on the anvil.

Though everybody may be convinced that in a certain property underground, there is a considerable quantity of ore, yet this ore can not be called "in sight," as no one unacquainted with the production could make any calculation of the amount.

Any statement made by owners or management about ore in sight, would never agree with one made say by a visiting expert, who as likely as not would have to make a report as follows:

"I carefully blasted in all the points indicated by the owners as producing silver. I gathered, weighed, and assayed all the fragments, and only found traces to the ton. Therefore, there is no paying ore in sight at the present date, statements of owners notwithstanding."

Perhaps the mine would be producing a large monthly output all the time.

The only way to answer the question: "What can be done in the future?" is somewhat in the following manner: Look at our veins and convince yourselves that they are as good now as they were so many years ago. See in the mines and on the maps what has been done since. This has cost so much. We have taken out so much.

Therefore, with a similar amount of work or a similar amount of money expended carefully in the right places we expect to get out at least an equal amount of silver. Probably a good deal more, as the mines are opened up, and we know more about the "likely" places; but you can not go into the mine, and from what you see there calculate its value, any more than you can figure out the value of the ruins of a burnt jewelry factory by wheeling away and sampling a couple of barrows of dirt.

Any practical miner will understand that no mine of this kind could be worked without an enormous amount of prospecting or dead work. In fact, the great danger is prospecting too much; as notwithstanding that some prospecting may give brilliant results, a great part of it necessarily does not. By their works you shall know them. Yours respectfully,

WALTER M. BRODIE.

WASHINGTON, D. C., 8th June, 1887.

## Earthquake Phenomena in Arizona.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The earthquakes, which since the 3d of May have been daily and several times daily warning us by slight tremors, and occasionally sharp shocks, that the forces which on the 4th nearly shook us to pieces are still active, came as a very unexpected visitor. We are accustomed to see our soil moved from above, but never from below. When the wind blows, and it occasionally blows very hard here; you can not tell which is air. The dust is still high as thick in your eyes and mouth as under foot, and the whole shifting fabric of sand and dust is in motion. Wind is our scavenger, it sweeps our streets more effectually than does a good rain storm yours. Truly nature is kind and suits her services to our needs, doing even the neglected duties of our City Fathers. But in the memory of man, there has never been an earthquake here, and the delicately joined portions of rocks such as were on the unfractured walls of such prehistoric adobe buildings as the Casa Grande, bear witness to the remarkable freedom of this vast elevated plateau for many centuries

past from earth disturbances. This long protracted series of shocks has therefore greatly perturbed the native population.

The exact area of the disturbances can not be known for some time, as the focus of greatest intensity was somewhere on the western slope of the Sierra Madre, probably about 200 miles south of the frontier, and the shock, therefore, was propagated northeast through a very inaccessible and thinly peopled region, whence reports will reach us slowly.

It is to be feared that very few exact data of any scientific value, as to time, direction and intensity of shock, will be obtained.

Every mining camp keeps its own time, shifting it occasionally during the winter in order to reconcile hours of work with the sun's rising and setting, and even along the lines of railroad less attention is paid than in the camps to extreme accuracy in time-keeping, as such accuracy is hardly necessary for regulating the two or four daily trains, generally late. All information as to time of the first shock will be dubious; equally so are the statements as to its duration. It commenced here with a low rumbling noise and a tremor so slight as to have been unobserved, if it had not been followed by two violent shocks, apparently directed from the west, separated by some moments of a lull. The total duration was about one minute. Witnesses from the neighborhood of Fronturas and Sonora, where undoubtedly the first shock was more intense, say there were three shocks, and that the appreciable tremor lasted 3 minutes. The general opinion as to direction is that the undulations were from west to east. But the position of fallen objects in the San Pedro Valley show that it was from the southeast, and undoubtedly the shocks were most violent and their effects most disastrous to the south-east of us.

No serious damage was done here either above or underground. At Bisbee the foundation of the large Corliss engine was thrown slightly out of line. The surface of the steeper waste dumps seemed to be actually in motion, rocks were in many places dislodged and thundered down the hillsides in a cloud of dust; plaster fell from the walls, and slight rents were made, the direction of the rents between ceiling and walls indicating a general E. and W. direction. The earthquake, from its effects here, would be ranked as fifth class. The effects were more severely felt in the valleys, and most severely in those parts where there is a great depth and width of soil, and which carry submerged water channels. The San Pedro valley, to the west of us, contains a flowing stream. It is occupied by several hamlets. The Mormon village of St. David is built on alluvial soil, and suffered more than we did. The school-house is completely wrecked; one wall fell out and the front tottered. The ground in the valley near by is cracked and sunk by two steps of about one foot each. At Benson and St. David the shock must have lasted nearly three minutes. It continued for some time as a slight tremor, which seemed to gain force gradually and ended by a violent oscillation which would undoubtedly have overthrown any high frailty constructed building. The length and strength of the undulatory motion was sufficient to produce seasickness, and the motion of the earth was distinctly visible beneath the feet. Charleston, in the same valley, but built near a rocky gorge, where the valley is narrow and the soil shallower, is somewhat more dilapidated than it was before the catastrophe. There are a few more adobes out of place and the plastered walls are perhaps more mottled than they were. But even the shakiest house did not fall, and though one disreputable abandoned structure was rendered so dangerous that it has been deemed wise to pry it over since. Charleston would therefore pass for an earthquake-smitten community, a character the moribund little town itself will probably henceforth cherish.

The most notable phenomena were exhibited in the Sulphur Spring Valley, a broad valley to the east of us, beyond the Mule Pass Mountains, extending across the frontier, with a total length of over 100 miles, and an average width of about 12. No water runs above its rich alluvial soil, but abundance can be reached by sinking. At places, as at Soldiers Holes, it almost comes to the surface; at others, wells 40 feet deep have to be sunk to strike it. While, therefore, the surface of the valley is almost level, the underlying rock is broken into ridges. At Abbott's Ranch, about 35 miles north of the line, very shortly after the first shock, the water gushed out of the wells to the height of several feet, and the ground near by was seen to swell, then burst, and from the cracks abundant water flowed for about 20 minutes. The water in all the wells throughout the valley rose up to, or above surface, carrying coarse sand and gravel out of wells which had been sunk in fine sand. In about two hours, the water had everywhere resumed its normal level, and we do not hear that any of the innumerable shocks which have occurred since have redisturbed its equilibrium. A party of surveyors in the valley, warned of the approach of the earthquake by the rumbling noise which presaged it, assert that they could distinctly see the wave approach, and were cognizant of the moment when the earth would rock, and did rock beneath their feet. The water was rocked out of the cattle troughs, and nearly all the adobe buildings of the ranchers suffered. Almost on the U. S. line a long crack six inches wide crosses the road, and for a distance southward of seven miles the valley is fissured in every direction by mere cracks or wide crevasses, out of which water flowed in streams. In places over an area of an acre or so the level of the ground is disturbed, sinking sharply to a depth of two feet, and returning without marked breach of continuity to its natural level. Had the valley been thickly peopled, and towns covered these seven miles, the Sonora earthquake would have rivaled in horror that of Lisbon itself; not a building would have stood.

Explain it as we may, the oscillations are described by all who experienced them in the valleys as more appalling, and the effects were undoubtedly more terrific, than on rocky ground. At the San Bernardino Ranch, situated in a valley resembling the Sulphur Springs, slaughter adobe buildings are said to be utterly ruined, and the town of Baciopo, where 48 lives are reported to have been lost, all by the falling of the church, whither the frightened people had flocked, is in a valley on one of the tributaries of the Yaqui. Frontera, where a number of houses fell and a child was killed, is on low ground. If waves in granite, as determined by Mallet, travel 1665 feet a second, and waves in sand only 825 feet a second, and the waves communicated to the water which flows through the sand or lies in lakes beneath the surface travel with a still different velocity, there must result, when our water-logged sandy plains and valleys are agitated by an earthquake shock, a complicated series of wave motions, which must not only throw the surface

into more violent agitation than the underlying rocks, but may cause the surface to pulsate after the solid rock has returned to rest. Both the preceding North American earthquakes of note, that of New Madrid, in the valley of the Mississippi, in 1811, and the Charleston earthquake of last year, occurred in a low-lying alluvial region, where the character of the country aggravated their effects. Here the area disturbed comprises bare mountains and great stretches of sandy plain, and affords information for comparison, which, if it could be collected, would be of signal interest.

Immediately after the earthquake, volcanoes and lava flows were seen in all our mountain ranges. Eye witnesses averred that immediately after the shock they saw flames and smoke shoot out of more than one peak, and certainly till night nearly every mountain range was on fire. Whether the timber had been burning unobserved, or was ignited (the season being frightfully dry and the woods combustible as tinder) by the friction of falling rocks, there were immediately after the shock large fires in the Whetstones, San Jose, and other ranges, but subsequent search has failed to detect any symptom of volcanic activity. A volcano, however, is said to be belching forth lava in the heart of the Sierra Madre, to the south-east of unfortunate Baciope.

AN OCCASIONAL CORRESPONDENT.

TOMBSTONE, ARIZ., May 25.

#### HOW MINES ARE FLOATED IN LONDON.

Special Correspondence of the Engineering and Mining Journal.

The mining syndicates formed in London may very fairly be classed as venders of mines. Occasionally, when it becomes evident that a mine can only be acquired for cash, a syndicate is formed for that purpose, and just as we at home secure subscriptions for the purchase of a property, so also here it can occasionally be done through personal acquaintance and influence. The property once acquired, that particular syndicate goes out of existence, having no longer a "raison d'être." But that there is in London a single syndicate, as ordinarily understood, ready and willing to buy a large mining property *with its own funds*, I venture to deny.

The nearest approach to such a combination is to be found in several corporations for the most part formed by members of some successful mining company who are ready to take the trouble and expense of investigating the merits of mines that may be offered, and, if satisfied, to provide the funds requisite for "bringing out" the property and also in some cases to lend their individual names as directors, etc. For these undertakings, a commission is expected, payable mostly in shares, and varying from a minimum of fifteen per cent to a maximum of say three hundred per cent.

Naturally these promoting corporations can not investigate every mine that is offered to them. To secure any attention, properly prepared descriptions and reports of the property must be submitted. If these papers are not signed by some one in whom the particular company has confidence, the person presenting the matter will be asked to pay the cost of the company's verifying the representations made.

It is a sad fact that this examination beings and ends the business of some London syndicates: the examining engineer pockets his fee (cash in advance), makes a more or less hurried visit to the property, and readily finds some reason for rejecting it. This course may be maintained for years, and afford a very good income to the engineer, subject only to his sharing it with some shrewd friend who represents the syndicate in necessary contracts. The syndicate in this case may even be entirely visionary. Have we no such arrangements in New York? To come back to our *muttons*, however, let me advise every American would-be vender to supply himself with reports properly prepared, both as to substance and form by known engineers, or to bring \$5000 along to pay for verifying his statement or those of some local expert who has supplied a few sheets of legal cap type-written remarks.

Supposing suitable arrangements concerning reports to have been made, the next question for settlement is the length of option required. We have a way at home of offering 60 days for examination, and 30, 60 and 90 days more for payment. In England, one should be ready at least to multiply this by three, offering say one month for preliminary consideration, three months for examination and reporting, three months for floating, and payments to be say three, six and nine months from the accepting of the reports, so that the negotiation may be expected to cover a twelvemonth from the time when the verifying examination is undertaken. This time may be shortened, however, by accepting what spare cash comes in on allotment and the balance in shares.

There are a very few of these incorporated syndicates whose names on a prospectus insure a prompt cash subscription for all shares offered to the public, and it is to these few companies that almost every mine is first offered. They, however, require really good mines or those which appear to be so; consequently they do not appeal to the public so often as to become too common.

Turning from these generalities to more recent facts, you will notice a new and quite plentiful crop of mining companies advertised of late. Many of them have "allotted" their shares, and yet it is not because the general public has responded well to the invitations to subscribe. Applications for shares other than those previously solicited and promised ("syndicated" or "underwritten") have been almost nil. But in some cases, as in that of the Pittsburg Consolidated gold mines, nearly the whole capital had been previously subscribed because of personal and friendly confidence in the examiners and promoters of the enterprise. Nevertheless some of the newspapers, and especially those devoted to mining matters, are giving quite glowing reports of the market for mining shares, even though they have to account for the small number of shares actually purchased by saying that the *sellers are very few* (!) and the offerings light.

LONDON, May 31, 1887.

**France to Aid the Chinese Railway.**—The Chinese have declined to subscribe money for the new Chinese railway, and in consequence the Comptoir d'Escompte de Paris has contracted to lend the Chinese government 3,000,000 taels (equal to about \$4,880,000) for the purpose.

#### BATTLE MOUNTAIN MINING DISTRICT, EAGLE CO., COLORADO.

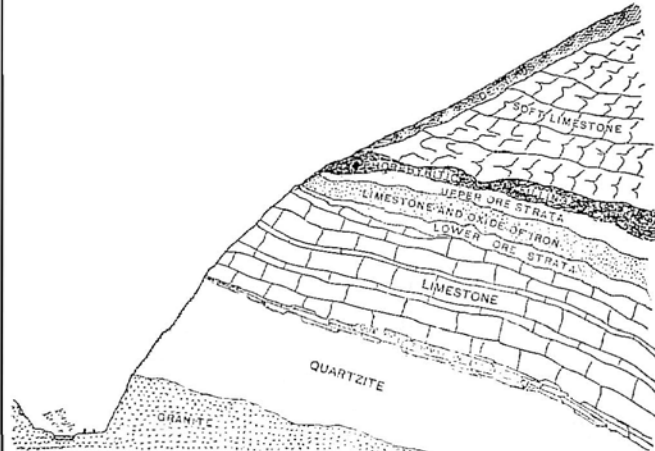
By E. E. Olcott, E.M.

I present herewith a few general and hasty notes taken during my recent examinations of the Iron Mask Property and the Polar and Occidental mines which may prove of some interest to the readers of the *ENGINEERING AND MINING JOURNAL*, for the Battle Mountain mining district has again come into prominence.

Some years ago, that part of the district lying near Red Cliff attracted considerable attention, but during the past year the camp now called Gilman has been the center of greatest activity, and some very valuable discoveries of ore have been made here.

#### GEOLOGICAL CHARACTERISTICS.

Reference is made to the accompanying approximate section of the strata, through the Iron Mask and Accidental grounds, and to the map of the claims of the Battle Mountain mining district.



Section of Battle Mountain, Colorado.

Eagle River flows through a deep gorge over granitic rocks, which have a thickness of about 150 feet. In this formation, there are said to be fissure veins carrying lead, silver, and gold, and there are evidences that some rich galena veins extend from the quartzite down into the granite.

Next above the granite are strata of quartzite having a thickness of perhaps 350 feet, and a dip N. 30 degrees E. of about 14 degrees; strike N. 60 degrees W. Beds are beautifully colored with iron oxide, and standing out boldly form a very picturesque feature in the landscape. In places, the structure of this quartzite is saccharoidal, and in the upper beds of the formation are valuable deposits of gold and silver ore, developed more or less in all the quartzite mines.

These metal-bearing beds lie conformably with the strata in three or four nearly parallel layers, and are as peculiar in composition as in occurrence.

The ore which forms the bulk of the shipments is, locally, called tale, but it seems to be more properly an impure clay. It varies greatly in thickness, from a thin film to several feet, and is chiefly remarkable on account of its frequently high yield in silver and gold. Shipments of this ore averaging \$100 per ton are not infrequently made. Mixed with this tale or clay ore as found are lenses or scales of quartz and impure oxide of iron, which are generally sorted out owing to their inferior yield. The clay itself as found is wet, plastic, and sticky, so that everywhere through the mines you find wooden or iron scrapers for removing what adheres to the tools, cars, and even the clothing of the men. It might almost be called mining with a spoon, for the clay is so soft that a quarter inch iron rod can be thrust into it for several feet without bending. In places, caves of considerable length open from these layers; their floors are generally overlaid with the clay ore and the roofs hung with stalactites of gypsum and oxide of iron.

In this same quartzite formation, very rich ores are occasionally found, sometimes as tellurides of gold and silver, such as have been recently struck on the Ben Butler mine, hand samples of which assay over \$50,000 per ton; but I am not informed what the shipments average.

Above the quartzite, is a bed of compact limestone, 200 feet in thickness, which constitutes the ore-bearing rock of the so-called carbonate mines. Above this lies a softer limestone, called by the miners dolomite limestone, separated from the ore in places by decomposed porphyry.

The carbonate ores exist in much thicker bodies than any in the quartzite.

(TO BE CONTINUED.)

**A Morocco Bonanza.**—It appears from a cablegram that "hidden treasure to the value of £95,000,000 sterling has been discovered in the palace of a deceased Vizier at Rabat, Morocco. The Sultan, it is said, has confiscated the treasure, and is having it conveyed to the imperial coffers."

The latter part of the telegram "goes without saying," and might have been omitted as superfluous, but the stupidity of a "Vizier" or any other man in hoarding \$475,000,000 in a Moroccan palace is so stupendous as to be worthy of note. Of course it is possible that the message may have "repeated" the last three, or four, or five zeros, which would lessen the Moor's stupidity, and the interest of the article at the same time.