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The Underground Gold Digger

By Dennis H. Stovall

DOUSE the glim!"
"Smother the flicker!"
These were the commands given in the bunk house at 9:30 P. M. Every light was extinguished, and soon the long-drawn snores and loud breathing that issued from the long rows of bunks indicated that many weary miners had entered the Land of Nod.

It was the day shift men that were asleep. I was one of them. Early that morning I had applied to the superintendent of the Golden Eagle for work, and had been assigned to one of the stopes of the lower level of the mine, six hundred feet below the surface of the earth. My bones ached, and I lay for a moment thinking of the drudgery of the day just past and of that to follow on the morrow. Close at hand, the sixty stamps roared from the mill as they crushed the quartz to paste in the mortars. To the sleeping miners, as it soon became to me, this deafening roar of the stamps was a soothing lullaby. As I lay there listening to the thundering roar, I thought of the night shift men at work far back and down in the depths of the mountain, as busily engaged as bees in a hive, following with pick and drill the rich quartz veins that penetrated the mountain's heart, and robbing them of their precious treasure. The mill roared on; the loud breathing about me continued; the bunk above my own creaked as the man in it turned over; and ere I knew it, I too was asleep.

At 5:30 the following morning the mill's whistle shrilled loudly, the bunk house gong clanged, and I awoke with a start. It was as if I had just gone to sleep. My bones, oh, how they ached! And every muscle seemed set. The miners about me were yawning and mut-

tering unprintable things about men who knew no better than to work in a gold mine. But soon the blankets were thrown aside and the men rolled out. In three minutes every one had donned his woolen shirt, overalls and miner's boots and was ready for the morning meal. The cook's bell sounded from the mess house, and both the day and night shift men filed in for breakfast. The black, steaming coffee and the boiled beef were delicious viands for my empty stomach, and I ate as only a hungry miner can.

The day men entered the mine for work at 6:30. An hour was taken at noon. At 4:30 the shots, or blasts, were set, and we quit for the day. The night men go on at 6:30 P. M., after the powder smoke from the shots has cleared away, taking an hour at midnight for a "snack" and a brief rest. They also retire from the mine at 4:30. There is a law in nearly every mining state of the West prohibiting employers from working underground miners longer than eight hours a day.

In all quartz mines the ore is removed by stoping from the shafts and tunnels. There are two methods of stoping, one known as overhand, the other as underhand stoping. In the former, the miner works from below upward, being aided by gravity in the work of removing the ore to the hoppers, from which it is taken into the ore cars. This is the method most used in all quartz mines. In underhand stoping, the miners work from above downward. In this method all of the quartz must be lifted up to be gotten out of the way. Underhand stoping is usually only employed where exceptionally rich veins are struck; and as it all has to be picked out, there is less danger of a loss of the quartz by its

rolling down and mixing with the worthless debris.

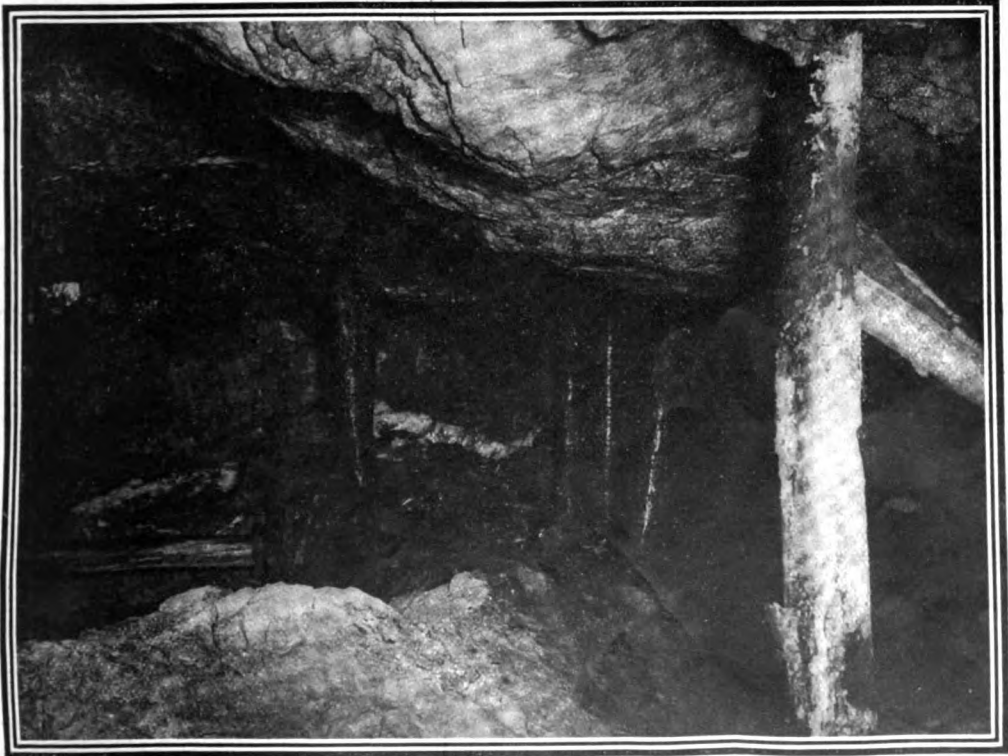
The stope usually has a width of from four to ten feet, depending upon the width of the ledge; and its slope depends upon the dip of the vein. As they are worked out, they are timbered in order to keep the upper or hanging wall from caving and crushing out the life of the miners under it. In a big quartz mine a large crew of men is required to do the timbering, and fortunate is the mine that is located in a district where an abundance of timber may be found near by. The timbers are from six to ten inches in diameter, and of such length as to fit snug when driven in between the walls of the stope. The drifts, following the veins, and the working tunnels, all must be well timbered as they are driven in. The larger mines employ a sawmill of their own for cutting timbers.

On the floors of the tunnels are laid narrow steel tracks that wind and curve about, with here and there a switch, or a crossing, where other tunnels on the

same level cross and lead to other parts of the mine. The cars follow the tunnels and turn out into the drifts, where they are run under the ore chutes beneath the stopes. As the ore is removed from the ledges it rolls down the chutes into the cars, and is hauled out by men or mules and dumped into the hoppers above the crushers and stamps.

In going on duty, the men of the upper levels entered first, then the next lower, and so on until the deepest level had been manned, all going down in the cage of the double-compartment shaft.

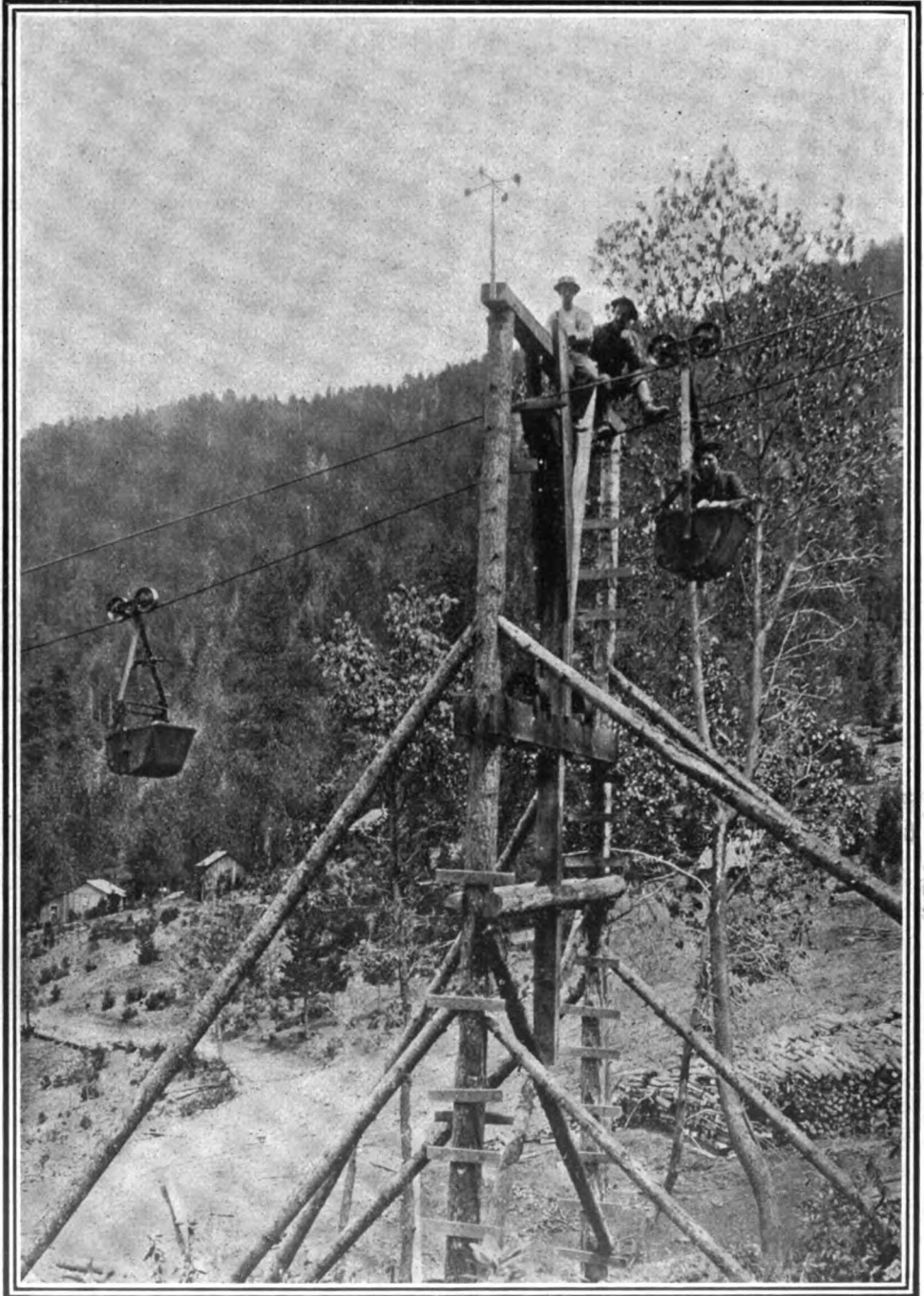
I was put in a stope in the midst of a long row of veterans of the sledge and drill. By straining every muscle and making good every moment, I managed to get my quota of holes drilled by the time those near me had finished for the day. Hard as was the work, there was a fascination in keeping time to the "pink! pink! pink!" of the regular clink of the hammer blows. I looked up from my work occasionally to rest my back or gaze at the long row of working men on either side. All through the gloomy



THE STOPE.—As the vein appears after it has been "worked out."

depths of the stopes the candles flickered like so many stars, revealing the swarthy faces and muscular forms of the miners. To my right and working next to me was a typical miner, a per-

fect specimen of physical manhood. One could see at a glance he had worked many years in the quartz mines, that he was a veteran of the pick and drill. With his sleeves rolled to his elbows,



CABLE TRAM—On which run the buckets that convey the ore from upper tunnels into hopper above mill.

he swung the heavy hammer to and fro, striking the drill's head with unbroken regularity.

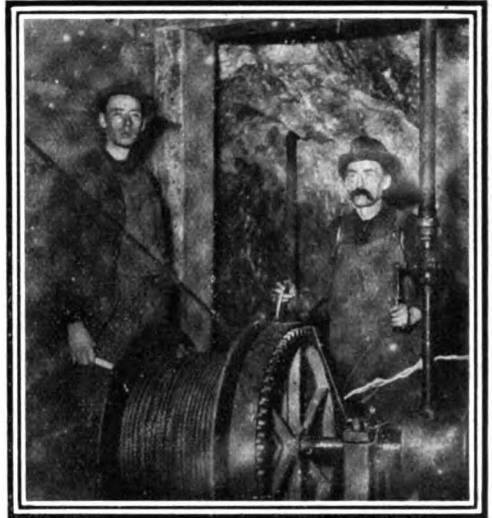
The holes, an inch and a half in diameter, were driven into the hard, tough quartz to a depth of twelve inches or more. In these holes the giant powder was set and the terrific explosion did the rest.

A large crowd of men was kept busy keeping sharpened and tempered an ample supply of drills. As the stopers dulled them they were thrown aside and gathered up by the muckers, being constantly replaced with sharpened ones from the shop.

Early in the morning the foreman came through and issued orders to the bosses of each level. The work of personal supervision is distributed among five or six bosses for each shift, commonly known among the miners as "shift bosses." Each shift boss has a given district on one or more levels. They start out just after the men go on duty and visit each man on their routes, issuing orders as to the day's set of timbers, and also giving orders as to how the drilling for the day must be done in order to remove and follow the main ore body to advantage. From each man, especially those in prospect rock, the boss takes two or more samples from as many positions in the stope. These samples are numbered or so designated that they can be readily identified, and all are sent in to the manager for assaying. In this manner the manager keeps in touch with every part of the mine, and can direct the work easily and intelligently. His main idea is to remove the greatest amount of ore with the least amount of work, and he can only do this when the ore bodies are being followed closely.

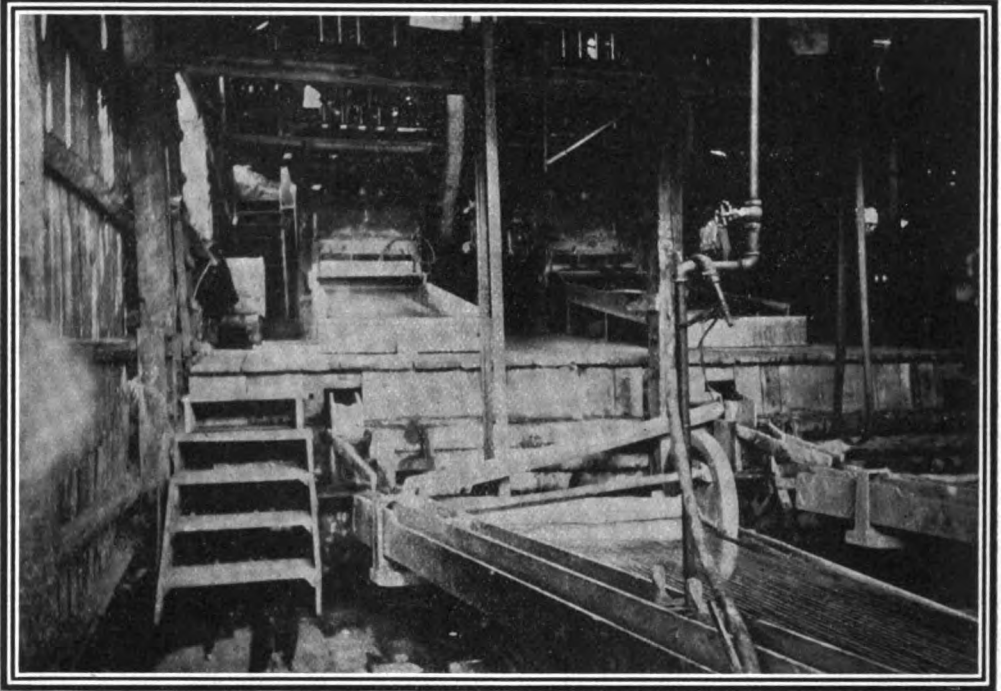
At 4:30 in the afternoon our shots were ready to be fired. At this hour, both in the morning and the afternoon, the stopers finish drilling their holes for the day, set their powder and fuse, and make ready for the blast. In this feature of the quartz miner's work, a perfect system is absolutely necessary. Neglect of this, and the disobedience of orders, has been the cause of many a poor unfortunate being taken out of the mine in a hand-basket.

As the lower level shots are fired first, we were the first to make ready. The sticks of giant powder were kept in a cool place, one of 60 to 70 degrees, at the powder house, from which they were brought in and distributed to the stopers. The miners in the stope with me took the dangerous sticks and set them in the holes as calmly and carelessly as they would have planted a



THE HOIST—Cable and spool that raise and lower the shaft cages or buckets.

shrub. As I took mine and set each one with trembling fingers, I felt the cold perspiration come to my brow. At a signal, which was three dips of a lighted candle from our level director, our shift boss calmly gave the command to light the fuses. I had five fuses to light. I touched each one twice with the tip of my candle, and when I looked up I was horrified to see that every other man down the line had lighted his fuse and was making out of the stope. I ran hurriedly down the incline and bumped my head against the solid rock of the hanging wall above me in my madness to escape. When I reached the tunnel below I was surprised to find the other men standing about, talking and chatting with entire unconcern. I was so badly frightened my every limb trembled and my knees knocked together. One of the grizzled stopers took note of my fright and winked to a man standing near him. That was a signal



A CORNER OF THE STAMP MILL—Two sets of stamps are in view, with concentrating tables in foreground.

for a laugh all round. I retreated to a remote corner and waited. In a few minutes the shots began to explode, perhaps a hundred all at the same time, followed by the thundering, deafening roar of the remaining ones. The whole mountain quivered and shook as though being torn asunder. The loud, booming reports of the blasts were intermingled with the clatter and rattle of the tons of rock and quartz that were torn from the ledges and sent hurling down the stopes and ore chutes. If all the armies of the world were engaged in an underground cannonade, they could no more than rival the deafening, booming, earth-quaking roar and rattle of "shot-time" in a quartz mine.

We made our way out to the shaft and were hoisted to the surface to escape the cloud of smoke and noxious fumes that followed the explosion. Near the mouth of the main tunnel leading into the mine was the "change room," where we each changed our clothing, or at least exchanged the jumper and overalls worn in the mine for clean ones. This was a rule followed at the Golden Eagle, it being a property con-

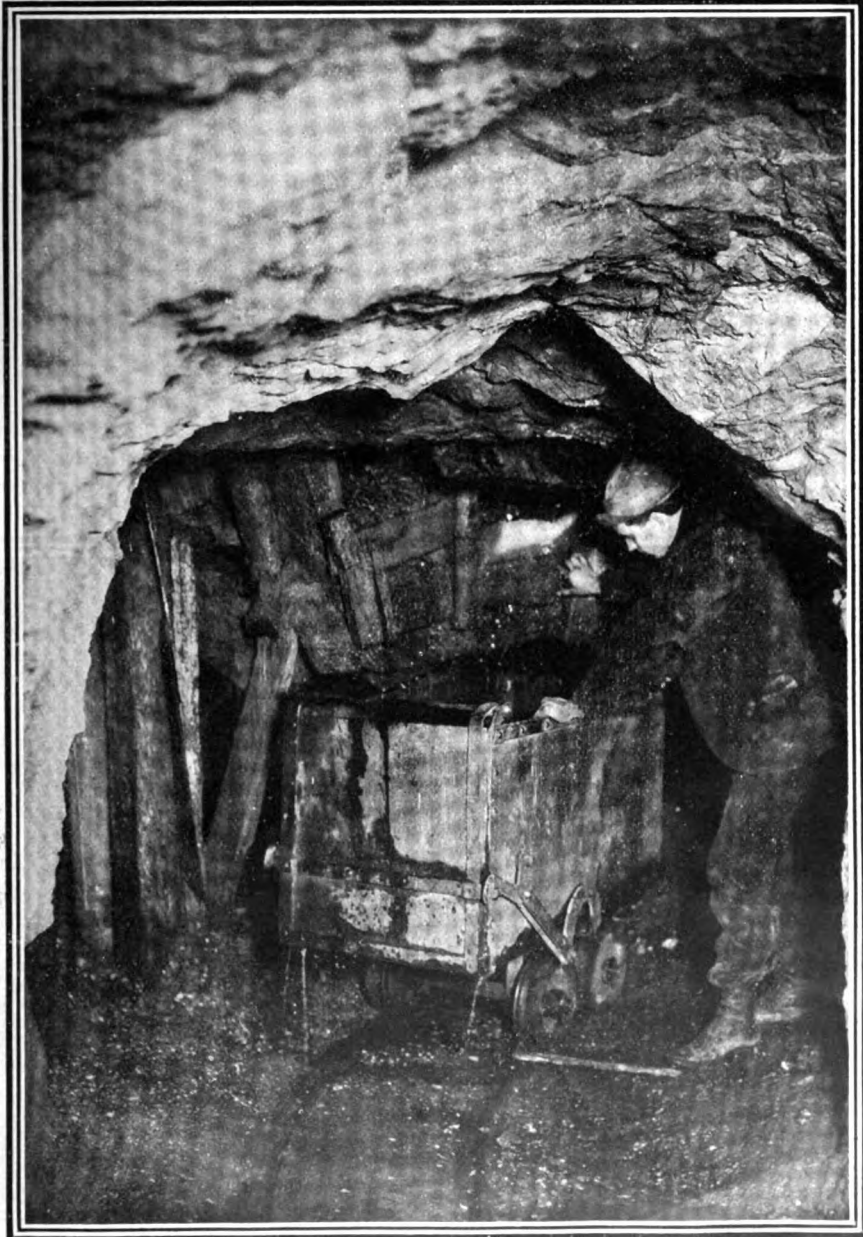
taining much free gold in the ledges. Oft times miners found large pieces of pure gold in the white quartz of the Golden Eagle, and it was mainly for the purpose of preventing the treasure from being carried away that the stoppers were required to change their clothes before leaving the mine.

I was kept a week in the stope of the lower level, until one day the foreman called me to his office and asked if I knew anything about machinery. When I told him I was a graduate of a mechanical engineering school, he smiled as if pleased with the knowledge, and told me to report at the engine room the following morning for duty. I was highly elated with my advancement, and lay awake for some time that night, listening to the roar of the stamps and wondering what the other men of my stope would say when they learned of my promotion.

I was given charge of the compressor and hoist engines, and my salary raised from \$2.25 to \$3.50 per day. However, my hours were longer now, as I was obliged to work ten hours instead of eight. It was my duty to look after all

of the machinery in what was known as the "hoisting room." Here were located the spools on which the long steel cables wound that raised and lowered the cages in the shaft, and the compressors that pumped or compressed air into large tanks from which it was conveyed in pipes to the lower levels of the mine for the men to breathe, and also to operate the drills in the drifts.

In my new position I was afforded a good opportunity to study the stamp mill with its thundering beams of steel. The stamps of all quartz mills are arranged in groups of five; that number dropping in each mortar and for each concentrating table. There is undoubtedly no other institution of any character that can produce as much noise as a stamp mill in which fifty, sixty or



DUMPING ORE FROM ORE CHUTES INTO CAR IN THE MINE TUNNEL.

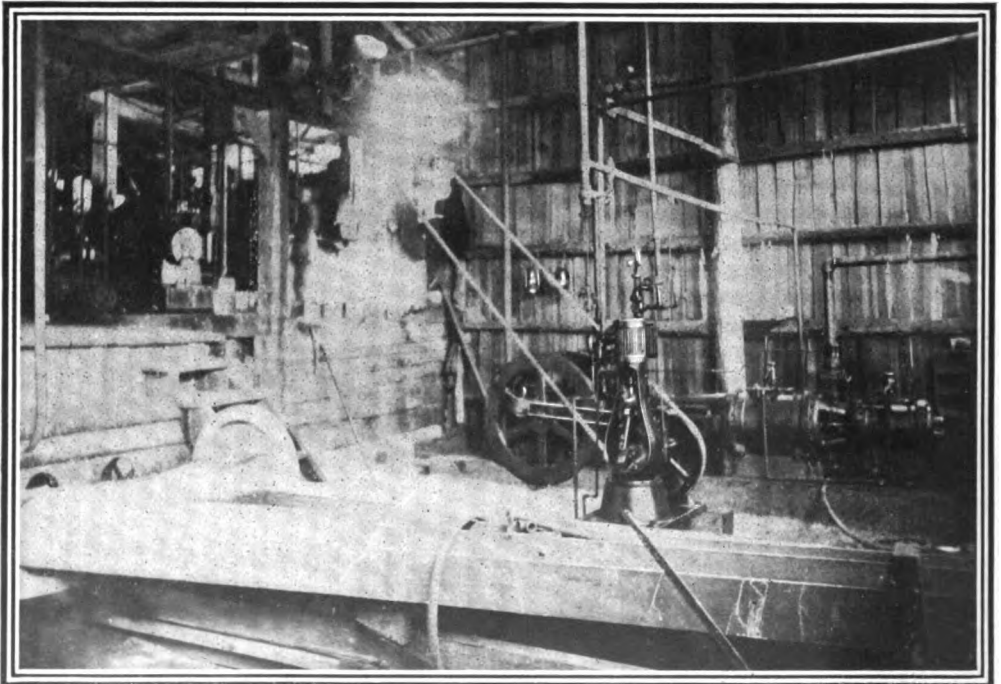
eighty stamps are hammering. The mill men, those in charge of the batteries of stamps, who must listen day after day to the deafening, thundering roar, in time meet the misfortune of having their hearing greatly impaired, and veterans of the business often become totally deaf.

The stamps are naught more than great steel beams, that are raised and dropped, raised and dropped, incessantly, in a long mortar, pounding the quartz that is fed beneath them. A steady stream of water pours into the mortar, and the dropping stamps crush into a paste the rock and quartz, which flows and spreads out over a zinc table. The refuse flows on and off with the waste water, but the free gold and concentrates are caught and held as an amalgam on the zinc, by the mercury that is frequently sprinkled into the mortars. In the concentrates the gold is held by rebellious sulphides which can only be removed by the process of chlorination, or treatment with acids, and by roasting, the method employed depending entirely on the character of the rock of the mine. As but few mines

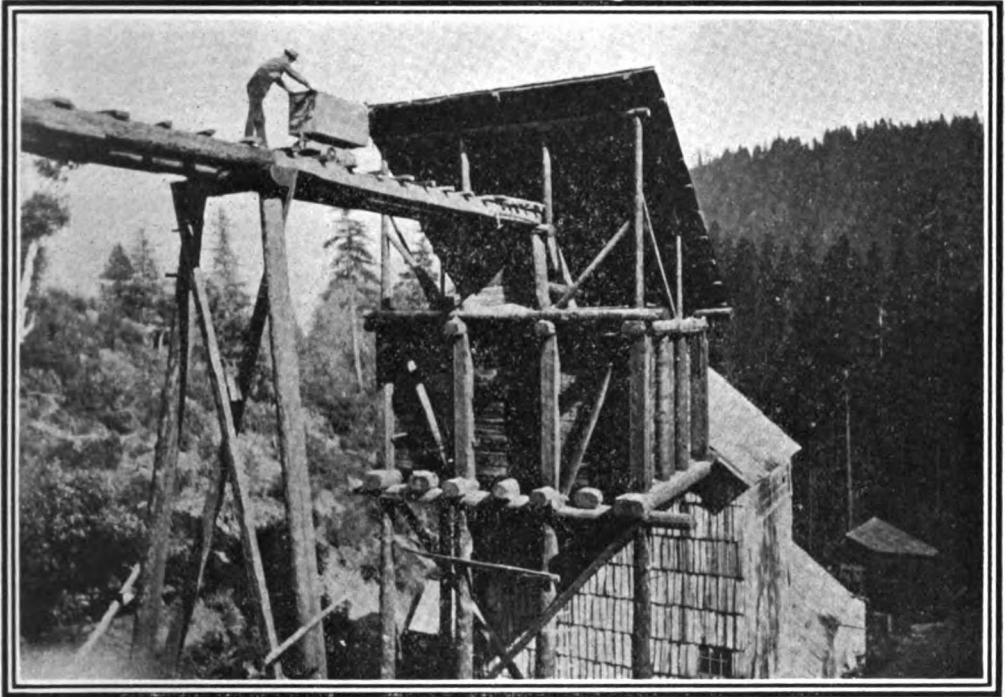
have quartz of the same formation and character, so all require different methods of treatment to extract the gold.

In the mess house of the Golden Eagle mine there were three classes of tables. There was one long row where the stopers and common workmen about the mine ate. Board at these cost \$4.50 per week. There was another set of tables at which the price of board was \$6 a week. At these the engineers, level bosses, foremen of shifts, and men whose wages ran over \$3 a day ate. I was entitled to a seat at one of these, but preferred to remain at my old place with the \$4.50 board. Then there was still another table with white linen, napkins and silverware. About this the superintendent, amalgamator and higher salaried men of the mine took their meals. What their board cost them, none of us who had not the money to fare as they did ever knew.

In "after chuck time," which is the miner's expression for after supper, the most interesting place about the mine was the lounging room or "parlor" of the bunk house. Here all the day shift men, except those that were married



COMPRESSOR AND ENGINE ROOM.



DUMPING ORE INTO THE HOPPER ABOVE THE STAMP MILL.

and occupied cabins to themselves, congregated. As the nights were always cool, and more usually cold, a bright and cheerful fire crackled nightly from the big box stove. The men lounged about and smoked their corn-cobs. Some played poker on the rough tables; other attempted to read; and still others sought a quiet corner to write a letter home to mother, to sister, or to sweetheart.

All manners of men were to be seen each evening gathered about the smoke-filled lounging room of the bunk house. Among the grizzled group were representatives of nearly every nation. Rough mannered, uncultured, most of them, yet nearly all I found to be open-hearted, kind. Should one of their number meet with accident, as was often

the case, all were ready and eager to help the unfortunate along until he was able to resume his duties again. At one time smallpox broke out in the camp. The two affected with the contagion were removed to a cabin remote from the main camp. When volunteers were asked for to stay by the diseased miners, every man came forward and offered his services.

Many are the tales that the older ones about the bunk house stove can tell of mining days in other lands—of the Eldorados, the Bonanzas, the Golcondas they have known and seen. Some of them, according to their own stories, have been millionaires, made fortunes in a day, but lost it all as quickly as it was found.

