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## REFERENCE SERIES

### THUNDER MOUNTAIN

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Responsible for Idaho's final gold rush, Thunder Mountain had antecedents which went back to an earlier era. Early day prospectors radiating out from Warrens after 1862 were attracted by Thunder Mountain's conspicuous mineralization, and wild tales of early investigation there circulated after 1899. Other accounts had greater accuracy. James W. Pie, a prominent Lewiston pioneer of 1861, had discovered a good Thunder Mountain outcrop with free gold in 1866 or 1867. That led him to search

"for the placer ground that would apparently go with the rich quartz lead. But the country was then the summer stamping ground of the Sheepeater Indians, who about this time became troublesome, and white prospectors were compelled to leave." Poe reported that Chamberlain Basin miners also had to evacuate because they could not process gravel worth less than twenty-five cents a pan in 1867. While on a trip to Buffalo Hump in 1899, Poe returned to Thunder Mountain only to find that his old discovery had been taken up during an early phase of mining development there. Poe was fortunate not to get too involved in Thunder Mountain lode properties, although some of his unpromising 1899 claims there were later relocated and sold to Pittsburgh investors.

Although Poe could make no use of an almost inaccessible gold lode at Thunder Mountain in 1867, mining conditions improved in three decades. Ben and Lou Caswell-twin brothers from Michigan who had learned something about prospecting in Colorado--had searched for Seven Devils mineral wealth with no success at all in 1894. During the Panic of 1893, gold mining was favored over copper, and they decided to hunt for gold in as remote a wilderness as they could find. By then they were broke. The way Ben reported it, all they "had was a bunch of scrawney cayuses--in fact they represented about our only possessions when we went into the Seven Devils, so we can't say we lost anything there. Finding some good surface indications on Thunder Mountain in August of 1894, they settled on Cabin Creek, trapped and hunted for a living, and came back the next two summers to use rockers during short two-week seasons when placering was practical. They recovered \$245 worth of gold in eight days in 1895 and another \$190 in 1896. In 1896 they spent most of their time whipsawing lumber for sluices, so as to increase future production. Then their brother Dan and his partner, Wesley Ritchie, came over from Montana to join them in producing \$900 in 1897 with sluices. Encouraged with this success, Ben and Lou came out to Boise, August 10, with a remarkable story:

That there are Klondikes yet hidden from the knowledge of men in the wilds of the Idaho mountains was demonstrated yesterday when the discoveries of A. B. and L. G. Caswell in the Salmon River country became known.

These men came into town with a large clean-up of gold. When asked about their discovery they stated they mined the gold on what they called Mule Creek, which heads in a mountain which they named Thunder Mountain.

Mule Creek flows into Monumental Creek, this into Big Creek and Big Creek into the Middle Fork of the Salmon.

The brothers discovered the claims some four years ago. The first three seasons they made expenses and this year they have secured a fine clean-up. They

expressed the belief that the district will make a good camp; and from their report of the character of the discovery would seem to be well founded.

They have been placer mining the surface of lode claims, working the debris on the mountain side. The entire mountain, they say, is gold-bearing and the gold they have been getting has been released by the decomposition of the formation over which it is found.

This remarkable mountain is porphyry. The prospectors describe it as being a great volcanic crater which has been filled with the fold-bearing rock. The gold is found everywhere on the mountain.

The brothers have prospected the ground very thoroughly and say they have pounded up fully a ton of the porphyry. It all pans well. In addition they have had a number of assay tests. The result of their investigations is such as to convince them that the mountain is an enormously valuable deposit of gold. They do not claim the rock is high grade, but they are well satisfied with its value. They did not care to state what the average value of the rock is as determined by their investigations.

Their mountain of gold, even though low grade in value, contained more high grade pay streaks than they noticed at first.

Yet their massive appearing gold deposit had geological characteristics not typical of ordinary mines. They were dealing with an unstable formation which confused more than a handful of competent mining engineers.

Slides of soft, disintegrated rhyolite which absorbs water in a wet year and begins to roll silently along slick faults, have occurred frequently on Thunder Mountain. (One in 1909 which plugged Monumental Creek and flooded the town of Roosevelt was the most recent of many in the area.) These slides are of some commercial importance, since they contain important gold resources. Prospectors and miners dug around in the mud flows, since gold was precipitated rather widely in them. Some remineralized mud flows had especially rich surface gold deposits. Gold, in fact, had even precipitated on old (thousand of years old, that is) wood chips which acted as a reducing agent. Prospectors got the notion that Thunder Mountain (or at least the rhyolite mud slides on it) was a mountain of gold; there was enough solidification of mud slides from the action of silicic acid as to give some essentially placer deposits an appearance of soft rock which might be worked by quartz methods.

The gold (already precipitated by carbon through a process much like that of a ball mill) was easily recoverable, and the enriched surface concentration of hillside mud placers gave an entirely false impression of the extent and richness of the district. Early in Thunder Mountain's phase of mineral

development, some less scrupulous promoters contributed even more in the way of artificially brilliant gold assays. Salting of samples ("salting" is enriching a sample by slipping some already mined gold into the test before assaying) was more than ordinarily common there: John Oberbillig, for example, assayed in there in 1904 and caught some of his clients salting their samples so thoroughly that even barren bull quartz would go \$20 to the ton. Yet surface enrichment in their initial claims gave Ben and Lou Caswell good enough returns they had no need to resort to fraud. They were not trying to peddle their claims, since they were gaining handsome returns for a very short mining season each spring when melting snow provided water for a few days high on Thunder Mountain. They had no way of anticipating that their mountain of gold actually was a mountain with a gold skin. Before this unusual deposition of gold could be evaluated accurately, however, they got involved in one of Idaho's wildest mining developments.

Returning to their Cabin Creek ranch, Ben and Lou Caswell prepared for an enlarged operation in 1898. Reinforced by Dan Caswell and his Montana partner, they obtained about \$3,000 in their two-week season, and managed \$4,000 during a similar run with a small hydraulic giant in 1899. Because they could sluice only a short time while melting snow provided water up on Thunder Mountain, they could manage only brief annual seasons. They received publicity sufficient to attract a number of prospectors in 1899. That fall, S. W. Emerson reported in Grangeville that:

The ledges are composed of talc throughout which are found kidneys of sulphide ore that goes \$3,600 tr [sic] the ton. The talc is dug out and allowed to slack one year and is then run through sluices which virtually make a placer mine of a quartz proposition. The tailings after slacking from ten to twelve months are put through the sluices, giving good return for the labor expended. In fact the tailings sluiced the third time will pay expenses. A stamp mill would save all the values, it being strictly a free milling ore.

H. E. Taylor, impressed by geological similarity between Thunder Mountain and Colorado Cripple Creek district, where he was an experienced mining engineer, concurred. With a Caswell recovery of thirty pounds of gold in only forty-two hours of operation of a small giant in 1899, he anticipated that with "immense richness" and "phenomenal surface showings," Thunder Mountain was "destined to be the leading gold camp in Idaho." Efforts to interest substantial investors proved more difficult, however. Taylor organized a Thunder Mountain Consolidated Gold Mines Company with Weiser capital. His plans to bring in a twenty-five ton Huntington mill in 1900 proved to exceed his investors' resources, so his venture collapsed.

A search for wealthy mine owners eventually produced better results. J. R. DeLamar, who had gained a fortune in developing large scale mining near Silver City had Thunder Mountain checked out by engineers prudent enough to keep him from going into a losing Thunder Mountain proposition. W. H. Dewey, another large Silver City operator, was less fortunate. His son, E. H. Dewey, had excessive confidence in Thunder Mountain. In 1900, after seeing a \$500 short run Caswell production, W. H. Dewey agreed to purchase their property for \$100,000 if a full investigation should warrant such an investment. Dan Caswell certainly had a good operational report:

In a run of 72 hours this season, with hydraulic power, they took out 29 pounds of gold, avoirdupois weight. The gold is worth \$13 an ounce. The 29 pounds was worth between \$5,000 and \$8,000. They worked this year an area of 75 feet square and to a depth of three feet. These places are nothing more nor less than a huge porphyry belt. The material is dug out and slacks, after which it is washed. Below a depth of three feet it is too hard to work by this method, but carries as much gold as from the surface to that depth.

The extent of this auriferous porphyry is not known, but the whole mountain appears to be porphyry. Three tons were crushed in a mill at Warren to test the value. The three tons yielded \$31.10, or that is the amount that was taken from the plates. The battery was not cleaned. A big mill will some day be put up on Thunder Mountain which will in a not very distant day no doubt be one of the greatest camps in the state. Citizens of Boise are now talking of constructing a wagon road to Thunder Mountain. The cost will be about \$15,000. The Caswell Brothers have a team and expect to drive as far as Pen basin, 25 miles from Thunder Mountain. The route is by way of Bear valley, where they leave the state road. From there to Pen basin there is almost a natural road.

But, aside from a passable road through Pen basin, more was needed than some small, yet profitable, surface placering of an outcrop which could not be identified as a vein. They had a rhyolite cliff with values exposed to a depth of 200 feet along a length of 500 feet. "This whole surface ran an average of \$14 a ton. The face of this cliff that will not pan, and yields of fifty cents to one dollar to the pan are quite frequent." Volcanic basalt and other intrusions made for complicated geology there. Yet L'Hame noticed that "Mineralogically and structurally it is strongly suggestive of the famous Cripple Creek region of Colorado." Because recovery so far at Thunder Mountain has not exceeded half of what gold was processed, L'Hame foresaw a truly

bright future.

So did W. H. Dewey.

He immediately put men to work developing them and several tunnels were run a distance of eighty-four feet and the ore taken out went \$13.50 to the ton. In another much shorter tunnel the ore went \$8 to the ton.

Up to this time, not including that taken from the tunnels, 460,000 tons of ore has been broken. Mr. Reed, an experienced miner, who has been at work in these mines, has reported that he fully expected to find a sixty foot vein.

Colonel Dewey has ordered two mills from Chicago, one of which will be here by the 10th of June. One is a 10 stamp mill, which will crush from 50 to 70 tons in a day, the other is a 100 stamp mill and will crush from 500 to 700 tons of ore. The wagon road at present only goes to within 50 miles of the mines and will not be built in this year, as it is thought everything needed can be packed in. The colonel thinks he now has without exception the best mines in the United States and he is going to push the work of development, and it will not astonish anyone who knows anything about this region if the greatest gold discovery of the age is made here.

Impressed with these results of his investigation in 1900, and with Thomas C. Reed's report in June of 1901, he [Dewey] decided to go ahead with his purchase. Reed had shown Thunder Mountain to F. J. Conroy of Pittsburgh, who

brought out 100 samples for assay. Each represents 100 pounds of ore, carefully sampled. Each 100 pounds was crushed, mixed and quartered. The samples were taken from the tunnel, cross-cuts, croppings, and slides. Samples were taken every five feet in the tunnel and cross-cuts. . . .

Samples were not taken from all the claims, and this was not really necessary. A sample of one is virtually a sample of all. Assays will be made of samples taken from three or four of the claims.

Dewey sent out eight miners with Locke's pack train. This will make a force of eleven men. Three miners have been at work this spring and Summer. Four were employed during the winter. The tunnel, with cross-cuts run each way, measures about 300 feet.

At this stage, the Caswells professed disappointment. With additional help from William Huntley, they had increased their total recovery to over \$20,000. While so engaged, they had come

across a truly rich pay streak that they thoughtfully covered up. A five-to-seven-foot vein, forty feet long, ran as high as \$9.80 a pan. An especially valuable three foot section of their vein yielded \$3,000 a ton. "Four sacks of ore taken from a width of seven feet gave returns of \$1,997.21. Another sample taken where the ledge is five feet wide, assayed \$100.83." Sometimes they contemplated developing their property with Richey and Huntley, hoping that Dewey would reject their offer to sell. But Dewey's energetic development dashed any such hope. (Actually, they were just as well off to realize a hundred thousand instead of losing a fortune that they did not have.) So they finally chose to get out as soon as possible. Using their rich new find as an incentive, they induced Dewey to complete his \$100,000 purchase immediately, rather than wait until 1902 as originally contemplated. Dewey was going ahead anyway, so their insistence did not inconvenience so much just then.

Very flattering reports continued to emanate from Thunder Mountain even though those better discoveries remained confidential. A prominent, but unidentified, Boise miner told E. W. Johnson, July 9, 1901:

After thoroughly looking over this country I am forced to believe that the greatest mining camp in Idaho will soon spring up in the Thunder Mountain region. All it will require is a little nerve and capital to open up these mammoth mineral veins. Prospectors are coming in from all sides and already vacant ground is scarce. Several parties are here waiting for their associates who are coming in with money to secure property and there is no doubt but there will be lots of development work going on here soon. Every day there are reports of rich strikes being made all around here and these reports are backed up by samples of the ores found. Never before have I seen such surface showings as in this camp. With capital to open these big ledges Thunder Mountain would astonish the mining world.

Information reaching the Lewiston Tribune from Grangeville was equally enthusiastic:

Parties arriving from the Thunder Mountain country report that the work has been progressing all winter on the property of Col. Dewey and has shown up an extent of ore and values that is marvelous. This has always been considered one of the richest sections in any part of the State, and indeed ever struck. When the property was in the hands of Dewey's grantors and Mr. Woodruff was managing the mine, he assured his company that if they sold to Dewey he and not they would make

millions out of it. But they sold and the facts so far demonstrated prove him right. The property under the management of Dewey has been worked all winter by a force of from eight to twenty-five men, and a large number of cross-cuts, tunnels and shafts have been sunk to ascertain the extent and values of the ore body. It is demonstrated, as has always been contended, that the whole mountain is practically one dyke of ore. Assays have been made nearly every day of a large number of samples from all the workings and the company claims that, making every allowance that could be asked in computing the average values, and then cutting the result in half, the ore in sight if it goes no deeper than the shafts so far sank, which is about 110 feet, is worth \$6,500,000. The enormous total is practically only the surface of eight claims. Other properties in the region are as good apparently.

S. B. Edwards, "one of the best known prospectors of Idaho," had encouraging information based upon his own experience there in 1899 and 1900.

A year ago this summer he discovered some float which struck him as representing something of value. Upon his return in the fall he had assays made of this float both by James A. Pack and Thos. Manning. Pack's assay gave values of \$48 in gold and 6 ounces in silver. These most encouraging assays of the float led Mr. Edwards to return to the Thunder Mountain country early this spring and seek for the ledge from which the float had come. His efforts led to the discovery of a blind lode upon which he has made three locations all showing ore of a most excellent character.

Ores from these claims have also been assayed by Albert B. Sandford, assayer of the custom house in Denver, Colorado. Mr. Sandford's assays show considerable higher value than those of Peck and Manning, some of them going as high as \$100 in gold and 48 ounces in silver and from 60 to 70 per cent or nearly \$600 a ton.

He further declares that there is room for a thousand prospectors yet remaining. The country is not half prospected. There are probably at this time in Thunder Mountain and the section surrounding it 400 men, but new prospectors are coming in every day. These come from all quarters, from Warrens on the west, Salmon City on the east and from Boise and the southern section. The number now in there will be doubled before snow flies.

Mr. Edwards says he looks for the biggest finds to

be made in Thunder Mountain that the northwest has ever seen. He has unbounded confidence in that section and says that Thunder Mountain means to Idaho what Cripple Creek and Leadville mean to Colorado and that the district is a far more extensive one than any that state ever saw. Thunder Mountain itself is nothing but a mass of ore. This has been fully demonstrated by the operations of Col. Dewey and his associates. It is ore everywhere. To be sure much of it is low grade, but the almost limitless quantities in sight will make it one of the most productive sections of the world. He prophesies that it will more than equal the celebrated ore mountain of Treadwell's Island in British Columbia.

A genuine Thunder Mountain mania finally was built up from the impact of countless reports of great mineral wealth there. Thunder Mountain had a romantic name anyway: acting as a sounding board for lightning which danced off nearby Lightning Peak, that somewhat inconspicuous mountain offered legend writers a welcome opportunity to display their talents. While Thunder Mountain was gaining interest everywhere, some practical problems had to be faced. W. H. Dewey raised enough capital in Pittsburgh to assure purchase and development of his Caswell property. To get a road necessary for hauling in a large plant, he offered to put up ten of a twenty-thousand dollar estimated cost if Boise subscribers would match his share. While they contemplated this venture, Dewey's initial ten-stamp mill--designed so that packers could get it over a mountain trail--arrived for shipment to Thunder Mountain. Upon a very strong positive engineering recommendation, Boise's Chamber of Commerce decided to join Dewey's road project, August 16. John Pilmer, their agent, assured them that

Thunder Mountain and its vicinity was an entire revelation to him. Before going in on this trip, he was considerably prejudiced against that section but he returns firmly convinced that Thunder Mountain is the greatest mining camp on earth today. He says that the entire mountain is a solid body of ore. In appearance it is very similar to some of the white, chalklike cliffs of the Snake River.

The mountain has a topping of lava, which is broken away upon all sides. The formation itself is a very soft porphyry, every part of which is ore. This decomposes very rapidly upon exposure and from this source came the gold discovery by the Caswell brothers.

The whole side of the mountain disintegrates by the action of the elements and sloughs away to the lower ground. This has been washed in the placer mine with excellent results but the dumps are still nothing but

quartz containing much gold.

The Dewey tunnel and all those being driven into the mountain are all in ore. There are no hanging or side walls and but little or no difference in the value of the ore at any given point.

Mr. Pilmer thinks that open cut mining, similar to the operations for many years carried out at the famous Treadwell mine in British Columbia, must be followed at Thunder Mountain. He says it is the greatest proposition he ever saw and states that a 1000-stamp mill, if started tomorrow and operated continually for a thousand years would still leave vast quantities of ore unmilled.

Reassured by this enthusiastic response, and in need for early construction before another winter's delay intervened, Dewey offered to go ahead, advancing initial costs. Then when Boise subscribers succeeded in raising only \$3,000 (less than a third of their share), Dewey became impatient. After more than a month's delay, he called his entire proposition off, decided to build his Dewey Palace Hotel in Nampa, and to find a Long Valley route for his road. Meanwhile he had his original mill packed in through Bear Valley and Penn Basin along his original route. This involved great expense. Lem York reported that

Supplies and machinery are freighted to Bear Valley, about 100 miles above Boise, where they are transferred to the big pack trains and transported 80 miles further to the mines. To one who has not been over the route no conception of the difficulties encountered can be had. Every pound of freight has cost the operators 6 1/4 cents per pound, or \$125 per ton, and it is safe to say that the transportation charges have greatly exceeded the first cost of the invoices.

At the date of our visit, September 1st, the camp presented a very lively scene. Men were hurrying here and there: trails and roads were being graded; wood and timber for the mill was being "snaked" in from the surrounding timber; carpenters were busy erecting a two-story boarding and bunk house; the mill grade was ready for the foundations and most of the machinery was piled in the yard ready for erection. Prospectors, with their pack outfits, attracted thither by the stories of vast wealth, were coming and going, quite a "tent town" being established on the bench above the mine. It was a scene calculated to take the mind back to the pioneer days of Idaho, for Thunder Mountain certainly occupies a frontier position.

Through the courtesy of Supt. Reed, our party was

taken through the now famous mine, which has been opened by cross-cuts and drifts aggregating some 550 feet; all in ore. The work has been done in the shape of a cross, thoroughly demonstrating the uniform value of the rock. No timber is required. The ground is easy drilling and breaks fairly well. Fifty-two samples, each weighing 200 pounds were taken from the property, outside and inside, a few weeks ago, the average value being a fraction over \$6 per ton in gold.

When it is considered that this ore can be mined and milled for less than \$1.00 per ton, its value can be partially realized. It is calculated that seventy tons can be treated daily with the 10-stamp mill now in course of construction. The ore is very very free milling, the values being readily saved on plates. Some twenty-five men were employed in and about the property at the time of our visit, but we understand that the number has now reached about 50.

Considering Thunder Mountain's potential, this effort was worthwhile:

Its formation (in the language of the prospector) is porphyry [sic] and basalt, the lines of contract extending nearly east and west, the south side of the mountain being basalt and the north side porphyry. And it is a mountain of gold! Whatever its origin--whether it came up, fell down or slid in, we cannot say--but the fact remains that the whole mass of conglomerated material carries the royal metal in paying quantities.

There are no veins. Not a piece of quartz, even, can be found in that marvelous monument of mineralogy.

Martin Curran (who completed Caswell sale arrangements) returned with assurances that his \$100,000 investment was purchasing two million tons of ore. Having been shown the secret Caswell discovery, Curran had interesting statistics to support his optimism:

Nature did wonders for this property, as the great vein or zone stands up from one hundred feet on the westerly end to one hundred and fifty feet on the easterly end, over the level of the surface exposing the great ore body for more than three thousand feet in length, and from one hundred to one hundred fifty feet in width, leaving exposed one million five hundred thousand tons of pay ore at a conservative estimate of ten million dollars.

The underground workings consist of about five hundred feet of cross cuts and drifts, every foot in

pay ore. Main cross cut, sixty feet, samples seven dollars and eighteen cents, pay ore still in face west drift cross cut fifty-five feet, six dollars and twenty-seven cents. Face of west drift, seven dollars and eighty-two cents dark ore. On south side of west drift one hundred and forty-eight dollars and twenty-nine cents. At this point it requires a cross cut south to determine width of this high grade ore, also forty feet cross cut north to go through ore, such as the face of the west drift. At present it is unnecessary to do any more work in the mine until the mill starts, as it is easier to handle the ore from the mine than the dump.

On the surface and about the center of the great ore body and between the two underground cross cuts there is a very rich chute of ore, forty feet long and from five to seven feet wide, that assays as follows:

Seven feet, \$1975.84, \$100.93; five feet, \$199.78, 266.20. If this rich chute carries the same values to the tunnel level, same width and length (estimate one thousand tons, average value \$860 per ton, or \$860,000.00), the property can furnish one thousand tons of ore per day, as soon as there are a few chutes put in the mine to load cars from, and can be mined for 60 cents per ton. The property requires 200 stamps, and with that number in operation the property will pay \$150,000 per month.

The property is situated near plenty of wood and water and can be worked by tunnels for a great number of years. The saw mill is all on the ground and will be sawing lumber by the 10th of the present month, also ten stamp mill in course of erection and will be in full operation about December 1st, 1901.

William E. L'Hame concurred:

I consider the formation identical with that of Cripple Creek. It consists of royalite intersected by phonolitic intrusions. The greatest values are met with at the contact of the dyke with the overlying volcanic breccia. The position of the dyke shows that it was one of the last of a series of volcanic actions which took place at a period probably antedating the Cambrian age. At the intersection of the dyke with the other strata the same is crumpled and crushed, giving special opportunities for the mineralization of the same.

It is also proper to assert that the carbonaceous

material which is found in the volcanic tufa in the form of fossil has the effect of precipitating the metal from the auriferous solutions which accompanied the dyke during the process of eruption.

I believe the ore presents special facilities for free milling on account of its chemical composition and makeups, pyrites and other base metals being almost entirely absent. Samples taken from the deposit showed values of nearly two thousand dollars per ton, ranging downward, too, of course, less in places. It shows on the surface several hundred feet of valuable ore that has been exposed by hydraulic working a distance of maybe five or six hundred feet in length, and two or three hundred feet wide. The values so exposed will probably range all the way, as far as I am able to say, from two to three hundred dollars to as many thousands.

Mr. Richie showed me a place about as large as this little corner by the door in which they took out three thousand dollars. Mr. Richie panned \$2 from one pan of dirt he took from the top of the hill. There is an immense amount of slide rock and the dirt between it all assays very big. There is a great amount of gold in it, and all the tailings that have gone through the sluicings contain a very appreciable amount of gold. There is an immense amount of ore--a whole world of it.

I think all the slide rock has gold in it, and if it is all auriferous material there is a million tons of ore in sight there. That is a very fine mineral section in there.

Thunder Mountain is a mountain of ore; there is nothing like it; it is no hill, it is a mountain. There is all the reason in the world to believe the deposit is continuous. I have not seen any mine in the country that makes as fine as Thunder Mountain. I consider it second to none in the United States.

E. W. Burton of Murray came out with a slightly different impression of Thunder Mountain. He

formed a favorable opinion of the new camp, and declares it to be unlike anything ever discovered. He claims that it is simply one vast field of decomposed mineralized rock. Some call it quartz; others designate it as porphyry. Its real value as a whole had not been determined, as there were miles of it. It looked like a vast overflow of some crater, which spread as it continued to discharge. There was no doubt some rich streaks in it, but the mass was low grade, and the methods of working would have to be on a very large scale, so that thousands of tons could be

reduced every 24 hours. Water is plentiful within a short distance, but fuel is scarce. It is not, in a strict sense, a poor man's camp, but many miners will be employed there in time.

An even wilder report emerged from Challis:

Thunder Mountain is all the rage in this part of the world. There is nothing peculiar about Thunder Mountain to look at in the distance. But when one gets to it there is something peculiar about it. Thunder Mountain is a big mountain, and nearly all the formations that are common to Idaho are represented there except lime. The make-up of this mountain consists of nearly all the different granties, porphyry, rhyolite, sandstone and a little quartz. In the sandstone is found small seams of lignite stone coal.

While all kinds of accounts of Thunder Mountain circulated during the fall of 1901, Dewey's crew finished installing a mill engine and boiler scheduled to start processing ore in December. Freight costs from Boise ran 12 cents a pound, but once installed, their mill was expected to process free milling ore at only a dollar a ton. They also employed a string of 120 pack mules to get in their winter supplies late in November. Important new discoveries on Monumental Creek three miles from Dewey's property added a new dimension to mining there, while accounts of other valuable finds over a broader area created still more excitement. In preparation for a grand rush, Boise's Chamber of Commerce went ahead to construct bridges and road segments which W. H. Dewey had backed off from, and Weiser, Emmett (rail terminal for Dewey's new route), Grangeville, Dixie, Salmon, Mackay, and Ketchum also began to advertise their routes to Thunder Mountain. Other purchases of claims there (more in the five to ten thousand dollar range) helped boost interest. But W. H. Dewey, returning from Pittsburgh with his hundred thousand to complete his Caswell claim transaction, November 16, went totally wild in announcing his expectations in Chicago:

Colonel W. H. Dewey of Idaho believes he is the richest man in the world or that he soon will be. There will be trumpet tidings from Idaho within two or three months, he says, tidings that will proclaim Idaho an American Transvaal or a United States Klondike, that will pale the fame of Cripple Creek or any other old diggings. The colonel carries in his pocket a little vaseline bottle filled with pure gold, all extracted from just three pounds of quartz. He knows a man who made a bet that a pound of rock from the new Idaho

field would result in from \$60 to \$80 worth of gold.

Alvin B. and Daniel G. Caswell went out to Ogden and Denver to tell their story of sudden wealth and to explain how they had discovered some more mines at Thunder Mountain.

Without waiting to see how his ten-stamp mill worked out, W. H. Dewey ordered a \$250,000 second mill with a hundred stamps so that he could process his anticipated \$200,000,000 gold mine more quickly. Professor E. H. Mead, while not trying to estimate how much ore could be developed, assured the Union Pacific that one deposit alone, extending 250 feet in all directions, with no foot nor hanging wall anywhere, equalled a 2,000 foot vein. He regarded Thunder Mountain as "the most wonderful mining country I ever expect to see." Already ore "enough shows to keep a 100-stamp mill going indefinitely." In Minneapolis, Avery C. Moore estimated that fifteen thousand miners would head for Thunder Mountain "as soon as the snow melts" in 1902. Twelve log cabins and a two-story building were available there to accommodate that rush. Late in December, a major stampede was anticipated to Idaho's "MOUNTAIN OF GOLD," in which "Stone Coal, Charcoal, Petrified Wood and All Kinds of Usually Barren Mineral Yield Up Treasures." A Grangeville report from L. A. Leland and Frank E. Johnesse outlined Thunder Mountain's attraction, December 26:

"You may say the truth about Thunder Mountain is fully up to the most extravagant stories that have been published anywhere," said Mr. Leland. "It is a geological revelation. The saying is almost universal that 'quartz is the mother of gold.' Thunder Mountain disproves this, for there is almost no quartz there, and that little is found only incidentally. but there is almost everything else, and gold in it all. One finds stone coal, charcoal, petrified wood, and all kinds of barren rock here, impregnated with flakes of gold. You can pan gold out of almost everything on Thunder Mountain proper. How it got there, no one knows. A vast primeval conflagration might have melted the gold, and driven it out either molten or in fumes, so that it filled everything. But there it is, a puzzle to all who see it.

"There is almost no stratification in the camp. It is veritably a mountain of gold. Rhyolite is the chief deposit, although almost everything is found in the most uncommon conglomeration. The mountain has been compared to the Rand reef in the Transvaal.

"There is probably not a pound of spare food in the camp today. I took in 100,000 pounds of vegetables by pack train from the Caswell ranch, last fall, but I understand they are already short. It would not be

advisable to attempt going in now, as one could not take in enough supplies to last, and there is nothing in there.

"Every foot of ground for the three or four miles square of Thunder Mountain has a claimant. Fractions are eagerly sought. But there may be other districts just as good near by, only they have not yet been uncovered. . . ."

Although more appropriate for a humor column than for an explanation of a \$30,000 mine sale, this kind of report was issued all too often as a Thunder Mountain mania built up. Late in December another Pittsburgh sale--this time for \$125,000--out-classed Dewey's purchase. By December 28, W. H. Bancroft of the Union Pacific increased his traffic estimate to 20,000 for Thunder Mountain, with passengers expected from all over the United States.

While excitement mounted nationally, mining at Thunder Mountain cooled off when winter arrived. Dewey's ten-stamp mill was completed on schedule in December, and five stamps were tested then. But ore could not be processed until January 3. Winter snow also halted prospecting. Close to a hundred miners worked on their claims, but they could only prepare for later production. Communication was almost cut off with Warrens: three miners spent four days getting out on snowshoes, December 21-25, getting partially frozen on their difficult trip. Aside from thirty to forty Dewey employees, who had been taken care of adequately, provisions were scarce and prices were high. A November pack train from Warrens would have supplied Thunder Mountain's growing market if snow had not blocked their trail. No more could come through until spring. Warnings were issued to prospective miners to stay away unless they could bring in all their supplies--a practical impossibility. Costs of claims, ranging from one to fifteen thousand dollars, also were inflated greatly. Fred Holcomb, a pioneer miner there, warned that

Thunder mountain it [sic] not a poor man's camp, and those who go there expecting to find it one will be disappointed. The whole mountain is covered with placer rock, but there is no water that could be diverted to handle it. The Caswells appropriated all the water that could be diverted so as to be used for placering. You see, the placer dirt is on the highest mountain in that part of the country, and the water is all below it. The dirt isn't rich enough to haul it to water.

Another prominent Idaho miner, A. J. McNab of Salmon, although "quite enthusiastic over the possibilities of the country" after prospecting thirty-six square miles at Thunder

Mountain, also warned miners to wait:

It is foolish for those seeking an intelligent foothold on Thunder Mountain to undertake a trip into the region at this time [January 1902] as it holds out no refuge to the traveler and exposes him entirely to the chance of reaching a cabin. . . .

Unable to go to Thunder Mountain, impatient miners began to pile up in Warrens, ready to dash on in as soon as an opportunity should offer. Stage lines from Union Pacific stations in Ketchum, Mackay, and Red Rock, Montana (operating via Salmon) also prepared in January of 1902 to offer service over non-existent roads (through country in which roads still have not been completed eighty years later) when winter might break. Seventeen Concord coaches were procured for a line from Red Rock alone.

At Salmon Meadows, Charles Campbell (one of Idaho's most prominent ranchers) noticed that local packers were trying to break through to Warrens to get in advance of the gold rush. Campbell said that

during his long residence in the west . . . [he had] never seen conservative men lose their heads under pressure as they have done in his section of the state for the past 90 days.

"All the people of the county have the fever," said the visitor, "and if only one-quarter of the stories they tell about the camp materialize, it will be the greatest mineral belt ever discovered. Scarcely a week passes but some one comes out over the trail from Thunder Mountain, and I have yet to meet the first man who says the 'find' is not a wonder. When old time miners tell you it is the greatest thing they ever saw, it must have some merit."

While a townsite of Roosevelt was being promoted in Boise to serve Thunder Mountain, conditions there grew critical. When Allan Stonebreaker left there January 19 on his regular semi-monthly mail trip, sacks of flour were selling for twenty to fifty dollars each. Only a few were left, and as supplies neared exhaustion, about seventy-five miners had to prepare to retreat from their isolated camp. New rich discoveries--selling for \$500 a claim--were reported. But right then, groceries were needed more than gold.

In an effort to alleviate some of Thunder Mountain's shortage, Frank Andreas set out from Boise, February 3 with a large dog team hauling a ton of provisions. Two other packers left Grangeville with dog teams at the same time. They immediately were followed by an advance wave of the great 1902

Thunder Mountain gold rush. Packers with horses began to break their way from Dixie through Chamberlain Basin to Thunder Mountain, and other pack outfits were assembling in Bear Valley.

Even winter snow could not quite halt a gold rush. Extravagant Thunder Mountain testimonials continued to fill columns of Idaho newspapers, and impatient fortune hunters simply couldn't afford to wait. When Allan Stonebreaker made another postal trip to Dixie, February 6 to 8, he met thirty-five parties of gold seekers. By then their trail was in good shape for horses, with no snow depth exceeding four feet. About everyone who had stayed at Thunder Mountain was selling claims to newcomers. Those who rushed in early in 1902 thus had an unmatched opportunity to assume losses inherent in buying claims there, while those who had spent an expensive winter there had a chance to recover some of their investment in time and travel cost.

Winter travel to Thunder Mountain remained somewhat hazardous on some routes, at least three miners were lost in a snow slide near Elk summit between Thunder Mountain and Warrens, February 10. That misadventure did not slow anyone down too much, though. Some continued to use dog sleds, although others did their own hauling. A horse and dog sled party left Florence, February 11:

A snowshoe and rawhide outfit of horses and a large dog train passed through here today enroute to Thunder Mountain. They expect to be on the road from here about one week. The only trail breaking they will have to do is from the Snowshoe cabin across Salmon river bridge to the Warm Springs, about 18 miles, which they will do with a bunch of horses they have on Salmon river. From the Springs to Warrens and thence to Thunder Mountain the road has been kept open all winter. This dog and rawhide train has been on the road from Grangeville to the Salmon river three days and it will take them three days more to reach Warrens, from which point they will have good traveling. There is plenty of feed for horses along the entire route via Grangeville, Florence and Warrens, with good hotel accommodations.

A Grangeville crew, February 13, included experienced old timers who had been to Thunder Mountain years before, as well as others who had come out that winter:

A large party of argonauts left Grangeville this morning, for Thunder Mountain. They will go by way of Florence, the state bridge and Warren, having contracted with Tom Walton to take their supplies as far as Warren. Each of the men took about 250 pounds of supplies--50 pounds of flour, 30 of bacon, and the

rest of the weight being made up of tea, sugar, beans and bedding. In the party was one 25-35 Winchester rifle, for the deer that are numerous in the Thunder Mountain country; also one 22-calibre for birds and small game. From Warren, each man will pull his supplies on his own rawhide toboggan.

More dog teams began training in Boise, where small problems such as snow slides near Thunder Mountain did not deter those who wished to leave early. Expectations that mills with 2,000 stamps soon could be hauled there made everyone eager to get in while some potential claims still were left to prospect. News of important new discoveries February 2 arrived in time to encourage more dog trainers, and Ben Caswell confirmed reports he had declined a number of offers of a hundred thousand for his new claims after selling to Dewey. finally they sold their new property for \$125,000.

Caswell estimated from his experience in Michigan and Pennsylvania that thousands of hopeful fortune hunters soon would be headed for thunder Mountain, and competition between Northern Pacific and Union Pacific promotional departments for that traffic grew intense. With a variety of Union Pacific entrances (through Red Rock, Mackay, Ketchum, Boise, Nampa-Emmett, and Weiser-Council) and two Northern Pacific options (Lewiston-Grangeville and Stites-Dixie), a large number of local communities contested for favor. Telephone lines from Boise and Blackfoot via Mackay also were projected to Thunder Mountain.

Increased March snow and related fuel problems brought additional complications to Thunder Mountain miners. After two months of operation, Dewey's stamp mill had to shut down March 10, for lack of fuel. All timber within a mile had been used up, and additional supplies could not be hauled in just then. Everyone wanted to locate more claims rather than operate a mill. About 250 miners had got in to camp, but none wanted to work. Trails to thunder Mountain also became more difficult to negotiate. In February, only two miles were closed to anyone aside from hikers who had to drag their supplies over that stretch from Warrens. But conditions grew considerably worse. Flour went up to \$50 a sack, and food shortages became more troublesome. Boise traffic could get through only by equipping horses with snow shoes--an old mountain device to facilitate packing:

The trip from Thunder Mountain to Boise can be made in five days. It took me longer because I stopped on the way. I met two pack trains going in. They were composed of several horses drawing rawhide toboggans. The animals were all heavily loaded. The lead horses of the first pack train wore snowshoes, but the rest

seemed to be getting along all right without them. The trains were making about 20 miles a day. I did not know any of the men and did not talk to them. there will probably be a scarcity of horse feed, for the reason that while a horse can draw feed enough to last him along the trail, he cannot do much more, and there is no feed at the other end of the route. The problem of feeding horses will be a serious one before the grass grows in that country.

Late in March, a long train of toboggans and pack horses left Grangeville prepared to break through to Thunder Mountain with almost two tons of supplies. These certainly were needed, as too many gold hunters continued to arrive empty-handed.

"Not an ounce of food is to be bought in Thunder Mountain at any price," said Sheriff J. Dixon, who arrived here today [early April] from Warren. "Men are coming out every day as far as Warren for food, where they can buy staple groceries in limited quantities. It is an 80-mile trip, the way most of the travel goes, and takes about four days either way. A man who is not well equipped will eat in the eight days coming and going almost all he can carry.

"Ten cents a pound is being paid for freight from Meadows to Warren. The freighters won't touch it for less. Seven cents is also being paid from Warren to Shaffer's, 25 miles. A party of three Colorado men came through Warren with 1000 pounds of supplies on which they had paid this rate.

"But the rush continues. One man who came out to Warren last week met four men going in without even a cracker. He divided his last three biscuits among them, telling them that they could buy nothing further on. Still they went in. Others are going not much better prepared. . . .

"A movement is on foot to shorten the distance over the dangerous Elk creek summit. The wind blows the snow up the long slope from this side, whipping it over an almost perpendicular descent on the other side, thus forming a comb of snow 50 to 100 feet deep. This is continually breaking off and making dangerous snowslides down into the valley, besides necessitating a long detour. The plan is to dynamite the snow crest, let the resulting avalanche clear a new short road down into the valley and save the long detour.

"Ten degrees below zero was the record all through the mountains last week. Considerable snow has fallen. There are now between five and six feet of snow at Thunder Mountain, according to all reports. . . ."

New and larger mines also helped compensate for extended hardship of operations at Thunder Mountain. Another \$250,000 Pittsburgh investment, made in frantic haste March 9, set off a new round of transactions. Marshall Field, S. W. Swift (noted for his meat processing), and George H. Phillips invested a hundred thousand in fifteen important claims, and another forty-thousand-dollar transaction infused yet more capital into local mines there. By April, Dewey's company had invested about \$700,000 in thunder Mountain, and that sum by itself amounted to double the total gold production realized there prior to suspension of mining in 1908. Pittsburgh capital also more than made up for Dewey's withdrawal of Boise's Thunder Mountain road project. A total of \$20,000 from Pittsburgh was pledged to match Boise's \$10,000 goal, so Boise's road buildings seemed \$10,000 better off than they would have been if they had received Dewey's original offer.

Dewey, however, opposed construction through Bear Valley because of formidable problems his packers encountered that way in hauling his ten-stamp mill prior to construction. So preliminary planning became embroiled in a hopeless controversy over whether to build from an Idaho City-Bear Valley, Placerville-Garden Valley, or Emmett-Garden Valley approach. Dewey wanted to extend his rail line from Emmett toward Garden Valley, while Boise and Idaho City complained about being bypassed with such a project. Meanwhile, promoters of a half dozen other routes clamored for attention.

Insulated by winter from most exterior anguish over how future miners ought to reach their camp, mines at Thunder Mountain had more than enough excitement of their own. thomas Johnson reported that "there is lots of ready money in Thunder Mountain.

Agents representing all sorts of wealthy clients are there with cash to buy promising properties. The camp is at a fever heat of anticipation." Johnson also had some good stories to tell of skiing in camp and on his trip out to Warrens:

"The average Thunder Mountain traveler isn't in it with some of the trained mountaineers who are going in," said tom Johnson, just out from the big camp. "Why, a fellow got caught in a snowslide the other day, and slid for half a mile, along with rocks, trees and 100 feet of snow. What did he do but pull out his pencil and location blanks, figure out the distances by computing the rate of speed and counting the seconds on his watch, and he located three claims before he reached the bottom. He missed getting hte fourth one

by just one second. Fact, for I saw the slide."

Tom came out from Warren on skees, a month ago, and had a notable run-away from greasing the skees with a prepared dope to make them run more smoothly. this time he stuck to plain webs. Dave Pugh, however, who came with him, was on skees, and tom persuaded him to buy a bottle of the dope. The skees ran away from . . . [him and dumped him into a bank] of snow. Tom says that his lecture on the genealogy of skees was a masterpiece of impassioned oratory, more picturesque even than the grand mountain scenery round about. Dave keeps the bottle of "slick-em" as a stimulant for his vocabulary, when he runs short of words.

With miners everywhere trying to find new properties, claim jumping grew into a problem. Snow claims (of the kind Johnson satirized) also became all too popular. Of some 2,800 snow claims filed at Thunder Mountain from December through May, less than 15 per cent had any merit. A stampede to Indian Creek, twenty miles south of Thunder Mountain where prospects had been discovered the previous fall, enlarged this difficulty: there "Only snow claims are being staked, the snow being six feet deep."

With the approach of spring, a grand rush to Thunder Mountain got underway in April. Impatient prospectors from all over Idaho and many western states filled all available hotels in Boise, Weiser, Pocatello, Blackfoot, Lewiston, and Idaho City, where the Luna House began to look like old times. Early in April, fifteen to twenty were leaving Lewiston daily to get closer to thunder Mountain. some--as many as sixty to seventy each day from all sources--were going all the way, although lack of supplies forced as many to leave, so that Thunder Mountain's winter population (which rose from about 200 to 800) remained at a stable level. Places such as Campbell's Salmon River crossing (between Dixie and Chamberlain Basin) became cities of tents, with 150 to 200 eager miners camped at Campbell's. Organized efforts to open several routes for horses kept packers in Warrens, Dixie, and Bear Valley more than busy. But during April, none could get through. Operators from Warrens got three burros across elk summit trying to break a horse trail April 18, but more snow defeated their attempt. Before they managed to get horses over Elk Summit, May 15, a lone packer had gotten through from Salmon on April 29. Finally on May 12, Frank Andreas of Boise came from Bear Valley with an initial pack train, composed only of dogs. His problem, in common with everyone else, had been late snow that was melting, so that travel had become more difficult than ever.

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