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THE PRODUCTION, CONSUMPTION AND EXPORTS OF COPPER, 1892.

The following figures represent the production, exports and consumption of copper in the United States in 1892 and 1891, the figures for 1891 having been checked by new returns from each of the producers. This is done each year in order that the estimates for the last month, which were made before full returns were in, may be checked.

	1891.		1892.	
	Pounds.	Gross Tons.	Pounds.	Gross Tons.
Stock Jan. 1st.....	101,000,000	45,089	76,000,000	33,929
Lake Superior.....	114,400,000	51,071	107,200,000	47,857
Arizona.....	39,700,000	17,723	38,000,000	16,979
Montana.....	113,200,000	50 536	164,300,000	73,348
All other States.....	18,800,000	8,415	15,680,000	7,000
From imported ores.....	11,500,000	5,134	10,200,000	4,554
Total supply.....	398,600,000	177,968	411,380,000	183,667
Deduct exported.....				40,195
Deduct consumption.....				118,472
Stocks Dec. 31.....	76,000,000	33,929	.....	25,000

Last year (and this year also) the Calumet & Hecla Company refused to furnish their figures of production. We were obliged, therefore, to wait until the sworn returns were made to the State of Michigan, as required by law, for 1891. This year, however, we have been enabled to ascertain their output.

Our statement is, therefore, correct within a very few thousand pounds. The remaining figures in our last year's report are not varied to any appreciable extent in the aggregate. The full returns are in some cases increased and in others diminished slightly, but the aggregates remain the same as we then published them.

The Montana production has greatly increased in 1892, owing partly to the enormous output of the Anaconda (amounting to 63,000,000 pounds for the first six months of the year) and partly to increased output by some other mines, which more than offset the reduction on other hands. The Montana output is credited with copper smelted in the State but produced as ore in other States.

The full details of these figures will be given in the volume of "The Mineral Industry," which is now being put in type. Next week we shall publish in these columns the production of lead and spelter.

THE PLAYA DE ORO PLACERS, ECUADOR.

While at all times really good gold properties have been in demand, there is now an increased inquiry for them, owing to the depression in the value of silver. To meet this demand a large number of properties have been offered for sale in more or less "rosy" prospectuses. Perhaps the most remarkable of these works of the imagination is that of the Playa de Oro Mining Company, of Ecuador. This placer mine, concerning which considerable information will be found on another page, has been incorporated in this city with a capital stock of $10,000,000 in 100,000 shares of $100 each. The company has been successful, we understand, in raising sufficient capital to inaugurate the preliminary operations and to purchase a plant, and is now looking for additional funds.

The first Americans to take active interest in this property, as we are informed, were OTIS S. GAGE, the present vice-president of the company, who at that time was traveling on the South American coast in the interest of a certain smelting establishment of this country, and CLARENCE DOUGHERTY, a civil engineer, who made a report upon the property.

DOUGHERTY'S report was extremely favorable, and GAGE then induced New York capitalists to send FRANK S. KETCHUM to make a thorough inspection of the deposit. Mr. KETCHUM was greatly pleased with both the gravel and the natural facilities for working it. He estimated the value of that portion of the gravel along the Santiago River at 40 to 45 cents a cubic yard, making a gross total on 43,000,090 cu. yds. of the enormous sum of $159,800,000. Apparently not content with Mr. KETCHUM'S sufficiently high estimate, Mr. RUSSELL F. LORD was engaged to make a further examination, and, it is stated, estimated the gravel to average $1.03 per cubic yard.

In the calculations of profit the promoters adopt the basis $1.00 per yard, allowing only three cents per cubic yard for washing, and estimating the water supply at 6,000 miner's inches, and the duty per miner's inch at four cubic yards daily. On this basis the annual gross yield is calculated at the modest sum of $7,200,000, the expenses at $216,000 and the net profit $6,984,000, which, as the prospectus says, would enable the company to pay a dividend of 60 per cent. on the capital stock and leave a surplus of nearly a million in the treasury. The arithmetic seems to be correct, but it seems to rest on a very unstable foundation.

It is not an unnatural question to ask, Why has not this property been worked by the natives, who must have known its value? The promoters say substantially that it has been worked by unintelligent natives in a desultory way. Crudest appliances, even the rocker and sluice being unknown and work being confined to the batea, a wooden substitute for the miner's pan. It is difficult to believe that gravel of such high grade does not contain richer channels where the gold has concentrated and which would

prove remarkably profitable when worked by even this means. This may not be so, and the gold, as is claimed, may be evenly distributed throughout the gravel, but if the top gravel is as rich or richer than the bottom, as has been stated, it is an extremely unusual occurrence.

We are not disposed to criticise the estimates of the engineers concerning the supply of water and the facilities for working, but the prospectus leaves us in much doubt as to whether their sampling was sufficiently accurate to justify their estimates.

Sampling place ground under the most favorable circumstances is difficult enough, but when the gravel is covered with 3 or 4 ft. of soil, covered itself with the luxurious undergrowth of an equatorial climate, we may well doubt that the limited time allowed in such an examination could afford sufficient evidence to justify such enormous estimates. There are other evidences besides lack of time that lead us to believe these estimates too sanguine and unsafe.

As to the estimated cost of working—3 cents per cubic yard—it is true that certain California hydraulic mines, more particularly the North Bloomfield, when worked upon an extremely large scale, did work at a cost as low as this, but the cost of working at even the larger mines in this country averages fully 6 cents, and this is still too small a figure to count upon in Ecuador, where the native labor is confessedly poor, and that imported costly, and where many obstacles which are foreseen with difficulty are certain to occur. The estimated duty of the miners' inch—four cubic yards per diem—is too high, except in exceptionally favorable cases.

Taking the prospectus as a whole it appears to us as if sufficient time or experience had not been given to these examinations to prove, beyond doubt, all that has been claimed for the value of these gravels. There may be extensive deposits of auriferous gravel, but we have much doubt as to their average value. We are quite certain that they will not average $1.03 per cubic yard, nor will the profits approximate $7,000,000 annually, as has been claimed. Another feature of this transaction which does not appear upon its face is the purchase price of the property. We have understood that the first cost was about $100,000, including several commissions. Now the property is being offered at the rate of $2,000,000, the $100 shares selling at $20. Intending investors may avoid ultimate disappointment by looking closely into the points we have raised before parting with their money.

TUNNEL RIGHTS.—AN IMPORTANT MINING DECISION.

THE opinion handed down by Judge HALLETT in the United States Circuit Court at Denver, December 22d, 1892, in the cases of *The Rico-Aspen Cons. M. Co.* vs. *The Enterprise M. Co.*, published in the ENGINEERING AND MINING JOURNAL of December 31st, 1892, is an interesting and important exposition of a section of the United States mining law which has never before, so far as I now recall, received construction in the Federal courts.

In order to state the substance and grounds of this opinion, so far as they are susceptible of general application, I will endeavor to strip the suits in question of local features irrelevant to the principles laid down in the decision.

The complainants asserted title under lode locations to the mining ground in controversy. The respondents claimed the ground under a location crossing those of the complainants, and later in date. But this location was made upon a vein previously discovered in a tunnel, and was entitled, therefore, as the respondents contended, under Sec. 2323 of the Revised Statutes, to the date of the location of the tunnel.

Moreover, this cross location, made on the surface, with the maximum length of 1,500 ft. permitted by the law, was extended 54 ft. in one direction and 1,446 ft. in the other, from the point over the lode discovery in the tunnel, which was the basis of location, and the contention of the respondents was, that under Section 2323 they had the right to locate at any time during the prosecution of the tunnel work on any lode discovered in the tunnel, and not known before the tunnel was located, a claim 1,500 ft. long, whether this length were taken partly or wholly in one direction from the discovery point; and that such locations would have the full rights of ordinary locations upon contested surface discoveries bearing the date of the original tunnel location.

The questions decided by Judge HALLET in his opinion were two:

1. Was the cross-location of the respondents entitled to the benefit of the date of their tunnel location, or only to its own date? In the former case, it would be senior to the locations of the complainants (with one exception, which plays no part in these cases, being excluded under the second question). In the latter case, the respondents would have the junior title, that is, no title at all, except to the ground actually occupied by their tunnel.

2. If the earlier date legally belonged to the cross-location, could it be applied to the whole length thereof; or, if not, to what length?

In considering both these questions of law, it was assumed that all the locations involved had been properly made and maintained upon "lodes" such as the law contemplates, and at the rates asserted.

Before proceeding to state Judge HALLETT'S opinion, it will be well to quote the law and sketch the history of its construction heretofore.

Sec. 2323 *Rev. Stat.* (which was Sec. 4 of the Act of 1872) is as follows:

> Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins or lodes within 3,000 ft. from the face of such tunnel on the line thereof, not previously known to exist, discovered in such tunnel to the same extent as if discovered from the surface; and locations on the line of such tunnel of veins or lodes not appearing on the surface made by other parties after the commencement of the tunnel and while the same is being prosecuted with reasonable diligence shall be invalid; but failure to prosecute the work on the tunnel for six months shall be considered as an abandonment of the right to all undiscovered veins on the line of such tunnel.

The precise force of this section was never clear to the mining community. It was construed by some to mean that a tunnel location being once made the effect of it was to describe an area 3,000 ft. long (with the line of the tunnel as an axis) and 3,000 ft. wide (*i. e.*, 1,500 ft. on each side of that line), within which no valid locations could be made by any parties except the tunnel owners upon blind lodes crossing the tunnel line and not discovered prior to the tunnel location. For, it was said, the tunnel owners were entitled to possession "to the same extent as if discovered from the surface" of "all veins or lodes within 3,000 ft. from the face of the tunnel on the line thereof, not previously known to exist." Since the "extent" of a surface claim might be 1,500 ft. in length, it followed that 1,500 ft might be located upon a lode discovered in the tunnel, and since this 1,500 ft. might be taken, if desired, wholly on one side of the tunnel, it followed that the ground for 1,500 ft. on either side was subject to this prior right of the tunnel owners, at least until they had selected their 1,500 ft. of length upon any blind lode within it.

There is some reason to believe that the "tunnel section" of 1872 was, in fact, intended to have this extraordinary force. That was the period of the decadence of the "tunnel mania," especially in Colorado, concerning which, as United States Commissioner of Mining Statistics, I had written in 1870 ("Mining Statistics Report for 1870," printed 1871, page 322):

> "Innumerable sites for tunnel-mouths have been located along the cañons above and below Georgetown; many companies have been organized; and much money has been wasted in attempts to develop, by means of cross-tunnels, the 'wealth' of this, that or the other mountain. . . . The sale of tunnel-claims at exorbitant prices, as if they were in themselves valuable property, is reprehensible. A tunnel-claim may be a valuable auxiliary to the owners of the veins which can be drained by it. In and of itself it is the privilege of spending money to cut veins which may belong to other people. As far as blind lodes are concerned, the tunnel-claim does indeed give so many feet upon each vein discovered by the tunnel; but surface explorations would discover any more veins at the same cost than a tunnel will cut, because the surface-prospector can go where he likes to look for outcrops, while the tunnel must hold a single course. . . . The rights attached to a tunnel-claim, unaccompanied by surface ownership of known lodes to be pierced, are extremely visionary. The only tunnel right which would be really valuable our laws do not give. I mean the right to exact a royalty from mines benefited by the tunnel."

At the time these words (and much more to the same discouraging effect) were published, there was no special provision for peculiar tunnel rights in the United States law. Such criticisms, together with the unfortunate experience of many tunnel enterprises, made it impossible to obtain capital for undertakings of this class unless they could be better protected. And I have no doubt that the tunnel section (now Sec. 2323) was framed to give tunnel claimants a pre-emption right.

Soon after its passage, attempts were made in Colorado to secure under its provision large portions of newly opened mining districts. But the indignation of surface prospectors, thus deprived of valuable chances, was so great that the tunnel owners quailed before it, and the popular wrath was hastily soothed by a letter obtained from Commissioner DRUMMOND, of the General Land Office, September 20th, 1872, by Mr. (afterward Senator) CHAFFEE. I quote the essential portion of this letter

> The line of the tunnel is held to be the width thereof and no more, and that upon this line only is prospecting for blind lodes prohibited while the tunnel is in progress, and that the right is granted to the tunnel owners to 1,500 feet of each blind lode not previously known to exist which may be discovered in such tunnel; but that other parties are in no way debarred from prospecting for blind lodes or running tunnels so long as they keep without the line of the tunnel as herein defined, the said line being required by our regulations to be worked on the surface by stakes or monuments placed along the same from the face or point of commencement to the terminus of the tunnel line aforesaid.
>
> When a lode is struck or discovered for the first time by running a tunnel, the tunnel owners have the option of recording their claim of 1,500 feet all on one side of the point of discovery or intersection, or partly upon one and partly upon the other side thereof; but in no case can they record a claim so as to absorb the actual or constructive possession of other parties on a lode which had been discovered and claimed outside the line of the tunnel before the discovery thereof in the tunnel.

It will be seen that Mr. DRUMMOND ingeniously applied the words, "on the line thereof," in Sec. 2323, to the remote "veins or lodes," and not to the nearer "3,000 ft." The obvious meaning of the language is that the 3,000 ft. of the length of the tunnel-claim shall be measured on the line of the tunnel. But some way of escape from popular indignation was necessary, and the Commissioner obliged Mr. CHAFFEE by construing the section so that it gave to tunnel-owners practically no new protection whatever. Under his letter a party might spend millions of dollars in prosecuting a tunnel to cross-cut in a mountain the veins not discovered by anybody before the tunnel began; but anybody else, during its prosecution, might, by shafts or tunnels in the same field, find and acquire the lodes toward which he was running. In fact, the costly deep tunnel might prove only a means of free drainage for surface prospectors.

Mr. DRUMMOND'S construction was re-affirmed by Commissioner WILLIAMSON, October 12th, 1878, in a letter to DAVID HUNTER, of Deadwood, Dakota, in which he says:

> The line of such tunnel is held to be the width thereof and no more; and upon this line only is prospecting for blind lodes prohibited while the tunnel is in pro-

gress. . . Prospecting for lodes not previously known to exist is prohibited while work on the tunnel is being prospected with reasonable diligence. . . The tunnel is a means of discovery. When the lode is discovered, the tunnel-proprietor must proceed in locating his surface-ground, staking off the same, posting notice, recording, etc., as if the mine were discovered from the surface.

The usual looseness of the Land Office rulings is evident here. For the law does not "prohibit" *prospecting* at all. It only makes certain *locations* invalid; and if, as the Commissioner holds, the tunnel-owner has nothing until he has made a discovery, and must, after such discovery, proceed to get title by a surface location, then up to the date of such location by him the land is the property of the United States and free to exploration by any citizen, under Sec. 2319. But the "prohibition" thus read into the law amounts to nothing, after all, being confined to the mere width of the tunnel, not of the tunnel claim. And the ruling, like that of Commissioner DRUMMOND, destroys the last vestige of value in the tunnel claim by clearly making the title to discovered lodes date from their discovery, and not from the location of the tunnel. This renders the grant of "all veins or lodes with 3,000 ft.," etc., in Sec. 2323 a mockery, by confining it to those portions of such veins which are actually included in the width of the tunnel. The idea of rewarding a miner for driving a tunnel thousands of feet "with reasonable diligence," by granting him what he finds in the hole, and no more, is sufficiently absurd.

Yet this construction was followed substantially by the Supreme Court of Colorado in *Corning Tunnel Co.* v. *Pell* (4 Colo. 507), and the effect of all these interpretations has been to establish a general impression among mining communities that the "tunnel section" of the law is empty nonsense, and that tunnel owners stand practically where they did before it was passed. I might add that the Land Office has consistently refused to grant patents on tunnel locations or on lodes discovered in tunnels and not made the basis of surface locations. Thus Commissioner DRUMMOND wrote August 31st, 1877, to Surveyor General CAMPBELL, Denver, Colo. :

No patent can issue for a vein or lode without surface ground; and as the surface which overlies the apex of a vein or lode discovered in a tunnel can only be ascertained by sinking a shaft or by following a lode upon its dip from the point of discovery, a survey of a lode of this kind cannot be made until it has been definitely determined as above indicated what portion of the public domain overlies the apex of such lode.

Judge HALLETT declines to accept the principle, which narrows the grant of Sec. 2323 to so much of the veins or lodes discovered as may be in the tunnel itself. He rightly observes that this would deprive the section of all force and meaning. He holds that there is conferred a right of possession in veins not yet discovered, in which view he is warranted by the spirit of the section and by the letter of its final clause, defining the "abandonment" of this "right." And he is entirely justified in rejecting the notion that "such small segments of lodes and veins as may be in the bore of the tunnel" are all that the law was intended to give. He therefore decides (I think properly) that the respondents in the cases before him, having discovered a vein in their tunnel, could locate a surface claim to cover its apex, and thus perfect their right, which dated from the location of their tunnel, not the supplementary location of their lode.

This answers the first of the two questions involved. The second question is, How long may be the lode location thus made by the tunnel owners? Under this head Judge HALLETT points out that Congress has never fixed the dimensions of mining claims. It has set limits which they may not exceed, and it has fixed a minimum of width, less than which may not be forced upon the miner by local regulations (though there is nothing to prevent him from taking less if he chooses). But within the range of the United States law, the dimensions of claims may be regulated by local laws or rules.

Now there is a law in Colorado—an old territorial enactment of 1861, antedating even the United States law of 1866, and hence recognized in that act, never repealed—in Judge HALLETT'S opinion, not inconsistent with the present United States law, and hence applicable to this case. It gives to a tunnel-locator "250 ft. each way from the tunnel on all lodes discovered in the tunnel." A similar statute of Montana (1887) was recognized and enforced by the Montana Supreme Court in *Hope M. Co.* v. *Brown* (11 Mont. 470).

Judge HALLETT says:

"The words of Sec. 2323, 'to the same extent as if discovered from the surface,' mean only that the location shall be as good as upon a discovery upon the surface."

His argument is that, in either case, the length of the claim, while it may not exceed 1,500 ft., may be as much less than that as the State or other local regulations have determined. Applying these principles, he concludes that the respondents, on proving the facts alleged, are entitled to 250 ft. of the 1,446 which they claim in one direction (and of course to the whole of the 54 ft. in the other direction); that this part of their location is valid as of the date of their original tunnel location, but that the rest is void because in excess of the length granted by the Colorado statute.

This decision seems to me reasonable, though not wholly free from doubt. Granting that the dimensions of mining locations may be fixed by local laws within certain limits, may it not be argued that the phrase "to the same extent" in Sec. 2323 operates to forbid any distinction between veins discovered in tunnels and those discovered on the surface? The Colorado law permits locations on veins discovered from the surface to be 1,500 ft. long; can it, in the face of this section, limit the force of tunnel discoveries to "250 ft. each way"? Must it not recognize possession in them "to the same extent"?

The fact is that this old Colorado statute antedates the whole present system of mining titles. It belongs to a time when a mining claim did not involve the ownership of land at all; and it can hardly be fitted into the theory of the U. S. act of 1872, now in force.

In view of these difficulties, I am not quite ready to adopt Judge HALLETT'S view, though it is certainly acute and plausible. R. W. R.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.

Poor's Hand Book of Investment Securities. Published by H. V. & H. W. Poor; New York, 1893. Pages, 986. Illustrated with colored maps. Price, $3.50.

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 San Juan Placer Boom.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Since the San Juan gold excitement was supposed to be greatest along our proposed line, the A. & P., I naturally became interested. I had no thought of visiting the San Juan district, as it is over 200 miles from our nearest point, Winslow, off our road with about 60 miles without water (and this is the most unfavorable time of the year). Although the papers, especially those of Denver, have contained a great amount of advertisement and general loose talk indulged in by mining camp boomers, I was not prepared to find that on the ground there is next to nothing in the whole thing. Holbrook, Winslow and Flagstaff have not been depopulated, railroad officials have not resigned, no one has seen any gold from that country. A good many men have gone out and located a claim; one little company calling itself the San Juan Gold Company (they are mostly poor men) has 40 odd claims and millsite. Another, the Arizona & Utah Company, and made up chiefly of men of means, is supposed to have two or three times as many claims.

The gold, if there is any, is supposed to be in the gravel under the waters of the San Juan River, and will present therefore a not unlikely complicated question of hydraulic mining with large expenditures for a long time, and uncertain results. It is therefore no place for a poor man, except as a day laborer when the work begins. Just now the only work is getting a wagon trail down into the canyon, which is practically the continuation of that of the Colorado, not far away. It seems that a certain Williams, an Indian trader, has lived long on the lower San Juan and believed in the existence of gold there. It is said not to be difficult to get the color, but no metal. The "$2,800 man" seems to have been a pure Denver invention.

If what I have written will help to save the money, strength and vitality of that hopeful, confiding, venturesome, hospitable crank, the Rocky Mountain Prospector, I shall be satisfied. T. B. BROOKS.

NEEDLES, Cal., Jan. 2, 1893.

The Action of Cyanide of Potassium on Sulphide Gold Ores.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Certain recently published statements and experiments might lead mine owners and managers to conclude that cyanide cannot, under any circumstances, be successfully applied to concentrated sulphurets, or to what are commonly known as heavily sulphuretted ores, and thus discourage experimental investigation, which, when properly conducted, might give valuable comparative results. As a matter of fact, considerable quantities of such material have been successfully treated in California.

Regarding experiments, they are always interesting, but they must not only be conducted with care, but also with thoroughness. Some two years' experience has taught me that to simply mix a small quantity of ore with a small quantity of cyanide solution, and then to agitate occasionally for three or four days, may give results which are absolutely worthless, both as regards the extraction of the precious metals and the consumption of potassium cyanide. This is especially true of the class of ore referred to above.

The consumption of available potassium cyanide, may, for practical purposes, be divided into avoidable and unavoidable decomposition, and each of these factors will vary with the chemical composition of the ore, the strength of the solution, time of contact and method of treatment.

I was recently called upon to make some tests on a heavily sulphuretted ore, and was told that previous experiments had shown that good extraction could only be obtained with a 2%, or stronger, solution. Assuming for the time being that this was correct, a series of decomposition tests was made, using a 2% solution. The raw ore in 24 hours decomposed available cyanide at the rate of 12 pounds per ton. After all known precautions and been taken, this loss was reduced to 3 pounds per 24 hours. As it was necessary to treat the ore from seven to ten days, even this decomposition would have made the process a comparative failure.

A series of extraction tests was then carried through which proved that a quarter of one per cent. solution when reinforced each day gave as good results as the stronger, and with a decomposition of from five to seven pounds of cyanide per ton. The trouble had been that in the previous tests with weak solutions no precautions had heen taken to prevent decomposition, and the solutions had not been reinforced. As the ore con-

tained acid salts of iron and fine copper sulphides, both of which decompose potassium cyanide, the probability is that the weak solutions were rendered inert after a few hours contact with the ore.

It may not be out of place here, however, to state that parties intending to investigate this process should be very cautious about the statements of interested parties whose extravagant claims have not been in the least substantiated as yet. C. W. MERRILL.

SAN FRANCISCO, Jan. 3, 1893.

Pyritic Smelting.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have been around to some of the best conducted reduction works in this country looking up smelting processes suitable for the smelter in this place, which several of us were thinking of leasing, so as to treat lead ores from the Cœur d'Alene region. The trips I have taken have been very instructive. I can see plainly that the pyritic smelters are ahead of the lead smelters, for one thing, my experience in the latter showing no room for doubt. The three principal plants that I have visited all smelt successfully ores that no lead smelter could handle profitably in any way. At Deadwood they run on ores that are nearly pure quartz, using only 25 cents' worth of flux to a ton of ore. At Leadville Mr. Austin burns his sulphurets instead of coke for fuel. At Mineral, Idaho, Biddle & Lang smelt twelve tons of ore with one ton of fuel and make the richest bullion in America, sometimes going nearly $1,000 a ton.

Our lead smelters are advanced people, but they cannot do this. It seems to me that all this has grown up within four or five years, and nothing is said about it. Nearly every lead furnace makes slags, going over two or three ounces of silver per ton (but claiming less), while the pyritic smelters' slags always go less. At Leadville they ran a whole dump of lead slag through a matting furnace and reduced the contents from 5 to 1½ oz. and made it pay, which shows conclusively which is the best process. The idea of re-smelting lead slags made by our best works and making a profit out of them is strange and almost ridiculous. The Omaha Grant works boast that their dumps carry only an ounce and a half of silver to the ton, after being smelted again and again (for nothing is thrown away without going at least twice through the furnaces). But at Deadwood the slag never carries off a dollar, they say, and at Mineral the loss is almost as small, while the lead furnaces use up a great deal of expensive iron and limestone flux it costing sometimes as much as a hundred dollars a day for flux. The D D smelter uses only limestone and the La Plata works only sulphurets and Lang at Mineral gets along without any flux.

The principal fault I find with this Northwestern country for smelting is the lack of ore. Neither here nor at Portland or Tacoma is there enough ore—particularly dry—to run one small furnace on. There is no good prospect of any either, for the price of silver is inducing a good many mines to stop and discharge men. Possibly the British Columbia mines, of which there are a good many being opened, will give us a supply of ore, especially if the duty is taken off lead, which Congress ought to do. Otherwise there is a poor outlook for smelting in this State.

SPOKANE FALLS, Dec. 19, 1892. T. D. MANVEL.

[We believe that in the foregoing argument in favor of pyritic smelting Mr. Manvel has not considered the question broadly but has taken certain favorable instances as covering the entire field, erroneously coming to the conclusion that pyritic smelting is invariably preferable to the lead reduction process. The 25 cents a ton he instances as the cost of flux at Deadwood is 25 cents more than the cost at the Eureka, Nevada lead smelters, when a self-fluxing mixture of ores was used. It is true that the concentration of precious metal in iron matte is usually carried further than in lead smelting, but the fact must be taken into consideration that lead is a valuable and marketable by-product, whereas the iron sulphide of the matte is valueless and an excess of it adds not only to the freight charges to the refining works, but to the cost of refining. Besides, in lead smelting, over-concentration adds to the losses in the slags.

To the statement that "nearly every lead furnace makes slags giving over two to three ounces of silver per ton," our great lead smelters will object seriously, and can furnish proof that such slags are the rare exception, and proofs in themselves of careless work. The common run of slags nowadays from a well conducted furnace, with an assortment of ores to make proper charges, will carry less than three-quarters of an ounce per ton. In some instances, however, it is more profitable to allow a greater loss rather than to purchase flux.

The statement that certain slags at Leadville carrying 5½ oz. of silver per ton have been run through a furnace using the pyritic or matte-concentration process with profit is undoubtedly true, but it must not be forgotten that these slags were made at a very early stage of the development of lead smelting and that they could have been added to lead furnace charges with equal profit and in addition helped to flux the ores had they not carried a high percentage of zinc.

We believe that Mr. Manvel has come to his conclusions rather prematurely and take this opportunity of asking those engineers who have had experience with both or either to give their opinions on the comparative merits of these processes. Since comparatively little exact information is attainable at present concerning the matte concentration process and its progress, we shall be pleased to receive any contributions on this subject.—ED. E. & M. J.]

New Canadian Iron Fields.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Mr. W. W. Russell, in a letter published in the ENGINEERING AND MINING JOURNAL of December 31st, gives an analysis, or what purports to be an analysis, of Gunflint Lake ore, as containing 61·08% metallic iron and 19·65% insoluble residue. I should be loth to believe that the analyst of the Canadian Geological Survey was unable to determine these two constituents with accuracy, but to bear out his figures the Gunflint Lake ore must contain metallic iron. If the figure for metallic iron is correct and the ore be magnetite, it must contain 84·2% magnetic oxide and 15·7% other ingredients, while if it be hematite it must have 87·2% ferric oxide and 12·8% other elements.

The figures are evidently erroneous, and if not a typographical error they reflect little credit on the analyst. DAVID H. BROWNE,

CLEVELAND, O., Jan. 7, 1893. Chemist Canadian Copper Company.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Absence from my office is my excuse for not replying earlier to the criticism upon my letter made by Mr. W. W. Russell, Port Arthur, Ont.

I feel that he is supersensitive; for those not interested in the districts named the description was sufficient, while to those interested the three points named would be known, and, if not, reference to maps of the district would give them their geographical position.

Further, I did not hang out a danger signal north of the boundary line between Canada and the United States, but distributed my titanic favors both sides of the line, by saying that they were confined to ores lying in troughs of the Gabbro overthrow. Titanic ores are not unknown in Minnesota, and I do not think my critic will venture to say that the ore bearing series of rocks found in Minnesota stop at the boundary line, and as like conditions produce like results it is quite possible that some titaniferous ores will be found even if the specimens analyzed and quoted did not show it.

I quote from *Bulletin* No. 6, "Iron Ores of Minnesota," page 123: "*The Gabbro titanic-iron group.* There is certainly no iron ore in Minnesota which is known to exist in larger amounts than this. The explorer in the iron regions is continually finding this ore in immense masses. . . . The belt that carries the ore is wide and it extends from Duluth to Pigeon Point. . . ." Further, on page 125, we find: "The Gabbro, with its capriciously distributed titanic masses, thereupon being of about the same age as the non-titanic ore masses of the Pewabic quartzite, and having been pursed over the quartzite, and having embraced large disturbed portions of the Pewabic quartzite in its own mass, will be found to present some confusion and variety as to the quantity of the magnetic ore which it may hold." Such is the fact. It will not be safe to infer that because a magnetic ore body is contained within the general area of the Gabbro it is therefore to be condemned as titanic, although that would generally be correct. It may be non-titanic and derived from the Pewabic quartzite or from some other part of the Animikie, and it ought to be inspected carefully by one familiar with the distinctions between titanic and non-titanic ores, and as a final test it should be examined chemically for titanium. RICHARD A. PARKER.

MARQUETTE, Mich., Jan. 7, 1893.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Allow me a little space for the correction of a few items in the article written by Mr. R. A. Parker, which appeared in the ENGINEERING AND MINING JOURNAL of December 10th, 1892, entitled "New Canadian Iron Fields." Mr. Parker speaks of only three iron fields, while he could have mentioned several others of more importance,—for instance, the "Matarvin," a range of over 24 miles in length, and extending through a synclinal of considerable width. I would have overlooked this as a *lapsus calami*, if there had not been several more such omissions.

He speaks then in detail about the occurrence of iron around Gunflint Lake, but makes so little distinction between the geological conditions south and those north of the lake that everyone not familiar with the country thinks the occurrence of iron north of the lake identical with the ore south on the Mesaba range, and as titaniferous this is a mistake. Canada borders only on the north side of the lake, while the United States (Minnesota) is on the south, west and east sides.

The geological formation at the north end consists of Huronian schists (Keewatin), with almost vertical dip, overlaid in many places by the flat lying basal beds of the Animikie slates capped by trap overflows (Cambrian rocks), while at the west side flat lying bands of chert (lowest Cambrian) and at the northwest at Magnetic Bay Laureatian gneiss are to be seen. There is no gabbro around the lake, and also not in the neighborhood of Mr. Paulson's mine, which is about five miles west of the lake (in Minnesota). The iron is here not flat lying but dips 45° to the south between chloritic schist and quarzite. And if Mr. Parker attributes the gabbro as an indication of the existence of titanium then we have no titaniferous iron in this country, and, in fact, in all the five years of my living here I found only once in an iron analysis "a good trace" of titanium, notwithstanding that I have made several hundreds of such analyses during that time.

Mr. Parker asks then, "Of what good is all this iron?" As soon as our iron fields are opened and mines started he will see that we can compete with any mine in Minnesota so long as they can afford to pay as high as 65c. royalty, and as long as we are able to pay 75c. import duty into the United States, we can mine the ore cheaper than most of the mines on the other side, and have a 120 miles shorter route to Lake Erie.

In regard to the remarks about fuel for an iron smelter in Port Arthur, Mr. Parker may excuse me when I say that he was not very well informed while he was there. I invite him to take a trip with me through this country; he would be astonished at the growth of pine north of the railroads mentioned by him. He forgets also that there are several hundred miles of lake shore tributary to our harbor, from which we can carry charcoal cheaper than from any place near the railways. Quite a number of years will pass by before we see all the timber gone, and, if so, any company could then well afford to change the furnaces to a coke iron smelter. I cannot see why birch, tamarack or pine charcoal should not carry the burden in an 80 or 100-ton furnace. I know positively that the Black River Falls furnace does not burn any charcoal from oak or beech, but mostly from softwood, and this furnace has a capacity of 80 tons daily.

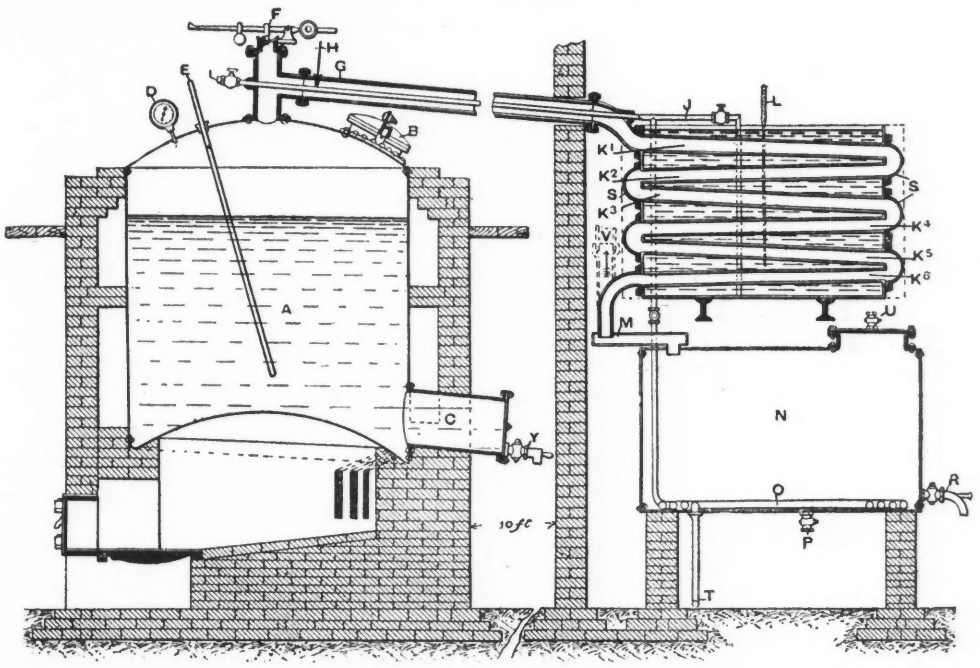
The same is the case with the Ashland furnace, whose output is 120 tons a day. Surely Mr. Parker will not count birch charcoal among the soft, even not tamarack, which belongs to the "half-hard," and makes one of the densest coals. Of course this coal is not so well adapted to a low furnace as it is to a furnace of wider and higher dimensions, because the heat is in here not so much concentrated and is more gradually warmed, which causes this coal to lose its tendency to decrepitate when fresh and coming suddenly in contact with great heat.

PORT ARTHUR, Ont., Jan. 3, 1893. F. HILLE.

THE MANUFACTURE OF PURE NAPHTHALENE.

Naphthalene has of late years become a very important base for the manufacture of dye-stuffs, and at the present time the naphthol dyes rival the earlier produced aniline dyes. Naphthalene is also used largely for the enrichment of illuminating gas. A comparatively crude form of naphthalene serves well enough for the latter use, but when it is to be used for the manufacture of dye-stuffs, it is necessary to obtain the very purest quality possible. It may be interesting here to give some account of the latest and most improved purifying process, as described in a recent issue of London "Industries."

About 5 tons of crude naphthalene obtained from the fractional distillation of coal tar is placed in the still A together with 30 lbs. of 70% caustic soda, which has previously been made into a solution of strength 70° Twaddell. The still is 7 ft. in diameter and 7 ft. deep. The manhole cover is then closed and the fire applied. At first and until the temperature rises to 210°C., water vapor and oily matters come off. When these have finished, the heat is raised to 235° C., at which temperature the naphthalene vapor comes off. The vapors pass off through the pipe G, and go to the condensing coil K. Here the naphthalene is condensed to the form of a hot liquid, and in that state runs down the shoot M, in a cylindrical receiver N. Before the naphthalene commences to come off, and while the watery vapor and oily matters are escaping, the receiver N is not in its place. This tank is fitted with a steampipe O to keep the contents liquid. Before describing the further treatment of the partially purified naphthalene thus obtained, it is necessary to point out some of the details of the still A and coil K. The still has a dished bottom inclining toward the mud hole C. There is an emptying tap Y, a pressure gauge D, a pocket to carry a thermometer E, a safety valve F, and a thermometer H in the pipe G. There is a steam pipe I J placed down the center of G to prevent condensation; this is rendered necessary because the still and condenser have to be placed in separate buildings to minimize risk from fire.



STILL FOR THE MANUFACTURE OF PURE NAP THALENE.

In the next part of the process the liquid naphthalene in N is thickened to the consistency of mortar by the admixture of ground naphthalene residues from previous operations. The paste is transferred to strong bags and pressed while still hot in a hydraulic press. The pressure is as great as 3 tons per sq. in., and it is sufficient to express all oily matters. These oily matters are collected and used as liquid fuel. The naphthalene is left as a hard, grayish cake, which, when struck, emits a ringing sound.

This "pressed material," as it is called, is charged into another still of similar construction to the first, and about a hundred weight of best thirds commercial sulphur is added. The mixture is distilled as before and under the same conditions. The first runnings are kept separate and are afterward used in working up succeeding tankfuls of liquid. naphthalene. A considerable quantity of sulphuretted hydrogen gas is evolved in this distillation, and is drawn off at the end of the coil K, through the pipe shown in dotted lines V into a box fitted with wire gauze baffles to prevent the naphthalene from following the gas. From this box the gas passes to the chimney or to an oxide of iron absorber. The naphthalene collects in a receiver, and it is kept liquid for a period of 12 to 24 hours. Then it is forced by compressed air into a third still of precisely the same construction as the two previous ones. Here it is mixed with 50 lbs. of 70% caustic soda in the form of a 70° Twaddell solution. This mixture is distilled as before. The caustic soda in this distillation reacts at a temperature less than 160° C.; so in order to prevent the reaction from reversing itself at a higher temperature, the fire is drawn as soon as the temperature reaches 165° C., the contents allowed to settle for an hour and the caustic soda and impurities drawn off at Y. Then the distillation is again proceeded with. The finished naphthalene is run off into 100lb. galvanized iron cans and allowed to solidify, after which the blocks are broken into small pieces. The naphthalene is of the highest purity, and its melting point is 79·2°-79·5° C., free from oily matters and suitable for the preparation of naphthols and naphthylamines.

THE GOLD MINES OF SADO, JAPAN.

Written for the Engineering and Mining Journal by R. Kanda, Mining Engineer.

The gold mines of Sado are situated in the northwestern portion of the island of that name, which lies in the Sea of Japan, 50 miles north of Niigata. The mines and reduction works are close to the coast, and near the town of Aikawa, a city of 16,000 inhabitants, the greater portion of whom are dependent upon the mining industry for their livelihood.

These mines have been worked uninterruptedly for about three hundred years; the total production, since the property came into the hands of the government, in 1890, being estimated at 104,300,000 yen—the yen being nearly equal to the dollar. They were worked in a primitive manner, with the occasional occurrence of bonanzas, to within 20 years, when systematic work and modern machinery were introduced under the direction of American engineers.

In the district there are three important parallel lodes, striking east and west, in which ores containing sulphides of silver, metallic gold and copper pyrites are found in some quantity. These lodes, which average about 15 ft. in thickness, although occasionally they widen to a maximum of 80 ft., have been superficially traced for 7,000 ft. along their strike. In this distance three faults occur at right angles to the strike.

The lodes are worked to a depth of 500 ft. without any diminution being noticed in the strength of the vein, by means of two shafts, Odate and Tokata, and a tunnel level, Ogivi, independent of one another, but connected by the underground works. The main adit, begun in 1690, at a point near the coast, has attained a length of 12,000 ft. From the Tokato shaft, which was opened recently under the writer's supervision, is produced the greater portion of the present supply of ore.

This shaft, which is 900 ft. deep, has a double hoist capable of raising 100 tons in ten hours. Knowles pumps and those of other manufactures are used in abundance, as the mine is wet. Similar machinery at the Odate shaft is to be replaced by other of greater capacity, as sinking and development is going on below the 950-ft. level. The Ogivi level is driven 1,300 ft. to intersect the lode, and then runs nearly a mile along its strike.

This lode is more barren than the others. As mineralized bodies are of comparative infrequency, but little work has been done in depth. It is in this vein that copper pyrites are found.

The output now is about 5,000 tons per month, which are assorted by hand to about 4,000 tons, of an average value of $7 to $8 per ton. The low grade ore, which contains fine gold, is treated by direct amalgamation in a 30-stamp gold mill of a monthly capacity of 1,800 tons.

The tailings are concentrated on six Duncan concentrators, and the product from these is treated by pan-amalgamation. The capacity of this mill is now being doubled. This is also a 25-stamp pan-amalgamation mill, with 14 pans and 7 settlers, with a capacity of 800 tons monthly. To treat the ores not suitable for either of the the above mills, there is a concentrating plant, in one portion of which the low grade ores containing sulphides of silver as well as gold are crushed in Huntington mills, in which a portion of the gold is amalgamated, while the tailings flow to Frue vanners. Eight hundred tons a month are treated by this process. In this mill there is also a concentrating plant, consisting of rolls, trommels and Hungarian jigs. The tailings from the jigs are crushed in Huntington mills and are dressed after classifying in three series of Spitzkasten, on Frue vanners. All the concentrates are smelted in a 36-in. American water-jacket furnace. The crude copper or lead produced in this furnace is shipped to Osaka to be refined, as is all the bullion produced. A large lixiviation plant, with a capacity of 100 tons daily, is now being erected to treat the tailings.

THE GOLD FIELDS AT PLAYA DE ORO, ECUADOR

Recent surveys and examinations of some old Spanish grants in the Province of Esmeraldas, of Ecuador, S. A., reveal the existence there of auriferous gravel beds, said to be of unusual richness, under conditions exceptionally favorable for hydraulic mining. The properties are known as the Playa de Oro, the Uimbi and the Cachavi. The Playa de Oro property forms a parallelogram three and one-half miles wide in an easterly and westerly direction, and eight and one-half miles long north and south, and contains about 20,000 acres. These are reached from the ports Limones and Bolivar. These are situated at the mouth of the Santiago River and are perfectly safe for vessels drawing fifteen feet of water. The river is navigable for vessels drawing nine or ten feet for eighteen miles up to Borbon, at the junction of the Santiago and Cayapas Rivers, and the tide extends to the foot of the rapids of "Como Hacemos," one and a half miles below the town of Concepcion, which is eighteen miles from the town of Borbon, or thirty-six miles from the Pacific Ocean. Steamers drawing six to eight feet of water can come as far as the rapids. Canoes of five tons capacity are at present used between Borbon and Concepcion; between the latter place and Playa de Oro, a distance of eleven miles, smaller canoes are employed, making in all only forty-seven miles of river navigation between the Pacific and the company's property. It is proposed, however, to construct a road from Gage City, on the Santiago River, about six miles below Concepcion, direct to the town of Playa de Oro. Freight will then be shipped in schooners drawing eight feet, from San Francisco or Panama to Gage City, and carted to Playa de Oro, necessitating only one handling and fourteen miles of cartage from points of shipment to destination.

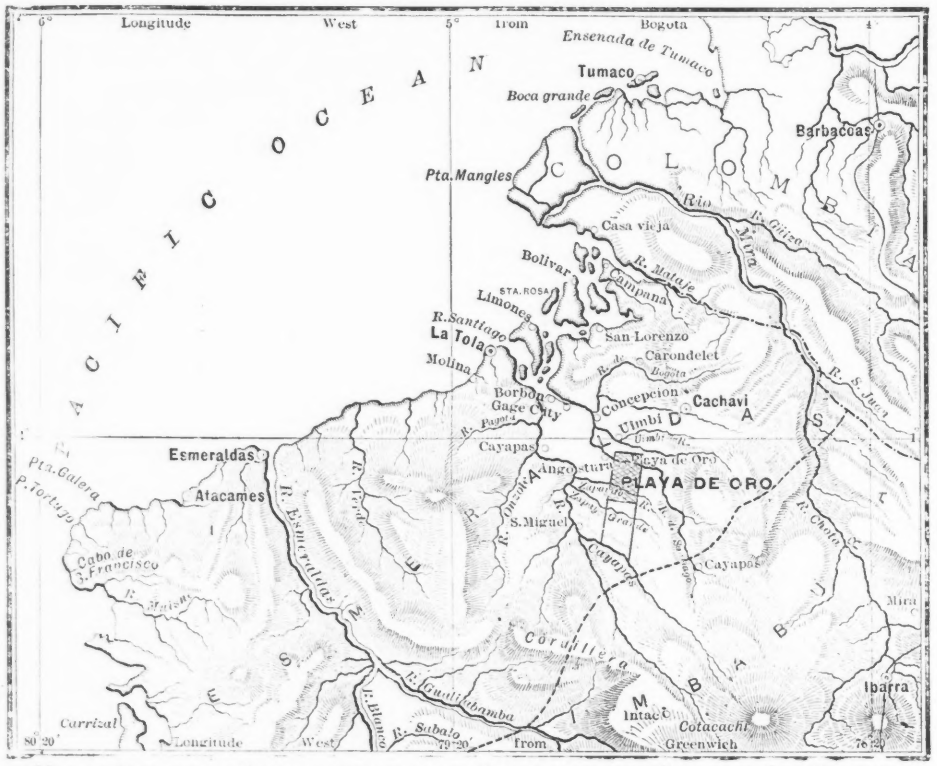
The northerly portion of the property, along both sides and contiguous to the Santiago River for about one and a half miles, was carefully examined and mapped in 1891, by Mr. Clarence E. Dougherty, civil and mining engineer, which examination was verified during the same year by Mr. Frank S. Ketchum, mining engineer, and in 1892 by Mr. Russell F. Lord, civil and mining engineer, and from their reports and maps the following facts are taken. The gravel beds are exposed everywhere along the banks of the river; in the numerous cuts made by the natives in their efforts at mining, which is their only means of subsistence; along the gulches, and everywhere that the top soil, which averages about four feet in thickness, has been removed. The auriferous gravel beds average about fifty feet in thickness, and only in one place was the bed found but fifteen feet thick, while in many places it was as much as eighty feet. The gravel contains a slight amount of clay, which disintegrates readily in washing, and in no way interferes with the sluicing process. No large bowlders or cemented gravel are encountered.

A cut in the "Medio Mundo" bank, near the town of Playa de Oro, has been worked back some three hundred yards from the river through gravel forty-five feet thick, exposing the bed-rock for that distance, which shows a good grade for sluices and dumps, its elevation being fifty feet above the river. A measured cubic yard of gravel taken ten feet above bed-rock, and washed by the natives in their crude way, yielded 97½ cents of gold; a cubic yard taken forty-five feet above bed-rock, gave $1.67. In both these cases considerable fine gold was undoubtedly lost in the washing. The last cut on the north side of the river is some three miles east of Playa de Oro; here the bed-rock is found at an elevation of from 100 to 120 feet above the river; the gravel is seventy feet thick, and samples from this cut gave 83½ cents per cubic yard. The high bed-rock continues through the property on both sides of the river. An average of all the samples taken from the property gave $1.03 per cubic yard.

The main object of Mr. Lord's first visit to the property was to select a point at which to commence operations, and to estimate for the necessary plant. He states that the Santiago River is about 500 feet in width at the town of Playa de Oro, and averages 300,000 miners' inches of water of 2,160 cubic feet each in twenty-four hours, or 7,500 cubic feet per second at the average stage of water.

Here are extraordinary facilities for successful placer mining—an immense amount of rich gravel easily washed; a soft bed-rock of marine formation; high dumps, and practically an unlimited supply of water. Mr. Lord's explorations also developed unknown falls in a branch of the Santiago, a short distance above El Salto, having an elevation of over 700 feet above sea level. By this discovery, the elevation desired for starting a canal, giving sufficient head for water, was obtained some three miles nearer to the gravel beds of Playa de Oro than had been previously estimated.

The rushing waters of this branch, named by him Rio Francklyn, empty into the Santiago at El Salto. A canal started from a point above Lord's Falls would carry the water around the mountain to Quebrada Aguita on the Santiago, with a length of five-eighths of a mile, but the grade of the Rio Francklyn is so steep that the water can be carried across the ridge to a point 100 feet higher, or the summit of the mountain, above the same Quebrada, by a canal less than a mile in length. The elevation of the river at Santos Quinones, two and one-half miles distant, is 350 feet, and the bed-rock is about 120 feet above the river, making our head of water 330 feet above bed-rock in a distance of two and one-half miles. Playa de Oro is 250 feet above sea level, and the bed-rock at Medio Mundo is about 300 feet. Mr. Lord suggests that the canal from the Rio Francklyn should have a capacity of 6,000 miners' inches of 2,160 cubic feet per twenty-four hours, or 97,000,000 gallons. The grade should be ten feet per mile. As stated before, this canal would lead the water to the summit of the ridge north of Rio Francklyn, and the water would be utilized to wash the gravel on the northerly bank, and back from the Santiago River. It is estimated that with a four per cent. grade for sluices, one miner's inch of water will wash four yards of gravel in twenty-four hours; 6,000 miners' inches, at four cubic yards each, will wash 24,000 cubic yards in twenty-four hours.



MAP OF PORTION OF ECUADOR, SHOWING THE LOCATION OF THE PLAYA DE ORO PLACERS.

The climate of this part of Ecuador is remarkably healthy and agreeable; the thermometer ranges from seventy-two to eighty-two degrees Fahr., rarely exceeding the latter figure. Th atmosphere is always fresh and never oppressive, owing to the Antarctic current, the proximity of the Andes Mountains and the large and rapid rivers flowing down from them. The water in the rivers is always good, clear and cold. Hardly any sickness is known among the inhabitants.

The natives are a healthy, quiet and peaceable, but rather lazy, people. There are about 200 of them on the property. A large number of good laborers for mining purposes can be had in the vicinity, or Jamaica negroes could be employed, of whom there are now a great many on the Pacific Coast who have been out of employment since the closing of work at the Panama Canal, and are anxious to obtain employment.

The tariff and mining laws of Ecuador have recently been amended so as to admit all mining machinery and supplies free of duty, and to exempt mining property from all municipal and fiscal taxation, also prohibiting any tax or duty on the product of the mines for a period of twenty-five years.*

Mr. Russell F. Lord has been engaged as Chief Engineer of the Playa de Oro Co.; he sailed from New York with Mr. Mark B. Kerr last November, to take charge of the mining operations, for which the

* See Engineering and Mining Journal, Dec. 31st, 1892, page 649.

plant, consisting of 600 tons of iron pipe and all necessary appliances for hydraulic mining, has already been secured, costing over $100,000; it was manufactured by Messrs. Francis Smith & Co., and other well known firms at San Francisco. A large staff of surveyors and skilled miners have also been sent to the property. Considering the present demand for new gold mines, this property is attracting considerable interest, and it is to be hoped that the favorable conclusions arrived at by the examining engineers will be confirmed by future operations.

THE MINES OF THE BLACK HILLS IN 1892.

The past year has been one of the most prosperous in the history of the Black Hills, and that district is now one of the most active in the United States. Owing to the low price of silver considerable attention has been given to the gold deposits of that region, and large purchases have been made by both existing companies and new ones. The total production of the Hills in 1892 is estimated at $5.376.000, not including large quantities of exported ores. This sum was divided among the following companies.

Homestake	$3,000,000
Golden Reward Works	660,000
Consolated Works	560,000
Welcome Works	400 000
Deadwood & Delaware Smelter	300,000
J. R. Mine	48 000
Ruth Lardner Mill	60,000
Columbia Mill	60.000
Wilson Mill	48,000

While this estimate, which is taken, as is much of the information contained herein, from the columns of the "Black Hills Times," may be considered somewhat exaggerated as to the production of several of the custom reduction works, the fact remains that the production last year was the largest in the history of the Hills. Nor was this large amount produced with one profit, for a number of the companies declared dividends as follows:

Homestake	$150,000
Deadwood Terra	100,000
Caledonia	50,000
Buxton	20,000
Golden Reward	60,000
Monitor	22,000
	$402,000

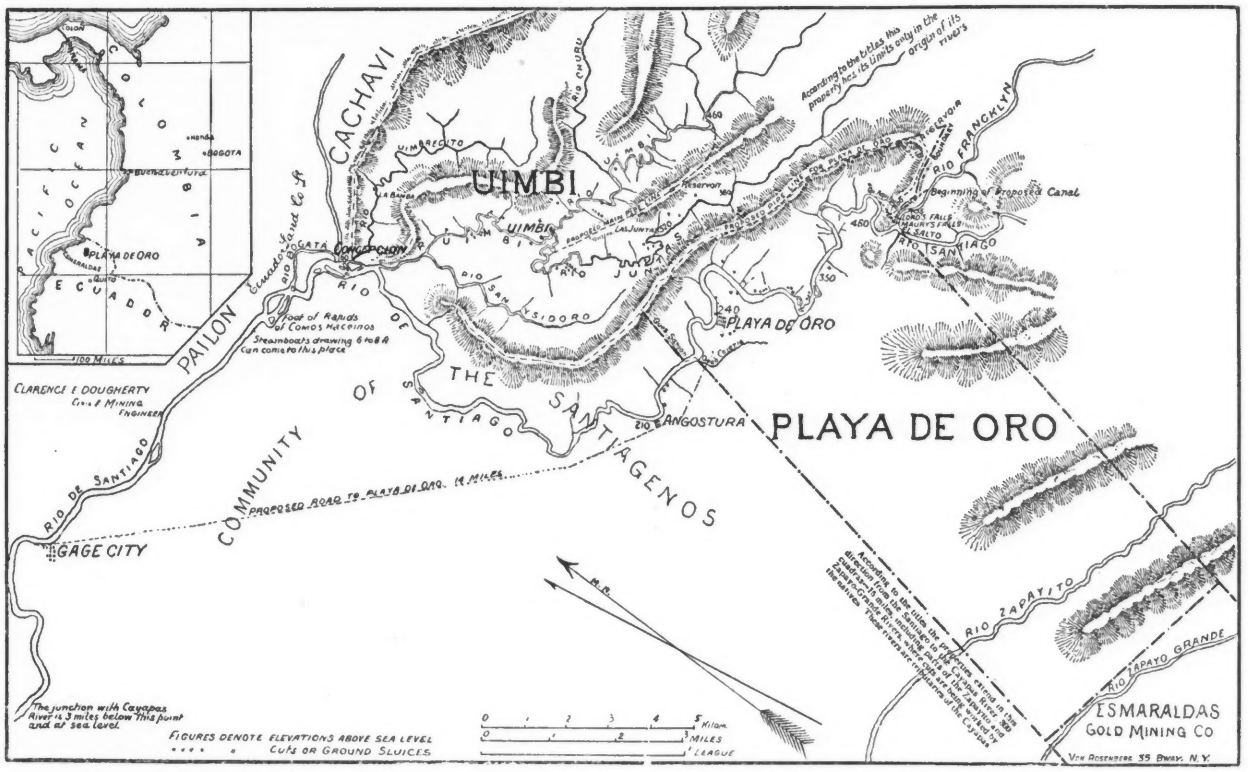
The following information concerning the more important new properties is not without interest:

Golden Reward Mining Company.—This company was organized in 1887 to work mines on Bald Mountain and in Ruby Basin. The ores of these veins are refractory, and it was some time before a process was decided upon, but finally a reduction plant was erected to use the lixiviation process of R. D. Clark, superintendent of the Cortez Mill, Nevada. Shortly after this plant was completed it burned down, but not before the process was demonstrated to be a failure. Although this plant had cost $200,000 the directors of the company were not disheartened and a chlorination plant was erected by W. B. McPherson; the first results were rather discouraging and it was not until John E. Rothwell, who had much experience in treating the refractory ores of Deloro, Canada, took charge that the process could be termed an unqualified sucess. The plant, the initial capacity of which was 12 tons daily, was then enlarged to 30 tons, and later to 100 tons, which is the present amount treated daily. It is stated that this company proposes to increase its capacity still further by the erection of two plants in order to treat the full output possible from its mines. The cost of treating a ton of ore is said to be $9 a ton, including $3 a ton for mining.

The main mine belonging to this company is the Golden Reward. Large quantities of ore are said to be in sight here, a portion of which toward the south end of the property is said to be unfit for the chlorination process owing to the high percentage of silver which it carries. Five years' supply is stated to be in sight. Below the present workings there is said to be a second contact, the existence of which has been proved by the diamond drill. The Tornado mine has yielded 3,500 tons of ore during the past year, and is said to contain large quantities of decomposed and sulphide ores; 25 tons of ore is being shipped daily. The vein in the Double Standard is the same as in the Tornado. This mine has yielded 5,000 tons of ore during the past year. The Boscobel is west of the Double Standard, and is on the south end of the latter's ore body. Two shoots of non-oxidized ore are being worked here. The Tony and Lundt properties are being prospected. The ores here run high in silver. The Big Bonanza is also being developed. The mine at present is yielding 30 tons daily with a good prospect of increase in the future.

Deadwood and Delaware Smelter.—This plant was built to use the matte concentration smelting process, the details of which were devised by Dr. Carpenter, then of the School of Mines at Rapid City and now superintendent of the works.

The equipment of the plant consists of four stacks, three matte and one lead stack, the dimensions of which are as follows: One 36 ins. in diameter, one 84×36 ins., one 108×36 ins. and one 120×42 ins. in diameter. One roasting furnace 18×75 ft., one Welsh reverberatory smelting furnace with a 9×14 ft. hearth, and three larger cupelling furnaces. The plant employs 50 men when running on half capacity,



MAP OF PORTION OF ECUADOR, SHOWING THE LOCATION OF THE PLAYA DE ORO PLACERS.

as it is at present; with the blowing in of the other two stacks, 50 additional men will be employed. The iron matte produced is either roasted in long furnaces, and then smelted with lead products, or shipped raw to the Aurora, Ill., refining works for treatment. The company not only buys all the ores offered them from the Hills, but keeps agents at Denver, Colo., and Spokane, Wash., to purchase smelting ores. During the past year the company has expended $200,000 in the purchase of the following valuable mining properties: Ross-Hannibal, Carthage, Mikado and Calumet groups. In addition to this, $50,000 has been expended in opening up and developing a group of fissure veins located seven miles south of Deadwood, known as the Two Bears. At this property the company also operates a 20-stamp mill and concentrators. The output of the smelter in bullion per month is $25,000. This only represents the product of two stacks.

Hawkeye Mining Co.—This company's property consists of eight claims—the Merrimac, Capital, R. E. Lee, Lark, Frye, Galatea, William and Saint James. These claims join on the west the Homestake, on the north and west the Caledonia, and on the north and east the Monitor, since passed into control of the Homestake company, and the Pluma. These claims cover an area of 70 acres. This company has developed its low grade gold property on the Homestake belt and has built a 40-stamp mill. A Bleichert tramway 4,000 ft. long conects the mine with the mill.

Minnesota Mining Co.—A mill is about to be constructed, it is claimed, on this property near Rochford. It will be started with 60 stamps, and another 60 will be added later on. Over $20,000 has been expended on development work, and a deposit of ore 300 ft. deep by 100 ft. wide has been blocked out; 3,000 tons of ore and other material just as it was taken out has been milled; this yielded $3.18 per ton in gold and a small amount of silver on an average. The cost of mining, handling, transporting and milling will not exceed $1.50 per ton, it is claimed.

Work upon the erection of the mill, it is expected, will be commenced by March 1.

The White Syndicate.—During 1892 a syndicate headed by Mr. Thos. H. White purchased a large quantity of ground at Bald Mountain, and, it is said, proposes to erect a large chlorination plant. The property purchased by Mr. White is as follows: The Horseshoe group, consisting of 42 claims, embodied in which are the Mount Terry, Duluth, Troy and Golden Sands groups. The first claim adjoins the Welcome company's ground and shows the same contact. The work upon the property consists of a 208-ft. shaft., 8 ft. of which is in ore, and numerous prospect drifts and cross-cut tunnels. The ore found is the non-oxidized ore of the Welcome contact.

Welcome Mining and Smelting Company.—This company has spent large sums during the past year in the purchase of Bald Mountain and Ruby Basin mines. Their mines, known as the Welcome group, consists of the Terra Peak, Geona, Welcome, Express fraction, Marathon, Magenta, Oriole and Protection lodes. The properties lie on the southeastern slope of Terra Peak, directly on the blanket formation of ore, whose general trend is north and south, and whose thickness averages 5 ft. by from 35 to 50 ft. in width. This property's workings consist of tunnels, snafts and drifts, all in ore. On the Protection lode the predominance of the work has been done. Its workings consist of a 125-ft. working shaft to the ore body. Below are numerous cross-cut tunnels and drifts, all but the prospect workings being in ore. The mines are at present shipping 900 tons of ore monthly to the Welcome chlorination plant at Rapid City.

Another of the company's properties consists of Hardscrabble lode and Vulgar Fraction. A prospect tunnel has been driven into the ore body on the north side. Four cars a week are shipped to the D. & D. smelter for treatment. These properties are on the divide south of Fantail Gulch and lie contiguous to such properties as the Golden Reward, Calumet and Bonanza. The ore is of the same character as these mines, which is the brown oxidized, an ore susceptible of treatment by the chlorination process. The company has a diamond drill at work locating their ore bodies. The company, which is incorporated under the title of the Welcome Milling and Smelting Company, will build a 100-ton chlorination plant for the reduction of these ores. The plans are already in hand and the site is under consideration.

THE ACTION OF SULPHURIC AND NITRIC ACIDS ON LEAD OF DIFFERENT DEGREES OF PURITY.

Written for the Engineering and Mining Journal by Prof. George Lunge, Ph. D., Zurich.

(*Continued from page 8.*)

III. *Experiments on a Sudden, Violent Action of Sulphuric Acid upon Lead at Higher Temperatures.*—It has been noticed before, especially by Hasenderer (1872) and by Bauer (1875), that pure lead, when heated with sulphuric acid to 230° or 240° C., is suddenly acted upon with violent effervescence, and is almost at once converted into sulphate. Alloys containing 1% antimony or copper suffer this violent reaction only at higher temperatures, from 250° to 280° C.; on the other hand, even 0·73% bismuth lowers the point of sudden action on lead to 160° C. It seemed not unlikely that some of the phenomena observed by Hochstetter might be explained by a similar cause, and this question appeared to possess sufficient importance to merit special investi ation, which, however, in this case was confined to the action of pure sulphuric acid. The results are as follows:

Concentrated sulphuric acid (spec. grav. 1·842) acts at first but very slowly on pure soft lead (No. II.). Up to 175° C. there are only isolated gas-bubbles which increase very slowly up to 220°. From that point they become larger, and at 260° the lead dissolves all at once completely with violent effervescence and with formation of free sulphur and sulphur dioxide. If the source of heat is removed at the commencement of this reaction it continues nevertheless, and the temperature rises to 275°.

The same lead, when alloyed with 0·2% copper, exhibits only at 260° a distinct evolution of gas which increases slowly up to the boiling point (310°), at which point the lead is very slowly dissolved; the sudden reaction mentioned above is not at all observed here.

The same soft lead, when alloyed with 1% antimony, begins to evolve gas at 175°; rather more strongly from 225°; at 275° or 280° the same sudden and complete reaction occurs as with pure soft lead.

If dilute acid is made to boil in contact with lead it is, of course, gradually concentrated and the boiling point rises constantly. In this case the sudden conversion into sulphate occurs with soft lead at 280°, and with lead containing 1% antimony, at 300°.

We have now proved that the sudden solution of lead in hot sulphuric acid is slightly retarded by 1% of antimony, and entirely prevented by 0·2% copper, but it remained to be seen whether these additions would or would not produce a corresponding improvement in the behavior of lead below the temperature of the sudden reactions but above the maximum of 200° C., formerly adhered to by us as the highest normal temperature to which lead is exposed in acid pans and similar apparatus. For this purpose 30 tests were made with the descriptions of lead just mentioned, heating them for 9 or 10 hours in open flasks with sulphuric acid of specific gravity 1·66, ultimately to temperatures of 220° to 270° C., during which operation the specific gravity ultimately rose to 1·774. The results were as follows:

Description of acid.	Final specific gravity and temperature of acid.	Loss of lead per superifical metal grammes.	Proportion.
1. Soft lead No. II	1·77 at 220-225°C.	224·3	100
" + 1% antimony	"	597·1	2,664
2. Soft lead No. II	1·81 at 240-255°	5752·2	2,661
" + 0·2% copper	"	216·2	100
3. Soft lead No. II	1·79 at 235°	2724·7	1,703
" + 0·2% copper	"	160·0	100

This demonstrates the following facts. Up to 225° C, a temperature certainly never reached in concentrating pans, pure lead stands pretty well, but above that temperature the loss of weight becomes very heavy. At 225° lead with 1% antimony loses 26½ times more weight than pure lead. On the other hand at 235° lead containing 0·2% copper loses 17 times *less* than pure lead and at 255° it loses 26½ times less. We thus see that while the addition of antimony is very injurious at temperatures both under and over 200°, a slight addition (0·1 to 0·2) of copper greatly improves the lead in its behavior toward very hot sulphuric acid. We can also now understand that under certain circumstances such an improvement may take place even at temperatures at or slightly below 200° C., viz., in case the lead continues bismuth, which lowers the temperature of the sudden attacks. In this case an addition of a little copper will compensate the injurious action of the bismuth and make the lead resist better in hot acid. This probably explains Hoehstetter's observations; for the "virgin lead," of which his easily destructible pans consisted, contained 0·05% bismuth; in the pans afterwards employed, the effect of the bismuth would be compensated by the addition of 0·02% copper to the lead, and this caused them to resist the hot acid better than did the first pans. We must however, strongly dissent from his advice to "improve" chemically pure lead by remelting it with old lead; in this case we may or may *not* introduce useful ingredients, like copper, and we are very likely to introduce injurious ingredients like antimony, bismuth, tin, etc.

The above supplies another reason for the advice given in my "Sulphuric Acid and Alkali" (second edition, Vol. I., p. 667) viz., to put the fire-place, in a set of several pans, under the weak solution pan, so that the strong pan is furthest from the fire. In that case there is no possibility whatever that the temperature could ever reach a dangerous point (it never exceeds 160° C.) and there is thus no occasion to employ lead specially prepared with an alloy of copper as described.

IV. Influence of the Presence of Oxides on the Behavior of Lead Toward Sulphuric Acid.—I had been informed by Freiberg men that they considered the action of sulphuric acid on lead to be greatly increased by the presence of oxygen in the lead. Inquiries showed that this was merely a vague impression or hypothesis, without experimental basis, but as it did not appear at all unlikely to be true, I resolved to put it to the test. I was confronted at the outset by the difficulty of estimating reliably the very slight proportion of oxygen present in lead; in fact a very complicated process, the description of which would be too lengthy here, had to be worked out for this purpose, and was executed with great perseverance by Dr. Schmid. The considerable amount of time and labor expended on this task may be summed up very briefly. Ordinary soft lead contains an exceedingly slight proportion of oxygen (0·0024% on the average), and but very little more if alloyed with a little antimony or copper (up to 0·0036% with 0·02% antimony or 0·1% copper, and 0·0057% with 0·2% copper). Numerous attempts were made to artificially increase the quantity of oxygen in pure lead, but we never got beyond a maximum of 0·0050%, and experiments made in the same way as before proved that this slight difference in the percentage of oxygen is not connected with a perceptible difference in the action of sulphuric acid. The oxygen hypothesis must, therefore, be entirely abandoned.

V. Behavior of Lead Toward Sulphuric Acid of the Highest Degree of Concentration, and Toward Nordhausen Acid. These experiments were made in a specially constructed apparatus in which no organic substances whatever were employed, at a temperature of 50° C., which was chosen to minimize the escape of SO_3. Comparative tests were made with acid concentrated in platinum up to the usual points with "monohydrate" prepared by my freezing process, but slightly weaker than fresh monohydrate in consequence of standing for some time, and with Nordhausen acids containing up to 45% SO_3, all of them carefully analyzed. The results of 10 hrs. exposure at 50° C. were as follows (42 experiments).

Description of acid.	P'rcentage of total SO_3	P'rcentage of real H_2SO_4	P'rcentage of free SO_3	Loss of weight of 1 superf. meter of lead (grammes)	Proportionate loss.
Concentrated sulphuric acid	79·30	96·57	.....	64·0	100
Technical monohydrate	80·69	98·85	.....	867·5	1.356
Real monohydrate (interpolated)	81·63	100·00	.....	1,300·0	2,031
Nordhausen acid	83·49	....	10·11	1,899·6	2,968
"	85·31	.. ..	20·02	2,0 2·5	3,207
"	87·10	.....	29·77	2,008·8	3,139
"	88·92	. .....	39·68	1,891·5	2,815
"	89 90	.....	45 01	16,49·7	2,578

We see that the attack of the acid increases enormously with its concentration above the highest strength usually attained in platinum stills or analogous apparatus. The somewhat deteriorated "monohydrate" of 98·85% dissolves 13½ times as much lead as acid of 95½%; with real monohydrate the attack is 20 times, and as the maximum point, with Nordhausen acid of from 20 to 30 per cent SO_3, 31 or 32 times greater than with acid of 96½% H_2SO_4. Above that strength, Nordhausen acid acts slightly less, because then a thick coating of lead sulphate protects the lead; but, at all events, it is evident that lead must not be brought into contact, even at very moderate temperatures, with sulphuric acid above 66° Baumé.

(*To be Continued.*)

Schaffner's Chlorine Recovery Process.—The new process invented by Schaffner for recovering chlorine from the calcium chloride formed in the ammonia soda process has been tried for some months with success by the Austrian Ammonia-Soda Works, at Szczakowa. By this process the waste liquors containing calcium chloride and undecomposed salt are first evaporated to separate the calcium chloride from the salt, and the latter is returned to the stock of raw salt. The calcium chloride is dissolved and the concentrated solution is heated with carbonic acid and magnesia. The result of this reaction is the production of magnesium chloride and calcium carbonate. The magnesium chloride thus obtained is then treated by the Weldon-Pechiney process for the recovery of chlorine. The magnesia is also recovered by this process and it can be used over again. The chlorine prepared in this way is used in the manufacture of potassium chlorate.

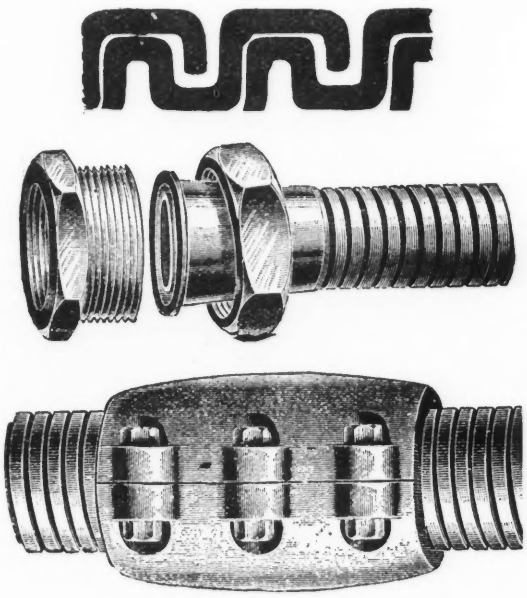
FLEXIBLE METALLIC TUBING.

For many years inventors have attempted to find a metallic substitute for the ordinary india rubber tubing. The first flexible metallic tube was made of a number of annular segments, fitting into each other in such a way that a small amount of play was allowed for the two surfaces to slide over each other. Then many methods were tried by building up a tube by spirally winding a corrugated strip of metal, and allowing a similar amount of play between each convolution. Both of these kinds of tube presented the disadvantage inherent in all joints, consisting of sliding surfaces; that is, the difficulty of making the joint airtight and watertight. In order to make the joint perfectly airtight, inventors then inserted small strips of india rubber between the convolutions. This had, of course, the desired effect, but the india rubber strip was found to be exceedingly perishable, and the tube was in other ways just as open to objection as the plain india rubber tube. Inventors then had recourse to other devices, such as the combination of several layers of metal wires, the strands of each fitting into the recesses of the others. Some of these designs have met with more or less success, though none can be said to be quite satisfactory. It has been left to a French inventor, M. Le Vavasseur, to make a perfectly satisfactory flexible metallic tube. He experimented for years with almost every conceivable form of tube, but eventually succeeded in getting a quite simple design to give eminently satisfactory results. The tube is built from a single strip of metal, previously corrugated in a special manner, and spirally wound on itself. There is no packing whatever between the convolutions, and yet the tube will withstand ordinary steam pressure for an indefinite period. A cross section of a wall of the tube in shown in Fig. 1. It will be seen that the strip has two channels formed in it, one larger than the other, and that the larger channel of one convolution overlaps the smaller one of the next convolution. The smaller channel is also much narrower than the larger one, so that considerable play is allowed between each convolution. Engineers and mechanics have been at a loss to account for the strength of the tube and its perfect airtightness, and several theories have been advanced, for it is remarkable that this design should be so successful with M. Le Vavasseur after it had failed to give satisfactory results before. Whatever may be the cause, the result is without doubt, for the tubing has been in use in all sorts of installations for some time, and has made good all its inventor's claims and promises. Special machinery of high order has been designed for the manufacture of the tubing. It is made in one continuous operation from a ribbon of tough steel. The weight of a 5-16-in. tube is 2½ oz. per ft.; a ¾-in. tube weighs 8½ oz. per ft., and a 1-in tube weighs 11 oz. per foot. A ¾-in. tube is made from a strip of metal 0·6 mm. thick and 14 mm. wide.

The industrial application of such a tubing depends first on the degree of its flexibility, and, secondly, on its capability to resist the attacks of the fluid conveyed through it. The metal tubing is naturally much less flexible than any india rubber, but its strength and durability are immensely superior. It is capable of withstanding far greater internal pressure, and it is able to transmit suction, which the rubber tube cannot do. Then, again, it is not injured so much by bodies passing over it and falling on it; it can also bear weights hanging on it. It has many advantages over a solid metal pipe. For instance, it does not burst under frost, for its joints allow of sufficient contraction and expansion.

This form of flexible metallic tubing has been used with great success for conveying compressed air to rock drills; for carrying steam under 150lb. pressure; for supplying Pintsch gas to railroad cars, at 200lb. per sq. in. pressure, and in beer engines, speaking tubes, organ blowing machines, carpet cleaning machines, etc. It has also been applied successfully as a sheathing for electric wires and small cables.

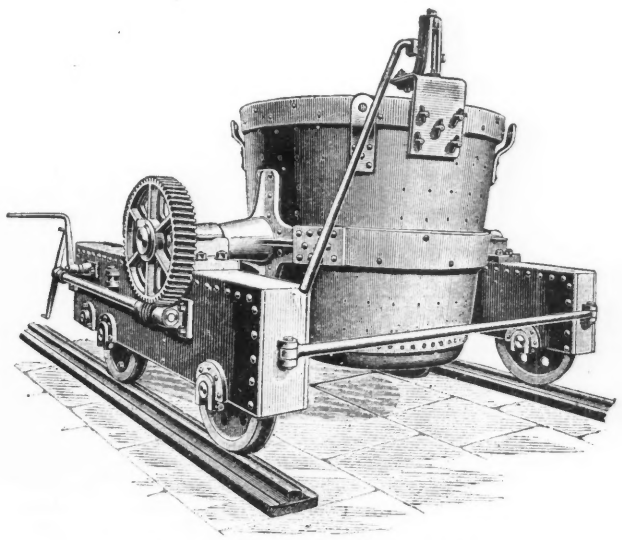
With a tube of this sort, it is necessary that there should be some means of making a good and secure joint or coupling. This has been done by a simple screw connection—Fig. 2—the end of the tube being inserted into a conical cup, into which it is fastened by white lead or solder. A simple push-on connection may be used for gas. For a strong joint for low pressure a plain collar made in halves and capable of being bolted round the junction with a packing of india rubber is all that is required, as in Fig. 3. These illustrations have been taken from a paper read before the last meeting of the British Association by Mr. Gilbert Redgrave.



FLEXIBLE METALLIC TUBING.

STEEL CASTING LADLE AND CARRIAGE.

We here illustrate one of the latest and most improved steel casting ladles, made in England, by Friedenthal & Co., Preston. Several of this make have been adopted in steel works with success. This design is used for all sizes from 10 tons to 40 tons capacity, that illustrated having a capacity of 18 tons. The ladle is built of ¾-in. steel plates, welded at the vertical joints, and it has a flanged bottom plate riveted inside the shell. Both shell and bottom are perforated with ⅝-in. holes for the better adhesion and ventilation of the lining. The tapping gear is arranged to give a direct lift. It consists of the usual stopper rod, protected by fireclay sleeves, cottered into a wrought iron guidebar of large diameter, which is guided in a vertical direction by a cast-iron bracket fixed on a plate bracket riveted to the top of the ladle shell. The plate bracket may, instead of being riveted, be fixed to the shell by cotter bolts, to facilitate the removal of the gear. The vertical guidebar is actuated by a lever which works through a slot in the guidebar, and is connected at the end with the socketed lever. The nozzle box is of cast iron and of the hinged type, and is arranged so that the fireclay nozzle can be easily removed. The ladle has four steel plate lifting ears. Cast steel trunnions are riveted direct to the ladle shell, and the shell itself is further strengthened round the middle by a riveted steel belt. The tipping gear consists of a steel worm, which is keyed on the end of the trunnion, and a steel worm keyed on the end of a wrought-iron shaft. When upright the ladle is locked by a heavy forged-iron bar, which works through wrought-iron guide brackets on the carriage top, and engages with a bracket riveted to the ladle band. The locking bar is locked to the carriage top by a turned drop-bolt. The carriage is constructed of ¾-in. steel plates. The side frames are each composed of two plates, connected together by steel channels. The intermediate frame is arranged to grasp the side frames, to which it is firmly riveted. The hand traversing gear is worked from the side of the carriage, and consists of spur wheels and pinions, giving a purchase of 25 to 1 from handle to rail. The side frame carries studs and bolts for fixing the eye end of a prop from a locomotive ingot crane to the carriage for traversing. When this occurs a clutch pinion in the hand traversing gear is disengaged so that the quick motion is not transmitted through the wheel train.



STEEL CASTING LADLE AND CARRIAGE.

DIGEST OF DECISIONS OF THE SECRETARY OF THE INTERIOR AFFECTING THE MINING INDUSTRY.

COAL-ENTRY—TRANSFEREE—LEGAL SUBDIVISIONS.

1. A transferee claiming under a coal-entry takes no better title than the entryman has the right to confer, and the right thus acquired is subject to the subsequent action of the Land Department.

2. Coal-land entries are made of "legal subdivisions," and if it be shown that any such subdivision, so entered is not in fact coal land the entry should be canceled as to such tract. [The case of Rucker *et al. v.* Kinsley (14 L. D., 113) cited and distinguished.]

3. The doctrine that prior to issue of patent the purchaser stands in the shoes of the entryman, that he acquires all the rights of the entryman—no more, no less—and whatever rights are thus conferred are subject to the subseqnent action of the Land Department, is as applicable to an entry under the coal-land law as to entries under the other land laws of the United States. Scott *v.* Sheldon and an. (on Review of Departmental decision, August 30th, 1892. 15 L. D., 361), involving entries in Seattle Land District, Washington. (Motion of Sheldon & Skagit Cumberland Coal Company for review overruled.)—[Secretary's, December 23d, 1892.]

THE RUSSELL PROCESS AT LAS YEDRAS, SINALOA, MEXICO.

Written for the Engineering and Mining Journal, by R. F. Letts.

The Yedras Mine of the Anglo-Mexican Mining Company is situated in the northeast corner of Sinaloa near the states of Chihuahua and Durango. A 40-stamp mill and a lixiviation plant to use the Patera or Kiss processes was erected in 1882. Low results were obtained, and the Bruckner furnaces which had been introduced were abandoned for the cruder but more satisfactory reverberatory, as the latter did not ball or agglomerate the roasted ore. It is estimated that the Patera process did not save over 65% of the silver in the roasted ore.

The following are two analyses of Yedras ore, representing the averages of the ore treated at different periods:

	No. 1.	No. 2.
Carbonate of lime	35·78	46·50
Silica	15·13	25·00
Iron	17·53	9·89
Sulphur	13 31	12·50
Arsenic	9 82	2·50
Zinc	4.92	....
Lead	1 78	....
Magnesia	2·58	....
Alumina	1·35	....

No. 2 is an analysis of the average battery sample for one month. The composition of the ore varies greatly. A couple of months later analysis No. 2 was made; the battery samples for several weeks had 4% zinc, and two months later contained a large percentage of antimony.

The results by using the Patera or old lixiviation process were as follows: Assay of ore, 60·67 ozs. per ton; extraction in assay office, 72·09%; extraction in mill, 67·12%; total leaching time, 92 hours.

By the Russell process the results were as follows: Assay of ore, 55·3 ozs. per ton; extracted by old process in assay office, 69·94%; extracted by Russell process in assay office, 83·62%; extracted by Russell process in mill, 82·44%; leaching time, 76 hours.

It will thus be seen that the extraction by the Russell process was 15·32% higher than by the old process, and that the leaching time was 16 hours shorter. The chemicals consumed per ton of ore were as follows:

	Old process. Lbs.	Russell process. Lbs.
Lime	9·7	....
Sulphur	4·7	3·6
Hyposulphite	...	1·4
Blue stone	...	9·6
Caustic soda	...	5·5
Total	14·4	20·1
Cost	$0.52	$2.20

Since these runs were made the consumption of chemicals has been reduced to 9·14 lbs. per ton of ore and the cost to $0.82.

Owing to the great distance from the railroad the price of chemicals per pound at Yedras is, of course, considerably greater than at any place in the United States or at most localities in Mexico. The average cost of chemicals per pound at Yedras for the last three years is as follows: Hyposulphite of soda, 8 cents; blue stone, 10 cents; caustic soda, 9·1 cents; sulphur, 7·1 cents. No soda ash (sodium carbonate) is used at Yedras, as there is usually no lead in the ore. The total cost of all chemicals at Yedras in 1890 was 3·6 per ounce of silver produced. Of the copper used in the form of blue stone, about 50% remains in the ore.

During the past five years the comparative efficiency of the two processes at the Yedras mill has been tested four times. The duration of each of these tests was from one to three months. Two methods were pursued in making these comparative runs. One was to divide the roasted ore equally between the two processes, running one-half the ore vats and precipitating tanks on the old process and the other half by the Russell process, the products being kept entirely separate and the tailings from each process being thrown out. By this method, however, there is a loss of eight to ten ounces per ton on all the ore treated by the old leaching process; as that amount, which might be extracted by the Russell process, if it were used on those charges after the old process, remains in the tailings and is lost.

In the other method of making the comparison between the two processes, all the charges are treated first by the old process, that is, by the simple hyposulphite solution, until no more silver can be extracted by that process, the sulphides being precipitated by themselves and kept separate. Then these same charges of ore are treated by the Russell process, that is, by a cuprous hyposulphite, or "extra" solution. The precipitates from this solution are likewise kept separate. In this way a comparison between the two processes is made without any loss, each charge of ore having the benefit of being treated by both processes before it is thrown out. In fact, this is the way all the ore is treated at Yedras, whether a comparison is being made or not, all charges being first treated by the old process and then by the Russell process.

The first of the two comparative runs made by myself between the two processes was in September, 1890, the test being continued during the whole of the month. I extract from my report to the Anglo-Mexican Company, made at the time, on this test run: "Our intention was to give the old process every possible show. Great care was taken to keep the precipitates separate, both at the beginning and end of the month. The tons of ore in question were totally leached out. During the month no experiments or extra 'clean up' was carried out. In making the test we allowed the old process to take out all it could take, i. e., we ran the vats (by the old process) so long as sodium sulphide would show the least trace of silver in the solution. When the old process would not take any more silver out, the 'extra solution' of the Russell process was applied, and, as in the case of the old process, was run as long as sodium sulphide showed any trace of silver coming out."

The actual "clean ups" from the two processes were as follows:

	Ounces.
Extracted by the old leaching process	26,361·42
Additional extracted by the Russell process	5,088·76
Total	31,450·18
Per cent. of total product extracted by old process	83·8
Per cent. of total product extracted by Russell process	16·2

That is, after the old process had done its utmost work, extracting 26,361·42 oz., the Russell process was used on the same charges of ore and extracted 5,088·76 oz. more.

The total additional cost of the Russell process, or in other words, the extra expense of producing this 5,088·76 oz. over the cost of the old process was as follows: Chemicals, $632.50; fuel, $21.21; extra help, etc., $155.60; total, $809.31.

At the then price of silver the 5,088·76 oz. equalled $5,852.07. Deducting the above expenses there is left $5,042.76 as the net profit per month due to the use of the Russell process.

Another test on the comparative efficiency of the two processes was carried out during the month of November, 1890. In this run the total cost of chemicals per ton was 95 cents.

Of the total ounces extracted the old process took out 80.29% and the Russell process the remaining 19.71%. The additional ounces silver extracted by the Russell process over the old process were 7,653.7, or (with silver at $1.02.5 per oz.), $7,845.04, making a net profit due to the use of the Russell process of about $7,000 per month.

Re-treatment of tailings from the old process.—All the tailings which had been produced at the Yedras mill by the old leaching process, before the introduction of the Russell process in 1887, have now been retreated by the latter.

The tailings are brought from the old dumps, where they had been thrown out in former years, and are charged directly to the leaching vats without any drying, roasting or other preliminary treatment. Like the charges of ore they are leached first with water in order to remove the small per cent. of soluble salts which is present, this washing requiring about four hours. A small amount of ordinary hyposulphite solution is then applied, not because this solution extracts anything, as it extracts absolutely nothing.

But, as the volume of the "extra solution" is only enough to saturate the charge, and it would become diluted to some extent with the wash water if it followed that, the small volume of ordinary solution is interposed between them.

As in treating ore, the "extra solution" amounts to 13 cu. ft. per ton. It is followed by more of the ordinary hyposulphite solution to extract any silver which has been made soluble by the "extra solution," but which has not passed out of the charge with the solution, but remains mechanically held in the pulp.

The total amount of tailings from the old leaching process at Yedras which have been re-treated by the Russell process is between 30,000 and 40,000 tons. The following table shows the results:

Year.	Ounces.	Extraction in Assay Office. Old Process.	Extraction in Assay Office. Russell Process.	Apparent Extraction in Mill.	Actual Extraction by Russell Process.
1888	19·49	37·40%	62·70%	60·14%	62·74%
1889	17·23	32·17%	57·20%	55·95%	60·14%
1890	13·46	38·48%	49 26%	48·37%	46·84%

In the above table "apparent" extraction in mill is obtained by comparing the value of the final tailings from the Russell process with the old tailings as charged to the leaching vats (taking into account any soluble salts also).

"Actual extraction" in mill is obtained by comparing the "clean up" in silver with the silver actually charged to leaching vats.

The chemicals used per ton of ore during these three years were as follows:

Year.	Hyposulphite.	Blue stone.	Caustic Soda.	Sulphur.	Total chemicals per ton.	Cost of chemicals per ton.	Ounces silver extracted per ton.
1888	2·68 lbs.	6·32 lbs.	4·54 lbs.	3·30 lbs.	16·24 lbs.	$1.45	12·23 oz.
1889	1·62 "	5·11 "	3 13 "	2·69 "	12·55 "	1.12	9·75 "
1890	1·07 "	4·06 "	2·48 "	1·71 "	9·32 "	0.84	6·30 "

The value of the product from the treatment of old tailings at Yedras, by the Russell process, averages about 25% in silver or approximately 7,000 oz. per ton.

The Artificial Production of Mineral Sulphides.—When sulphides of metals are prepared artificially by the direct combination of sulphur and metals they bear very little resemblance to the natural minerals. The reduction of sulphates gives sulphides which have a more natural appearance, but no method hitherto devised imitate the natural crystals successfully. Mr. H. N. Warren, of Liverpool, writes to the *Chemical News* that he has discovered an eminently successful method of producing natural sulphides. He brings easily reduceable oxides of metals into contact with sulphocyanide of potash. By this means he has imitated natural sulphides so successfully that detection of the difference is quite impossible, and in several cases he has produced entirely new compounds. At a very low red heat scaly litharge is converted, when acted on by potassium sulphocyanide, into galena, which after washing closely resembles the native compound. If the litharge is heated to fusion under a layer of sulphocyanide it breaks with an identical fracture, and possesses almost the same specific gravity as the dressed ore. When ferric oxide is treated in this way at a continuous red heat, a very brilliant pyrite is formed, and if the process is conducted at a higher temperature the compound $Fe_4 S_8$ is obtained. Pyrolusite is obtained when black oxide of manganese is treated with a large excess of sulphocyanide and heated to bright redness. Oxides of tin and of antimony yield ordinary sulphides at high temperatures, and at lower temperatures the golden sulphides are obtained, hich possess in all respects the full brilliancy of the natural compound. Several samples of sulphide of zinc prepared in this way, after being cleansed from impurities, exhibit the property of phosphorescence.

THE ACCURATE AUTOMATIC TIME STAMP.

A new workmen's time recorder is being brought out by the Accurate Time Stamp Company, of New York. The chronograph shown in the illustration, in addition to having an ordinary hour and minute dial plate, has a series of revolving discs, round the peripheries of which are type indicating the minute, hour, day and month, respectively. These discs are actuated by the clock, but have an intermittent motion at the end of their respective units, instead of a continuous motion. An ink ribbon is arranged over the row of type thus formed, and after the time card has been placed over the ribbon, a hand stamp is brought down so that the record of the time is made on the card. The type wheels are continuously and positively locked, so that they cannot be accidentally shifted during stamping, nor can they be tampered with. The mechanism is mounted independently of the clock, and is not moved but only regulated by it. Thus the stamping force is not transmitted into the clockwork itself. It has a setting attachment, by means of which the hands and type wheels can be set, but this is internal and is protected by lock and key. This time recorder can be used for all sorts of purposes in addition to the checking of workmens' time; for instance, in an office for automatically recording the receipt and dispatch of telegrams, etc. When used as a workmens' time checker, an adjustable gauge is attached to the top for the receipt of the time card. The gauge is set so that it can be moved on through a small space for each record by means of a small lever. The workmen's cards are kept in a rack and on each entry and exit the men place their cards in the gauge of the recorder and stamp them, thus automatically recording the minute, hour, day, month and year. After they have stamped the cards they can verify the automatic record. A week's card thus made up shows the bookkeepers at once the attendance of the workman and saves a large amount of adjusting and making up the wages' account.

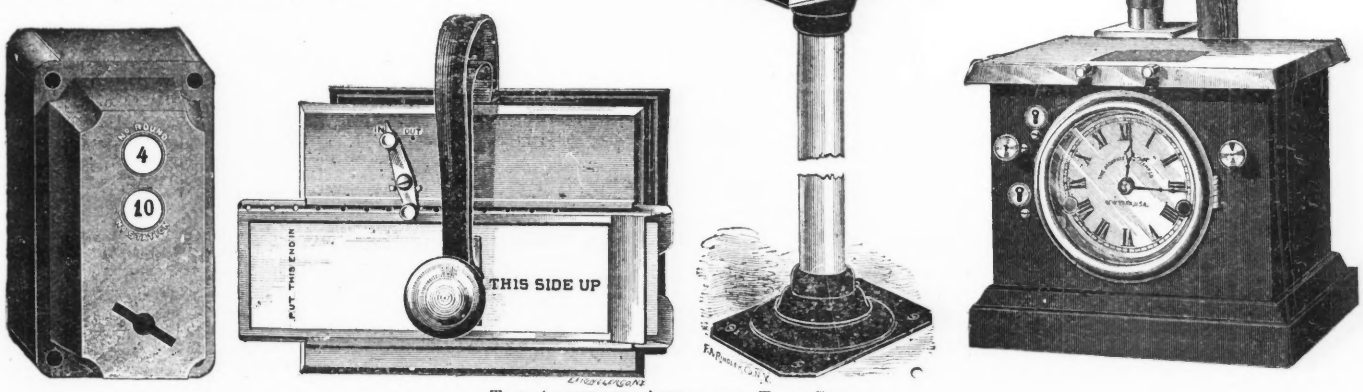
PROGRESS OF GEOLOGICAL SURVEYS.

ALABAMA.

During the two years since the publication of the last report of progress, the survey has accomplished a great deal.

Four bulletins have been issued, viz.:

1. On the coal measures of the Plateau Region of the Warrior Field, by Henry McCalley, Asst. Geologist. This includes a report on the coal measures of Blount County, by A. M. Gibson.



THE ACCURATE AUTOMATIC TIME STAMP.

2. On the Phosphates and Marls of Alabama, by Eugene A. Smith, State Geologist.

3. A preliminary report on a part of the Lower Gold Belt, by William B. Phillips.

4. Report on the Geology of Northeastern Alabama and Portions of Georgia and Tennessee, by C. Willard Hayes.

Six other reports are in manuscript and will be issued as rapidly as possible. These are:

1. On the Geological Structure and Economical Resources of Murphree's Valley, by A. M. Gibson.

2. Report on the Iron Ores, Semistones and other Resources of the Coosa and other Valley Regions of the State, by Henry McCalley.

3. Report upon the newer formations of the state, embracing all that part not included in what is known as the mineral region, by Eugene A. Smith, D. W. Langdon and L. C. Johnson.

4. Report upon the Coal Measures Adjacent to Murphree's Valley, by A. M. Gibson.

5. A Geological Map of the State, on the scale of ten miles to the inch.

6. Report upon the Useful and Noxious Plants of the State, by Charles Mohr.

The office of the survey is at the University of Alabama, Tuscaloosa, and its large collections are housed in the University Museum.

The survey has an appropriation of $7,500 per annum, which is expended most judiciously. The Cahaba coal field has already been thoroughly examined and mapped by Joseph Squire, and a report published. The greater part of the force is now engaged upon the Warrior Field.

The preliminary report upon the lower gold belt showed that there were extensive deposits of free milling ore in Tallapoosa County, which needed only the application of capital and skill to become highly remunerative.

The opening of the Bauxite deposits in Cherokee County, to which reference has recently been made in this journal, is now fully under way, and all doubt as to the extent and quality of the ore has been dispelled. These deposits are likely to add still another industry to the state, so that bythe close of the present year Alabama will be a producer, not only of iron and gold ores, coal and fire clay, but of aluminum ores as well.

So far but little attention has been paid to the iron ores of the Metamorphic region, an omission to be accounted for by the meagre appropriation and the necessity of pushing the work in regions of present development. But we have seen analyses of magnetic ore from East Alabama, well within the Bessemer limit, and we believe that a thorough examination of this region would be advisable.

Magnetic concentration of ores lower than those represented by the analysis is successfully carried on in this country, especially in New York State, and ores which had not commended themselves for Bessemer iron are now used in the manufacture of this metal.

In that part of Clay County which lies south and west of the Columbus & Western Ry. the survey might spend a month with great profit to the state and to itself.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office:

TUESDAY, JANUARY 3, 1893.

489,010. Process of Making Fertilizer from Tank Water. Omar T. Joslin, Chicago, Ill.
489,090. Centrifugal Ore Separator. Orrin B. Peek, Chicago, Ill., Assignor to Melinda Peek, same place.
489,101. Means for and Process of Separating Metals from Ores. Charles E. Seymour, Lake Geneva, Wis.
489,111. Dumping Car. Henry C. Womelsdorff, Tyler, Tex.
489,136 Machinery for the Manufacture of Artificial Fuel. William B. Westlake, Swansea, Wales.

THE ACCURATE AUTOMATIC TIME STAMP.

489,142, 489,143. Ore Roasting Furnace. Horace F. Brown, Butte, Mont., Assignor to Mary C. Brown, Chicago, Ill.
489,197, 489,198, 489,199, 489,200, 489,201, 489,202, 489,203, 489,204, 489,205. Centrifugal Ore Separator. Orrin B. Peck, Chicago, Ill., Assignor to Melinda Peck, same place.
489,254. Process of and Apparatus for the Manufacture of White Lead. Andrew Honman and Victor Vulliez, Williamstown, Victoria.
489,261. Chloride of Lime Dissolver. George M. Newhall and Charles L. Hamilton, Philadelphia, Pa.
489,303. Process of Manufacturing Manganese and Alloys of Manganese Free from Carbon. William H. Greene and William H. Wahl, Philadelphia, Pa.
489,314. Metallic Alloy. Frederick W. Martino, Sheffield, and Francis R. Martino Birmingham, England.
489,319. Furnace. Ivor J. Monger and Robert Monger, Baltimore, Md.
489,332. Apparatus for the Manufacture of Gas Black. David M. Schermerhorn, Peter V. Schermerhorn and Simon P. Schermerhorn, Warren, Pa.; said David M. Schermerhorn and Peter V. Schermerhorn assignors to Simon P. Schermerhorn.

TUESDAY, JANUARY 10, 1893.

489,460. Method of Producing Metallic Zinc. Parker C. Choate, New York, N. Y.
489,461. Art of Producing Metallic Zinc. Parker C. Choate, New York, N. Y.
489,490. Furnace. George T. Moe, Philadelphia, Pa.
489,538. Hydraulic Mineral Separating Apparatus. William S. Lockhart and Edwin W. Streeter, London England; said Streeter assignor to said Lockhart.
489,574, 489,575, 489,576. Process of Obtaining and Separating Sulphide of Nickel. Robert M. Thompson, New York, N. Y.
489,624. Process of Precipitating Oxide of Tin from Solutions. Camille L. C. Bertou, Paris, France.
489,677. Apparatus for the Production of Chlorine and Caustic Soda. James Greenwood, London, England. Assignor to the Caustic Soda and Chlorine Syndicate, Limited, same place.
489,725. Boiler and Boiler Furnace. Earl A. Wheeler, Sharon, Pa.
489,738. Washing and Sizing Machine. Eugene G. Hammond and Edward D. Hammond, Hanover, Ill.
489,744. Ore Concentrator. George Johnston, San Francisco, Cal.
489,751. Hydraulic Mining Apparatus. Newton C. Millee, French Corral, Cal.
489,797. Ore Washer. Charles Faber, Riverside, N. J.
489,882. Method of Producing and Separating Sulphide of Nickel. John L. Thomson, Bayonne, N. J. Assignor to The Orford Copper Company, of New Jersey.
489,884. Pyrometer. John G. Wiborgh, Stockholm, Sweden.

The Precipitation of Copper from Mine Waters.—The waters from the Anaconda and St. Lawrence mines, Butte, Mont., contain a considerable quantity of soluble sulphate of copper which has caused corrosion of the iron pump columns, although the precipitation and recovery of the copper by means of scrap iron were known to be possible, as it had been done in England, Ireland and Bohemia. It was not applied here until recently. It is now being done with success, however.

PERSONALS.

Mr. Werner Languth, chemist of the Black Hills Milling and Smelting Company, at Rapid City, S. D., has resigned.

Mr. C. F. Howe and Mr. E. P. Jenuings have formed a copartnership as analytical chemists, with headquarters at Duluth.

Mr. John W. Meier, of St. Louis, Mo., has been appointed superintendent of the Black Hills Milling and Smelting Company, at Rapid City, S. D.

Mr. W. Forman Collius, late Chicago and Western editor of the New York "Electrical Engineer," has been appointed business manager of the "Western Electrician."

Mr. John Hays Hammond, president of the Bunker Hill and Sullivan Mining and Concentrating Company, of Wardner, Idaho, has returned to San Francisco from a visit to Pioche, Nev.

OBITUARY.

Egbert Judson, a capitalist of San Francisco, Cal., died on the 9th inst. at the age of 80, leaving a fortune of $3,000,000. He was interested in powder, chemical and iron and steel works.

Edward Cahill, a mining stock broker, died in San Francisco, Cal., on the 9th inst. It is said that his commissions when Comstocks were booming amounted to $1,000 a day. When he made money rapidly he didn't speculate, but when business shrunk he tried to recoup by ventures on his own account, and in this way lost everything. He continued to have a good business, however, and retired only last week.

Edgar Mills died on the 10th inst. in San Francisco, Cal. He was born at North Salem, Westchester County, N. Y., on October 18th, 1827. He was educated as a civil engineer, and made some of the early surveys for the Hudson River Railroad. He went to California with the first rush after the discovery of gold. There he became first a merchant, afterward a banker, and, at the time of his death, he was president of the National Bank of D. O. Mills & Co., of Sacramento. Mr. Mills was also president of the Eureka & Palisades Railroad Company, and connected with many other corporations on the Pacific coast. He was commissioner from the State of California to the French exposition of 1867. He was interested with his brother, Darius Ogden Mills, in such mines as the Alaska-Treadwell, Bunker Hill and Sullivan and Alaska-Mexican.

INDUSTRIAL NOTES.

A fall of ground at the Prince of Wales, Negaunee, on Wednesday resulted in seriously wounding one miuer and came very near killing several others.

The American Axe and Tool Company, at Beaver Falls, Pa., on the 12th inst. notified the meu at its forge department of a reduction of nearly 50% in their wages.

The Braddock Wire Works, near Pittsburg, Pa., resumed operations on the 9th inst., after a five weeks' shutdown for repairs. The resumptiou gives employment to 700 meu.

The fly wheel at the steel mill of Oliver Brothers, Pittsburg, burst on the 10th inst., instantly killing one man and severely wounding three others, two of whom will probably die. The roof and machinery were severely damaged.

The officers of the Washburn & Moen Manufacturing Company, at Worcester, Mass., said, on the 10th inst., that there was uo truth in the reports from Pittsburg, Pa., of a proposed combination of wire and nail maunfacturers.

The billet mill of the Bethlehem Iron Company started up on the 9th inst., which, with the puddle mill, which is again working, gives employment to about 250 men. This is about one-fifth of the nnmber thrown out of work by the Christmas shutdown.

To complete the 21-ft. channel from Duluth to Buffalo over 500 million yards of sand, gravel and clay are to be removed, besides 90,306 yards of lime-rock at Sailors' Encampment. Some of the contracts are now let, and work will commence in the spring.

The management of the Sioux City, Ia., Stove Works shut down, on the 11th inst., owing to the strike of 75 moulders, and announced that it will continue the lockout until the moulders consent to make the factory an open shop for both union and non-union moulders.

Mr. Charles A. Turner, of Market Street, Pittsburg, has just produced an elaborate catalogue, handsomely bound in cloth, descriptive and illustrative of all the engineers' supplies dealt in by him. The volume contains over 300 pages and there are nearly 1,200 illustrations.

Of the 13 strikers charged with riot at the Duquesne, Pa., steel works of the Carnegie company, and tried at Pittsburg, 10 were convicted on the 10th inst., two were found guilty of unlawful assemblage, and one was acquitted. This is the first case growing out of the Homestead trouble.

Winston Bros., of Indianapolis, and R. B. Dear, of Duluth, have the contract for the new ore docks at Duluth. Two hundred and fifty thousand dollars will be expended in the operation, giving 1,000 ft. of dockage, with a storage capacity of 90,000 tons. Mesaba and Vermillion range ores will be shipped over the new work.

Mr. Johu Thomas, for many years general manager of the Thomas Iron Company, at Hokendauqua, Pa., has resigned. With his resignation the office of general mauager is abolished. His career in the iron world, says the Bethlehem "Times," commenced at the Crane Iron Works, Catasqua, and when the Thomas Iron Company's works were erected at Hokendauqua, and that town laid out, he went there as superintendent, and continued as such until his promotion as general manager. The works now consist of six furnaces at Hokendauqua, two at Lock Ridge, two at Hellertown, and one at Chain Dam, with numerous ore mines, two railroads, etc.

Among the many useful inventions placed on the market during the past year is the Truaz Automatic boilerscraper, which has suplied a long-felt want. It is the only boiler scraper that does not push the mud to the back head. As can be seen in the cuts of the advertisement, it opens automatically; it leaves no mud iu the boiler to burn, like the usual boilerscrapers do. By means of this little instrument a boiler can be cleaned iu half the time necessary otherwise, and better besides. This scraper reaches up about 8 in. on each side, thus making it about 16 in. long, when open. It is made of malleable iron, and has steel blades to fit the diameter of the boiler.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting machinery or supplies of any kind will notify the Engineering and Mining Journal of what he needs, his "Want" will be published in this column and his address will be furnished to any one desiring to supply him.

Any one wishing to communicate with the parties whose wants are given in this column can obtain their address at this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the Engineering and Mining Journal are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

Goods Wanted at Home.

2,864. A complete outfit of woodworking machinery, including shafting, hangers, pulleys, belting, etc. Virginia.

2,865. A 10-HP. engine and a 20-HP. boiler; also machiuery for a first-class laundry. North Carolina.

2,866. Catalogues of stamp mills and mining machinery; printed in Spanish. Pennsylvauia.

2,867. A key lathe and a cock grinder. Illinois.

2,868. Machinery for a roller flour mill. Virginia.

2,869. Catalogues of hay cutters to cut from 2,000 to 6,000 lbs. of hay per day; printed in Spanish.

2,870. Machinery for a 4-set woolen mill. North Carolina.

2,871. Corn mill outfit. South Carolina.

2,872. A mounted stone crusher. Tennessee.

2,873. A shearer and folder and a hand stamp for branding sheetings. Tennessee.

2,874. A second-hand rim bending machine for bending east and wagou rims of various sizes. Alabama.

2,875. A steel water tower. Texas.

2,876. Saw mill machinery for making high grade quartered oak, wagon and agricultural material. Indiana.

2,877. Second-hand machinery for a small cotton yarn mill. Alabama.

Goods Wanted Abroad.

2,878. Catalogues and price lists of barrel making machinery. Germany.

GENERAL MINING NEWS.

ALABAMA.

Cherokee County.

(From our Special Correspondent.)

The new year has apparently brought with it brighter prospects for this mineral section. There is no donbt bnt that this county contains the largest brown ore deposits in Alabama, as well as the most extensive banxite banks, and the shippers of brown ore have been fortunate in obtaining good contracts for the coming season. The Tecumseh Iron Company is preparing to fill a contract for 8,000 tons per month, which will require them to keep both Baker Hill and State Line banks working to their utmost capacity with full crews in each. This company has leased the property of the Cochrane Ore Company, at Hamlet, Ga., and the Reynolds Ore Company, at Rendalia, Ala. The individual stockholders of each of these three companies own in all the properties; but previous to this year each company has been under separate management. The deal now closed places the general superintendence of all under one management. S. J. Fearing, the superintendent of the Tecumseh Iron Company since April 1st last, is now general manager of these three properties, with headquarters at Tecumseh, in this county. The Cochrane and Rendalia properties have had large amounts expended in the past for erecting ore washers and building tracks, opening cuts and prospecting for ore. It is now proposed to make them producers, and the deal just closed was in the interest of economy. A new bauxite discovery was resently made in this county in the near neighborhood of the State Line ore banks owned by the Etna Furnace Company, of Polk County, Georgia. No work other than prospecting and determining the existence of the mineral has been performed; but the samples compare favorably with the surface bauxite from the banks from which mineral has been shipped. The discovery is of importance to this section, because it proves to a certain extent that this entire brown ore district contains vast deposits, both in extent and number, of bauxite, and when thoroughly prospected will also become the producer of this mineral in sufficient quantities to warrant the erection of works in the South for treating it, either in the manufacture of alum, or aluminum. At present the limited demand, high rates of freight and requisite high grade renders bauxite mining none too profitable, and consequently the value of land containing the mineral only nominal. Associated with the bauxite in every bank where work has progressed beyond prospecting has been found a good quality of kaolin; carrying a small percentage of aluuina, entirely free from grit or sand, and of pure white color, for which undonbtedly a market will be found in the near future; but potteries erected here at home would be more profitable, both to manufacturers and producers. At present the only mines in Alabama from which bauxite is being shipped are in the Dyke's district, on the Bass Furnace Company's property.

ARIZONA.

(From our Special Correspondent.)

The mineral output for 1892, as shown by the smelters and Wells & Fargo's report was: Gold, $3,000,000; silver, $2,200,000; copper, $4,500,000; total, $9,700,000, being an increase of $2,000,000 over 1891. Quite a considerable amount of dust and placer gold is disposed of in such a manner that no record is made of it, and its computation is thus lost. Much ore is also shipped for reduction outside the territory, making it well nigh impossible to compute the total output, but a conservative estimate places it at $13,000,000.

Maricopa County.

(From our Special Correspondent.)

Phoenix, Phoenix.—Operations were resumed at the mine on the 6th inst. This will cause the starting up of five mills, there being over 1,000,000 tons of ore in sight, it is claimed.

Yavapai County.

(From our Special Correspondent.)

The following statement of progress in the Seven Stars mine at Hillside during the month of November has been furnished me by the superintendent. Its chief point of interest to the public is the low cost of the work per foot, even with the miners' wages at $3.50 per day:

No. 2 level, north, progress made, 40 ft. by one man, price $2.50 per foot.

No. 3 level, north, progress made, 32 ft. by one man, price $2.50 per foot.

No. 1 level, south, progress made, 51½ ft. by one man, price $2.50 per ft.

No. 2. level, south, progress made, 61 ft. by two

No. 4 level, south, progress made, 52 ft. by two men, price $2.60 per foot.

men, price $2.75 per foot.

An average of 32 ft. per man, at a price of $2.60 per foot.

"Rises" cost $2 per foot, and winzes $3 to $3.50 per foot. Cross-cuts have cost a minimum of $2 per foot and a maximum of $3.50. The usnal price is $3 per foot.

CALIFORNIA.

(From our Special Correspondent.)

Apart from the precious metals, the mineral output of the State was not large during 1892. The output has been estimated as follows: Asphaltum, 3,500 tons; bituminous rock, 50,000 tons; copper, 3,000,000 lbs. matte (1,800,000 lbs. metal); coal, 50,000 tons; chromic iron ore, 3,000 tons; cement, 6,000 barrels; gypsum, 3,800 tons; lead, 1,300 tons, principally from Inyo County; salt, 35,000 tons; antimony, manganese, tin, mica, graphite, onyx, plastic clays and building stones have been produced also in considerable quantities.

Perhaps the industry that has shown, during the last year, the most gratifying increase was the petroleum produet. In 1891 the output amounted to only 350,000 barrels, while last year the output of the crude material has been estimated at 500,000 barrels, or about 20,000,000 gallons. This showing places the Golden State third in the list of oil-producing States, being surpassed only by Pennsylvania, and Ohio. In California, however, the crude

oil sells at double the Eastern rate, in consequence of the active demand for fuel purposes. Santa Barbara County made the largest showing, with 250,000 barrels, the Pacific Oil Company, of Los Angeles, County, following, with 150,000 barrels; the Puente district, same county, producing 35,000 barrels, and 50,000 barrels being credited to all outside localities. During the current year it is certain that a still larger output will be made. Various companies with good financial backing are sinking new wells, and the oil prospects obtained in Kern, Humboldt and Ventura counties are bringing others into the field.

Amador County.

(From our Special Correspondent.)

The estimated output of gold bullion during 1892 amounts to $1,500,000, this being almost all obtained from quartz lodes, other forms of miniug, including hydraulic washing, being carried on in very limited degree.

Calaveras County.

(From our Special Correspondent.)

Utica, Angels Camp.—Another rich strike has been made in this old and productive property, which belongs to Alvinza Hayward, the estate of W. S. Hobart and C. W. Lane. The strike was made on the 100 level, and the pocket is so rich that 28-lb. rock is said to bave yielded 16 lbs. of gold. The pocket is so large that it was not cut through in 24 hours' work. The mine has been yielding dividends regularly, the rock being taken out being of good value and keeping the 60-stamp mill constantly at work. The vein is from 40 to 70 ft. wide, and has been supplying ore so steadily that a 100-stamp mill had become a necessity, and is now in course of erection.

Los Angeles County.

(From our Special Correspondent.)

Kelsey.—Some very rich ore has been taken from this mine and shipped to Pueblo, Colo., for reduction. The yield amounted, in several instances, to $5,000 per ton.

Nevada County.

Champion Mining Company.—This compauy, says the Nevada City "Transcript," has made arrangements for the erection of new hoisting works soon, to be put up in place of the present works, which are to be placed on the old Merrifield mine, a property owned by the company. The change of machinery, etc., will not seriously interfere with operations in the mine. It is proposed to resume work on the Merrifield ledge, aud an increase of meu will result as soon as everything is ready.

(From our Special Correspondent.)

The county maintained its reputation as the "banner" county during the past year so far as bullion production is concerned. In 1892 the product amounted to $2,250,000, as compared with $2,225,000 in 1891 and $1,985,000 in 1890.

Placer County.

(From our Special Correspondent.)

During the last 12 months drift mining has been carried on extensively, but the prohibition of hydraulic working has limited the bullion to about $1,000,000 in gold. Quartz mining has been confined almost solely to the Forrest Hill divide. The most important drift mine—the May Flower—has made an output of about $2,000,000, while the Hidden Treasure, and Bruce, and Wheeler, the latter known for its rich deposits, have both yielded handsome returus.

San Bernardino County.

(From our Special Correspondent.)

Owing to the depreciation of silver several mills have closed down within the past year, and in consequeuce the silver output of the county for 1892 has declined almost 50%, having been only $400,000. Placer mining has been carried on by about 200 men with varied results.

Shasta County.

The gulches between Redding and Shasta aud Buckeye districts are alive with placer miners, says the Shasta "Democrat," who are just now making good pay with rockers and sluice boxes.

Tuolumne County.

The Lady Washington, Soulsby, Richards and Grizzly mines, at Summersville, have been consolidated aud bonded by a San Francisco incorporation.

COLORADO.

Clear Creek County.

Pelican-Dives.—Besides the large amount of ore produced by the Eagle Bird and Illinois workings, a large body of ore has been opened up in the old Pelican tunnel, says the Georgetown "Courier." Some time ago the lessees started work here. Failing to meet satisfactory results, they were about to desist, when the management offered them a four months' lease at a greatly reduced royalty. They accepted the offer, and soon after opened up a body of ore estimated at from 2 to 3 ft. in width. The lessees immediately employed about 20 men and are working actively.. The ore is reported to run high. Lessees are employed in the Diamond tunnel level of the Pelican, and they, too, have opened up a 2-ft. body of ore.

Dolores County.

Rico-Aspen Consolidated Mining Company.—This company's mines at Rico were closed down on the 7th inst. This was the result, says the Denver "Republican," of a consultation held recently between David H. Moffat, president of the company; Eben Smith, general manager, and A. B. Roeder, treasurer. For some time the mines have been making no money, and the officers of the company have been contemplating stopping work in their shafts. The miners are union men. They will not work for less than $3.50 a day, and at that scale of wages they are the only gainers by the operation of the mines. The company made overtures to the men to continue them in work for the winter at lower pay, but the miners would not listen to the proposition. The compauy has 32 claims in a consolidation near Rico, all of which have been worked during the fall and winter, and all of which will now close and remain closed until spring at least. Two hundred men will be thrown out of employment. "We have been working our mines without profit," said Mr. Moffat to the "Republican," "in the expectancy or the hope, anyway, that silver would advance. But as it has been almost stationary, and there seems little prospect of its rising, we thought it best to close our properties. We shall not do any work at all in our mines. They do not need it, for they are perfectly dry and will not accumulate water."

El Paso County.

Mineral Hill Mining and Milling Company.—This company owns three claims on the west slope of Mineral Hill, but special attention is being devoted to the tunnel, which has been driven in 210 ft. in the side of the hill. The vein in the breast of the tunnel measures 3 to 4 ft. in width, of a grayish porphyritic quartz, in a porphyry formation. A careful examination of this vein matter reveals a pay streak of 8 to 15 ins. wide. The ore is apparently free milling, and there is about 900 tons of medium grade on the dump, whicb, though not of sufficient value to send to the smelters, will probably pay to run through one of the local mills now being erected. It is the intention of the superinfendent to drift on tbe vein.

Park County.

A frightful explosion occurred on the 10th inst. at the Union Pacific mines, four miles from Como, by which 24 workmen lost their lives. The accident was caused by what miners call a "windy shot;" that is, the charge of powder had been insufficiently tamped. The result was the instant explosion of the dust in the chamber of the mine where the men were working. The concussiou set free and circulated the black damp, and the almost instant death of the 24 men followed. The portion of the mine in which the accident occurred was promptly sealed up by the proper authorities to await the arrival of the State iuspector of coal mines.

Pitkin County.

Mollie Gibson Consolidated Mining and Milling Company.—An important decision in connection with mining corporations has been made by Judge Hallett, of the United States District Court, at Denver.The decision is, in brief, that any stockholder in a mining corporation has a right to enter the mine and make examinations of the property to his own satisfaction. The decision was made in connection with the suit of Captain Thatcher against this company. While regular dividends have been paid, the stockholders have been compelled to await results blindly, as the management refused admittance to any stockholders outside the officers of the company, while workmen in the mines, according to the Denver "Times," were pledged to secrecy.

Saquache County.

Nancy Hanks.—Sam. D. Coffin, it is reported, has completed arrangements whereby he disposes of a three-fourths interest in the Nancy Hanks lode to Charles J. Hughes and others of Denver for $60,000. The papers are all finished and the payments are to be completed in 60 days. The Nancy Hanks lies on Mammoth Mountain, south of Mammoth Mine. It was located by Coffin on September 21st, 1892. He has been operating the claim ever since, uncovering eight feet of vein, which he confidently asserts is the big lead of the hill and runs lengthwise of the claim, nortbwest by southeast.

FLORIDA.

The Plant Investment Company has acquired a controlling interest in the Silver Springs, Ocala & Gulf Railroad Compauy, which operates a line of 43 miles from Ocala to Iverness, where it joins the South Florida Railroad, one of the roads in the Plant system, and also 32 miles of branches to Homassassa, together with phosphate mines. Upon the completion of a knli about 60 miles, now under construction between Dunnellon, on the Silver Springs, Ocala & Gulf Railroad, and High Springs, on the Gainesville Division of the Savannab, Florida & Western Railway, the Plant system will control a continuous line from Montgomery, Ala., to Tampa, Fla. The phosphate mines on the Silver Springs, Ocala & Gulf Railroad, which have hitherto been solely dependent on Fernandina as an outlet for their large and growing export business, will now have a shorter line to deeper water at Tampa. To Brunswick and Savannah the same phosphate territory will now have ready access by this connection, through High Springs and the Savannah, Florida & Western Railroad. This new connection also opens to those ports and to Tampa, a valuable phosphate territory lying between the Silver Springs, Ocala & Gulf Railroad and the Cedar Keys division of the F. C. & P. Railway, and also the territory lying between the latter and the Gainesville division of the Savannah, Florida & Western Railroad. The work of improvement at Tampa, recently entered upon, provides for additional facilities for export business.

GEORGIA.

Polk County.

(From our Special Correspondent.)

After lying idle for several years, the Oredell brown ore tanks are again numbered among the shippers. This property, consisting of 1,100 acres, 20 years ago was among the best producers of soft honeycomb ore, analyzing very low in phosphorus in this section of the South. Since the old cuts have been cleaned out, the banks have every appearance of still being capable of bolding that reputation. The machinery used in the old single log washer has been removed, and a new washer erected in a more convenient location to the main body of ore. While both the surface indications and open cuts show evidence of immense bodies of ore, yet it is impossible to form any estimate of the extent of these deposits; for while all brown ore deposits are uncertain and deceptive, the soft ore banks are more so than the hard, which analyze bigh in pbosphorus. The ore is found in pockets and witbout any stratified formation. In one bank I saw a face almost solid, of boulders ore 25 ft. high and about 50 ft. across, with the floor of the cut in ore; in another bank the face of ore was only a few feet thick, the ore giving way to sandstone about 6 ft. below the surface. At another point on this property, a well sunk 45 ft. exposed ore the entire depth, increasing in value as it went down, but showing no regular formation or dip. It is the purpose of the superintendent at this point to sink on this ore body, and ascertain, if possible, its depth. The present water supply, if extensive works, such as are proposed, be erected, will be inadequate, but the owners of the property also own a fine spring 2½ miles distant, from which it is proposed to pump a sufficient supply. Prospecting has been carried on over about 50% of this property, and on nearly every 40-acre tract prospected more or less ore has been exposed. In one prospect cut a good quality of hard ore bigh in metallic iron and also in phosphorus has been encountered, but no work to ascertain its extent has been performed. Shipments are being made at present to the charcoal furnaces at Rome, Ga., and Rock Run, Ala.

IDAHO.

(From our Special Correspondent.)

The Boise City Bank has reported the mineral production of 1892 to have been as follows:

	1892.	1891.
Gold	$1,790,000	$3,150,000
Silver	2,798,000	5,650,000
Lead	2,475,000	4,200,000
Copper	....	75,000
	$7,063,000	$13,075,000

There is thus shown a decline of $6,012,000, accounted for by tbe sbut-down in tbe Cœur d'Alenes and tbe suspension of production in Alturas, Custer and Lemhi counties, owing to the low price of silver.

Alturas County.

Star Mining Company.—The directors of the Star mine, at Hailey, Idaho, bave held a meeting to receive bids for the erection of a mill at their property. It was decided to erect a concentration plant witb a capacity of 50 tons daily, and to place on the market 50,000 shares of the treasury stock at 15 cts. to meet the expense. A number of bids have been received for the contract, which are now nnder consideration. Advices from the mine are to the effect that the shaft is now down over 100 ft., and at the rate at which it is now being sunk it will reach the tunnel level by February 1st, and the main vein by March 1st.

Owyhee County.

Black Jack.—A large force of miners are at work on this property, and the mill is running steadily. The work in the mine consists of drifting south on the ledge and in stoping. The mill is doing excellent work.

Cliff.—Something over 300 ft. in tunneling bas been done on the property, and a fine body of ore has recently been opened. The rich streak is from 7 to 12 in. in width. Several tons are now on the dump, and a mill run will soon be made.

Trade Dollar Mining Company.—There are 26 men on the pay roll. Stoping is being done in the north drift of tbe 100-ft. level of winze D and in tunnel No. 3, over the winze. The south drift of the 100-ft. level is being driven also. The mill made a cleanup this week, and has shut down for want of ore. As nearly all of the milling ore has to be hoisted by hand, it is impossible to keep the mill running steadily. The mill will be started again about the 1st of January. The Blaine tunnel has reached a length of 2,075 ft. and is being pushed as rapidly as possible by three eight-hour shifts. The stope is looking fine, and has about 12 in. of $250 ore. The face of the drift is in fair quartz.

Shoshone County.

Mammoth.—The location is on a parallel to the Tiger-Poorman lode and about a quarter of a mile south. The ore is galena and carbonates, generally clean and fit to ship withuot much hand-

sorting. and runs by the carload about 10 oz. in silver and 50% lead. As concentrates from the Coeur d'Alenes run on the average about 25 oz., it is seen at a glance that the Mammoth ore is of a very high grade. The average width in the pay chute is two feet of clean ore. The mine is opened up by two cross-cut tunnels, one striking the ore body at a depth of 100 ft. and the other at 325 ft. The lower tunnel is 600 ft. long. The owners struck the ore body in the fall of 1890, and have taken out over $100,000 of ore. They have shipped to Denver, Omaha and other distant markets, and are now shipping to Tacoma. The owners have their own boarding house, blacksmith shop and everything needed for operating a mine, and now employ about 25 men. In connection with the Standard, they have constructed two miles of wagon road, connecting these mines with both the Northern Pacific and Union Pacific railroads in the town of Burke, where the Mammoth has a switch. The Mammoth is owned by C. W. O'Neil, Richard Wilson, A. L. Scofield, James Leonard and W. R. Leonard of Shoshone County, and Walter Mackay, of Butte, Mont. Mr. O'Neil owns three-eighths and Mr. Wilson and Mr. Mackay nearly one-quarter each. They have now ahead of them an ample stope of 225 ft. in height, which will take a long time to work out. The company intend driving another tunnel, probably 1,000 ft. long, to tap the ore body deeper.

MICHIGAN.

Copper.

Copper Falls Mining Company.—Superintendent Moyle says the shaft was down 405 ft. at the close of the year. On first level. drift is in 180 ft. In the second level the drift is in 60 ft. and they are ready to start on a third drift. The vein is looking well, and an assessment of $1 per share would be sufficient to build the necessary shaft house and put the mine in good working shape.

Tamarack, Junior, Mining Company.—The third level and the stope following are showing richer.

(From our Special Correspondent.)

The Duluth, South Shore & Atlantic Railway has bought the controlling share of the stock of the Mineral Range road, which runs from Hancock to Calumet and other mining towns. Broad gauge will at once be put in and the entire copper country treated to through connection with the outside world.

Iron.

(From our Special Correspondent.)

The following quantities of ores and minerals passed through the Sault Ste. Marie Canal during 1892:

4,901,132	tons	iron ore, value	$17,152,962
64,993	"	copper, "	12,998,000
41,748	"	pig iron "	709,716
1,930	"	silver ore "	296,814
39,698	"	building stone, value	396,980
59,772	"	manufactured iron, value	2,988,600
2,904,266	"	coal, value	10,164,931

Besides other freight, all of a total value of $135,000,000, 12,580 vessels of all sorts were locked through. The canal was open 233 days, and business increased 26% over 1891.

Iron—Gogebic Range.

Chapin Iron Company.—On January 3d the new pumping plant at the Chapin mine was started up and all the connections were found to do their work satisfactorily. The engine is of the steeple compound condensing type, and was designed by E. & I. H. Reynolds. It is capable of lifting 200 tons of water per minute 1,500 ft., 100 ft. flow, which will be equivalent to 4,000,000 gallons in 24 hours. It will be seen that the Chapin Mining Company, in putting in this machine, is providing for any contingency that is likely to arise as the mine is deepened to 1,500 ft. from the surface. The high pressure cylinder is 50 in. in diameter, and the low pressure cylinder is 100 in. in diameter, and the pumps, to be located about 200 ft. apart in the shaft, are 28 in. in diameter, with 120 in. stroke, The bob weighs about 120 tons and the fly wheel about 160 tons. The fly wheel is 40 ft. in diameter. The rim of the wheel is 24 in. thick and 24 in. wide. The shaft on which the fly wheel revolves is 27 in. in diameter. The bob is made in seven pieces and firmly held together by 21 wrought iron links shrunk on to the lugs. The engine is fitted with a surface condenser with 1,049 1-in. tubes and a Reynolds patent air pump. The mine water will be used in the condenser for cooling purposes. The boiler plant at present consists of four Reynolds patent vertical boilers, but as the mine increases in depth four more will be added as needed. The plant was built by the E. P. Allis Company.

Norrie.—Fire was discovered at 6 o'clock in the morning, on January 11th, on the fifth level, No. 7 shaft, Norrie mine. The fire is so situated that much difficulty is experienced in getting at it. At noon the firemen were working at it from the fourth level, but their work was retarded by the dense smoke. The Norrie's output for 1892 was 1,000,000 tons.

(From our Special Correspondent.)

Sales of ore for next season's delivery are already reported. The Florence Iron River Company have sold 300,000.

Two thousand tons per day is the output of the Chapin mine. Over 1,000 men are employed.

As soon as the Ludington and Chapin agree upon water charges and a few other questions about which there is a disagreement both mines, with the Hamilton shaft, will be worked to their full capacity.

Iron—Marquette Range.

Pioneer Furnace.—At about 6 o'clock Wednesday evening, January 4th, the first cast of pig iron from the Pioneer furnace at Negaunee was run off.

(From our Special Correspondent.)

Between the Cleveland companies land and the Jackson Iron Company at Negaunee a union diamond drill hole is being bored. Already 650 ft. is reached, but nothing of value has been cut.

Lake Angeline Iron Company.—On the 5th of January the company announced to its employès that it had adopted the eight hour day. The news was received with manifestations of pleasure on the part of the men. During the last three months the eight hour day has been tried as an experiment and the output per man has increased considerably.

Lake Angeline is dry. Water now running in will be pumped into a flume and carried off via the Carp River, the natural drainage outlet of this part of the range.

Iron—Menominee Range.

Pewabic Iron Company.—A second shaft has been located at the Pewabic mine, to be known as No. 2. This shaft will be located about 120 ft. east of No. 1. Its size will be 6 ft. by 21 ft. in the clear of the timber, and will contain four compartments. Two of the compartments will be used for balanced cages for ore hoisting, one compartment will be used for timber cages and the other for pumps and ladder road. This new shaft will be sunk to the fourth level, or about 640 ft. from the surface, during the present year. It is expected that good speed will be made in sinking, as the most approved machinery has been secured and the working force well organized. Preparatory work for sinking has been commenced, but sinking will not be pushed until boilers and engines have been placed, which will be late in January.

MINNESOTA.

Iron—Mesaba Range,

(From our Special Correspondent.)

Steam shovels of a new pattern are to be built for the Mesaba. They will be able to shovel 15 ft. deeper than the track upon which they stand, thus giving quite a "stope" of ore to work from. But just how the ore can be shoveled without first blasting no one seems to know.

MONTANA.

Jefferson County.

Elkhorn Mining Company, Limited.—Ore 550 ft. level south. The vein is 3 ft. wide and assays 30 oz. In the underhand stope the vein is 4 ft. wide and assays 40 ozs—650 ft. level south: The back stope has 3 ft. of 50 oz. dry ore. At the south end the ore is 3 ft. wide and assays 42 oz; 750 ft. level north, the vein in the raise from the footwall crosscut is 18 in. wide and assays 28 oz. The ground is becoming softer and appearances more favorable. South of the shaft in the back stope (below the 650-ft. No. 2 stope) the veins 2 ft. wide. One-half of this is lead ore, assaying 50 oz. and 30% lead. Centre stope: The vein is 4 ft. wide and assays 40 oz. No work has been done on the 850-ft. level; 950 ft. level, raise to diamond drill stope, the vein is 5 ft. wide and assays 38 oz. A new stope has been started from the bottom of the raise at the north end of crosscut. At the south end the vein is 5 ft. wide and assays 50 oz.; 1,050 ft. level south: A raise is being put up from the back of the level just above the south end of the 1,150 ft. stope. The ore assays 40 oz. for a width of 4 ft.—1,150 ft. level south: At the north end of the stope the ore is 4 ft. wide and assays 30 oz. In the centre the dry ore is 5 ft. wide assaying 40 oz.; and the lead ore is 2 ft. wide, assaying 60 oz. and 12% lead. The south end has 6 ft. of 35 oz. dry ore. 1,250 ft. level south, the north end of the main stope has 5 ft. of 50 oz. dry ore. The centre and south end have 6 ft. of 80 oz. and 12% lead with some bunches of high grade sulphurets. 1,350 ft. level south. The north end of the stope has 5 ft. of 40 oz. dry ore. At the south end the vein is 12 ft. wide, 4 ft. of this is high grade smelting ore, and the balance is 40 oz. mill ore. Prospecting department: 1,450 ft. level north, footwall crosscut previously reported 5 ft.; advanced in November 14 ft.; total length December 1st, 19 ft. This crosscut is all in ore averaging 65 oz. silver with bunches of lead. The appearance is very good, and the indications are that we are near the top of a valuable ore body. South drift, during the month the main drift was advanced 66 ft. The total length is 562 ft. The footwall drift is 47 ft. making the total drifting on this level 609 ft. A new body of ore was struck in the main drift at a point 537 ft. from the shaft, it is 25 ft. long and averages 70 oz. The width is not yet proved. Raise to 1,350 ft. previously reported 67 ft.; advanced in November 83 ft.; total length December 1st, 150 ft. We are expecting to hole through to the upper level at any time. The sinking of the main shaft will be resumed as soon as this connection is made. Milling department: During the month we renewed two of the pans and one of the settlers. The new dust chambers and blower are working satisfactorily and are saving a large amount of the fine battery dust. The machinery generally is working smoothly. We have sufficient sulphur in the milling ore from the mine to make the addition of iron sulphide unnecessary, and the purchase of this article for the benefit of the roasting has been unnecessary. Table of work performed in November, 1892: Ore on hand November 1st, 94 tons; raised from the mine, 2,302 tons; less smelting ore, 262 tons; second class, 64 tons, waste 114 tons, 440 tons, 861 tons. Add for salt, 160 tons; ore panned in November, 1,008 tons; pulp in the mill, 43 tons; rough ore in stock, 64 tons; total, 1,115 tons. Dry tons panned, 1,008; assay average value, 43 oz.; average per cent. salt used, 12; average value of tailings, 4 oz.; averaged percentage saved, 91; number of Dore bars produced, 59; number of ounces fine silver, 47,286; number of ounces fine gold, 66; batteries in service, 26 days 12 hours; pans in service, 27 days 12 hours; estimated value of bullion, $39,975; actual value of 262 tons of ore shipped $17,822; $57,797. Current expenses, including salaries, labor, and all supplies, $24,371 = $33,426. Balance being profit for November, 1892 (at $4.90 to pound sterling = £6,821. Surface department: Wood tramway. The contractors have been delivering wood during the latter part of the month. Everything is in order for the winter, which is now fairly upon us.

NEVADA.

The mining industry has been steadily declining in Nye county for a long time past, and no change for the better is expected unless Congress will afford some relief. Since the decline of silver camp after camp has shut down and been abandoned. The geographical position of the country in the state is and will be against the development of its mines until a railroad intersects it. Nye was, in early days, well in the front as a bullion producer, but is now in the lowest notch among the mining counties of the state. Her hills, like her valleys, have been reduced to mere pasturage. The need of a railroad is equally felt by miners, farmers and cattlemen. The low price of silver is ruinous, and the want of cheap transportation of supplies to the county and of its products to market precludes the possibility of profits from any source, and people are seeking other fields for remuneration of labor.

In Spanish Belt District the little working force of 12 miners at the Barcelona mine has been reduced to half that number. In Jefferson only six men are working—chloriding in the hope of realizing enough money to get away on. There is not a miner at work in Toziabe range of mountains from Kingston to Peavine. In Northumberland District two men own all the mines and three men do all of the mining and haul their own ore, and are doing fairly well. These are samples of the condition of mining in a county where the ore is plentiful and rich. Tybo and Reveille have each eight men at work where there were formerly hundreds. In 18 other districts combined there are only 18 miners at work all told. No active work is being done except in the southern part of the county, through which section the hopes of a railroad in the near future encourage a limited number of miners to work. Such is the present condition of one of the richest counties in Nevada.

In Nye County the valleys are fertile and water is plentiful. Her hills are remarkable for their number of mineral veins and, in very many cases, the richness of the ore. There are also many low grade properties of great extent, but they cannot be worked with profit while silver is low and transportation charges are ruinous.

Elko County.

(From our Special Correspondent.)

Coptis Mining Company, Tuscarora.—A shipment of bullion valued at $3,200 has been received at San Francisco from the mine.

Lincoln County.

The Pioche "Record" says: That the interest now centering in the Yellow Pine district is not without a good mineral foundation may be illustrated by a review of the properties there which at this time are regarded as ore-producers—the claims, in fact, which will be relied on, without further discoveries, to supply the 200 tons of ore a day required by the incoming branch road from Golf's. A number of lead deposits exist in the district, among the foremost of which comes the Mountain Top group, situated some two and a half miles southwest of Good Springs, and embracing nine claims.

Magnolia.—The Pioche "Record" says of this property: "While the Magnolia is admitted generally to be a good prospect, a man is not justified in going wild over it. No particular change has occurred in its appearance for some time past. The last and final payment on the property of $42,500 would have been due on January 15th. The main shaft on the claim is down about 140 ft., and to properly prosecute the work deeper would necessitate the erection of a whim or steam hoist. With supplies of all kinds difficult to obtain, this would occupy some time, three weeks, at least, and the bondees asked for 60 days' further time in which to prospect the claim after the erection of the hoist. Some of the locators agreed, while others wanted a bonus of $10,000 for the privilege. In the opinion of the bondees the property did not warrant this, and all work was suspended and the mine turned over to the original locators. With all work stopped on the Reed tunnel, and no active work going on in the April Fool claim, the district is correspondingly dull and quiet, and will probably remain so until new

deals can be effected or new discoveries are made there."

Storey County—Comstock Lode.

The following Comstock companies report having had cash balances on hand on the 31st ult.: Alta, $14,833; Alpha, $1.278 (and owes the pumping association $2,500); Andes, $3,009; Best & Belcher, $2.421; Bullion, $13,0 0; Caledonia, $1.647; Chollar, $622; Consolidated New York, $7,617; Gould & Curry, $13,979; Julia, $3,803; Justice, $5,619; Kentuck, $2,063; Lady Washington, $5,227; Mexican, $14.328; Occidental, $9,573; Savage, $2,703; Sierra Nevada, $13.558; Silver Hill, $3,858; Union Consolidated, $7,053. The following companies report an indebtedness: Belcher, $20,155; Challenge, $9,522; Confidence, $12,122; Consolidated Imperial, $3.372; Consolidated California & Virginia, $42,297 (with $40,081 in unsold bullion); Crown Point, $14,793; Exchequer, $2,500; Hale & Norcross, $8,087; Ophir, $4,563; Overman, $12,365; Potosi, $26,099; Segregated Belcher, $6,976; Utah, $4,444.

Confidence and Challenge Mining Companies.—The latest weekly official letter says: "The joint west crosscut from the north drift on the surface level is out 180 ft. The face shows porphyry. We are still hoisting from the mine and shipping to the Brunswick mill for reduction some ore found on the upper levels."

Consolidated California & Virginia Mining Company.—Superintendent Lyman writes as follows under date of January 4th: President Fish and myself have been through the Ophir, Mexican and to the extreme south end of our 1,500 ft. level to-day. That is, to the sill floor on the 1,500-ft. level stopes and within a few feet of the up raise connecting with our 1,650 level, or the point where the fire started and drove the men out. I have a large stream of water running into the old stopes in this part of the mine, and feel certain that in a very few days we will resume ore extraction from the 1,500-ft. level.

Crown Point Mining Company.—The latest weekly official letter says: "The west crosscut from the southwest drift, 150 ft. south of the shaft on the 400 ft. level, has been extended 20 ft and is now 156 ft. The face is porphyry mixed with clay. The pay streak on the floors above the 160 ft. level in the west stope has become smaller and lower in grade. We are stopping under the track floor at this point and find the pay extends down about 8 ft. below this level. This grade of the ore is very good, but its extent north is very limited as far as we can see."

Hale & Norcross Mining Company.—There has been an improvement in crosscut No. 4, now being run north on the 1800 level, near the dividing line between the Norcross and the Savage, says the "Virginia City Enterprise." Ore is known to exist in this locality over the Savage line, and the present discovery will not take people by surprise who have kept posted on the situation. The north lateral drift should have been continued and crosscutting commenced at this point in the first instance instead of wasting time over the others further south.

Justice Mining Company.—The latest weekly official letter says: "The south drift from the north stope on the 822 ft. level is out 80 ft. It is following a pay streak from 3 to 4 ft. wide, which assays about $25 per ton. We have stopped the north drift from the raise on this level, and have started to clean out and repair the tunnel from the main road, with the intention of driving it farther west."

Savage Mining Company.—The latest weekly letter says: "We have hoisted 496 cars of ore from the 950, 1,100 and 1,400 levels; shipped to the Nevada mill 525 tons and milled 525 tons. The average car sample assay was $25.71, average battery assay, $24.14; bullion yield for the week, $8,872 50, shipped to the United States mint at Carson, January 3d, 734 lbs. of bullion. On the 950 level, at a point 100 ft. south of the shaft, we are sinking a winze from the main south drift, to connect with the upraise from the 1,100 level ore stopes. This winze is now down 10 ft. in ore of fair grade. On the 1,100 level they are stoping ore from the thirteenth floor up to the seventeenth floor. The upraise from the fourteenth floor has been carried up 32 ft.; top is in ore of good quality. On the 1,450 level the west crosscut started 100 ft. from our south boundary is advanced 80 ft. The face of this drift has reached the downward continuation of the ore from the north stope, 1,400 level. The joint north drift with the Gould & Curry Company on the Sutro tunnel level was advanced 15 ft.; face in hard porphyry."

(From our Special Correspondent.)

The following is the weekly tabulated statement of ore extracted from Comstock mines and milled, with the car sample and battery assays, bullion shipments, etc.:

Mines.	Tons Hoisted.	Car Sample Assay.	Tons Milled.	Average Battery Assay.	Bullion Product for Week.	Bullion Shipped.
Belcher.....	.....	.....	431	26.31	.....	[1] $19,704.16
Con New York.	.....	.....	....	...	.....	[5] 20,381.33
Con. Cal. & Va..	26	32.75	...	...	.....	.....
Overman.....	183	15.54	236	10.75	....	....
Potosi.....	348	33 60	348	25.61	.. ....	[2] 7,495 [3] 392 lb.
Savage.....	[4] 496	25 71	5 5	24.14	8,872.50	[3] 731 lb.

[1] First shipment on December account. [2] Shipped to San Francisco. [3] Crude bullion. [4] Cars. [5] Total amount on present run of mill.

NEW MEXICO.

American Turquoise Mining Company.—This company declared a dividend of 6% on its capital stock o $1,000,000 last month, says the Silver City "Sentinel." This company has mines in the Burro mountains. These mines were worked many years ago, as is shown by the old dumps, but of late years there was very little attention paid to them until they were secured by this company.

Grant County.

The Mountain Key mill is running full time on ore from the Pacific Gold Company's mine.

Manhattan Gold Mining and Milling Company.—This company has levied assessment No. 6 for the purpose of carrying on the work of tunneling to the main vein on the company's property at Pinos Altos. It is expected that the tunnel will be completed in a few weeks, and then the company's mill of Silver City, which has been idle for more than a year, will be started up.

Pacific Gold Company.—This company's mill. at Silver City, is again in operation after having been idle for several months on account of lack of water. The company is now mining more ore than ever before, the output of the mine reaching nearly 100 tons a day.

Solid Silver Mining Company.—Work has been resumed on the new shaft on this company's property at Black Hawk. It is being put down on an incline to a depth of 1,000 ft. Connection will be made with the old workings at the 700 ft. level.

Santa Fe County.

It is reported that the placers near Golden are in a portion of New Mexico to which it would cost millions of dollars to get a supply of water sufficient to work them. These placers cover an area several miles in extent, and development has shown that the pay dirt is as much as 90 ft. thick. Attempts have been made to work the dirt in dry washers, but none of them has been successful. A nugget valued at $2,790, the largest ever found in New Mexico, was found near Golden about 30 years ago, and a number of smaller ones have been found there since.

Sierra County.

The Hillsborough mines are keeping three mills constantly in operation reducing the ores produced from the mines in the district, and a 30-ton smelter is kept going most of the time. The mills are all small, having an average capacity of about 20 tons of ore a day each.

The output of the mines at Lake Valley has been very light for some months, but drilling has been commenced in the heart of the town in the hope of finding another bonanza like the Bridal Chamber, which caused such an excitement there nearly 10 years ago, says the Silver City correspondent of the New York "Sun." More than $1,000,000 have been paid in dividends from the mines owned by the Sierra Grande Company, and later by the Silver Mining Company, of Lake Valley, but all the rich deposits of ore in these mines have been worked out, and the output from them is now inconsiderable.

OREGON.

Jackson County.

(From our Special Correspondent.)

Ashland Mining Company, Ashland.—The mill has made such a good run that, in conjunction with the general interest aroused by a favorable mining outlook, a boom in mining is almost certain to occur in the spring. From a 26 days' run of the five-stamp mill belonging to this company a clean-up of 426 oz. of gold bullion was made.

PENNSYLVANIA.

In the Supreme Court at Philadelphia on the 9th inst., in the appeal of the Chartiers Block Coal Company vs. W. L. Mellon, Judge Paxson held that the leasing of the coal right to land entitles the lessee only to the coal and the right to remove it. The owner of the land can lease the oil, gas or any other rights, involving lower strata of earth to another, and the owner of the coal lease cannot object to the drilling through his coal by the holder of the leases below him. The question is an involved one, however, and for this reason the court advises legislative action regarding surface and strata leases of land. Consequently the decree of Common Pleas Court No. 2, Allegheny County, is affirmed and the appeal dismissed. Justice Williams gave notice of intention to file a concurring opinion. The decision is one of great importance to oil men operating in territory in which the coal right had previously been disposed of.

Coal.

In connection with the recent tonnage deal of the Pardee estate it is stated that that estate no longer has any interest in the operations conducted at Lattimer, Harwood and Hollywood. This copartnership terminated December 31st. The Pardee estate, however, retains its interest in the Hazleton mines Nos. 3 and 6, and in the Laurel Hill operations.

Philadelphia & Reading Coal and Iron Company.—We abstract the following from President McLeod's annual report, submitted at the annual meeting of the stockholders held in Philadelphia on the 9th inst.: "The operations of the Coal and Iron Company have left the entire receipts of the railroad company available for application to the payment of interest on the income bonds without requiring an appropriation by the railroad company from its earnings to pay interest and sinking fund charges on the divisional bonds of the Coal and Iron Company, as in previous years. Your board has, therefore, under the provisions of the income mortgage, declared the full rate of 5% interest, payable February 1st, on the three classes of income bonds." Referring to the arrangement with the Finance Company of Pennsylvania, the report says: "This arrangement, together with negotiations recently concluded for the sale of securities in the treasury of the company have enabled the company to supply working capital, to provide for the liquidation of the floating debt and meet requirements for capital for construction expenditures in the ensuing year. The equipment of the company was increased during the year by 46 locomotives, 100 passenger coaches and 4,383 freight and coal cars, upon which payments have been made amounting to $1,630,824. Upon improvements there have been expended, in excess of the amount charged to operating expenses, $437,148, making the sum carried to capital account for the year $2,067,972. The statement for the year to November 30th, 1892, showed a surplus of $24,340 from the Coal and Iron Company, and $3,157,147 from the railway company, a total of $3,181,487, or $246,487 in excess of the interest on the incomes. Gross earnings of the Reading Railway Company for the year were: $22,986,247, against $21,853,801 in 1891; net, $10,495,-174, against $9,991,882; other income, $703,867, against $526,152; total income, $11,199,042, against $10,514,732; interest, rentals, equipment, dismantled taxes, profit and lost, etc., $8,041,895, against $7,921,-487; surplus, $3,157,147, against $2,593,245. The statement of the Coal and Iron Company shows: Net receipts, $1,273,148; all charges, $1,248,808; surplus; $24,340; to which add railway surplus, $3,157,147. making a total of $3,181,487. The interest on preference income 5's amounts to $2,935,000, and the surplus of both companies to $246,487."

Slate.

Hazleton Slate Company.—Seven persons, representing four families, have entered suit in ejectment against Benjamin T. Jones, David Thomas and Evan G. Evans, trading as the Hazleton Slate Company, to dispossess them of a tract of sixty acres of valuable slate land in Slatington and Washington townships.

Stone.

The recent lease by a syndicate of Philadelphians of nearly all the large granite quarries at falls of French Creek is followed by the information that the Delaware & Lancaster Railroad, running to that place, will probably be leased by the same party, and the quarries and railroad will be operated on a most extensive scale. Hundreds of men will be given work getting out granite, much of which will be converted into Belgian blocks.

SOUTH DAKOTA.

Lawrence County.

Deadwood & Delaware Smelting Company.—The smelter is working with the regularity and precision of clockwork. The matte and lead stacks are in continuous operation. The product is shipped as fast as turned out, and is not permitted to accumulate.

Pennington County.

Tin Mining, Milling and Manufacturing Company.—The following are extracts from reports by Mr. J. S. Childs, the company's superintendent at South Dakota: Under date December 12th, 1892, Japanzey mine—25 tons from Japanzey received this morning (at the mill) averaged 340 lbs. block tin per ton of 2,000 lbs. I shall test all ore on the dumps of the several mines not reached by the spurs, including Flora, Excelsior, Mohawk, Mewonitoc, Nevada No. 2, and may test some from Ecta. Under date December 14th, 1892—tin mill: It is now nearly one month since we began crushing ore. We have now one-half of the mill working nicely and will at once begin hedding the remainder, so that in a short time we will be running full time. As a matter of fact, we have been considerably longer than I expected in getting the mill at work. This, as I have explained, was caused by the representative of the builders fearing the detection of loss of metal below the mill. I have caused the closest watch to be kept here, and while the tailings have shown some black metal, the loss, considering the experimental stage, has been slight. Addie mine: Aside from sinking and timbering the main shaft over 300 ft., drifting, cross-cutting and cutting stations at each 100-ft. level, I have nearly doubled the size of the shaft house, replaced the old boilers with new ones, more than doubling the steam supply, completed large ore bins, added a changing room for the miners to the main building, and in other ways made many improvements, so that the Addie mine to-day is one of the most complete hoisting plants in the Western country.—Cow Boy mine: I have also enlarged the shaft house at this mine, and increased the steam supply.—G. W. Coats' mine: I have done but little here, as I found the hoisting plant larger than most of the other mines.—Japanzey Mine: We have been engaged in drifting and blocking out ground here; aside from this I have raised through to the old workings, carrying a full sized shaft that will enable us to continue sinking below the tunnel level.—Mohawk Claim: I find at the Mohawk claim one of the finest outcrops in the district, carrying a grade of ore fully as high as the Cow Boy. I now have two men at work stopping ore from the surface, which yields a fine percentage of black metal.—Placer Mines: We have not worked any of these except as farm properties. I find it of benefit to adopt my system of

leasing for a portion of the crop harvested. I shall hereafter endeavor to find people who are willing to accept longer leases and hold them entirely responsible for any damage sustained by the ranch property, such as buildings, fences, &c.

UTAH.

A. Kuebler returned on January 10th from Conewash, on the San Juan River, about 75 miles from Bluff City. He was sent out by the Board of Trade of this city. He states that there is absolutely nothing to warrant the excitement in that section. There has been no gold taken out, and 3,000 disgusted men and two women are heading back for civilization. The situation can be understood by this legend, which he found written with chalk upon a square face of sandstone near Navajo Springs, Utah: "One hundred thousand dollars for the man who started this gold boom."

The country has been flooded with provisions of all kinds, and flour is being offered for $1.50 a hundredweight, grain at 1¼ cents per pound, and other things in proportion, with no takers. He met several hundred men who had no bedding and were begging their food. They were afoot, and will probably perish unless taken care of by some of the returning outfits.

The Gable company only have twenty two men employed, eight at one point and fourteen at another, guarding the claims. No work is being done and there is no machinery on the ground. The only machinery he saw were two small rockers. No men are working along the river, and for several days few people have gone there by the Green River route.

Mr. Kuebler made good time back, as he was anxious to give the news after getting it straight. David Day's party has split up, and most of them are now in the Carrizo Mountains prospecting for copper leads. The roads are bad below Bluff, the sand being 12 in. deep, and 15 miles a day with good teams is the limit.

Provisions and goods of all kinds are scattered along the river for 50 miles, being practically abandoned, the owners desiring to get out of the country as fast as possible. In many instances men went there with nothing, and are cursing the people who started the boom, as they gave up positions to get into the alleged El Dorado.

There has been no trouble of any kind. A bond of sympathy exists between the duped gold seekers. Several other men returned last night from the river, and they verify Mr. Kuebler's statements. When pressed by the correspondent of the New York *Times*, Mr. Kuebler said: "You can say for me that the whole business is a 'fake.' There is nothing in the country at all, and people should keep away."

Mancos, Col., Jan. 11.—The great San Juan gold fields are now declared to be a fake of the first water, and the rush homeward has started. Between 75 and 100 angry men came in here yesterday from the south, and hundreds are following them as rapidly as their means of transportation will permit. All are loud in their denunciation of those who orignated these stories of rich placers, and large rewards are offered for any reliable clue to their identification. The situation would be ludicrous were it not for the fact that many of these deluded men risked every dollar they owned in the undertaking and now find themselves penniless.

On another page will be found a letter from a trustworthy correspondent confirming these reports.

Salt Lake County.

Emma Company, Limited.—December 10th: Extracts from reports: We completed the shipment of Grizzly ore last night, which amounted to 1,540 sacks and will arrange with the railway company to send sufficient cars to Wasatch for 55 tons of ore, so when the ore gets there we may be able to ship direct. The winze in the Emma mine is still encouraging, too good to abandon Illinois new working. Am sinking down a seam of iron which is 2 ft. wide and about 5 ft. long. We had an average assay tried this morning which resulted in 24% lead and 27 oz. silver. December 14th: Emma, Illinois new workings: Some few days since we started a winze on a seam of iron that was in bottom of old workings; by sinking about a foot we came into payable ore, which still continues; if it keeps the same pitch it will go beyond our old workings. Now taking out from 25 to 30 sacks per day. Winze below Illinois, the vein matter is about 2 ft. wide intermixed with galena for the entire length of winze, which will pay for milling. We have started a raise on No. 4 level about 40 ft. southwest of Attwood winze on a streak of vein matter 1½ ft. wide. The ground has every indication of ore.

WASHINGTON.

(From our Special Correspondent.)

The minerel industry has been carried on during 1892 in such a desultory manner that it is impossible to make any close estimate of the output. Several big properties were sold to capable parties during the year, however, and during the coming season ought to be heard from. The coal production aggregated about 900,000 tons, divided as follows: Roslyn mines, 204,000 tons; Newcastle mines, 15,000 tons; Franklin mines, 80,000 tons; Gilman mines, 80,000 tons; Carbonado mines, 80,000 tons; Black Diamond mines, 60,000 tons; South Prairie mines, 60,000 tons; Blue Canyon mines, 20,000 tons; Green River mines, 20,000 tons; and about 50,000 tons from small mines throughout the State.

Stevens County.

Bonanza.—Three carloads of concentrates from the Bonanza mine at Millington, in Stevens County, on the Spokane & Northern Railroad, arrived in Spokane Tuesday evening for shipment to Helena, Mont., and Deadwood, Dak. This mine is now turning out a daily average of one carload of concentrates that run about 60% lead and 12 oz. of silver to the ton. A regular contact vein has been discovered in addition to the large ore body. A meeting of the stockholders was held in this city to arrange for increasing the facilities for operating the mine, which promises well.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

E. P. Hughes, of Kaslo, said recently: "The road is completed now from Kaslo City to Bear Lake all but about three quarters of a mile. From Bear Lake City to the Freddie Lee it is finished. Thirty-six tons of ore goes into Kaslo City every other day now, and in less than 10 days the amount will increase to 45 tons daily. George W. Hughes has contracts for hauling 2,000 tons from the Washington, 1,000 and possibly 500 more from the Freddie Lee, and 1,000 from the Idaho. The Idaho has run a drift in 45 ft. on the upper tunnel, and has 15 inches of solid clean ore that goes 210 oz. and 73%. The Freddie Lee's tramway is a way up success, and they have 500 tons of ore on the dump. The Washington is in 160 ft. and has 29 in. of solid clean ore, with 450 tons on the dump. G. W. Hughes is at work with 17 men building a trail, and expects to haul out at least 20 tons a day from the time the trail is completed until May 1st. G. W. Hughes' Mountain Chief has 17 in. of clean ore, sacking near an average of two tons a day. A sleigh road is being built down to it by 12 men, and it is expected to ship 250 tons. The Best, owned by G. W. Hughes and myself, is looking well and employing eight men. The Blue Bird is shipping three tons a day in rawhides. A week ago it had 32 in. of clear ore in the face of the drift. The Jackson claim, bonded by Dr. Kilburn, of Seattle, has in the tunnel 18in. of solid, clean ore that assays 175 oz. and 63%. The Dardanelles expects to ship in a few days 30 tons of ore. The Lucky Jim had 26 in. of clean ore December 16th, when I was there, and had 200 tons on hand. The Wonderful has got in supplies and has eight men at work. The Rico has five men on and is in 35 ft. and has 24 in. of solid ore. The Wellington is looking better than ever, and the Grady claim, on Four Mile, has 18 in. of high-grade ore. The Keno, the south extension of the Best, had 10 in. solid after the assessment work was done. It assays 562.40 oz. of silver and 78% lead. When the assessment work was started, there was nothing in sight."

Slocan.

Alamo.—This group consists of the Alamo, Twin Lakes and Ivy Leaf locations. There are 15 men at work in tunnels on the two first named. They will be kept at work all winter. In the Alamo the tunnel is in 30 ft. and in ore all toe way. The ledge is about 3 ft. wide, with a 13 in. pay streak of high grade galena. The balance of the ledge is composed of carbonates and quartz. The cost of getting the ore out, exclusive of mining, is as follows: From the mine to Caslo City, $20 to $40 per ton; from Kaslo to Tacoma, from $15 to $17 per ton.

Chambers Group.—John M. Burke has secured a bond on this group on Carpenter Creek in the Slocan country for the sum of $50,000. This was one of the discoveries of a year ago which created the stampede into Slocan and Kaslo this summer. It has perhaps the largest surface showing of any mine in that section, the ledge showing for several hundred feet a width of from 50 to 75 ft. But little work has been done on it so far. The ledge is composed mostly of concentrating ore, but there are streaks of ore from 6 in. to 2 ft. wide, as clear and of as high a grade as almost any galena in the camp.

CANADA.

Province of Nova Scotia.

The strike at the Spring Hill collieries ended on the 23d inst., mutual concessions being made by the miners and the corporation. The miners, however, gained most of the points for which they contended.

Province of Nova Scotia.

It is reported from Halifax that Pennsylvania coal operators, acting with the Canadian Pacific Railway, have nearly closed a deal by which almost the entire coal fields of Nova Scotia are to pass under their control. The "combine," it is said, has over $17,000,000 to invest in the project. The Nova Scotia Legislature has been called to meet next week to ratify the bargain. A well-known financier says of the scheme: "This consolidation of Nova Scotia mining companies is the outcome of the combination of the anthracite coal carriers in February, 1892, and the anthracite men are believed to be backing this new deal to protect themselves against competition in Nova Scotia coal in the event of the Democrats abolishing coal duties."

President McLeod, of the Reading system, is said to have been active in the matter lately. The New York & New England is also in the "deal," and Mr. McLeod has pooled his interests with Frank Jones, of the Boston & Maine road. It is believed that through Mr. Jones the Canadian Pacific comes into the project. The Finance Company, of Philadelphia, with George H. Earle, Jr., as president, will control the coal production, and the coal carriers have reached a thorough understanding as to rates to the Lakes and the Atlantic seaboard. It has been reported that a new company was to have a long lease of the Cape Breton mines—60 or 90 years. The reported purchase could not be actually confirmed in Philadelphia, but that such a deal has been consummated is generally believed in financial circles in that city. When President McLeod was asked if the coal fields of Nova Scotia had been purchased, and if the Reading was in the deal, he only replied, "I have nothing to say." George E. Earle, Jr., president of the Finance Company, of Pennsylvania, said that he knew nothing about the reported deal, as his company had not yet been approached in regard to the matter. A gentleman prominently interested in the recent coal deals, but who did not wish his name used, stated that he believed that the Nova Scotia fields had been purchased, although he had no actual information to that effect. He also believed that the Finance Company would be the fiscal agent of the combination, as the whole tendency of the railroad companies is to divorce the coal producing part of their business from their traffic and passenger business, and give it for management into the hands of responsible financial companies.

Ontario.

Belmont Gold Mining Company.—The exploration of this property which was commenced in September, 1891, was continued until March last, and consisted of the sinking of a working shaft on the westerly portion of the north vein 10 × 10 to the depth of 95 ft., and two openings about 800 ft. east on same vein to the respective depths of 21 and 27 ft., also a shaft on a vein to the south to the depth of 33 ft., besides other prospecting work and about 1,100 tons of ore raised, a shaft house erected, a substantial boarding house and office, blacksmith shop, etc. All the ores so far mined consist of a quartz gangue, heavily charged with sulphides of iron and copper. Several hundred tons of the ore were treated by the Crawford Mechanical Gold Extractor last winter, which proved the value of the ore. On October 11th last, Mr. Middleton Crawford purchased a controlling interest in the property, and has since that time sunk the main shaft to a depth of 115 ft., has started drifting on the 30 and 70 ft. levels, raising a sufficient quantity of ore to feed the new mill which he has erected. This mill at present contains two Crawford mills; a third is to be added the first of the present year.

Crescent Gold Mining Company.—The development of this property has steadily progressed, with a force varying from 30 to 45 men, the intention of the company, says the "Canadian Mining Review," being more to develop the property than to raise a large quantity of ore. Owing to the very broken and distorted nature of the ground, the work had to be done near the surface, and, although not yielding any great direct financial return, it has placed them in possession of very valuable information as to the staying qualities of the mine. The tunnel to the length of 90 ft. has been opened, disclosing a large body of low grade ore; a shaft has been sunk 95 ft. on this vein. They are now prospecting on a vein about 300 ft. west of the original, having a shaft 62 ft. in depth sunk, and have just struck a vein 5 ft. wide of quartz, heavily charged with mispickel, carrying gold from $20 to $80 per ton. The 10-stamp mill of modern design is situated on the property, having a capacity of 20 tons in 24 hours, and has crushed within the last three months about 1,200 tons of rock, which has yielded a paying quantity of gold.

Hastings Mining and Reduction Company.—In June last, representatives of the Hastings Mining and Reduction Company, Ltd., of Toronto, visited several localities in the county, and finally decided upon establishing their works in the village of Marmora, where abundant water-power was secured from the Pearce company, and on which a mill has since been erected, and into which the machinery is now being put. This company proposes to treat the refractory arsenical gold ores which occur in this district. This company also secured some mining claims at Deloro, near the Consolidated Gold Mining Company's property, and a small force of men have for the past two months been engaged in active mining. Some 250 tons of rock ready for milling are already on the dumps, and in a few weeks, when the mill is ready for active operation, a larger force of miners will be put on. A little free gold is seen, but most of it is in the heavy sulphides, which have baffled all efforts made to extract the precious metal profitably.

Y—One Mining Company.—The regular annual meeting of the stockholders of this company was held in Chicago, November 9th, last, and the following directors were duly elected: John T. Huntington, Col. J. S. Morgan, John W. Lewis, H. S. Sprague and P. N. Taylor. At a meeting of the directors held at the company's business office, 29 Euclid avenue, Cleveland, O., on November 15th, Col. J. S. Morgan was elected as president and general manager; John T. Huntington as vice president and assistant manager; John W. Lewis, secretary and treasurer, and Prof. R. J. Grant as superintendent of mines. President Morgan made a verbal report on the condition of the company affairs and property; he said a tunnel had been started in the hill to cut the five ore veins that are known to exist on the property. The tunnel has now reached 120 ft. from its entrance with a backing of 75 ft. The main

ledge on the property is exposed in the bed of Silver Creek for a distance of 80 ft. by 20 ft. wide, and assays from $143 to $223 per ton silver. The company intend erecting a concentrating plant of machinery on the property early in the coming spring, when concentrates and ore of very high grade will be shipped to the United States for treatment.

GERMANY.

The striking coal miners in the Saar districts now number about 22,000 men. The Government fears that they may proceed to acts of violence, and has accordingly dispatched troops to the scene of the trouble to preserve order.

GREAT BRITAIN.

While a number of men were at work in the Wheal Owl mine, of Penzance, Cornwall, water suddenly rushed in and drowned 30 of the miners. The water came from an adjacent mine which had been closed for many years.

MEXICO.

Durango.

(From our Special Correspondent.)

Candelaria Mining Company.—A shipment of bullion, valued at $53,000, has been received in San Francisco from the mines.

Lower California.

It is reported that Messrs. Russell & Rhodes, owners of the Aurora mine at Alamo, have succeeded in organizing a company to develop the mine, says the Diego "Union," and that work will soon be started on a larger scale than ever. Mr. Rhodes' recent visit to England is thought to be in this connection. The Aurora's total output of gold is unknown to any but the owners, but actual shipments since manifesting has been in vogue have been over $200,000 in gold. This gold was taken from drifts not 150 ft. in depth. It is understood that arrangements have been made whereby Russell & Rhodes devote the output of the mine for a certain time toward its development, against a stated cash capital of the newly interested parties. This report, if confirmed, will be good news to Alamo, meaning a new lease of life on a large scale where now only a few chloriders are at work.

Bolco Copper Mining Company.—This company has obtained from the Mexican government a concession which confirms it in the possession of the eleven mining grants which it holds at Santa Rosalia, Lower California, and prolongs for a period of 20 years, counted from December 17th, 1883, the exemption and franchises granted for a period of ten years by the concession of July 7th, 1885.

PERU.

(From our Special Correspondent.)

As a little more attention is at present being paid to matters connected with Peru, perhaps a few jottings from hence might prove of interest to your readers. The seven years of peace and quietness enjoyed in the Republic commence to have an effect, and although there is yet little to be recorded in the way of startling developments, the day of small things is not always to be despised. What little is doing here in mining matters has been almost entirely accomplished by local capital. When therefore it is remembered that the continuous revolutions, and the war with Chile, followed by three years of occupation by that army, nearly ruined all fortunes, scarcely much more could be expected than what is at present to be found. The rapid decline in the price of silver naturally affects us for the worse in many ways, as in addition to the increased cost, and less value of the product, capitalists are less ready than formerly to embark in new mining enterprises.

In the Department of Ancashs, from the ports of Chimbote, Samanco, Casma and Huarmey, a considerable and increasing quantity of valuable silver ore is being shipped. For the reasons hereafter explained, it does not pay from this region to export ores of less than 250 oz. to the ton. The principal producers are the Messrs. Bryson and the Tiquipampa Company (formerly Sokoloski & Thierry); both of these mines have been on steady production for about 15 years; they are some 90 miles distant from the coast, and as llamas do not thrive in this region, cost of transport is higher than in any other district in the country. Both in Caraz and Huaraz, however, there are several small beneficiating establishments, which, although worked in a primitive manner, at least make the mining industry possible.

Proceeding to the central district of Yauli, we find in active production the mines of Messrs. Heeren & Gildermeister, on the Carahuacra lode, those of the Messrs. Pflueker, at Morococha, of Don Manuel Montero, at Pucara, and Mr. Vannoni, at San Ignacio, not to speak of several smaller concerns which are worked intermittently by people who have very little capital at their command. The Carahuacra Company have lately struck a body of very rich ore, and are doing remarkably well.

Don Emiliano Llona, who is the owner of a group of about 40 mines (for the most part, however, undeveloped) has recently arranged a company in Paris with adequate capital to work them. He has previously refused the offers of the Yauli Mining Company, formed in London for the same purpose, deeming the terms offered by the French syndicate more favorable.

Don Manuel Montero is also the holder of very considerable properties in this region, and notably the famous galena mine of Vicharaye. He had commenced operations on a large scale under the direction of Mr. A. L. Pearse, but for reasons not yet made public these have been temporarily suspended. It is said, however, that Mr. Montero will shortly resume shipping ores by the Oroya Railroad as formerly, the line now passing within 1½ miles of his principal mines. Until recently his llamas had to traverse 20 miles to the railway terminus and could not make more than three trips each per month, transporting 100 lbs. at a time. It is obvious that with the improved railway facilities not only the output of this but of the smaller properties above referred to must be largely increased.

Mr. Montero's average monthly export used to be about 600 tons of ore, assaying 65 to 80 oz. silver and 50% lead.

There is at present, however, more activity displayed in the adjoining district of Huarocliri, on the Pacific slope, where the mines of the Messrs. Backus & Johnston, Bernardo Prüss and A. Garland & Co. lead the way. The first-named gentlemen have established smelting and concentrating works at Casapalca, 13,000 ft. above the sea level, erected under the direction of Messrs. Fraser & Chalmers, and which are probably the most successful in the country. The mill has been running continuously for nearly four years and possesses the advantage of being situated on the line of the Oroya railway. Casapalca is indeed the terminus of the part opened to the public traffic at present, although the rails actually have reached Yauli and are expected within one or two months to reach Oroya. The remaining miners ship most of their ores to Liverpool and Hamburg, although some parcels are purchased by Backus & Johnston. This firm works the Rayo mine and has leased the Carlos Francisco mine from Don Antonio Bentin. In both of these there is an abundance of ore in the upper levels, running, after hand sorting, from 130 to 210 oz. to the ton. A prospecting tunnel is being driven to cut both veins at about 500 ft. below the present workings.

In the southern districts there is increasing activity, and several mines are doing well. The Cuchilladas mine of Mr. Henry Gibson, of Arequipa, has been producing large quanties of high grade ore for some time past, and is steadily increasing its output. Adjoining this mine are those of the Calloma Company, of Liverpool. The preliminary work on this property cost a considerable sum, nearly £200,000 but the latest accounts are favorable. The ore body has been thoroughly proved at the lower levels and there is said to be a large quantity in sight. The company is shipping its high grade ore and has a ten stamp mill running on the lower qualities; it is proposed to largely increase the concentrating capacity.

Gold.

In several parts of the Republic there are extensive deposits of gold gravels. One of the earliest worked and most famous of the gold districts is that of Carabaya and Sandia in the south eastern portion of Peru on the headwaters of the Madre de Dios River which is a tributary to the Amazon.

The district is difficult of access and without any facilities for the traveler, transportation over the greater part of it being done on men's backs. Evidently centuries ago the Incas had good roads through this neighborhood, overcoming the steepest grades by what might be almost called flights of steps, built up of great blocks of slate. There seems little doubt that the gold found in the possession of the Inca at the time of the conquest was largely produced in this section of the country. Many attempts have been made by different companies to start up work on a modern basis, but after more or less spasmodic efforts all have been abandoned with the exception of Don Manuel Peña's hydraulic mine near Poto, on the borders of Sandia. A good California plant is here installed and is being profitably operated. Above this hydraulic property there are some interesting veins worked at the elevation of perpetual snow. The access to one of them is through a long tunnel driven under a glacier.

To the east of the port of Chala there is also a district, Nueva California, which is said by competent American engineers to possess all the essential conditions for large and successful work.

SOUTH AMERICA.

The Intercontinental Railway Commission have had prepared a facsimile in miniature of Central and South America to show the surveys of the proposed railroad intended to unite the systems of North and South America. It is about 25 ft. long, and in addition to the lines surveyed for the railroad, also shows the routes of the present and prospective steamship lines from North to South America. The surveying party, under the charge of Engineer Kelly, which surveyed the line from Quito, Ecuador, to Cuzo, Peru, the southern end, a distance of 1,900 miles, has concluded its work in the field, and the engineer in charge is in the office writing up the notes of the survey. At the point where Engineer Kelly left off work the line joined on to that of the Peruvian system of roads in the plateau of Lake Titicaca. Another party, under Engineer Shunk, is at present traversing Costa Rica, southward from San Jose. This party started north from Quito at the time the Kelly party started south, but was unable to go through Colombia on account of wet weather. Instead, a diversion was made from the main line at Canas Gardas, near Quimbo Pass, and a line surveyed to Carthagena, Bolivia. The party then sailed to Costa Rica and are now in the region of Atrata Basin. A third party, composed of army officers detailed for the purpose, under M. M. McComb, have been operating in the country from Ayutla, on the southern border line of Mexico, to the Savegre River, and are now in Salvador. McComb will complete his work by May 1. Shunk's party will finish their survey by April 1, according to the latest report. When these surveys are completed a feasible line will have been followed by which the systems of the two countries may be united. There will still remain, however, surveys through Venezuela to the coast and through Brazil to Rio Janeiro. The International Commission will ask Congress for an appropriation of $50,000 to finish up the office work and publish the results.

TRANSVAAL.

The total output of gold in the Witwatersrand district during November amounted to 106,794 oz.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, S. Dak.; St. Louis, Helena, Mont.; London and Paris, see pages 46 and 48.]

NEW YORK, Friday Evening, Jan. 13.

The mining stock market shows some signs of improvement; not that the actual business done during the week was so great as to justify unreasoning gayety, but that a better feeling prevails, and there are more hopes of a speedy return of activity.

The Comstocks are in no better condition than at the time of our last report. Consolidated California & Virginia shows sales of 500 shares at $1.95@$2.25; there was a sale of 100 shares of Hale & Norcross at $1.10, and of Ophir 200 shares changed hands at $1.90@$2.50. Other sales were as follows: 100 shares of Sierra Nevada at $1.50; 400 shares of Yellow Jacket at 85c.; 200 shares of Best & Belcher at $1.45; 300 shares of Bullion at $1.10@$1.15; 1,500 shares of Comstock Tunnel, at 9@16c.; 500 shares of Exchequer, at 30@32c.; 150 shares of Mexican, at $1.40; 300 shares of Scorpion, at 20@22c.; and 200 shares of Silver Hill, at 15c. The financial statements of the various Comstock companies will be found in our mining news columns.

There was no Tuscarora stock dealt in this week. The latest advices from Tuscarora are to the effect that all the mines have closed down with the exception of the Navajo, which is working only a small force. The following Tuscarora companies report having had a cash balance on hand on the 31st ult.: Grand Prize, $198; and North Commonwealth, $2,058. The following report an indebtedness: Belle Isle, $3,218; Commonwealth, $26,824; Del Monte, $21,612; Diana, $353; Independent, $259; Navajo, $2,525; Nevada Queen, $100; North Belle Isle, $7,224.

Of the California stocks the Bodies have been neglected, with the exception of Standard Consolidated, which shows a sale of 200 shares at $1.50. The following Bodie companies report having had cash balances on hand on the 31st ult.: Bodie, $5,709; Bulwer, $7,894; Mono, $5,307; Syndicate, $1,280; Standard Consolidated, $37,294. Summit reports an indebtedness of $1,804.

Sales of Belmont amounted to 300 shares at 30c. Brunswick Consolidated was quiet this week, only 600 shares being sold at 10 and 11c. The superintendent of this company, writing from Grass Valley under date of January 4th, says: "There has been no change in the mine since the last report. During the week the shaft has been sunk 6 ft. The east drift on the 600-ft. level has been extended 7 ft. The west drift has been extended 8 ft. The pumps have the water under control." There was a sale of 200 shares of Plymouth at 75c.

Of the Colorado shares Leadville Consolidated was rather quiet; total sales amounted to 1,800 shares at 21c. There was a transaction of 300 shares of Silver Cord at 30c. and one of 600 shares of Lacrosse at 4c.

Of the Black Hills shares Caledonia shows sales of 1,700 shares at $1@$1.15, of Deadwood Terra 200 shares were sold at $1.60@$1.75.

Sales of Ontario this week aggregated 300 shares at $14. Of Horn Silver 458 shares changed hands at $3.15@$3.30.

Phœnix of Arizona was dealt in to the extent of 2,500 shares at 54c@65c.

The feature of the week was the trading in El Cristo. The official lists report sales of 15 500 shares; the price advanced from 20 to 56c., owing to the reports that the company had entered into negotiations for a mill.

Boston. Jan. 12.

(From our Special Correspondent.)

The market for copper stocks is without any special feature. The dealings are light and no disposition is apparent to speculate in them, and the demand for investment is disappointing, consequently the market lags along with but little change from day to day in prices. Even the Montana stocks the past week have been neglected, and there is no indication of a revival of interest in them at present.

Boston & Montana sold at $32½@$32¾, with latest sales at $32½; less than 1,000 shares were dealt in for the week, while only one quotation appears for Butte & Boston of 60 sh. at $11, being a loss of ¼.

A few sales of Calumet & Hecla were noted at $295@$297½. Tamarack was in fair demand, and after selling at $153advanced to $155, at which price it can be readily purchased.

The directors of the Quincy mine declared a dividend of $3 per share, which was rather disappointing, as $4 was generally expected. The stock declined from $144 to $140, with a disposition to sell rather than to purchase at this price. Osceola has maintained its price very well, although the dealings in it have been rather light. It sold at $35½ for round lots, and small lots sold at $36@$35; closing price $35¼. Franklin held steady at $13, with few sales at $12½. Centennial declined to $7½, and Kearsarge to $11½ on light transactions.

Tamarack, Jr., sold at $20. Wolverine sold at $1½. The assessment of 50c. per share has been levied as was anticipated.

National sold at $1, and this price is bid for it.

We note sales of Pontiac at 30c., Humboldt at 25c., and Santa Fe at 4c.

Arnold sold at $1.

3 P. M.—Market closed dull, Boston & Montana sold at 32½ this P. M., and Wolverine at 1⅝ to 1½.

San Francisco. Jan. 6.

[From our Special Correspondent.]

The new year has opened with trading very quiet in the mining stock market, and prices have been cut below ruling rates during the last week of the old year. To-day only 1,880 shares, comprising dealings in 11 stocks, were dealt in, and later prices shaded off, closing heavy in the afternoon.

Consolidated California had recovered from the paralyzing weakness of a little over a week ago to a trifle over $2, opened at early call at $1.80, shading off a point during the informal session a point and then closing strong at the opening rate. Ophir sold for $1.75, a decline of 25 cents on the week's trading; Sierra Nevada for $1.20; Union Consolidated for $1, and Utah Consolidated for 10 cents.

The Middle Comstocks have been in light demand, Chollar selling for 70 cents; Best & Belcher, $1.25; Gould & Curry for 85 cents; Hale & Norcross for 90 cents; Potosi for $2.05, and Savage for $1.05. Potosi has been the only stock in this group that has maintained its strength, the above quotation being the same as the ruling rate a week ago. The others show a decline of from five to fifteen cents per share.

Of the Gold Hill and South End Comstocks prices have fluctuated, most of the stocks shading off in sympathy with the rest of the market, with a few exeeptions that to-day show an advance on the ruling rate of last week. Alpha sold to-day for 10 cents; Alta, 20 cents; Belcher, $1.30; Challenge, 55 cents; Justice, 15 cents; Crown Point, 50 cents; Kentuck Con., 10 cents; Lady Washington, 10 cents; Occidental Con., 25 cents; Overman, 25 cents; Seg. Belcher, 10 cents, and Yellow Jacket, 70 cents.

Naturally with such limited trading in the Comstock the outside stocks have been altogether ignored. They were quoted as follows: Bodie Consolidated, 20 cents; Bulwer Consolidated, 15 cents, and Mono 15 cents, all bid.

In the Tuscarora group Belle Isle and North Belle Isle at 10 cents bid. Del Monte at 5 cents, Grand Prize 10 cents, and Nevada Queen 10 cents asked, were all left severely alone.

Several propositions are being considered, or at least are said to be under consideration, for reducing working expenses on the Comstock, whereby the deposits of low grade ore may be worked to advantage. Upon the return from New York of Mr. Flood it is said some definite line of action will be decided upon, and until then it is likely that the market will continue to stagnate and remain at the mercy of the "chipper" and the curbstone broker.

SAN FRANCISCO, January 13th (*By telegraph*).—The opening quotations to-day are as follows: Best & Belcher, $1.35; Bodie, 20c.; Belle Isle, 15c.; Bulwer, 15c.; Chollar, 65c.; Consolidated California & Virginia, $2.50; Gould & Curry, 90c.; Hale & Norcross, 90c.; Mexican, $1.40; Mono, 15c.; North Belle Isle, 10c.; Navajo, 15c.; Ophir, $1.90; Savage, $1.10; Sierra Nevada, $1.35; Union Consolidated, $1.10; Yellow Jacket, 75c

MEETINGS.

Borell Mining Company, at the office of the company, No. 1 Broadway, New York City, February 4th, at 12 o'clock noon.

Golden Treasure Mining Company, at the office of Wm B. Root, 429 Mining Exchange Building, Denver, Colo., January 20th, at 2 P. M.

Lexington Mining and Milling Company, at the office of the company, No 1624 Curtis street, Denver, Colo., February 4th, at 10 A. M.

Louisa Mining Company, at the office of the company, No. 1624 Curtis street, Denver, Colo., February 4th, at 3 P. M.

Lone Star Quartz and Gravel Mining Company, at the office of the company. No. 2814 Sacramento street, San Francisco, Cal., January 21st, at 2 P. M.

Mountain Gold and Silver Mining Company, at the office of the company, No. 352 Kearney street, San Francisco, Cal., January 16th, at 3 P. M.

National Lead Company, at the office of the company, No. 1 Exchange Place, New York City, February 16th, at 12 o'clock. Transfer books close January 21st and reopen February 6th.

Nevada Salt and Borax Company, at the office of the company, No. 310 Pine street, San Francisco, Cal., January 17th, at 1 P. M.

Sierra Nevada Silver Mining Company, at the office of the company, No. 309 Montgomery street, San Francisco, Cal., January 8th at 1 P. M.

Utah Consolidated Mining Company, at the office of the company, No. 309 Montgomery street, San Francisco, Cal., January 25th, at 1:30 P. M.

DIVIDENDS.

Colorado Fuel and Iron Company, dividend of four (4) per cent. on the preferred stock, payable February 1st. Transfer books close January 12th and reopen February 1st.

General Electric Company, dividend of two (2) per cent., payable February 1st, at the office of the company, No. 44 Broad street, New York City. Transfer books close January 14th and reopen February 2d.

Mahoning Coal Railroad Company, dividend of five per cent. on the common stock, payable February 1st at the office of D. W. Pardee, Transfer Agent, room 47 Grand Central Station, New York City. Transfer books close January 16th and reopen February 2d.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of sale.	Ap sha.
Alpha Cons., Nev...	10	Dec. 20	Jan. 24	Feb. 14	.10
Challenge, Nev. ..	13	Nov. 16	Dec. 31	Jan. 25	.25
Commonwealth, Nev.	10	Nov. 23	Dec. 28	Jan. 24	.10
Confidence, Nev....	22	Dec. 24	Jan. 26	Feb. 15	.75
Con. Cal. & Va., Nev	.	Dec. 13	Jan. 21	Feb. 10	.50
Con. Imperial, Nev.	34	Nov. 22	Jan. 18	Feb. 8	.03
Crown Point, Nev.	59	Dec. 20	Jan. 24	Feb. 14	.25
Del Monte, Nev....	7	.....	Dec. 23	Jan. 24	.10
E. Best & Bel., Nev.	3	.....	Dec. 24	Jan. 18	.20
Eclipse, S. Dak.....	7	Nov. 18	Jan. 3	Jan. 23	.001½
Evening Star, Nev.	7	.....	Jan. 12	Jan. 31	.01
Gold Mountain, Cal.	4	Dec. 21	Jan. 28	Feb. 15	2.00
Gould & Curry, Nev	70	Nov. 22	Dec. 28	Jan. 20	.25
Gray Eagle, Cal....	31	Dec. 15	Jan. 23	Feb. 16	.07
Jack Rabbit, Cal.	2	Dec. 29	Feb. 6	Feb. 28	.05
Martin White, Nev.	28	... ..	Jan. 16	Feb. 20	.25
North Gould & Curry, Nev.....	14	Nov. 21	Dec. 24	Jan. 16	.10
North Belle I., Nev.	21	Nov. 14	Dec. 20	Jan. 17	.01
Russell, Cal	8	Nov. 14	Dec. 19	Jan. 16	.01
Seg. Belcher & Mides, Nev.....	11	Jan. 8	Feb. 7	Feb. 27	.25
Siskiyou Con., Cal.	5	Dec. 16	Jan. 20	Feb. 10	.01
South Eureka, Cal..	2	Jan. 4	Feb. 10	Mar. 6	.02
Utah Con, Nev....	16	Dec. 13	Jan. 19	Feb. 9	.10
Yellow Jacket, Nev.	53	.....	Jan. 6	Feb. 14	.30

METAL MARKET.

NEW YORK, Friday Evening, Jan. 13, 1893.

Prices of Silver per Ounce Troy.

Jan.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.	Jan.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.
7	4.87¼	38⅛	83	·632	11	4.87	38⅜	83¼	·634
9	4.87¼	38⅛	82¾	·630	12	4.87¼	38¼	83	·632
10	4.87	38⅛	82¾	·630	13	4.87¼	38¼	83	·632

Silver has continued remarkably steady the past week. Fluctuations have been within a very narrow compass. Supplies have been well distributed and no large stocks are held in reserve on speculation outside of the holdings of the Mercantile Safe Deposit Company. The prospect of legislation on the silver question that will pass both Houses of Congress this session does not grow brighter, so that the probabilities are matters will remain in *statu quo*.

The United States Assay Office at New York reports the total receipts of silver for the week to be 114,000 ounces.

Gold and Silver Exports and Imports at New York for Week Ending January 7th, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of
	Exports.	Imports.	Exports.	Imports.	Exports.
Week....	$2 055,749	$14,360	$1 073,420	$1 7 4	$3,113,106
1892.....	2,055 749	14,300	1,073,420	1,754	3,113,106
1891.....	4,000	67,109	190,695	73,077	59,609

The exports during the week ending January 14th, so far as ascertained, have been as follows: Exports, gold, $1,855; silver, $252,007. Imports, gold, $21,562; silver, $16,987. The amount of gold exported during the first week of the year is unprecedented. The cheering feature of the market is the large exportation of American silver.

NOTES OF THE WEEK.

As compared with the figures for January 1st, 1892, the treasury statement of the amount of money coined and issued at present outstanding shows a marked decrease in the amount of gold coin and bullion. Although gold coin has gone into circulation to the extent of only about five millions, the treasury holds almost 40 millions less than a year ago. As against this there is a reduction of 31 millions in gold certificates outstanding, so that the net loss of gold to the treasury is reduced by this amount. The absorption of money by the public in other ways has been mainly satisfied by treasury notes, in which there is an increase of 46¾ millions, and subsidiary silver, in which there is an increase of 4¼ million dollars, the chief decrease besides that in gold certificates being in United States notes 2¾ millions and currency certificates a little over two millions. The following table shows the changes in detail:

	Jan. 1, 1893.	Jan. 1, 1892.
Gold coin.....	$412,970,960	$407,999,180
Standard silver dollars.....	67,822,936	62,326,191
Subsidiary silver.....	67,327,267	62,776,830
Gold certificates.....	117,093,139	148,106,119
Silver certificates.....	322,075,011	320,817,568
Treasury notes..... ...	122,039,656	75,296,057
United States notes.....	330,933,540	333,767,351
Currency certificates.....	7,100,000	9,26 ,000
National bank notes.....	168,361,365	168,427,433
Total.....	1,610,683,874	1,588,781,729

The treasury holds nearly six million standard silver dollars more than at the beginning of last year, nearly three millions more United States notes and over one and one-half million more national bank notes. Its holdings of silver bullion are 42¾ millions more than last year. On the other hand, besides the decrease of nearly 40 millions in gold coin already mentioned, there is a decrease of 3¼ millions in subsidiary silver, which has gone into circulation. The decrease in gold bullion is very small, being only one-half million. Detailed statement follows:

In Treasury.	Jan. 1. 1893.	Jan. 1, 1892.
Gold coin.....	$156,662,452	$196,634,061
Standard silver dollars.....	355,054,049	349,217,549
Subsidiary silver.....	10,571,481	13,789,325
Treasury notes.....	2,705,967	2,631,045
United States notes	15,747,476	12,913,665
National Bank notes.....	6,043,059	4,651,152
Total.....	$546,784,484	$579,236,797
Gold bullion.....	81,697,350	82,212,689
Silver bullion.....	96,743,988	53,969,468
Total.....	$724,225,822	$715,418,952

The treasury holdings in gold coin and bullion are $238,359,802 in all. Deducting from this amount $117,093,139 in gold certificates outstanding, the amount of free gold in the treasury is $121,266,663. As against this are outstanding United States notes, $330,933,540, and treasury notes, $122,039,656, in all $452,973,196; the gold reserve thus being about 26·7%.

On January 1st, 1892, the amount of free gold in the treasury was $130,740,631, against which was outstanding $409,063,402 of notes, the reserve thus being 31·9. On January 1st, 1891, the amount of free gold was $148,972,935, and outstanding notes, $370,771,516, the reserve being 40·1.

The London "Financial News," in commenting upon the solution of the silver problem proposed by R. P. Rothwell says: "Our contemporary has a very comprehensive scheme for the solution of the silver problem. . . . It is quite true that the effect of the modern clearing-house in offsetting transactions one against the other and settling only the final balances in money is the same as if the quantity of money were increased in the same proportion as its efficiency, and transactions have no doubt been enormously increased by it. The adoption of an international clearing-house would therefore exercise a similar influence in increasing the volume of the world's business."

As yet there seems to be no possibility of repealing the Sherman act at this session of Congress. Amendments destructive of the measure proposed are attached to each bill; and Senator Teller, of Colorado, boldly says that the bill cannot be repealed.

The House Committee on Banking and Currency has voted to favorably report the Andrews Banking and Bullion Purchase Repeal bill, but Representative Cote has saddled upon it an amendment providing for the immediate coinage of all the bullion purchased under the Sherman act. No reason exists for the coinage of this bullion, as the Treasury now has stored in its vaults $355,054,049 standard silver dollars. The bullion is a better asset than coin and is easier and cheaper to handle. The country does not want silver coins, nor will it use them to any large extent.

It has been rumored that a large amount of gold will be sent out on Saturday, but up to the time of going to press none has been demanded at the Sub-Treasury. During the week the Bank of France ceased to pay interest on gold in transit, and in consequence it is not likely that much gold will be shipped from this country to France for some time to come. The reason assigned for this move is that the present rates of exchange favor a movement from London.

The gold held by the Bank of France has increased over 60% in the last two years, it having been £44,899,000 on Jan. 8, 1890; £53,609,000 on Jan. 7, 1892; £68,178,726 on Jan. 5, 1893.

Rates for sterling bills are stiffening, and gold may shortly go out to London.

Domestic and Foreign Coin.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars ....$	.65	$ .66
Peruvian soles and Chilian pesos.....	.59	.61
Victoria sovereigns.....	4.85	4.88
Twenty francs	3.85	3.88
Twenty marks.....	4 74	4.78
Spanish 25 pesetas.....	4.78	4.81

Copper.—The market is somewhat easier; very little business has been done, the cold weather which has set in having greatly interfered, making

transportation exeeedingly difficult. Lake copper from first hands is now obtainable at 12¼, and some second parcels are offered at about 12⅛, but even at these figures we have not heard of any business. Casting Copper is held comparatively well at 11⅝ to 11¾. No business is reported in Arizona pig copper. Shipments of fine copper and furnace material from this side to Europe continue rather heavy, and ought to have an influence on bimonthly statistics over there. Manufacturers have not bought any appreciable quantities of copper during the last four weeks, and will probably have to enter the market at an early date, and they speak very confidently of their being able to get in at somewhat lower prices, influenced by the disturbing reports from Paris. The London market has been rather depressed, and values have given way, G. M. B. S. closing to-day at £46 for spot and £46 10s. for three months, while for refined and manufactured we quote: English tough, £49 10s.@ £50; Best selected, £50 10s.@£51; Strong sheets, £58 10s.@£59; India sheets, £54@£54 10s.; Yellow metal, 5½d.

The exports of copper from the port of New York during the past week were as follows:

To Liverpool—	Copper Matte.		Lbs.	
S. S. City of Berlin	4,291	bags	434,496	$20,000
" Archimedes	3,252	"	357,720	17,000
" St. Enoch	2,175	"	197,381	9,600
" Britannic	2,038	"	227,540	10,000
" Runic	4,147	"	456,170	22,000
" Bothnia	4,140	"	474,157	21,000
" Herschel	2,294	"	240,484	10,000
" Bothnia	4,140	"	474,157	21,000
To Antwerp—	Copper.			
S. S. Rhynland	90	casks	112,500	14,000
To Havre—				
S. S. La Normandie	450	bbls.	562,500	70,313
" La Gascogne	829	pigs	224,347	28,000
To Havre—	Copper Matte.			
S. S. La Gascogne	216	bbls.		15,545

Tin has been rather active, and pretty heavy quantities have changed hands, which has slightly hardened prices. In the beginning of the week, a few transactions took place at 19·60, but during the last few days 19·80@19 90 was bid for spot, and we have to quote February 20c.; March, 20¼; April, 20⅜; May, 20½. Shipments from the East have been rather heavy lately, but are supposed to fall off within six weeks, quite considerably. The London market was narrow and fluctuated but little. We have to quote £91 7s. 6d. for spot and £91 5s. for three months. The heavy discount which hitherto existed for three-months tin has thus almost entirely disappeared.

Lead was rather firm with a fair volume of business. Early in the week transactions were recorded at $3.85 to $3.87½, but afterward slightly higher prices were realized, and we quote $3.82½ to $3.85, with free sellers at these prices. In Europe a heavy decline has taken place, which has so far not been satisfactorily explained. Spanish lead has declined to £9 10s. to £9 12s. 6d.; English is obtainable at 2s. 6d. more, and these are the lowest prices on record for this metal.

Chicago Lead Market.—The Post Boynton-Strong Company telegraph us as follows: Market quiet and dull, with 3·65c. bid and 3·67½c. asked, and only small sales at these prices.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: Lead strong but quiet. Both enemical and argentiferous are selling at 3·60c. for present, and nearby delivery with neither buyers nor sellers showing any great anxiety to trade.

Spelter.—In spite of the wintry weather and the consequent reduction in the output of ores, the article has remained rather flat, and we have still to quote 4·40 delivered New York. In London good ordinaries are quoted at £18 2s. 6d, and specials at £18 5s.

Antimony does not show any change. We have still to quote Cookson's 11c., L. X. 10½c, Hallet's 10¼c.

Nickel.—No business has been reported.

Quicksilver.—This market continues featureless Quotations are: New York, $37.50; London, £6 5s.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 13th, 1893.

Pig Iron Production.—The following table gives the number of furnaces in blast and the estimated production of pig iron in the United States during the week ending January 7th, 1892, and for the corresponding week ending January 7th, 1893. Also the total estimated production from January 1st of each year to these dates. The figures are in gross tons:

Pig Iron Production During Weeks Ending January 7th, 1892, and January 7th, 1893, and During Both Years to These Dates.

Fuel used.	Week ending Jan. 7, 1892.		Week ending Jan. 7, 1893.		From Jan., 92.	From Jan., '93.
	F'cs.	Tons.	F'cs.	Tons.	Tons.	Tons.
Anthracite.	94	38,970	70	32,600	38,970	32,600
Coke.	164	138,990	137	131,600	138,990	131,600
Charcoal...	55	11,820	39	8,900	11,820	8,900
Totals....	313	189,780	246	173,100	189,780	173,100

The iron market continues to sag, although no lower prices are quoted. Dealers are not at all expectant of any improvement within the next few months, even the most sanguine having finally succumbed to the inevitable. It is by no means a comforting thought that in the midst of the depression, when better prices are not within sight of the keenest-eyed producer, the output should be so large. Furnaces that were supposed to be not in the best financial condition, and whose suspension would not have surprised any one conversant with the situation, have not only continued in operation, but have also shown unexpected strength. If prices do not improve within the year we may expect to see some of the weaker furnaces go to the wall and the others have a hard time to keep in blast.

In Great Britain when very low prices are ruling, stocks are also very low, but with us stocks are not above the normal, yet the price continues very low.

What the end will be is a thing we can come upon only by waiting, but there does not appear to be any good reason for buying now in anticipation of a rise in the market.

As compared with the corresponding period of last year the output shows a decrease of 16,680 tons.

Prices here are as last week: Southern, ex-steamer No. 1 F., $15.26; No. 2 F., $14.26; No. 3 F., $13.76; Gray Forge, $13.01, Northern, tide-water, No. 1 X, $15; No. 2 X, $14; No. 2 plain, $13.50; Gray Forge, $13. Southern irons are quoted, nominally, 26c. higher than Northern.

Spiegeleisen and Ferromanganese.—Ferro is dull at $59.50 to $60. Spiegel, $26.50 with no special movement.

Steel Rails.—The market is dull at $29.

Rail Fastenings.—Prices rule as follows: Fish and angle plates, 1·55@1·65c. at mill; spikes, 1·90@ 2c.; bolts and square nuts, 2·40@2·70c.; hexagonal nuts, 2·70@2·80c. delivered.

Merchant Iron and Steel.—Prices stand: Mushet's special, 48c.; English tool steel, 15c. net, American tool steel, 6½@7¼c.; special grades, 13@ 18c.; crucible machinery steel, 4·75c.; crucible spring, 3·75c.; open hearth machinery, 2·25c.; open hearth spring, 2·30c.; tire steel, 2·25c.; toe calks, 2·25@2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

Structural Iron and Steel.—We quote: Beams, 2·3@2·55c.. except for 20-in. beams which are 2·75c.; angles, 1·95@2·15c.; sheared plates, 1·90@2·10c.; tees, 2·30@2·60c.; channels, 2·35@2·50c.; universal plates, 2@2·10c.; bridge plates, 2@2·10c.; steel hoops, 1·90@ 8c. All on dock.

Buffalo. Jan. 12.

(Specially Reported by Rogers, Brown & Co.)

The general tendency of the market during the past week has been made on the side of weakness in prices. There has been a liberal inquiry and a large increase in sales, but both of these features are largely neutralized by heavy offerings. We quote for cash f. o. b. cars Buffalo: No. 1 X foundry strong coke iron Lake Superior ore, $15; No. 2 X foundry strong coke iron Lake Superior ore, $14; Ohio strong softener No. 1, $15; Ohio strong softener No. 2, $14; Jackson County silvery No. 1, $17@ $17.30; Jackson County silvery No. 2, $16.30@$16.80; Lake Superior charcoal, $17 25; Tennessee charcoal, $18; Southern soft No. 1, $14.15@$14.40; Alabama car wheel, $19; Hanging rock charcoal, $20.50.

Louisville. Jan. 7.

(Special Report by Hall Bros. & Co.)

There is really nothing new to be said about the iron market. The general conditions and tendencies remain without essential change. There are undeniably some weak spots to the market, which here and there are demonstrated by concessions on the part of some one desirous of booking more of their output for the future, or realizing on some ready shipments. While this probably has not been noticeable to any very large extent, still it naturally has its weight and unsteadies the market.

Hot Blast Foundry Irons.—Southern coke No. 1, $13.50@$13.75; Southern coke No. 2, $12.50@ $12.75; Southern coke No. 3, $12@$12 25; Southern charcoal No. 1, $16@$17; Southern charcoal No. 2, $15.50@$16.

Forge Irons.—Neutral coke, $11.50@$12; mottled, $11@$11.25.

Car Wheel and Malleable Irons.—Southern standard brands), $20@$21; Southern (other brands), $18.50@$19.50; Lake Superior, $19.50@$20.50.

Philadelphia. Jan. 12.

(From our Special Correspondent.)

Pig Iron.—Out of somewhat contradictory statements made this week regarding both the amount of business done and prices realized, it is pretty safe to say that buyers are making larger purchases and in larger quantities than in December, and that prices, except for certain special brands, have not changed. On these special brands the change is only nominal and is due to a determination of makers to have a little more money or not sell iron. No. 1 and No. 2 Foundry are moving again at $15.25 and $14.50 respectively. Forge sold well this week at $13, but not for late delivery. Bessemer is stronger in tone.

Muck Bars.—The market has improved under the placing of delayed orders, but there is not that demand for bars that manufacturers had hoped to see.

Steel Billets.—Buyers acknowledge that prices have not been hammered down for two weeks. Makers claim the conditions are working gradually in their favor. The small amount of business done betokens indifference. Some inquiries made; $24.50 was named.

Merchant Iron.—Business is of restricted volume. The car builders are slow. Agents are following them up this week hoping to get some business and are offering iron at $1.60.

Nails.—Notwithstanding lessened production makers are seeking future deliveries at old figures on large lots. A slight improvement is observable on small lots.

Sheet Iron.—The maintenance of card rates seems to have been determined upon on small lots, but it looks as though the large orders would get in at the usual shading.

Skelp.—Two considerable orders were placed this week at 1.60 to be followed, it is said, by more.

Wrought Iron Pipe.—The representatives of mill owners are making great efforts to close business, but buyers are disinclined.

Plate and Tank.—It is understood that shipbuilding orders of considerable magnitude will soon be on the market. The Cramps have secured the contracts from two large warships. Small work is beginning to come in again. The old prices will probably hold through the winter from 1.80 up. There is no real activity among the larger buyers.

Structural Material.—There is nothing to boast of this week except rumors. There are several of them. One is that two orders calling for some 4,000 tons of material will be placed soon. Even among the smaller buyers very little is being done.

Steel Rails.—The market is quiet and makers are unable to say much. Quotations $29.

Old Rails.—A few lots disappeared this week at private terms. Quoted price on iron, $18.

Scrap.—Large demands have been made on scrap and the yard men hope to get cleared up of old stocks soon.

Pittsburg. Jan. 12.

(From our Special Correspondent.)

Raw Iron and Steel.—Business since the new year opened has so far failed to meet the expectation of dealers and raw-iron makers; in fact the disappointment at the outlook seems general among all classes of leading business men. Let us for a moment compare prices of January, 1892, and those ruling at the present time—Bessemer pig then, $15.75@$16; to-day's prices, Bessemer, $13.50@ $13.75; declined, $2.25. Gray forge during the same time declined $1.25@$1.50 per ton; steel blooms, billets and slabs, Jan., 1892, $25@$26. To-day prices f. o. b. cars at Maher's Mills, $21.75@$22; decline, $3.50@$4; and what is certainly remarkable sales are not liberal even at the large decline. The fact is there seems to be a want of confidence in regard to the future that must be overcome; that is the situation at present. How long it will continue is altogether another matter, and one that will require time to determine.

The present prices are the lowest ever recorded. Notwithstanding the low rates buyers are as timid as they were when prices were several dollars per ton higher. The sources of supply are so numerous that there is never any uneasiness in regard to that feature, and as no sudden advance is possible buyers are very leisurely in anything they do. This may perhaps be one reason for the long-drawn-out monotony in this department of the iron trade.

There seems to be no special inducement for ordinary consumers to tie themselves up to long contracts, and as this leaves them open for small lots they are constantly beset with sellers who are anxious to secure trade. Competition has therefore become exceeding close, and what is equally discouraging is that when a new account is opened it is just as hard to retain. This is not a cheerful statement to make, but it is a fact all the same and apparently without much prospect of being changed.

As regards recent sales, it can only be said that as a rule they were at lower figures than before the holidays; not much lower, but enough to show that the market is in buyer's favor. The question is not fully settled, however, as some furnaces have absolutely determined to shut down rather than make any further concessions. A leading Eastern dealer has this to say concerning the situation: Within a short time several buyers have placed liberal orders, the Thomas company alone having taken contracts for several thousand tons and some for large lots, while prices have been fine. Agents of Southern furnaces have made cuts at certain points in order to force sales, and this fact having been widely advertised has not been without effect. Consumers profess to expect lower prices will rule, but they are not holding off with that determination indicative of a conviction that prices will break. Producers feel that any further concessions in prices must result in the shutdown of many furnaces, as quotations are believed to be very close to cost.

Trade in new steel rails is in a promising condition in the East and manufacturers look for activity during the year. Pittsburg prices are $29 f. o. b. on cars at maker's mill.

Coke Smelted Lake and Native Ore.

3,000 Tons Bessemer, Jan., Feb..... $13.50 cash.
1,000 Tons Bessemer..... 13.60 cash.
1,000 Tons Grey Forge..... 12.25 cash.

1,000 Tons Mill Iron	12.25 cash.
1,000 Tons Bessemer, Feb	13.55 cash.
750 Tons Mill Iron	12 25 cash.
500 Tons Bessemer	13 70 cash.
500 Tons Mill Iron	12.25 cash.
500 Tons Grey Forge	12 25 cash.
500 Tons Grey Forge, Jan	12.25 cash.
500 Tons No. 2 Foundry	13.25 cash.
200 Tons No. 1 Foundry	14.00 cash.
200 Tons White and Mottled	11.75 cash.
150 Tons No. 2 Foundry	13.50 cash.
150 Tons No 1 Foundry	14 50 cash.
100 Tons Bessemer	13.75 cash.
75 Tons No. 1 Silvery	16.25 cash.
Charcoal.	
100 Tons Cold Blast	26.50 cash.
100 Tons No. 2 Foundry	19.00 cash.
100 Tons No. 1 Foundry	20.00 cash.
50 Tons No. 2 Foundry	19.00 cash.
50 Tons Cold Blast	25.50 cash.
Steel Blooms, Billets and Slabs.	
1,800 Tons Billets, Feb. and March, at mill	21.85 cash.
1,000 Tons Billets at mill	21.75 cash.
600 Tons Billets, Jan	22.10 cash.
500 Tons Billets and Slabs, Feb	21 85 cash.
Muck Bar.	
500 Tons Neutral, Jan	24.25 cash.
400 Tons Neutral, Jan	24 50 cash.
200 Tons Neutral, prompt	24.25 cash.
Ferro-Manganese.	
250 Tons 80%, foreign, delivered	60.00 cash.
100 Tons 80%, domestic	62.00 cash.
50 Tons 80%, domestic	61.50 cash.
Iron Skelp.	
400 Tons Wide Grooved	1.52½ 4 m.
300 Tons Sheared Iron	1.77½ 4 m.
150 Tons Narrow Grooved	1.52½ 1 m.
Steel Skelp.	
360 Tons Wide Grooved	1.45 4 m.
Steel Wire Rods 5 Gauge American.	
650 Tons at Mill	30.40 cash.
300 Tons at Mill	30.50 cash.
Sheet Bars.	
1,000 Tons Sheet Bars at Mill	28.00 cash
Blooms, and Billets Ends.	
350 Tons Bloom and Billet Ends	16.00 cash.
Spelter.	
100 Tons Spelter	21.25 cash.
Old Iron and Steel Rails.	
600 Tons American Ts	20.00 cash.
500 Tons American Ts	20.50 cash.
100 Tons American Ts	20.50 cash.
Scrap Material	
500 Tons No. 1 R. R. N Net	16.00 cash.
300 Tons Cast Scrap, Gross	11.00 cash.
200 Tons Cast Borings, Gross	8.00 cash.
200 Tons Open H. Steel, Gross	16.50 cash.
200 Tons Leaf Spring Steel, Gross	21.00 cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 13.

Statements of shipments of anthracite coal (approximated), for the week ending January 7th, 1893, compared with the first nine days of January, 1892:

Region:	Jan. 1-7, 1893. Tons.	Jan. 1-9, 1893. Tons.	Difference.
Wyoming region	296 324	339,542	Dec. 43,219
Lehigh "	71,915	96,469	" 34,545
Schuylkill "	131,928	221,718	" 89,790
Total	500,167	657,720	Dec. 157,553

PRODUCTION OF BITUMINOUS COAL for week ending January 7th, and year from January 1st.

EASTERN AND NORTHERN SHIPMENTS.

	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.	1,562	1,562	1,621
Cumberland, Md	53,649	53,649	89,672
Barclay, Pa	1,101	1,101	6,461
Broad Top, Pa	13,857	13,857	12,861
Clearfield, Pa	55,897	65,897	90,238
Allegheny, Pa	19,142	19,142	27,319
Beach Creek, Pa	35,812	35,812	49,731
Pocahontas Flat Top	40,842	40,842	53,859
Kanawha, W. Va	65,763	65,763	60,661
Total	297,645	297,645	389,833

WESTERN SHIPMENTS.

	1893. Week.	1893. Year.	1892 Year.
Pittsburg, Pa	22,330	22,336	33,546
Westmoreland, Pa	38,837	38,837	31,128
Monongahela, Pa	13,530	13,530	8,864
Total	75,003	75,003	73,538
Grand Total	372,648	372,618	463,371

PRODUCTION OF COKE on line of Pennsylvania R. R for the week ending January 7th, 1892 and year from January 1st, in tons of 2,000 lb.: Week, 114,368 tons; year 114,358 tons; to corresponding date in 1892, 138,564 tons.

Anthracite.

The present status of the combine is as follows: The Lehigh & Wilkesbarre has withdrawn from such active participation as was possible under the original terms of agreement; the Jersey Central Railway, which, up to January 1st, was selling the Lehigh & Wilkesbarre coal to the Reading Company, has taken charge of this coal itself; the Finance Company of Pennsylvania announces itself as commercial agent for the Philadelphia & Reading Coal and Iron Company, and appoints Mr. John Edmonds sales agent for New York and vicinity, in place of Mr P. B. Heilner, who resigned to go with the Lehigh & Wilkesbarre Coal Company.

The very severe weather is enabling the Reading Company to dispose of stocks that were accumulated under its refusal to break the circular prices. There are some who look for an early dissolution of the combine, but the fact is that, so far as the general public is concerned, there has been no change of movement since last September. It was at this time the Jersey Central withdrew from the combine and resumed control of its own affairs, in obedience to the order of Chancellor McGill. It, however, continued to sell the Lehigh & Wilkesbarre coal to the Reading until January 1st. The combine will, no doubt, go to pieces gradually, but only from the operation of natural causes which are slow of action. Chief among these is the fierce competition and other antagonism that must always assail an undertaking to control the fuel supply. The companies that entered into the anthracite coal combine did control about 80% of the anthracite production, but they did not control the supply of bituminous coal, and had also to strive against the other 20% of anthracite production, and the increasing use of crushed coke, which is offered on the line of the Delaware, Lackawanna & Western Railway at $3.50. A brief review of the combine in its salient features may not be amiss at this time. On the 10th of February, 1892, it was announced that the Reading had leased for 999 years the Jersey Central and the Lehigh Valley railways through a lease of the Jersey Central to the Port Reading Railway Company.

The Reading was to look after the interest, rentals, etc., and guaranteed to the Jersey Central 7% a year on its stock and one-half the surplus above that figure, and to the Lehigh Valley dividends of 5% per annum to July 1st, 1892, 6% for the year ending July 1st, 1893, and 7% thereafter. To get control of the Jersey Central it was necessary to operate through the Port Reading, a company auxiliary to the Reading, and organized in 1890 to build 20 miles of road from Bound Brook to Staten Island Sound. The capital involved in the combine was $600,000,000. Promises were made that there would be no advance in the price of coal, as the profits were to come through economy of management. The aggregate tonnage of the three companies was close on 24,000,000 per annum, which, by other roads entering the combine later on, was increased to about 30,000,000. It was expected by a few credulous persons that this enormous capital would be able to earn profits without disturbing current coal quotations. In this, however, they were soon deceived, for no sooner did the combine feel itself strong enough to carry out its plans than it raised the price of coal from 75c. to $1.15 per ton. The State of New Jersey began suits against it to annul the lease and on August 25th Chancellor McGill declared that the Jersey Central had no right to enter into any such arrangement, ollowing Gov. Abbett's veto of a bill to legalize the lease.

He asserted that the lease was illegal, and that if it was carried out it would destroy all healthful competition in the anthracite coal trade, by creating a practical monopoly. An injunction was therefore granted, but on October 17th the Attorney General of New Jersey filed information that the orders of the Chancellor had not been obeyed, and an order was granted to show cause why a receiver should should not be appointed. This was argued on December 1st, but no decision has yet been reached, as the Jersey Central has shown that it was disposed to obey. It did not join with the Philadelphia & Reading in the appeal from the decision of Chancellor McGill. The final hearing will be called as soon as all the testimony is in.

The suit of the State against the Easton & Amboy Lehigh Valley Terminal, Philadelphia & Reading, Lehigh Valley, Central Railroad Company of New Jersey (Jersey Central), and the Delaware & Bound Brook railway companies will be argued soon before the Chancellor on the rule to show cause. It was charged by Attorney General Stockton that the Lehigh Valley Railway Company, a Pennsylvania corporation, had no right to lease the Jersey Central, a New Jersey corporation, to the Reading, another Pennsylvania corporation.

The reports of the committees appointed by the New York Legislature and by Congress to investigate the combine have not yet been rendered. The Attorney-General of the State of New Jersey has shown a most commendable determination to ferret out the intricacies of this the most powerful of all combinations that have been made to control the anthracite coal supply, and to his efforts have been due nearly all the restrictions that have been thrown around it. He has devoted practically all of his time for the last ten months to this matter, and the words in which he has expressed his opinion of it are well worth quoting: "The vital question now is whether foreign corporations can combine with the creatures of this State to establish a monopoly in the necessaries of life, and whether such combinations have yet attained sufficient strength to defy the power of the courts to execute the law. It is simply whether the corporations shall rule, or the people, through the government they have established.

"When I consider the general tendency everywhere toward the consolidation of enterprises, and the immense aggregation of capital, and of influence involved in this lease: when I see the menace which such concentrations make in the body politic and in our legislatures to the institutions of our country and to the welfare of the great body of the people, I am impressed with the solemn duty of our courts to firmly maintain, wherever and whenever possible, those great common rights, which have been preserved to us by the judiciary of our mother country, and which they have continued to enforce there with a fearlessness and independence worthy of the highest imitation."

These are strong words, but the occasion does not admit of halting rhetoric or broken kneed eloquence.

The latest development is that on the 11th inst. Chancellor McGill decided in favor of the application for a receiver of the Central Railroad of New Jersey. The appointment of a receiver will, however, be delayed to enable the road to show that it had withdrawn from the combine. Mr. S. M. Williams, vice-president and controller, is reported to have said: "We think we will be able to prove to the satisfaction of the Chancellor that we have obeyed his order, and that the lease to the Port Reading Railroad has been canceled, and also that the contract between the Lehigh & Wilkes Barre Coal Company and the Philadelphia & Reading Coal and Iron Company has been canceled, and both the Central Railroad and Lehigh & Wilkes Barre companies are being operated independently."

Bituminous.

The condition of the trade is gradually becoming more satisfactory and we look to a better car supply in the near future. The usual reports as to shortage in cars are not so widespread, although it must be said that there is, as yet, no great change.

The soft coal trade is in far better condition than it has been for some time, if one may judge from indications that do not lie on the surface.

The inevitable combine is moving along "as well as could be expected," and may venture into the open air before a great while. If it is to increase profits by forcing upon the companies certain long deferred economies of administration, all well and good, but if, like the anthracite combine, it is to increase prices beyond a reasonable figure we advise our friends to go slow. We have had quite enough of this way of increasing dividends.

The usual reports as to the importations of Nova Scotia coal are now in circulation. The duty on soft coal is 75 cents per ton, and as it will be at least 18 months before any repeal of the duty can go into effect, it does not seem likely to disturb the trade just now. The production of coal in Nova Scotia, in gross tons, in 1890 was 1,984,001 tons, in 1891, 2,044,784, and in 1892 probably 2,250,000 tons. The quality is far inferior to that of even the average American coal. It was brought into Fall River some years ago and was found to "heat" so rapidly as to cause apprehensions of spontaneous combustion.

American companies may be willing to buy the Nova Scotia mines, but no one need lie awake at night over the dreadful possibility of immense importations from that district. Unless the rate of duty is materially reduced this coal can not be brought here in any considerable quantities.

We have repeatedly pointed out the fact that no bill to reduce duties can go into effect before the middle of 1894, and as no bill of this sort is at present under consideration all the talk about coal importations is absurd.

Discussions will be in order at the proper time, not before, and we really can not at this time advise the owners of coal property to sell out on the supposition that Nova Scotia coal will overwhelm the country.

Charter rates can not be quoted owing to the ice blockade at the chief ports, and the difficulty of guaranteeing shipments.

It is unusually cold all over the country, and Sound and Eastern ports are practically shut up for the time being.

Boston.

Jan. 11.

(From our Special Correspondent.)

The situation in coal now hinges on the weather. All along the Atlantic seaboard we are having a cold snap, and it begins to look very serious. The reports that New York harbor is blocked with ice, and that ice is also causing considerable trouble at Philadelphia and Baltimore, is causing considerable apprehension among our dealers. Already a number are in the market for good sized lots of anthracite and bituminous coal. Deliveries of the latter have been light for some time, and retailers' stocks are anything but heavy. The retailers are selling soft coal to-day for from $4.10 to $4.25 per ton and are seriously considering putting up prices, owing to the advances recently made by wholesale and the increase in freight rates. If this cold weather continues for a week or ten days more, retailers think they will also be obliged to put up prices on anthracite. What they fear mostly now is that the present cold weather will cut off their supplies of hard coal. Wholesale prices are much firmer than they were, and there is practically no cutting.

Prices quoted here are net New York: Stove, $4.75; egg, $4.40; free broken, $4.00; chestnut, $4.65; Lykens Valley (at Philadelphia) broken, $4.85; egg, $5.45; stove, $6.00; chestnut, $5.00; George's Creek coal on cars here is firm at $4.00@$4.15 per ton; and Clearfield from $3.70@$3.85 per ton.

Freight rates of all kinds are firm and higher. From New York to Boston rates are from 60@70c.; from Philadelphia to Boston, $1.25; to Bath, $1.35@$1.40; to Providence, $1.10; from Baltimore to Boston, $1.25; Newport News to Boston, $1.15; Sound Points, 75@85c.

In a retail way there is considerable activity, as this cold weather reduces coal bins fast. Prices are very firm. We quote: Stove, $6.25; nut, $6.25; egg, $6.00; furnace, $5.75; Franklin, $7.50; Lehigh egg, $6.25; Lehigh furnace, $6.25.

The receipts of coal at the port of Boston for the week ending Jan. 7 were 20,431 tons of anthracite and 16,341 tons of bituminous, against 21,447 tons of anthracite and 9,630 tons of bituminous for the corresponding week last year.

Buffalo. Jan. 12.

(From our Special Correspondent.)

No change in quotations of anthracite or bituminous coal since our last report. All sizes of hard coal can be had without trouble at this port, and the various kinds of soft are to be found. The demand is good and the market firm. If weather like what has been experieneed all over the United States for many days past continues to prevail for any length of time, there will be no talk or overproduction wher spring arrives. Coke is heing used quite freely for fuel purposes, especially in cook stoves.

Nearly one hundred of the members of our local coal exchange doing a retail trade are in arrears for dues. Measures are to be taken looking to remedying the state of affairs. Various reasons are given why the conditional $5 per annum have not been paid, but they are too lengthy to specify here. The busy tongue of rumor says that a new gas company is to be formed in Buffalo to supply the west side of the city with light. A meeting to consider the railroad freights on bituminous coal was held a few days ago in the city, but an adjournment was ordered until the 20th inst., as no agreement could be arrived at.

The charges for light in this city December 31st were as follows: Gas consumed by the city, $1 per 1,000 ft., and $15.80 per gas lamp per year; for electric lights, 35c. per night per light, and $127.75 per electric light per year; gas lamps in use, 1,803; electric lights in use, 1,742. Cost for the year 1892: Public streets by electricity, $230,422.17; public streets by gas, $78,192.72; and public buildings by gas, $11,743.42.

Pittsburg. Jan. 12.

(From our Special Correspondent.)

Coal.—Since our last report there has been one of the most disastrous breakups that has ever occurred on the Ohio River, and the end is not yet. The loss, so far, is estimated at over half a million of dollars. The loss of coal comes at a bad time; prices at Cincinnati and Louisville have more than doubled. Pittsburgers, as usual, were large sufferers. The largest single firm, the Marmat Coal Company of Kanawha, was the heaviest loser, as ts stock at Cincinnati was large.

The ground is covered with snow in all directions. Should a big rain set in it would clean out the river from Pittsburg to Cairo. The gorge started at Kanawha. The Pittsburg ice is yet solid. Every precaution is being taken here to be ready for the flood when it comes. The miners' strike is still on; however, the frozen river at present would prevent operations, the boats being all frozen. The past year was far from being profitable. The total coal shipments from Pittsburg compared with the preceding year showed deficiency of 13,327,000 bushels.

Connellsville Coke.—A slump in shipment last week was not a good one for the coke trade. The works, generally, made very poor time. The heavy passenger traffic and the cold weather crippled the freight movement very much, and in consequence shipments fell off about 1,300 cars. The falling off was the largest in Eastern shipments owing to a congested condition of traffic on the Pennsylvania roads. The car supply was bad all week; all the roads fell far below their requirements.

The supply will he better in the future, and a bigger trade will be the result. The week's shipments aggregated 5,479 cars, consigned as follows: To Pittsburg and river points, 1,662 cars; to points west of Pittsburg, 2,816 cars; points east of Connellsville, 1,001 cars; decrease compared with preceding week, 1,302 cars. Eastern shipments decreased 686 cars; the Western fell off 482 cars, and the Pittsburg shipments 134 ears. Prices are unchanged, being the same as ruled the past two years, though many of the small operators are said to be cutting the price of furnace coke.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 13.

Heavy Chemicals.—Trading during the past week has been very fair, considering the tempestuous weather, which has made it difficult, if not altogether impossible, to ship goods during the entire week. In addition to this the early opening weeks of a new year are never busy ones, but dealers express satisfaction at the amount of business done during the past fortnight. We quote this week: Caustic soda, 60%. 2·95@3·10c.; 70%, 2 70@2·85c.; 74%, 2·71½@2·87½c.; 76%, 2·87½@3·10c. Carbonated soda ash, 48%, 1·40@1·60c.; 58%, 1·35@1·40c. Alkali, 48%, 1·35@1·40c. Sal soda, English, on the spot, 1@1·05c.; American, ·90@·95c.; bleaching powder, 2·50c.

Acids.—There is nothing new to report of the acid market. The demand has been hrisk and a good amount of business has been done. Prices are unchanged. We quote: Acid, per 100 lhs, in New York and vicinity, in lots of 50 carhoys or more: Aeetic, $1.60@$2, according to quality; muriatic, 18°, 90c.@$1.10; 20°, $1@$1.25; 22°, $1.25@$1.50; nitric, 40°, $4; 42°. $4.50@$4.75; sulphuric, 90c.@$1.10; mixed acids, according to mixture; oxalie, $6.50@$7.25. Blue vitriol is quoted all the way from $3.25 to $3.75; glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—This market continues in the same condition as reported last week. The market was quiet and prices are unchanged. We quote: Best unmixed seconds, on the spot, $22; to arrive, future shipments, $20.75. Thirds are 75c. less.

Fertilizing Chemicals.—The fertilizer market is firm. There is considerable inquiry for goods and several sales are reported, especially for shipment to the South. Ammoniates are higher, owing to the continued scarcity of dried blood brought about by the light killing of hogs in the West. Prices have advanced. Our quotations this week are as follows: Sulphate of ammonia, $2.90@$2.95 for bone goods and $2.95@$3 for gas liquor. Dried blood, $2.75@$2.85 per unit for high grade and $2.65@$2.75 for low grade; acidulated fish scrap, no stocks on hand; dried scrap, nominally $26 f. o. b. fish factory; Azotine, $2.70@$2.85. Tankage, high grade, $27@$28; low grade, $24. Bone tankage, $22.50@$23.50; bone meal, $24.50@$25.50. The price of double manure salts for 1893, for orders placed prior to January 31st, has been fixed by the syndicate as follows: New York and Boston, $1.10; Philadelphia, $1.12½; Charleston and Savannah, $1.15 cwt. basis, 48@50% in 50 ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis 90%: New York and Boston, $2.05; Philadelphia, $2.07½; Charleston and Savannah, $2.10. Sulphate of potash, 96-99%, basis 90%, is 4% higher.

Prices on orders placed after January 31st will be at the rate of 2c. per 100 lbs. higher on double manure salt and 3c. per 100 lbs. higher on sulphate of potash. Buyers have the option of increasing the quantity by 25%, such option to be decided on or before September 1st, 1893.

Muriate of Potash.—There has been a fair demand for muriate. Arrivals during the past week amounted to 900 tons. Prices for 1893 on orders placed prior to January 31st are as follows: New York or Boston, $1.75; Philadelphia, $1.77½; Southern ports, $1.80. Prices on orders placed after January 31st will he 3c. higher per 100 lbs.

Nitrate of Soda.—This market is rather quiet. There is no change in prices, which continue $2.15@$2.17½ for spot.

Phosphate Rock.—A better feeling in the phosphate market is reported from Charleston, S. C., owing to the decreased production brought about by the closing down of some of the mines.

NOTES OF THE WEEK.

We are in receipt of a letter from our special Liverpool correspondents, Messrs. Joseph P. Brunner & Company, announcing the death of the senior member, Mr. Joseph P. Brunner, whose obituary appeared in this journal two weeks ago. The business will be carried on by the surviving partner, Mr. Wm. Connal Barclay, under the same style as heretofore.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, chem. pure .16@.17
Commercial, in bbls. and cbys. .015@.017
Carbonic, liquefied, ℔ lb. .18@.25
Chromic, chem pure, ℔ lb 1.00
for batteries .40
Hydrobromic, dilute, U. S. P. .25
Hydrocyanic, U. S. P. .45
Hydrofluoric .20
Alcohol—95%, ℔ gall. $2.30@$2.40
Absolute $3.80
Ammoniated $2.80
Alum—Lump, ℔ cwt. $1.75@$1.80
Ground, ℔ cwt. $1.85@$1.90
Powdered, ℔ lb. .04½@.05
Lump ℔ ton, Liverpool £5
Aluminum Chloride—Pure, ℔ lb. $1.25
Amalgamating solution, ℔ lb. .60
Sulphate, ℔ cwt $1.90@$2.50
Ammonia—Sul., in bbl. lots, ℔ lb. 02½@.03
Carbonate, ℔ lb., English and German, .07½@.07¾
Muriate, white, in bbls., ℔ lb. .08½
Aqua Ammonia—(in cbys) 18° ℔ lb. .03@.04
20°, ℔ lb. .04@.05
26°, ℔ lb. 05@.05½
Antimony—Oxymur, ℔ lb. .04@.06
Regulus, ℔ lb. .10@.11½
Argols—Red, powdered, ℔ lb. .15
Arsenic—White, powdered ℔ lb. .03@.03½
Red ℔ lb. .065@.07
Yellow .08@.09
White at Plymouth, ℔ ton £12 2 6
Asbestos—Canadian, ℔ ton $50@$300
Italian, ℔ ton, c. i. f. L'pool £18@£60
Ashes—Pot, 1st sorts, ℔ lb. 4.75@5
Pearl .06@.06¼
Asphaltum—
Prime Cuban, ℔ lb. .04@.05
Hard Cuban, ℔ ton $28.00@$30.00
Trinidad, refined, ℔ ton $30.00@$35.00
Egyptian and Syrian, ℔ lb. .05@.07½
Californian, at mine, ℔ ton $12.00@$26.00
at San Francisco, ℔ ton. $15.00@$29.00
Barium—Carbonate, pure, ℔ lb. .45
Carbonate, commercial, ℔ lb. .03@.10
Chlorate, crystal, ℔ lb. .75
Chloride, commercial, ℔ lb. .05@.10
pure, ℔ lb. .16
Iodide, ℔ oz. .40
Nitrate, ℔ lb. .06½@.07½
Sulph., Am. prime white, ℔ ton $17.50@$19
Sulph., foreign, floated, ℔ ton $21@$23
Sulph., off color, ℔ ton $11.50@$14.00
Carb., lump, f. o. b. L'pool, ℔ ton £6
No. 1, Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " £3 15 0
Bauxite—℔ ton $10.00
Bichromate of Potash—Scotch, ℔ lb. .11@.12
American, ℔ lb. 11@.12
Bichromate of Soda—℔ lb. .09½@.10
Borax—Refined, ℔ lb., in car lots .08@.09
San Francisco .08@.08½
Concentrated, in car lots .07½@.08
Refined, Liverpool ℔ ton £2
Bromine—℔ lb. .15@0.2
Cadmium Minion—℔ lb. $2.00
Cadmium Iodide—℔ lb. $5.50
Chalk—℔ ton $1.40@$1.75
Precipitated, ℔ lb. .05@.06
China Clay—English, ℔ ton .$13@$18.00
Domestic, ℔ ton $9@$11
Chlorine Water—℔ lb. .10
Chrome Yellow—℔ lb. .10@.25
Chrome Iron Ore—℔ ton, San Francisco $10.00
Chromalum—Pure, ℔ lb. .40
Commercial, ℔ lb. .12
Cobalt—Oxide, ℔ lb. $1.90@$2.00
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ℔ lb. 03¼@.0.½
" " extra .04½
Nitrate, ℔ lb. .40
Copperas—Common, ℔ 100 lbs. .90@$1.00
Best, ℔ 100 lbs. $1.35@$1.50
Liverpool, ℔ ton, in casks £2 @£2 10s.
Corundum—Powdered, ℔ lb. .04½@.09
Flour, ℔ lb. .03
Cryolite—Powdered, ℔ lb., bbl. lots. .07
Emery—Grain, ℔ lb. (℔ kg.) .04½@.05
Flour, ℔ lb. .02¼@.10
Epsom Salt—℔ lb. 01@.01½
Feldspar—Ground, ℔ ton .$6.00@$10.00
Crude $2.00@$3 00
Fluorspar—Powdrd, No. 1, ℔ ton. $20@$30
Lump, at mine $6@$8
French Chalk—
Fuller's Earth—Lump, ℔ ton. $16@$20
Glauber's Salt—in bbls., ℔ lb. .01@.01¼
Glass—Ground, ℔ lb. .10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g.
s. v., ℔ doz $5.50
Chloride and sodium, ℔ oz $6.00
15 gr., c. v., ℔ doz. $2.88
Oxide, ℔ oz. $27.25
Gypsum—Calcined, ℔ bbl. $1.25@$1.50
Land Plaster
Iodine—Resublimed $3.30@$3 35
Iridium—Oxide ℔ lb. $90
Iron—Nitrate, 40°, ℔ lb. .01@.01½
47°, ℔ lb. .02@.02¼
Kaolin—*See China Clay.*
Kieserite—℔ ton $9@$10
Lead—Red, American, ℔ lb. .06¾@.07½
White, American, in oil, ℔ lb. .06½@.07½
White, English, ℔ lb., in oil .08½@.08¾
Acetate, or sugar of, white .06@.06½
Granulated
Nitrate .09@.10
Lime Acetate—Am. Brown .90@.95
" Gray .$1.75@$1.87½
Litharge—Powdered, ℔ lb. .06¾@.07½
English flake, ℔ lb. .09@.09½
Magnesite—Crude, ℔ ton of 1,015 kilos $14.75
Calcined, ℔ ton of 2,240 ibs $22.00
Brick, ℔ ton of 2,240 ibs $47.50
Manganese—Ore, per unit. 23@.28
Oxide, ground, ℔ lb. 02½@.06½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. .62@.64
Powdered, ℔ lb. .50
Marble Dust—℔ bbl. $1.25
Metallic Paint—Brown ℔ ton. $20@$25
Red $20@$22
Mineral Wool—Ordinary slag .01½
Ordinary rock .02½
Ground, ℔ ton
Mica—In sheets according to size.
1st quality, ℔ lb. .25@$6.00
Naphtha—Black
Nitre Cake—℔ ton $10.00
Ochre—Rochelle, ℔ lb. $1.10@$1.50
Washed Nat Oxf'rd, Lump, ℔ lb. 06½@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb. .07@.07½
Golden, ℔ lb. .03@.05
Domestic, ℔ ton $12@$20
Oils, Mineral—
Cylinder, light filtered, ℔ gal. .14@.16
Dark filtered, ℔ gal. .10@.13
Extra cold test, ℔ gal. .20@.24
Dark steam refined, ℔ gal. .09@.12
Phosphorus—℔ lb. .50@.55
Precip., red, ℔ lb. .82@.85
white, ℔ lb. .85@.90
Platinic Chloride—℔ oz. $7
Plumbago—Ceylon, ℔ lb. .04@.05
American, ℔ lb. .05@.07
Potassium—Cyanide, ℔ lb., C. P. .70
67%, ℔ lb. .45
fused .40
Bromide, domestic, ℔ lb. .25@.28
Chlorate, English, ℔ lb. .14@.15
Chlorate, powdered, English, ℔ lb. .14½@.15½
Carbonate, ℔ lb., by casks, 82% .04½@.05
Caustic, ℔ lb., pure stick .06@.06½
Iodide, ℔ lb. $2.58@$2.80
Nitrate, refined, ℔ lb. .06@.08
Bichromate, ℔ lb. .10@.11½
Yellow Prussiate, ℔ lb. .23
Red Prussiate, ℔ lb. .42@.45
Pumice Stone—Select lumps, ℔ lb. 03½@.15
Original cks., ℔ lb. .01½@.02
Powdered, pure, ℔ lb. .01½@.01¾
Pyrites—Non-cupreous, p. units. .12@.15
Quartz—Ground, ℔ ton .$6.00@$10.00
Rotten Stone, Powdered, ℔ lb. .03¼@.03¾
Lump, ℔ lb. .06@.07
Original cks, ℔ lb. .04½@.05½
Rubbing stone, ℔ lb. .03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb. .80½
Salt—Liverpool, ground, ℔ sack .70@
Domestic, fine, ℔ ton $7@$7.5
Common, fine, ℔ ton $4.50@$5
Turk's Island, ℔ bush .26@.28
Salt Cake—℔ ton $10.00@$15.00
Saltpeter—Crude, ℔ lb. .03½@.04
Soapstone—Ground, ℔ ton $8@$
Block and slab according to size.
Sodium—Prussiate, ℔ lb. .22@.24
Phosphate, ℔ lb. .04@.05
Stannate, ℔ lb. .06@.12
Tungstate, ℔ lb.
Hyposulphite, ℔ lb., in casks .0235@.0245
Strontium—Nitrate, ℔ lb. .03¾@.09
Sulphur—Roll, ℔ lb. .02½
Flour, ℔ lb. .02¾
Sylvinit, 27@35%, S. O. P., per unit. .40
Talc—Ground French, ℔ lb. .01¼@.01¾
American No. 1, ℔ lb. .01¼@.01¾
American No. 2 .006
Terra Alba—French, ℔ lb. .65@.80
English, ℔ lb. .65@.80
American, No. 1, ℔ lb. .60@.70
American, No. 2, ℔ lb. .40@.50
Tin—Crystals, in kegs or bbls. .14@.16
feathered or flossed. .20
Muriate, single .07@.05
Double or strong, 54° B. .10@.15
Oxymur, or nitro .19
Vermilion—Imp. English, ℔ lb. .85@.90
Am. quicksilver, bulk .57 @.6
Am. quicksilver, bags .58 @ .6
Chinese .85 @$1.00
Trieste .90 @ .95
American .11½@ .12
Zinc White—Am., Dry, ℔ lb. .04½@ .05
Antwerp, Red Seal, ℔ lb. .06¾@.07
Paris, Red Seal, ℔ lb. .07½@.08
Muriate solution .06
Sulphate crystals, in bbls., ℔ lb. .03¾

THE RARER METALS.

Aluminum—℔ lb. .50@.65
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram .$4.00
Bismuth—(Metallic), per lb. $2.25
Cadmium—(Metallic), per lb. $1.00
Calcium—(Metallic), per gram .$10.00
Cerium—(Metallic), per gram. $7.50
Chromium—(Metallic), per gram. $1.00
Cobalt—(Metallic), per lb. $6.00
Didymium—(Metallic), per gram. $9.00
Erbium—(Metallic), per gram .$7.50
Gallium—(Metallic), per gram .$140.00
Glucinum—(Metallic), per gram .$12.00
Indium—(Metallic), per gram. $9.00
Iridium—(Fused), per oz. $12.00
Lanthanum—(Metallic), per gr. $10.00
Lithium—(Metallic), per gram .$10.00
Magnesium—(Powdered), per lb. $4.00
Manganese—(Metallic), per lb. $1.10
Chem. pure, per oz. $10.00
Molybdenum—(Metallic), per gm .50
Niobium—(Metallic), ger gram .$5.00
Osmium—(Metallic), per oz. $35.00
Palladium—(Metallic), per oz. $35.00
Platinum—(Plate), per oz. $11.00
Potassium—(Metallic), per lb. $28.00
Rhodium—(Metallic), per gram .$5.00
Ruthenium—(Metallic), per gm. $5.50
Rubidium—(Metallic), per gram. $2.00
Selenium—(Metallic), per oz. $1.80
Sodium—(Metallic), per lb. 50@.75
Strontium—(Metallic), per gm. .60
Tantalum—(Metallic), per gram. $9.00
Telurium—(Metallic), per lb. $5.00
Thallium—(Metallic), per gram. .20
Titanium—(Metallic), per gram .$2.20
Thorium—(Metallic), per gram .$17.00
Tungsten—(Metallic), per lb. .80
Uranium—(Oxide), per lb. $5.00
Metallic, per gm. .20
Vanadium—(Metallic), per gm. $22.00
Yttrium—(Metallic), per gram. $9.00
Zirconium—(Metallic), per oz. $65.00

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 7. H.	Jan. 7. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Jan. 11. H.	Jan. 11. L.	Jan. 12. H.	Jan. 12. L.	Jan. 13. H.	Jan. 13. L.	SALES.
Adams, Colo													
Alice, Mont													
Amador, Cal.													
Atlantic, Mich													
Belcher, Nev													
Belle Isle, Nev.													
Bodie Cons., Cal													
Bos. & Mont., Mont													
Breece, Colo													
Bulwer, Cal.													
Caledonia, S. Dak							1.15	1.10			1.00		1,700
Catalpa, Colo													
Chrysolite, Colo													
Colorado Central, Colo.													
Commonwealth, Nev													
Comstock T. bonds, Nev.													
" scrip., Nev													
Cons. Cal. & Va., Nev	1.95		2.25										500
Crown Point, Nev													
Deadwood, Dak									1.75	1.60			200
Enterprise													
Eureka, Cons., Nev													
Father de Smet, Dak													
Freeland, Colo													
Gould & Curry, Nev													
Grand Prize, Nev													
Hale & Norcross, Nev	1.[illegible]0												100
Homestake, Dak													
Horn-Silver, Utah							3.25	3.15	3.30	3.20			458
Independence, Nev													
Iron Hill, Dak													
Iron Silver, Colo													
Leadville Cons., Colo	.21								.21				1,800
Little Chief, Colo													
Martin White, Nev													
Mono													
Mt. Diablo, Nev													
Navajo, Nev													
N. Belle Isle, Nev													
Ontario, Utah									14.00				300
Ophir, Nev	1.90										2.50		200
Overman, Nev													
Plymouth, Cal					.75								200
Quicksilver, Pref., Cal.													
" Com., Cal.													
Quincy, Mich													
Robinson Cons., Colo													
Savage, Nev													
Sierra Nevada, Nev											1.50		100
Silver Cord, Colo							30						300
Silver King, Ariz													
Silver Min. of L. Valley													
Small Hopes, Colo													
Standard Cons., Cal							1.50						200
Yellow Jacket, Nev	85										.85		400

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 7. H.	Jan. 7. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Jan. 11. H.	Jan. 11. L.	Jan. 12. H.	Jan. 12. L.	Jan. 13. H.	Jan. 13. L.	SALES.
Alpha., Nev													
Alta, Nev													
American Flag, Colo													
Andes, Cal													
Astoria, Cal													
Augusta, Ga													
" bonds													
Barcelona, Nev													
Belmont, Cal					.30		.30						300
Best & Belcher, Nev.	1.45										1.45		200
Bonanza King, Cal.													
Brunswick, Cal									.11	.10			600
Bullion, Nev.	1.10		1.15										300
Butte & Bost., Mont													
Castle Creek, Idaho.													
Chollar													
Comstock T., Nev	.16										.09		1,500
Con. Imperial, Nev													
Con. Pacific, Cal													
Crescent, Colo													
Del Monte, Nev													
El Cristo, Rep. of Col	.20		30	.25	37	.30	.40	36	.51	.40	56	.50	15,500
Emmett, Colo													
Exchequer, Nev.	30		.32										500
Hollywood, Cal													
Julia, Nev													
Justice, Nev													
King. & Pembroke, Ont.													
Lacrosse, Colo.									.04				600
Lee Basin, Colo.													
Mexican, Nev	1.40												150
Middle Bar, Cal													
Moultor, Colo													
Mutual S. & M. Co., Wash.													
Nevada Queen, Nev													
N. Standard, Cal													
N. Commonwealth, Nev.													
Occidental, Nev													
Oriental & Miller, Nev.													
Phœnix Lead, Colo													
Phœnix of Ariz	.65	60	.57	.54	55				.55				2,500
Potosi, Nev													
Rappahannock, Va													
S. Sebastian, S. Sal													
Santa Fe, N. M													
Scorpion, Nev	.20		.22										300
Seg. Belcher, Nev													
Shoshone, Idaho													
Silver Hill, Nev	.15												300
Sullivan Con., Dak													
Sutro Tunnel, Nev													
Syndicate, Cal													
Tornado Con., Nev													
Union Cons., Nev													
Utah, Nev													

*Ex-dividend. + Dealt at in New York Stock Ex. Unlisted securities. ‡ Assessment paid. § Assessment unpaid. Dividend shares sold, 6,458 Non-dividend shares sold 22,650 Total shares sold, 29,108.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 6. H.	Jan. 6. L.	Jan. 7. H.	Jan. 7. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Jan. 11. H.	Jan. 11. L.	Jan. 12. H.	Jan. 12. L.	SALES.
Atlantic, Mich													
Bodie, Cal													
Bonanza Development													
Bost. & Mont., Mont	32.63						32 63	32.25	32.50	32.38	32 50	32 25	655
Breece, Colo													
Calumet & Hecla, Mich.					295						297½	297	27
Catalpa, Colo													
Central, Mich													
Cœur d'Alene, Id													
Con. Cal. & Va., Nev													
Dunkin, Colo													
Eureka, Nev													
Franklin, Mich	13 00				13 13	13.00	13 00	12.5					243
Honorine, Utah													
Horn Silver, Utah													
Kearsarge, Mich	12 00				11.63						11 50		175
Lake Superior, Iron													
Little Pittsburg, Colo													
Minnesota Iron, Minn.													
Napa, Cal													
Ontario, Utah													
Osceola, Mich							35 25	35.00	35.50		35.25		417
Quincy, Mich	142						144		144	143	140		87
Ridge, Mich													
Sierra Nevada, Nev													
Silver King, Ariz													
Stormont, Utah													
Tamarack, Mich	154½				154		154	153½	154	153½	155		228
Tecumseh, Mich													

NAME OF COMPANY.	Jan. 6. H.	Jan. 6. L.	Jan. 7. H.	Jan. 7. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Jan. 11. H.	Jan. 11. L.	Jan. 12. H.	Jan. 12. L.	SALES.
Allouez, Mich													
Arnold, Mich									1.00				100
Aztec, Mich													
Brunswick, Cal													
Butte & Boston, Mont	11.00												60
Centennial, Mich	8.25	7.25					7.50	7.38			7.50		387
Colchis, N. Mex													
Copper Falls, Mich													
Crescent, Colo													
Dana, Mich													
Don Enrique, Mex													
Geyser, Colo													
Hanover, Mich													
Humboldt, Mich	.26												100
Hungarian, Mich													
Huron, Mich													
Mesnard, Mich													
National, Mich									1.00				25
Native, Mich													
Oriental & M., Nev													
Phœnix, Ariz													
Pontiac, Mich									.30				100
Rappahannock, Va													
Santa Fe, N. Mex									.04				100
Shoshone, Idaho													
South Side, Mich													
Tamarack, Jr, Mich.							20.00						2
Washington, Mich.													
Wolverine, Mich.											1.50	1.38	500

Dividend shares sold, 1,832. Non-dividend shares sold, 1,274. Total shares sold, 3,106.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last			Dividends. Total paid.	Date & amount of last.		
1	Adams, s. L. c.	Colo.	$1,500,000	150,000	$10	*				$637,500	Jan..	1892	.05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25					1,450,000	Oct.	1892	.37½
3	Alice, s.	Mont.	10,000,000	400,000	25	*				975,000	Nov.	1891	.06¼
4	Alma & Nel Wood., g	Idaho	300,000	30,000	10	*				60,000	Jan.	1889	.50
5	Amador, g.	Cal.	1,250,000	250,000	5	*				31,250	Aug..	1890	.12½
6	American, g.	Colo..	3,000,000	300,000	10	*				225,000	Mar..	1892	.05
7	American Belle, s.g.c	Colo.	2,000,000	400,000	5	*				50,000	April	1891	.12½
8	Americ'n & Nettie, g.s	Colo..		300,000						175,000	Mar..	1892	.05
9	Atlantic, c.	Mich..	1,000,000	40,000	25	280,000	April	1875	$1.00	700,000	Feb..	1891	1.00
10	Argenta, s.	Nev..	10,000,000	100,000	100	335,000	July.	1889	.10	40,000	Feb..	1880	.20
11	Argyle, g.	Colo..	1,000,000	1,000,000	1	*				20,000	Mar.	1892	.01
12	Aspen Mg. & S., s. L.	Colo..	2,000,000	200,000	10	*				760,000	Sept.	1892	.10
13	Aurora, I.	Mich..	2,500,000	100,000	25					455,000	June	1892	1.00
14	Badger, s	Ont...	250,000	50,000	5					37,500	Mar.	1890	.25
15	Bald Butte	Mont	250,000	250,000	1	*				72,500	Mar..	1892	.03
16	Bates Hunter, s. g.	Colo..	1,000,000	1,000,000	1						Dec..	1891	.00¾
17	Belle Isle, s.	Nev..	10,000,000	100,000	100	220,000	Aug.	1892	.10	300,000	Dec..	1879	.25
18	Belcher, s. g.	Nev..	10,400,000	104,000	100	3,16[illegible],000	May	1892	.25	15,397,000	April	1876	1.00
19	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	1[illegible],000	Dec..	1889	.25	200,000	Jan..	1890	.19
20	Best Friend	Colo.	1,000,000	1,000,000	1					90,000	Feb..	1892	.01
21	Bi-Metallic, s. g.	Mont.	5,000,000	200,000	25					2,140,000	Dec.	1892	.20
22	Bodie Con., g. I.	Cal...	10,000,000	100,000	100	[illegible]0,000	June	1890	.25	1,602,572	April	1885	.50
23	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*				520,000	June	1886	.15
24	Boston & Mont., c. s.	Mont.	3,125,000	125,000	25	*				2,075,000	Nov..	1891	1.00
25	Brooklyn Lead, L. s.	Utah.	500,000	50,000	10					127,000	July.	1887	.05
26	Bulwer, g.	Cal...	10,000,000	100,000	10	30,000	Aug..	1889	.25	190,000	Oct..	1892	.05
27	Bunker Hill & S. s. L.	Idaho	3,000,000	300,000	10	*				150,000	Oct..	1888	.06⅔
28	Caledonia, g.	Dak..	10,000,000	100,000	100	505,000	May.	1885	.15	192,000	Oct..	1890	.08
29	Calliope, s.	Colo..	1,000,000	1,000,000						140,000	Jan..	1891	.00½
30	Calumet & Hecla c	Mich..	2,500,000	100,000	25	1,200,000				38,850,000	Dec.	1892	5 00
31	Centen'l-Eureka, s. I.	Utah.	1,500,000	30,000	50					577,500	Dec.	1892	.50
32	Central, c.	Mich..	500,000	20,000	25	100,000	Oct..	1861	.65	1,970,000	Feb..	1891	1.00
33	Champion, g	C..	[illegible]	34,000	10					114,900	Dec	1892	.10
34	Chrysolite, s. L.	Colo..	10,000,000	200,000	50	*				1,650,000	Dec..	1884	.25
35	Clay County, g.	Colo..	200,000	200,000	1	*				56,000	Nov..	1891	.02
36	Clinton Con, g	Cal...	5,000,000	100,000	5					80,000	Nov..	1891	.10
37	Cœur D'Alene, s. L.	Idaho	5,000,000	500,000	10					310,000	Nov.	1891	.02
38	Colorado Central, s. L.	Colo..	2,750,000	275,000	10	*				502,500	Jan..	1892	.05
39	Commonwealth, s.	Nev.	10,000,000	100,000	100	190,000	Sept.	1892	.10	20,000	Nov..	1890	.20
40	Confidence, s. L.	Nev...	2,496,000	24,960	100	1,589,550	Aug.	1892	.50	199,680	April	1889	1.00
41	Cons. Cal. & Va., s. g	Nev...	21,600,000	216,000	100	108,000	Jan..	1885	.20	3,682,800	Aug.	1891	.50
42	Contention, s.	Ariz..	12,500,000	250,000	50					2,637,500	Aug.	1892	.20
43	Cook's Peak, s	N. M..	2,000,000	200,000	10					114,532	Nov.	1892	.05
44	**Cop. Queen Con., C.	Ariz..	1,400,000	140,000	10					1,260,000	Nov.	1892	1.00
45	Coptis	Nev.	10,000,000	100,000	100					67,000	July..	1892	.12
46	Cortez, s.	Nev..	1,500,000	300,000	05	*				687,000	Mar..	1892	.50
47	Crescent, s. L. g.	Utah.	15,000,000	600,000	25	60,000	Oct.	1892	.10	238,000	Oct..	1888	.03
48	Crown Point, g. s.	Nev...	10,000,000	100,000	100	2,700,000	Sept.	1892	.25	11,898,000	Jan..	1875	2.00
49	Cumberland, L. s.	Mont.	5,000,000	500,000	10	*				15,000	Nov.	1889	.08
50	Daly, s. L.	Utah.	3,000,000	150,000	20					2,612,500	Dec..	1892	.25
51	Deer Creek, s. g.	Idaho	1,000,000	200,000	5	*				20,000	June	1889	.05
52	Deadwood-Terra, g.	Dak..	5,000,000	200,000	25	*				1,150,000	Oct..	1892	.05
53	DeLamar, s. g.	Idaho	2,000,000	400,000	5					550,000	Oct...	1892	.25
54	Derbec B. Grav., g.	Cal...	10,000,000	100,000	100	100,000	Sept.	1892	.10	60,000	Aug..	1891	.10

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
1	Alliance, s. g.	Utah.	$100,000	100,000	$1	$120,000	Feb..	1891	.25
2	Allouez, c.	Mich.	2,000,000	80,000	25	737,000	Jan..	1890	.75
3	Alpha Con., g. s.	Nev..	3,000,000	30,000	100	209,000	Sept.	1892	.10
4	Alta, s.	Nev..	10,080,000	100,800	100	3,369,880	Jan.	1892	.10
5	American, c.	Idaho	5,000,000	500,000	100				
6	American Flag, s.	Colo..	1,250,000	125,000	1	300,000	June	1887	
7	Amity, s.	Colo..	250,000	250,000	20				
8	Anchor, s. L. g.	Utah.	3,000,000	150,000	5	410,000	June	1890	.20
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	125				
10	Appalachian, g.	N. C.	1,750,000	1,400,000	20				
11	Arizona, c.	Ariz..	3,575,000	160,000	2				
12	Astoria, g.	Cal..	200,000	100,000	5				
13	Atlanta, g. s	Idaho	3,250,000	650,000	25				
14	Barcelona, g.	Nev..	5,000,000	200,000	5	*			
15	Bear Creek	Idaho	100,000	20,000	1				
16	Belmont, g.	Cal...	500,000	500,000	100	*			
17	Belmont, s.	Nev..	5,000,000	50,000	100	735,000	April	1886	.10
18	Best & Belcher, s. g.	Nev..	10,080,000	100,800	10	2,405,275	Aug..	1892	.25
19	Black Oak, g.	Cal...	3,000,000	300,000	100	*			
20	Boston Con., g.	Cal...	10,000,000	100,000	1	170,000	Nov..	1883	.25
21	Brownlow, g.	Colo..	250,000	250,000	5				
22	Brunswick, g.	Cal...	2,000,000	400,000	2				
23	Buckeye, s. L.	Mont.	1,000,000	500,000	100				
24	Bullion, s. g.	Nev.	10,000,000	100,000	100	2,890,000	Aug.	1892	.25
25	Burlington, g. s.	Cal...	10,000,000	100,000					
26	Butte & Boston, c. s.	Mont.	5,000,000	200,000	10				
27	Butte Queen, g	Cal...	1,000,000	100,000	1	6,000	Jan..	1892	.04
28	Calaveras, g.	Cal...	500,000	500,000	5				
29	Calaveras Con., g.	Cal...	800,000	160,000	10				
30	California, e	Cal...	1,000,000	100,000	5	9,000	Mar.	1892	.03
31	California Con. I. Q.	Cal...	2,250,000	450,000	10				
32	Camille, g.	Ga	1,500,000	150,000	5				
33	Carisa, g.	Wy...	500,000	100,000	2	*			
34	Carupano, g. s. L. c.	Ven...	200,000	100,000	2	*			
35	Cashier, g. s	Colo..	500,000	250,000	100	*			
36	Challenge Con., g. s.	Nev..	5,000,000	50,000	10				
37	Cherokee, g.	Cal...	1,500,000	150,000	100				
38	Chollar, s. g.	Nev..	11,200,000	112,000	2	1,820,000	May..	1892	.50
39	Cleveland, T.	Dak..	1,000,000	500,000	10	*			
40	Colchis, s. g.	N. M..	500,000	150,000	5				
41	Colorado, s	Colo..	1,625,000	325,000	1				
42	Comstock, s	Utah.	1,250,000	250,000	100				
43	Comstock Tun.	Nev..	10,000,000	100,000	100	35,000	Mar.	1887	.15
44	Con. Imperial, g. s	Nev..	5,000,000	50,000	50	2,062,500	Jan..	1892	.25
45	Con. New York, s. g.	Nev..	5,000,000	100,000	100	110,000	Mar..	1892	.10
46	Con. Pacific, g.	Cal	6,000,000	60,000	10	198,000	June	1890	10
47	Con. Silver, s.	Mo...	2,500,000	250,000	5				
48	Cordova Union, g.	Cal...	1,000,000	200,000	10				
49	Crescent, s. L.	Colo..	3,000,000	300,000	100	*			
50	Crocker, s.	Ariz..	10,000,000	100,000	1	165,000	Aug.	1892	.05
51	Crowell, g.	N. C..	500,000	500,000	1				
52	Dahlonega, g.	Ga...	250,000	250,000	10	*			
53	Dandy, s.	Colo..	5,000,000	500,000					
54	Decatur, s	Colo..	1,500,000	300,000					

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total Levied.	Date and amount of last			Dividends. Total paid.	Date & amount of last.		
55	Dexter, G. S	Nev..	1,000,000	100,000	10					80,000	Aug..	1892	.25
56	Dunkin, S. L.	Colo..	5,000,000	200,000	25	*				390,000	Oct..	1889	.05
57	Elkhorn, S. L.	Mont.	1,000,000	200,000	5	*				885,545	Dec.	1892	.50
58	Enterprise, S.	Colo..	100,000	10,000	10	*				700,000	Dec.	1892	.10
59	Eureka Con., S. L.. G.	Nev...	1,000,000	50,000	100	550,000	June	1889	.50	5,017,500	Jan	1892	.25
50	Evening Star, S. L.	Colo..	500,000	50,000	10	*				1,450,000	Dec.	1889	.2
61	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov..	1878	1.00	1,125,000	Dec..	1885	.20
62	Franklin, C..	Mich..	1,000,000	40,000	25	220,000	June	1871		1,160,000	July	1892	2.00
63	Freeland, S. G.	Colo..	5,000,000	200,000	25	*				190,000	July.	1886	.10
64	Garfield Lt., G. S.	Nev..	500,000	100,000	5					90,000	April	1888	.12½
65	Glengarry	Mont.	1,000,000	100,000	10					10,000	June	1891	.10
66	Gold Rock	Colo..	500,000	500,000	1						Dec..	1891	.01
67	Golden Reward	S.Dak	1,250,000	250,000	5					65,000	Dec.	1892	.02
68	Gould & Curry, S. G..	Nev...	10,800,000	108,000	100	4,591,200	June	1892	.25	3,826,800	Oct..	1870	10.00
69	Grand Prize, S.	Nev...	10,000,000	100,000	100	785,000	Jan..	1890	.30	495,000	Mar.	1884	.25
70	Granite, S. L.	Idaho	500,000	500,000	1	*				83,400	Nov..	1890	.02
71	Granite Mountain, S.	Mont.	10,000,000	400,000	25					12,120,000	July.	1892	.20
72	Great Western, L. Q..	Cal..	5,000,000	50,000	100					394,861	Dec.	1892	.25
73	Green Mountain, G..	Cal..	1,250,000	125,000	10	*				212,000	Nov..	1881	.07½
74	Hale & Norcross, G. S.	Nev...	11,200,000	112,000	100	5,534,800	Aug.	1892	.50	1,822,000	Aug.	1888	.50
75	Hecla Con., S. G. L. C.	Mont.	1,500,000	30,000	50					1,920,000	Dec	1892	.50
76	Hel'a Mg.& Red,S.L.G.	Mont.	3,315,000	663,000	5	*				197,970	July.	1886	.06
77	Helena & Frisco, S.L.	Idaho	2,500,000	500,000	5					170,000	July..	891	.02
78	Helena & Victor	Mont.	1,000,000	200,000	5					80,000	May..	1891	.05
79	* *Holmes, S.	Nev...	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886	.25
80	Homestake, G	Dak..	12,500,000	125,000	100	200,000	July.	1878	1.00	4,928,750	Dec..	1892	.10
81	Honorine, S. L	Utah.	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887	.05
82	Hope, S	Mont.	1,000,000	100,000	10	*				358,252	Jan.	1893	.25
83	Horn-Silver, S. L	Utah.	10,000,000	400,000	25	*				4,650,000	Dec.	1892	.12½
84	Hubert, G	Colo..	1,000,000	1,000,000	1	*				247,000	Dec..	1889	.00½
85	Idaho, G	Cal...	310,000	3,100	100					5,419,250	Dec.	1892	2.50
86	Illinois, S	N. M..	100,000	100,000	1	*				45,000	April	1889	.20
87	Iron Hill, S	Dak..	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov..	1887	.07½
88	Iron Mountain, S	Mont.	5,000,000	500,000	10	*				215,000	Aug..	1892	.03
89	Iron-Silver, S. L	Colo..	10,000,000	500,000	20	*				2,500,000	April	1889	.20
90	Jack Rabbit, G	Cal...	10,000,000	100,000	100	100,000	Sept.	1892	.10	260,000	Aug.	1891	.10
91	Jackson, G. S	Nev..	5,000,000	50,000	100	237,500	Nov..	1880	.20	60,000	Jan.	1891	.10
92	Kearsarge, C	Mich..	1,000,000	40,000	25	190,000	Oct..	1887	1.00	80,000	Jan.	1890	2.00
93	Kennedy	Cal...	10,000,000	100,000	100					387,000	May..	1892	.15
94	Kentuck, S. G	Nev..	3,000,000	30,000	100	454,180	Oct..	1891	.15	1,350,000	Dec.	1886	.10
95	La Plata, S. L	Colo..	2,000,000	200,000	10	*				610,000	Sept.	1882	.30
96	Leadville Con., S. L	Colo..	4,000,000	400,000	10	*				304,000	May..	1892	.08
97	Lexington, G. S.	Mont.	4,000,000	40,000	100	*				609,000	Jan..	1890	2.00
98	Little Chief, S. L	Colo..	10,000,000	200,000	50	*				820,000	Dec..	1890	.05
99	Little Rule, S	Colo..	500,000	500,000	1					220,000	Dec..	1891	.02
100	Maid of Erin	Colo..	3,000,000	600,000	5					557,757	April	1892	.25
101	Mammoth, S. L. C	Utah.	10,000,000	400,000	250	110,000		1882	.25	1,040,000	Dec...	1891	.10
102	Martin White, S	Nev..	10,000,000	100,000	100	1,275,000	Jan..	1892	.25	140,000	Dec..	1886	.25
103	Mary Murphy, S. G.	Colo..	350,000	3,500	101	*				175,000	May..	1888	5.00
104	Matchless, S. L	Colo..	500,000	500,000	1	*				15,000	Feb...	1890	.00½
105	Maxfield	Utah.	3,000,000	300,000	10					117,000	April	1892	.03
106	Mayflower, D. gravel	Cal..	1,000,600	100,000	10					100,000	Dec..	1892	.25
107	May Mazeppa, S. L.	Colo..	1,000,000	100,000	1					205,000	Oct..	1891	.03¾
108	Minas Prietas, G. S.	Mex..	1,000,000	100,000	10	*				350,000	Dec...	1890	.50
109	Minnesota, C	Mich..	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876	
110	Mollie Gibson, S.	Colo..	5,000,000	1,000,000	5					2,850,000	Jan	1893	15
111	Monitor, G.	S.Dak	2,500,000	250,000	10					45,000	Oct..	1890	.03
112	Mono, G	Cal...	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar	1886	.25
113	Montana, Lt., G. S.	Mont.	3,300,000	660,000	5	*				2,619,075	June.	1891	12½
114	Morning Star, S. L	Colo..	1,000,000	100,000	10					925,000	April	1891	.25
115	Morning Star Drift, G	Cal...	240,000	2,400	100					111,800	Dec...	1892	3.00
116	Moulton, S. G	Mont.	2,000,000	400,000	5	*				410,000	Nov.	1892	.07½
117	Mt. Diablo, S	Nev..	5,000,000	50,000	100	137,500	June	1880	2.00	210,000	July.	1891	.20
118	Napa, Q	Cal...	700,000	100,000	7					520,000	Jan..	1893	.20
119	Navajo, G. S.	Nev..	10,000,000	100,000	100	520,000	May.	1891	20	229,950	April	1889	.10
120	Newton	Cal...	10,000,000	100,000	100					10,000	May..	1891	.05
121	New California, G.	Colo..	800,000	160,000	5	*				48,800	May..	1890	.12½
122	New Guston, S.	Colo..	550,000	110,000	5					1,877,500	April	1892	.75
123	North Banner Con	Cal...	1,000,000	100,000	10					20,000	July..	1891	.05
124	North Commonw'th	Nev..	10,000,000	100,000	10	*				25,000	June.	1891	.25
125	N. Hoover Hill, G. S..	N. C.	300,000	120,000	2½					30,000	Dec..	1885	.06½
126	North Belle Isle, S.	Nev..	10,000,000	100,000	100	474,689	Nov.	1892	.10	230,000	May.	1888	.50
127	North Star, G	Cal..	1,000,000	100,000	10					350,000	Dec..	1892	.50
128	Omaha Cons., G	Cal...	2,400,000	24,000	100					30,000	May..	1892	.15
129	Ontario, S. L	Utah	15,000,000	150,000	100					13,175,000	Oct..	1892	.50
130	Ophir, G. S.	Nev..	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	Jan..	1880	1.00
131	Original, S. C	Mont.	1,500,000	60,000	25	*				138,000	Jan..	1889	.05
132	Oro, S. L. G.	Colo..	500,000	100,000	5					95,000	July,	1890	.20
133	Osceola, C..	Mich..	1,250,000	50,000	25	480,000	April	1876	1.60	1,697,500	Dec.	1892	1.00
134	Pacific Coast, B	Cal...	1,500,000	15,000	100					360,000	Dec.	1892	1.00
135	Parrot, C	Mont.	1,800,000	180,000	10					1,405,385	Dec.	1892	.10
136	Petro	Utah.	10,000,000	10,000	100					17,500	July.	1891	.75
137	Plumas Eureka, G.	Cal...	1,406,250	140,625	10					2,643,559	April	1892	.18
138	Plymouth Con., G.	Cal...	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
139	Poorman, G. S	Idaho	375,000	300,000	125	*				68,260	Sept	1892	
140	Quicksilver, pref., Q.	Cal...	4,300,000	43,000	100					[illegible]	June	1891	1.25
141	" com., Q	Cal...	5,700,000	57,000	100					[illegible]	July.	1882	.40
142	Quincy, C	Mich..	1,250,000	50,000	25	200,000	Dec..	1862		[illegible]	Aug..	1892	3.00
143	Red Cloud	Idaho	1,000,000	200,000	5					[illegible]	Dec.	1892	.10
144	Reed National, S. G..	Colo..	500,000	500,000	1	*				50,000	Dec..	1890	.01
145	Retriever, L	S.Dak	1,250,000	250,000	5					20,000	Aug..	1891	.03
146	Rialto, G	Colo..	300,000	300,000	1	*				50,250	April	1892	.01½
147	Richmond, S. L	Nev..	1,350,000	54,000	25	*				4,346,3[illegible]	Aug..	1891	.25
148	Ridge, C	Mich..	500,000	20,000	25	219,939	Mar.	1886		99,785	Feb..	1880	.50
159	Robinson Con., S. L..	Colo..	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
150	Running Lode, G	Colo..	1,000,000	1,000,000	1	*				36,000	May.	1892	.00 1-10
151	Savage, S	Nev..	11,200,000	112,000	100	6,772,000	Feb..	189[illegible]	.50	4,460,000	June	1869	3.00
152	Sheridan, S. G	Colo..	300,000	3,000	100	*				300,000	Oct..	1891	2.50
153	Shoshone, G	Idaho	150,000	150,000	1					7,500	April	1883	.01
154	Sierra Buttes, G	Cal..	2,225,000	122,500	10					1,529,307	Oct.	1892	.18
155	Sierra Nevada, S. G..	Nev..	10,000,000	100,000	100	6,411,910	June	1892	.25	102,000	Jan..	1871	1.00
156	Sierra Nevada, S. L..	Idaho	1,000,000	1,000,000	1	*				40,000	May..	1889	.02
157	Silent Friend	Colo..	500,000	500,000	1					60,000	Aug..	1891	.02½
158	Silver Cord, S. L. G.	Colo..	4,500,000	450,000	10					265,000	April	1889	.10
159	Silver King, S	Ariz..	10,000,000	100,000	100	130,000	Nov	1890	.30	1,950,000	July	1887	.25
160	Silver Mg. of L.V., S.L.	N. M..	500,009	500,000	1					300,000	Dec..	1891	4.05
161	Slide	Colo.	500,000	5,000	100					20,000	Nov..	1891	4.00
164	Small Hopes Con., S.	Colo..	5,000,000	250,000	20	*				32,00,000	Nov..	1892	.15
153	Spring Valley, G.	Cal...	200,000	200,000	1	50,000	Oct		.25	50,000	Jan.	1881	.25
164	Standard, G. S	Cal...	10,000,000	100,000	100	100,00		18	.50	3,645,000	Dec..	1892	.10
165	Stormont, S	Utah.	500,000	500,000	1	*				155,000	Nov.	1881	.05
166	St. Joseph, L	Mo..	1,500,000	150,000	10	*				1,974,000	Dec..	1890	.02
167	Swansea, G. S	Colo..	600,000	60,000	10					27,000	Mar.	1892	.10
178	Tamarack, C	Mich..	1,250,000	50,000	25	520,00	A		3. 0	3,160,000	Oct	1892	.00
169	Teal & Poe	N. M..	150,000	150,000	1					9,000	Nov.	1891	.01½
170	Tombstone, G. S. L.	Ariz..	12,500,000	500,000	25	*				1,250,000	April	1882	.10
171	United Verde, C	Ariz..	3,000,000	300,000	10	*				207,500	Jan..	1892	.10
172	Viola Lt., S. L	Idaho	750,000	150,000	5					337,500	Nov.	1888	.37½
173	Ward Con., S	Colo.	2,000,000	200,000	10					20,000	Dec.	1889	.05
174	Woodside, S. L	Utah	100,000	100,000	10					25,000	Oct..	1889	.25
175	W. Y. O. D.	Cal..	30,0,00	15,000	4	22,500	May.	1891	.10	42,000	Dec.	1892	.10
176	Yankee Girl, S	Colo.	1,300,000	260,000	5					1,405,000	April	1891	1.50
177	Yellow Jacket, G. S.	Nev	12,000,000	120,000	100	5,808,000	Sept.	1892	.25	3,184,000	Aug.	1871	1.50
178	Yosemite No. 2	Utah.	1,000,000	100,000	10					25,000	Oct..	1891	.05
179	Young America, G.	Cal...								175,000	Jan..	188[illegible]	1.00

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied	Date and am't of last.		
55	Denver City, S.	Colo.	5,000,000	500,00	11	*			
56	Denver Gold, G.	Colo.	300,000	60,000	5				
57	Dickens-Custer, S.	Idaho	2,100,000	420,000	5				
5	Durango, G.	Colo..	500,000	500,000	1	*			
59	Eastern Dev. Co., Lt	N. S..	1,500,000	150,000	10	990,000	Mar.	1886	1.00
60	El Dorado, G	Cal...	1,000,000	250,000	4	*			
61	El Talento, G	U.S.C.	1,000,000	500,000	2				
62	Emma, S	Utah.	625,000	500,000	125				
63	Emmons, S. L	Colo..	2,000,000	2,000,000	1				
64	Empire, S.	Utah.	10,000,000	100,000	100				
65	Eureka Tunnel, S. L.	Nev...	10,000,000	100,000	100	*			
66	Exchequer, S. G.	Nev...	10,000,000	100,000	100	940,000	Jan..	1892	.25
67	Found Treasure, G. S.	Nev...	10,000,000	100,000	100	130,500	Jan..	1892	.50
68	Gogebic I. Syn., I.	Wis..	5,600,000	200,000	25				
69	Gold Bank, G. S	Colo.	250,000	250,000	1	*			
70	Gold Cup, S	Colo..	500,000	500,000	1	*			
71	Golden Era, S	Mont.	2,000,000	200,000	10	*			
72	Gold Flat, G..	Cal...	1,000,000	100,000	10	5,000	Mar.,	1892	.05
73	Gold King, G	Colo..	1,650,000	350,000	5				
74	Gold Rock, G	Cal...	1,000,000	500,000	2				
75	Golden Feather Co., G	Cal...	900,000	180,000	5				
76	Goodshaw, G	Cal...	10,000,000	100,000	100	*			
77	Goodyear G. S. L	Mont.	1,000,000	200,000	5	13,000	Feb..	1892	.01
78	Grand Belt, C	Tex..	12,000,000	120,000	100				
79	Grand Canyon, S.	Ariz..	375,000	75,000	5				
80	Grand Duke, S.	Colo..	800,000	80,000	10				
81	Gregory Con., G.	Mont.	3,000,000	300,000	10				
82	Harlem M. & M. Co., G.	Cal...	1,000,000	200,000	5				
83	Hartery Con., G.	Cal...	1,000,000	100,000	10	22,000	Oct..	1890	.05
84	Hartshorn, G S. L.	S.Dak	1,250,000	250,000	5	8,750	Sept.	1891	.00½
85	Head Cent. & Tr., S. G	Ariz..	10,000,000	100,000	100	16,981	Mar..	1892	.08
86	Hector, G	Cal...	1,500,000	300,000	5	45,000	Jan..	1889	.15
87	Highland, C	Mich..	500,000	25,000	20				
88	Himalaya, G. S L.	Utah.	1,800,000	180,000	10	12,800	Oct..	1892	.00½
89	Holywood	Cal...	200,000	100,000	2				
90	Hortense, S.	Colo..	2,000,000	200,000	10				
91	Huron, C	Mich..	1,000,000	40,000	25	280,000	May.	1887	3.00
92	Idaho, G. S	Idaho	1,250,000	250,000	5				
93	Inez, S. L	Idaho	1,000,000	1,000,000	1				
94	Ingalls, G	Colo..	100,000	20,000	5				
95	Ironton, I	Wis..	1,000,000	40,000	25				
96	Iroquois, C	Mich..	1,250,000	50,000	25				
97	Kentuck Con	Nev..	10,500,000	105,000	00	57,750	July.	1892	.10
98	J. D. Reymert, S.	Ariz..	10,000,000	100,000	100				
99	Julia Con., G. S.	Nev...	11,000,000	110,000	100	1,463,000	Jan..	1889	.10
100	Justice, G. S. C	Colo.	500,000	500,000	1	*			
101	Lacrosse, G.	Colo..	1,000,000	100,000	10	*			
102	La Cumbre, G. S.	Mex..	150,000	3,000	50	*			
103	Lee Basin, S.	Colo..	5,000,000	500,000	10	*			
104	Little Josephine, S..	Colo..	250,000	50,000	5				
105	Lone Star Cons., G..	Cal...	500,000	500,000	1	10,000	April	1892	.00½
106	Lynx Creek, G.	Ariz..	237,500	147,500	5				
107	Madeleine, G. S. L.	Colo..	750,000	50,000	1	4,500	Feb.	1892	.00½
108	Mammoth Gold, G.	Ariz..	245,000	49,000	5	*			
109	Mayflower Gravel, G.	Cal...	1,000,000	100,000	10	*			
110	Medora, G.	Dak..	250,000	250,000	1	585,000	Mar.	1890	.56
111	Merrimac Con., G. S.	Colo..	5,000,000	500,000	10				
112	Mexican, G. S.	Nev...	10,000,000	100,000	100	2,917,560	Oct..	1892	.50
113	Michigan, G S	Mich..	2,500,000	100,000	25	40,000	Mar..	1892	
114	Middle Bar, G..	Cal...	400,000	200,000	2	*			
115	Mike & Starr, S. C.	Colo..	1,000,000	200,000	5	*			
116	Milwaukee, S.	Mont.	500,000	500,000	1	*			
117	Minah Cons.	Mont.	1,250,000	250,000	5				
118	Modoc Chief, L S. G.	Idaho	1,000,000	200,000	5	5,000	Jan..	1892	.00½
119	Monitor, G.	Colo..	100,000	100,000	1	12,500	May.	1891	.01
120	Montreal, G. S. L.	Utah.	750,000	150,000	5	4,500	Feb..	1892	.00½
121	Mountain Ledge, G	Cal...	500,000	100,000	5				
122	Mount McClellan	Colo..	1,500,000	300,000	5				
123	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*			
124	Native, C.	Mich..	1,000,000	40,000	25				
125	Neath, G.	Colo..	1,000,000	100,000	10				
126	Nelson	Cal...	50,000	10,000	5				
127	Nevada Queen, S.	Nev...	10,000,000	100,000	100	200,000	Oct..	1889	.25
128	New Germany, G.	N. S..	100,000	100,000	1	*			
129	New Gold Hill	N. C.	1,750,000	350,000	5				
130	New Pittsburg, S. L.	Colo..	2,000,000	200,000	10	*			
131	New Queen Gold, S..	Colo..	800,000	160,000	5				
132	North Standard, G.	Cal...	10,000,000	100,000	100	20,000	Nov.		
133	Occidental Con., G.S		10,000,000	100,000	100	245,000	April	1892	.25
134	Oneida Chief, G.	Cal...	500,000	125,000	100	*			
135	Oriental & Miller, S..	Nev...	10,000,000	400,000	100				
136	Original Keystone, S.	Nev..	10,000,000	100,000	100	250,000	Mar..	1892	.10
137	Osceola, G	Nev...	5,000,000	500,000	10	*			
138	Overman, G. S.	Nev...	11,520,000	115,200	100	4,001,840	May.	1892	.10
139	Park, S.	Utah.	2,000,000	200,000	10				
140	Parker, G.	N. C..	750,000	180,000					
141	Pay Rock, S	Colo..	1,000,000	200,000	5				
142	Peer, S.	Ariz..	10,000,000	100,000	100	190,000	Feb..	1892	.10
143	Peerless, S	Ariz..	10,000,000	100,000	100	405,000	Oct...	1890	.15
144	Pennsylva'a Cons., G	Cal...	5,150,000	515,000	10	36,050	Feb..	1892	.10
145	Phœnix, G.	Ariz..	500,000	500,000	1	*			
146	Phœnix Lead, S. L.	Colo..	100,000	100,000	1	*			
147	Pilgrim, G	Cal...	600,000	300,000	2	*			
148	**Pioche M.&R., S.G.L.	Utah.	20,000,000	2,000,000	10				
149	Poorman, Ltd., S. L.	Idaho	250,000	50,000	5				
150	Potosi, S.	Nev...	11,200,000	112,000	100	1,573,000	Mar..	1890	.50
151	Proustite, S.	Idaho	250,000	250,000	1	*			
152	Puritan, S. G	Colo..	1,500,000	150,000	10	*			
158	Quincy, C.	Colo..	3,000,000	300,000	10				
154	Rainbow, G.	S.Dak	1,250,000	250,000	5	4,250	July.	1892	.00½
155	Rappahannock, G. S.	Va..	250,000	250,000	1	*			
156	Red Elephant, S.	Colo..	500,000	500,000	1	*			
157	Red Mountain, S.	Colo..	300,000	60,000	5				
158	Ropes, G. S.	Mich..	2,000,000	80,000	25	167,200	Feb.	1891	.50
159	Ruby & Dun., S. L. G.	Nev..	25,300	506	50				
160	Russell, G.	N. C..	1,500,000	300,000	5				
161	Sampson, G. S. L.	Utah.	10,000,000	100,000	100	288,15[illegible]	July.	1888	1.08
162	Seal of Nevada, G.S..	Nev..	5,000,000	100,000	50				
163	Silver Age, S L. G.	Colo..	2,000,000	200,000	10	*			
164	Silver Bell, S.	Ariz..	850,000	170,000	5				
165	Silver King, S.	Cal..	2,000,000	400,000	5				
166	Silver Queen, C.	Ariz..	5,000,000	200,000	25	*			
167	Silverton, S.	Colo..	300,000	60,000	5				
168	Siskiyou Con., L.	Cal...	2,000,000	200,000	10	13,000	May..	1892	.01½
169	South Bulwer, G	Cal..	10,000,000	100,000	100	100,000	May.	1881	.25
170	South Hite, G.	Cal..	10,000,000	100,000	100	195,000	Jan..	1883	.05
171	South Pacific, G.	Cal..	500,000	100,000	5				
172	Stanislaus, G.	Cal..	2,000,000	200,000	10				
173	St. Kevin, S. G.	Colo..	100,000	100,000	1	*			
174	St. Louis & Mex., S.	Mex..	,000,000	500,000	10	*			
175	St. Louis & St. Elmo.	Colo..	000 000	200,000	10				
176	St. L. & St. Felipe, G.S.	Mex..	[illegible]	150,000	10				
177	St. L. & Sonora, G. S..	Ariz..	3,000,000	300,000	10	*			
178	Stemwinder, L. S.	Idaho	500,000	500,000	1				
179	Sunday Lake, I.	Mich..	1,250,000	50,000	25				
180	Sullivan Con., G.	Dak..	600,000	200,000	3	*			
181	Sylvanite, S.	Colo..	5,000,000	500,000	10	*			
182	Taylor-Plumas, G.	Cal...	325,000	65,000	5	3,575	Mar..	1892	.01½
183	Telegraph, G. S.	Cal...	325,000	65,000	5	3,575	Mar.	1892	.01½
184	Telegraph, G. S.	Mex..	100,000	100,000	1	70,000	Feb..	1892	.10
185	Teresa, G. S.	Cal...	1,000,000	200,000	5	10,000	Feb..	1888	.10
187	Tioga Con., G.	Nev...	10,000,000	100,000	10	295,000	May.	1888	.25
188	Tornado Con., G. S.	Nev...	100,000	100,000	1	*			
189	Tuscarora, S.	Nev...	10,000,000	500,000	20	385,000	Jan..	1892	.25
190	Union Con., G. S.	Nev...	10,000,000	100,000	100	370,000	June	1892	.25
191	Utah, S.	Nev..	10,000,000	100,000	100	245,000	Aug..	1890	.25
192	Ute & Ulay, S. L.	Colo..	1,000,000	500,000	2	1,500	Mar..	1892	.0018
193	Valley, G	Cal..	575,000	460,000	125				
194	Wall Street, G. S. L.	Colo..	500,000	500,000	1				
195	Washington, C.	Mich..	1,000,000	40,000	5				
196	West Argentine, S.	Colo..	750,000	150,000	5				
197	West Granite Mt., S..	Mont.	500,000	100,000	5	*			
198	Whale, S.	Mont.	5,000,000	500,000	10	*			
199	Wood River, G.	Idaho	2,000,000	200,000	10	3,000	Aug.	1891	.00½
200	Yuma, C. S. G.	Ariz..	10,000,000	400,000	2				
201	Zelaya, G. S.	C. A..	600,000						

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends and the Terra $75,000. Previous to the consolidation in August, 1884, the California had paid $31,320,000 in dividends, and the Cons. Virginia $42, 90,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid $1,350,000 in dividends. ¶ This company paid $190,000 before the reorganization in 1880. ** This company acquired the property of the Raymond & Ely Company which had paid $3,075,000 in dividends. *** Previous to this company's acquiring Northern Belle, that mine declared $2,400,000 in dividends against $425,000 in assessments

COAL, RAILWAY AND OTHER STOCKS.

Names of Stocks.	Jan. 7. H.	Jan. 7. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Jan. 11. H.	Jan. 11. L.	Jan. 12. H.	Jan. 12. L.	Jan. 13. H.	Jan. 13. L.	Sales
Adams Express							155						18
Albany & Susq.													
Alton, pf..													
Am. B'k Note													
Am. Cotton Oil.	43¾	43¼	44	43½	45⅝	43⅞	44⅞	41	45⅜	44⅜	46	44½	29,560
do. pref.	82		82⅜	82	83¼	82	82¼		82¾	82½	83	82½	3,973
Am. Express					118		117½	117	118				181
Am. Dist. Tel.	58½												15
Am. Sugar Ref.	116⅞	114⅜	118⅛	115⅛	117¾	116⅜	117¼	115½	119	115⅝	12 ½	1 9	315,968
do. pref.	102⅝	101¾	102¾	102¼	102½	102	102	101¼	102¼	101½	102⅞	102½	10,801
Am. T. & C.Co.	87		87½	87½					35¼	34¾			286
Am. Tobacco.	117		117		116¼		117¼		117				965
do. pref			108	105⅞	106½	105⅞	106½	103	107	106⅞			3,172
Atch., T. & S.F.	34	33⅝	35	33⅞	35	34½	35	34½			35¾	35	51,612
Atlantic & Pac.							4						200
Balt. & Ohio.	93⅞		94½	93⅞	94½	94¼	94⅝	14½	95½	94⅝	95⅛	95¼	3,945
do. pfd.													
B., C., R. & N.					61		65						110
Bos. A. L. pfd.													
Buff. R. P.													
do. pref.							85½	85					300
Cambria Iron													
Canad'n Pacific	89		88¼				88½	88	88¼	88⅛			1,318
Canada South.	56¼		56¾	56⅛	56⅝	56½			56¾	56¼	57	55½	3,29[illegible]
Cen. Iowa													
do. pref.													
Central Pacific	29	28⅝	28⅞										360
Ches. & Ohio	23⅛	23	23⅛	23	23		23	22⅝	23	22¾	23⅛	22⅞	6,106
do. 1st pref.													
do. 2d pref.							42	41¾	42½				1,290
Chic. & Alton.	14 ¾		14 ½				140						81
do. pfd.													
Chic., Burl. & Q.	98⅛	97¾	98¾	97¾	99⅛	98½	99⅜	92½	100¾	98½	102	99⅛	49,261
Chic. & East Ill.					69								200
do. pref.	10[illegible]½				99⅞		10[illegible]¼						3[illegible]0
Chic. Gas Trust.	87⅞		89⅞	88¼	89⅞	88¾	89⅝	87⅞	89⅝	88¼	90½	88¾	64,019
Chic., Mil. & S.P.	77⅛	76¾	77¾	76¾	78½	77¼	78⅝	77⅝	78½	77½	79½	78½	69,255
do. pref.	122½		122½		123		123		123		123½	123⅛	1,067
Chic. & N'west.	111⅞	110¾	112¼	111¾	112¾	112	112¼	111¾	112⅝	111¾	113¾	112½	13,108
do. pref.									144¼				100
Chic., R.I. & Pac.	83⅛	82⅝	84¾	82¾	85⅜	84½	85⅛	84½	85⅜	84½	86⅜	85⅛	55,709
Chi., S.P., M & O.											50⅜	49⅝	5,150
Chi. Stock Yds.			101				101						2[illegible]0
do. pref.					93¾								25
Cit. Gas, Bklyn.													
C., C., C. & St. L.	59	58½	59¾	58¾	59½	59¼	59¼	58	59¼	58⅜	58¾	57¾	6,715
do. pref.					94								5
Clev. & Pitts	156						155						95
Col. C. & I.	20½	19½	21½	20	21¼	21	21½	21	22½	21¼	23	22⅝	5,980
Col. Coal.	36½	35½	37	3 ½	36	35¼	36¾	36½	37¼	36½			3,670
Colorado Fuel.	60½	58¾	60	58	59½	58¾			60	59	60⅛	59½	4,247
do. pref.			111½										300
Col., H V. & Tol.			30¾	29⅝	30		30¾	30½	30¾	30¼	30⅝	30	6,275
do. pfd			71	71									100
Col. & H. Coal.	19½	18⅞	22	19½	22¾	21½	23⅞	22¾	25	24⅛	28	26½	23,611
do. pfd													
Commer. Cable.													
Cons. Coal.													
Cons. Gas.	125¾	125	125½		125⅜	125¼	126⅝	125½	130	126	135	129	2[illegible],681
Del. & Hud. C.	131¾	131½	132⅝	132	132½	132¼	133¼	13[illegible]¾	134	133½	135	134½	3,585
Del., L. & West.	149½	148¾	150¾	149½	150	149½	151	149½	151⅝	150¾	152⅞	151½	16,351
Den., M. & W. D.													
Denv. & Rio G.	17	16⅞	17⅛	17			17		17⅜	17			2,102
do. pref	53⅝	53⅜	53⅞	53¾	53½	53	53⅝	53¼	53⅞	53½	54⅜	53⅜	12,526
Dis. & C.F. Tr'st	64⅝	63	63⅛	61⅞	63¼	61⅞	63⅛	59⅞	61¼	58	60⅞	58	479,791
do. ex-div.													
Dul., S. S. & A.							12½	12					
do. pref													
E. T., Va. & Ga									3½				100
do 1st pref.													
do. 2d pref.			7¾						8				200
Edison Ill. Co of N. Y.													
Edison E.L.Co.	117	116	118	116½	119	118	119½	119	119½				2,663
Edison Gen. El.	112¼	112	113	112	113⅜	112¾	113¾	113¼	113½	112½	112½	111¼	13,[illegible]11
do. pref.			115½										16
Erie & West.													
Evans. & T. H.	149½				150½	150	151		152	151			1,520
Flint & P. M.			20										150
do. pref													
Gt. Nor. pref													
Green B. & W.													
do. t. r.	14¾	14⅛	14⅝	14⅛	14¼	14⅛	14⅜	14⅛	14½	14¼	14⅜	14¼	6,645
G. B. & W., pref													
do. t. r.	29⅝	29½	29¼	28½	29⅛		29⅛	27½	29⅛	29			2,700
Hunt. & B. Top.			40		40				40⅝				345
do pref			56				56		56				120
Ill. Cent.			99		100⅛	99½	100	99⅞	101	100	101⅝	100½	13,736
Iowa Central.							9	8⅞	9¼	9			800
do. pref.			30	29⅜			31		3 ½				320
Kan'wha & Mich							14	13½					250
Keokuk, D. M.													
Laclede Gas.	23⅝				24						25½	24	950
do. pref.													
Lake Erie & Wes			23½	23	23¼	23	22¾				24¼	23	3,106
do. pref.	76½	76	78	77	78		78	77½	77⅝		79⅜	77⅝	5,014
Lake Shore	128⅛		128¾	128¼	129	128¼	129½	129	129½	129¼	130¼	129¾	4,165
Lehigh C. & N.	53	52⅞	53	52⅞	53		53		53	52⅞			357
Lehigh Valley.	57¾	57½	57⅝	57½	57⅜	56¾	57⅛	57	57¼	57			1,921
Long Island.					106½	105½	107						200
do. ex-div.							105½						100
L. Erie & St. L.							25½		26	25			200
do. pref.													
Louisv'le & N'sh	72¾	72½	72¾	72¼	72½	72⅛	72⅝	71⅞	74	72⅛	74½	73¼	40,622
Louis., E. & St. L													
do pref													
L., N. A. & C.	24¼		24¾	24¼			24		24¼	24	26¼	24½	1,000
L., St. L. & T.													
Mahoning Coal.													
do. pref.													
Manhattan Con.	155¾	154	156	154½	155½	153½	162	157¼	167½	161½	174¾	170	64,785
Maryland Coal.													
Memphis & Char.													
Mexican Cent	11		11				11¾						650
Michigan Cent.					104		104¼		104½				560
Minnesota Iron.			68½		70	70			69½				250
do pref.													
Minn. & St. L.					18	17¾	18¾	18¼	17¾				1,600
do pref.					48¾	47¾	48⅞	48⅝	48⅞	48½			1,215
M., L., S., & W.													
do. pref.													
M., Kan. & Tex.			14⅜		14¼	14⅛			14⅝	14¼			3,682
do. pref	25½		26⅜	25⅞	26¼	26⅛	26½	26⅜	26¾	26¼	28	26½	7,970
Missouri Pac	56¾	56½	57⅞	56⅜	57⅞	57	58	57¼	58	57¼	59¾	57⅞	29,428
Mobile & Ohio													
Morris & Essex.													
Nat. Cord. Co.	138½	138¼	139½	138½	139⅞	139½	139⅞	139½	133⅝	137	137½	135¾	14,110
do. pref.	112⅝		113	112½	113¼	112¾	113	112¾	112½	110½	111	110½	3,914
Nat. Lead Co.	45½	45¼	47¼	45¾	47	46½	46¾	46¼	47⅜	46½	47½	46¾	23,662
do. pref.	93⅝		95	93½	94¾		94¾		94¾		94½		3,351
Nat. Linseed Oil			40½	40	40						39¾		1,210
Nat. Starch.	32½								32½	32	34	32	2,200
do. 1st pref.			102		102		102		102				620
do. 2d pref.	100		101½		102				102				480
New Cent. Coal.									11⅜				100
N. C. & St. L.													
N. J. Central.	124¼	124¼	123½				126½	125	126	124½	128	126¾	2,861
N. Y. Central.	108½		108¾	108½	108¾	108½	108⅞	108¼	108¾	108¼	109	108⅜	5,844
N.Y., Chi. & St. L.			19⅛	18¼			19		18⅛		18⅝		1,100
do. 1st pref.			77						77				300
do. 2d pref.			37⅝	37									400
N. Y., L. & W.			114										10
N. Y., L. E. & W.	23¾		23⅞	23¾	23⅞		24	23⅝	24⅛	23⅝	25¼	24⅛	17,360
do. pref			53				53		53¾		55¼	53¾	1,300

COAL, RAILWAY AND OTHER STOCKS.

Name of Stock.	Jan. 7. H.	Jan. 7. L.	Jan. 9. H.	Jan. 9. L.	Jan. 10. H.	Jan. 10. L.	Jan. 11. H.	Jan. 11. L.	Jan. 12. H.	Jan. 12. L.	Jan. 13. H.	Jan. 13. L.	Sales.
N.Y., N.H. & H'rt			256										
N. Y. & N. Eng.	46½	45¾	46⅝	45¾	46⅝	45¾	48⅜	46⅜	48⅝	47¾	50⅝	48	113,674
N.Y., Susq. & W.	17¾	17⅝	17½		17¼				17⅝	17¼			2,400
do. pref.			69½		69½				69		68⅞	68⅛	400
N.Y. & North.							9		13				43
do pref.	26¾	26½	26½		27	26	28⅛	26¾	29	27¾	32⅜	28¼	29,147
Norfolk South.													
N. & West.			10⅛		9¾	9½	10						364
do. pref.			37		38	37½	37⅞	37¼					745
Nor. Amer. Co.	10½		10½				10¾	10¼	10¾	10¼	11⅛	10¾	3,415
North. Pacific.	16¾		16¾		17	16¾	17⅛		16½		17		1,500
do. pref.	47	46½	46¾	46⅛	47¼	46¼	47⅛	45⅞	47⅛	46½	47¾	47¼	39,417
Ohio & Miss.	22				22½	22¼	22½						10,026
Ohio Southern.					45½		46	45					400
Ontario & West.	18¼	18	18⅜	18⅛	18¼		18⅜	18	18½	18⅛	18⅞	18½	6,585
Oregon Imp.													
Ore. R. & N.	76	75	76		76⅞				80	78½			711
Ore., St. L. & U. N.					23		22¾		24	23⅜			600
Pacific Mail.	26¾		26¼	26	26¾		26⅝		26⅝		27⅛	26	2,930
Penn. R. R.	58⅜	58¼	54⅜		54¼	54⅛	54¼	54⅛	54¼	54⅛			3,479
Peoria, Dec. & Ev. R.	16½		16¾				16½						30
Phil. & Reading.	51½	50⅞	51¼	49⅜	49¾	48¾	50	49¼	50⅞	49¼	51¼	50⅜	436,990
Pitts., F.W. & C.													
Pitts. & W., prf.													
P., C., C. & St. L.							61						100
do. pref.													
Pullman P. C. Co.					135		197		196½		197		388
Rich. & W. P.			7¼	7	7¼		7		8½	7⅛	9⅛	8	22,835
do. pref.	30		32						35½	30			1,100
Rio Grande & W													
do. pref.									62				100
Rome, W. & O.					11 ½	112½							10
So. Cotton Oil.													
So. Pacific.	35	34½	34¾	34½	34½	34⅛	34½	34¼	34⅜	34⅛	35	34⅝	3,550
St. L. & San. Fe.													
do. pref													
St. L. & Southw.							6½	6⅛	7	6⅜			2,920
do. pref			12⅜	12			12⅞	12¼	13¼	12¾			1,135
St. P. & Duluth.							42	41½					410
do. pref.									108				3
St. Paul, M. & M.							112¾	112½	113½				750
St. Paul & Omaha	47½	47¾	48¾	47¾	49⅛	48¾	49⅛	48⅝	49⅞	48⅞			15,580
do. pref.	117¾	117¾	117½		118¼	118			118¾	118¼			310
Tenn. C. & I.	36½	35½	35½	35	35½	34⅝	35½	34¾	37⅜	35¼	37⅜	36½	14,350
do. pref.									101				100
Tol. & O. Cent.													
do. pref	85								85				11
Texas Pacific.	9½		9⅝		9⅜	9¼	9⅜	9¼	9⅝	9½	10	9⅞	2,325
Tol., A.A. & N.M.	39⅞	39⅜	39½	39¼	39½	38½	39½	39	39¼	39⅛	39¼	39	7,760
Union Pacific	40⅛	39¾	40⅛	39⅝	4 ⅛	39⅞	40⅜	39⅝	40⅝	39⅝	41⅝	40¼	53,885
do. Den. & G.			16½		16¾	16½	16¾	16½	17	16⅝	17¾	17	4,000
U. S. Express.	58						57½						22
U. S. Rubber.			43½	43			43½				43½		922
do. pref.	95		95	94¼			95						1,032
Wab., St.L. & P.	11		11		11⅛		11		11		11¼		1,000
do. pref.	23¾	23⅝	24½	23¾	24½		21	23¾	24⅜	23¾	25	24½	4,500
Wells, Fargo Ex					146		149						116
Western Union.	96¼	95¾	96¼	95⅝	96	95⅜	95¾	95¼	96¾	95⅝	96¾	95½	70,809
do. ex-div.													
Wheel. & L. E.			20⅝	20½	20¾				21¼	21			925
do. pref.	63¾		64		63¾		63⅞		64⅞	64	64¼		739
Wisconsin Cent.							14						200

Total shares sold, 2,487,692.

San Francisco, Cal.

Names of Stocks.	Closing Quotations. Jan. 6.	Jan. 7.	Jan. 9.	Jan. 10.	Jan. 11.	Jan. 12.
Alpha						
Alta			.20			.20
Belcher			1.30			1.40
Belle Isle	.15			.15		
B. & Belch	1.30		1.30	1.25		1.45
Bodie	.25		.20	.20		.20
Bulwer	.15		.15	.15		.15
Chollar	.70		.65	.65		.65
Com'w'lth						
Con. C. & V.	1.85		1.90	1.90		2.00
Con. Pac.						
Crown Pt.			.50			.50
Del Monte						
E'reka Con						
G'ld & C'y	.85		.90	.90		.90
Hale & N.	1.00		.90	.85		.90
M. White						
Mexican	1.25		1.25	1.25		1.35
Mono	.15		.15	.15		.15
Mt. Diablo						
Navajo	.15			.15		
Nev. Qu'n.			.05			.05
N. B'lle Isle	.10			.15		
N. Co'w'th						
Ophir	1.80		1.80	1.85		1.90
Potosi			2.40			2.20
Savage	1.05		1.10	1.10		1.00
Sierra Nev	1.20		1.25			1.40
Uni'n Con	1.10		1.00	1.05		1.05
Utah			.05			.10
Yel. Jack.	.75		.50	.70		.75

STOCK MARKET QUOTATIONS.

Denver.

Prices and sales for the week ending January 7th, 1893:

	High.	Low.	Sales.
Anaconda	$ .16	$ .15	9,100
Bangkok-Cora Belle	.01¾	01¾	3,100
Bi-Metallic	.10	.10	100
Champa	.10	.10	1,000
Claudia J	.01	.00¾	6,200
Clay County	.02¼	.01½	4,800
Diamond B	.01¾	.01½	9,700
Gettysburg	.03½	.03¼	700
Golden Treasure	.05½	.05	7,000
Justice	.01¾	.01¾	1,000
Pharmacist	.25	.16	100
Tam O'Shanter	.02	.01	8,700
Total sales			51,500

Helena, Mont.

(Special report by SAMUEL K. DAVIS.)

Prices highest and lowest for the week ending January 7th, 1893.

	H.	L.
Bald Butte (Mont.)	$3.00	$2.50
Benton Group (Neihart), Mont.	.27½	.22½
Combination (Phillipsb'g), Mont	1.50	1 25
Cumberland (Castle), Mont	.25	.15
Elizabeth (Phillipsb'g), Mont	.42½	.40
Florence (Neihart)	.25	.20
Helena & Victor, Mont	.50	.35
Iron Mountain (Missoula), Mont	.80	.75
Poorman (Cœur d'Alene), Idaho	.87½	.82½
*Whitlach Union & MacIntyre	.50	.40

* One-sixth of this stock now held in New York.

Foreign Quotations.

London. Dec. 24.

	Highest.	Lowest.
Alaska Treadwell	£2¼	£2
Amador, Cal	1s. 3d	9d.
American Belle, Colo.	3s.	2s.
Can. Phosphate, Can.	£½	£¼
Colorado, Colo	£⅛	....
De Lamar, Idaho	£17-16	£15-16
Dickens Custer, Idaho.	6d.	3d.
Eagle Hawk	6d.	....
Eberhardt, Nev	9d.	3d.
Elkhorn, Mont	£1⅝	£1½
Emma, Utah	1s. 3d.	9d.
Esmeralda, Nev	6d.	5d.
Flagstaff, Utah	1s.	9d.
Golden Feather, Cal.	8s.	7s.
Golden Gate, Cal	3s. 3d.	2s. 9d
Golden Leaf, Mont	1s.	6d
Jay Hawk, Mont	9s.	8s.
La Luz, Mex	1s. 9d.	1s. 3d.
La Plata, Colo	1s.	6d.
Maid of Erin, Colo	£⅞	£⅝
Mammoth Gold, Ariz.	....	....
Mount McClellan	4s.	3s.
Montana, Mont	2s. 3d.	1s. 9d.
New Consolidated	....	....
New Gold Hill, N. C.	1s.	6d.
New Guston, Colo	£11-16	£9-16
New Hoover Hill, N.C.	2s. 6d.	....
New Russell, N. C.	....	....
New Viola, Idaho	1s.	6d.
Old Lout, Colo	2s.	1s.
Parker Gold, N. C.	4½d.	1½d.
Pittsburg Cons., Nev.	2s. 6d.	1s. 6d.
Poorman, Idaho	8s. 6d.	7s. 6d.
Plumas Eureka, Cal.	£$\frac{9}{16}$	£$\frac{7}{16}$
Richmond Con., Nev.	15s.	10s.
Ruby, Nev	6s.	3s.
Sierra Buttes, Cal	£⅜	£¼
" Plumas Eur., Cal.	£⅝	£½
Silver King	£⅜	£¼
United Mexican, Mex.	£3-16	£1-16
Yankee Girl, Colo	5s.	4s. 6d.

Paris. Dec. 22.

	Francs.
Belmez, Spain	660.00
East Oregon, Ore	....
Golden River, Cal	130.00
" " parts	30.00
Laurium, Greece	685.00
Lexington, Mont	168.75
" parts	2.40
Nickel, New Caledonia	880.00
Rio Tinto, Spain	407.50
" " oblig,	517.00
" " " 2d	512.00
Tharsis, Spain	123.50
Vieille-Montagne, Belgium	513.75