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Two important decisions relating to the metals have recently been made by the United States Court of General Appraisers in this city. One is in regard to the duty on pig lead, whether the two cents per pound should be levied on the gross weight of the imported metal, or on the weight of the lead therein contained.

The court holds that the duty is to be assessed on the gross weight of the pig lead.

The other decision relates to the importation of pyrites for acid purposes, containing copper, a brief notice of which appeared in this journal October 29th, 1892, page 409. The importance of the case warrants us in quoting the decision in full. It is by Judge WILKINSON, February 4th, 1893:

The question is the proper mode of determining the amount of copper in sulphur ore which contains copper. Paragraph 133 provides that sulphur ore containing more than 2% of copper shall pay an additional duty of one-half of one cent per pound for the copper contained therein.

In the present case the assay was made by the electrolytic process. The appellants claim that the fire assay should have been adopted. By the first method a portion of ore is dissolved, and the absolute amount of copper contained is precipitated. On account of loss in working, ore is usually bought and sold by what is termed a fire assay. But from the simplicity and accuracy of the electrolytic method and by common agreement in the trade, the so-called fire assay or commercial assay is determined by deducting 1·3% from the sum given by the electrolytic or wet process.

In deciding a case of this kind, S. S. 10,037, May 26th, 1890, the department says that after conferring with the Superintendent of the Mint the conclusion is reached that the "fire or dry assay" should be used by customs officers in such cases. Congress is supposed to have had cognizance of the method of assay followed by the department just prior to the passage of the act of October 1st, 1890; and as there is no substantial change in the phraseology of the new law in the provision for sulphur ores containing copper, there appears to be no reason to modify the regulations of the department as given in the decision named.

We hold that the amount of copper should be determined by fire assay, and that the fire assay may be ascertained according to conventional usage by deducting 1.3 per cent. from the result of the electrolytic assay. To that extent the protests are sustained.

THE CYANIDE PROCESS.

The cyanide process does not seem to be exciting so much interest now as it did some months ago, although as yet all inquiries as to its metallurgical value have not ceased. In view of the extravagant claims which have been made for this method of ore reduction, this apparent lack of interest would seem significant of the failure which has been predicted for it by those who have taken a one-sided view. We consider it to be due, however, to the discovery of what we long ago predicted—it's limited range.

That few ores, and they of the most docile character, can be treated successfully by this process is now certain, and it is as equally well proved that with the greater number of ores the decomposition of the cyanide solution is great and costly.

The amount of money which has been spent in arriving at these conclusions is not small; we have heard from time to time of large and costly plants being erected, success being predicted by all connected with the enterprise, and more especially by the representatives of the MacArthur-Forrest company, and we hear of nothing more except, perhaps, that the plant has shut down, presumably a failure. On the other hand some isolated successes are of record—notably in this country the case of the Mercur mine, Fairfield, Utah, where an ore which obstinately refused to yield its gold to pan-amalgamation has given excellent and economical results when treated by the cyanide process. It is pleasing for us to record this success, but it is not out of place for us to call the attention of those who are interested in the process to the fact that the gangue of this ore is principally limestone, without any accompanying minerals whose decomposition would form acid compounds which would react on the cyanide.

The successful treatment of ores by this process so largely depends upon the composition of the ore, as is shown in a thorough article on this subject which will appear in the forthcoming volume of the "Mineral Industry," that analyses should always be made before attempting to treat one. If no sulphate, no free sulphuric acid, and only a small amount of lead or copper are present, and at the same time the extraction by cyanide in the laboratory tests is large, then success in large operations may be hoped for at least.

THE LESSON OF THE SAAR STRIKE.

A strikingly practical answer to the argument of those who advocate government control and management of railroads, telegraphs and other industrial enterprises as a remedy for or preventive of strikes and other perplexing labor problems is to be sound in the strike among the coal miners of the Saar, Germany. The Saar coal mines are managed by the German government, and, it may be said, managed well and economically according to plans and methods especially devised for the purpose. At the time of their adoption the Emperor WILLIAM was particularly desirous of gaining the confidence of the labor party and the management of the mines was to show to socialists and anarchists that under the fostering care of a paternal government there would be peace and plenty, that the laborer would work contentedly and that strikes would cease. In accordance with this plan, wages were raised from an average of 76 cents in 1888 to an average of $1.15 daily in 1892; hours of labor were shortened, improved

methods of ventilation were adopted—in fact, every means taken to make the work a success.

Notwithstanding this, about 25,000 miners struck work in December last; rioting and bloodshed followed, and troops were called out to quell the disturbance. Strange to say, it was neither for higher wages nor shorter hours that these men struck; it was owing to interference with their work by government officials, to a multiplicity of rules and regulations which abrogated time-honored privileges, and to bureaucracy. In a word, they struck against government control. Whether the German Emperor will rightly appreciate the lesson taught by this strike remains to be seen, but it proves, if proof were again needed, that, as a preventive of strikes, government management is worse than useless.

To us the case is of wide application, for it corroborates what we have long advocated—namely, that work which can be conducted by private or voluntary public enterprise should not be undertaken by government. The proper functions of a government is to govern and to perform such general acts as are necessary for the good of the commonwealth, and which the citizens cannot perform themselves. We invite the attention of the thoughtful reader to the German coal miners' strike and to the following closing words of an editorial in our issue of April 23, 1892: "Nearly every custom which has grown to be recognized as an abuse of the functions of government had its origin in some plausible scheme to benefit the citizens. It is when a government is entering upon a policy that has no logical stopping point short of pure socialism that the warning voice should be raised. It is easier to guide the formation of correct principles than to eradicate erroneous convictions."

GOLD EXPORTS DURING 1892.

One year ago it was a matter of grave comment that although the net exports of merchandise from the United States during 1891 amounted to $142,278,703, the net exports of specie and bullion reached $43,616,600. Financiers and economists alike called attention to the matter and sought to explain what was seen by all to be an abnormal condition of affairs. Explanations differed according to the point of view, the most common being the large (and unknown) expenditures of American tourists in Europe and a heavy liquidation on the part of foreign holders of American securities, but one and all agreed that another such apparently prosperous year would bring financial disaster with it.

Such a year has come, indeed a worse one, for the net exports of specie and bullion during the calendar year 1892 reached $73,295,106, although the balance of trade in our favor on merchandise alone amounted to not less than $62,221,714.

The country is not ruined, it is true, but the free gold in the United States Treasury has reached the lowest point in years, timid persons are hoarding gold, and there is, above all, a feeling of unrest, a belief in approaching disaster, which by crippling business may bring about the very thing feared. That the condition of affairs is abnormal can readily be seen from the following table showing the exports and imports of the United States, both of merchandise and specie, since 1887:

EXPORTS AND IMPORTS OF UNITED STATES.

	Exports of merchandise.	Imports of merchandise.	Exports of specie.	Imports of specie.	Net exports merchandise.	Net exports specie.
1887	$715,301,044	$708,818,478	$36,789,414	$61,661,913	$6,482,566	$24,872,499*
1888	691,761,050	725,411,371	64,406,852	26,868,742	37,538,110*	37,532,110
1889	827,106,347	770,521,965	91,627,690	31,223,894	56,584,382	60,403,796
1890	857,502,548	823,397,726	50,602,863	42,656,209	34,104,822	7,946,654
1891	970,509,646	828,320,943	106,779,460	63,162,860	142,188,703	43,616,600
1892	938,419,893	876,198,179	112,472,304	39,177,198	62,221,714	73,295,106

* Net imports.

It is noticeable here that during 1891 and 1892, with net exports in our favor to the amount of $204,410,447, this country exported gold and silver to the amount of $219,251,764, and only imported $102,340,058, making a net export of $116,914,706, which far exceeds that of any other two years in the list.

In 1889 the net exports of gold amounted to $60,403,796, but it is a well known fact that this large outward movement was to a great extent caused by the large American attendance at the Paris Exposition. No such reason can be brought forward to explain the movement in 1891 and 1892, and we must look elsewhere. The amount annually spent abroad by Americans is constantly increasing, but it fails in the present case to account for the discrepancy. During the two years mentioned the total net exports were $321,325,153.

The conclusion is inevitable that either Europe sold us something that the custom-house does not take note of, such as stocks and bonds, or that this money is held to our credit in Europe. It is probable that both explanations are true, the latter, however, to a small extent only, and it is equally true that both show a widely prevailing disbelief in the stability of our currency and financial system. Since the passage of the Sherman act of 1890, the belief has grown, not only abroad, but among our own people as well, that the United States is tending toward the position of a silver basis country.

The situation grows worse from month to month, as is shown not only by the exports of gold during January of 1893, which were six times as great as those for any other month of January since 1881, but also by the nature of the notes paid to the Treasury for the gold. During the month referred to there was withdrawn from the New York Sub-Treasury the sum of $10,950,000, for which there was paid $6,097,500 in U. S. notes, $4,654,000 in Treasury notes (those issued in payment for silver bullion) and only $198,500 in gold certificates. Notwithstanding this and the petitions which have been sent to it from almost every State in the country, Congress has refused to repeal the Sherman Act. It is well known that Mr. CLEVELAND has declared himself in favor of repeal, and it is reported that unless some action is taken by the present Congress he will call an extra session some time in March or April.

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.

Johnston's Electrical and Street Railway Directory, 1892. Published by THE W. J. JOHNSTON COMPANY, LTD., New York, 1892. Pages, 786. Price, $5.

NEW PUBLICATIONS.

ANNUAIRE POUR L'AN 1893; PUBLIE PAR LE BUREAU DES LONGITUDES. Paris: Gauthier-Villars et Fils. Pages 692, with an appendix on the Mount Blanc Observatory, by M. J. Janssen.

This excellent volume contains much statistical information concerning France, and in addition has a number of handy reference tables of great value to those interested in astronomical subjects.

REPORT ON THE SUDBURY MINING DISTRICT. Being a Special Report to accompany Sheet 130, Series of Geologically Colored Maps of Ontario Geological Survey Department. By Robert Bell, M. D., LL. D. Pages 95. Illustrated. Published by S. E. Dawson, Ottawa.

This valuable little book is a full report on the geological and topographical surveys conducted by Mr. Robert Bell in the Sudbury mining district during the three seasons 1888 to 1890, epitomes of which were given in the annual summaries of those years. The report is supplemented by a finely colored geological map, showing the different formations with their general dip, and the locations of the different ores known to occur. Of these the greatest interest naturally centers in the mines of copper and nickel.

According to Mr. Bell, both the chalcopyrite and the nickeliferous pyrrhotite, are always associated with greenstones, their most common situation being at the contact of the greenstone with some other rock, especially granite or gneiss. These minerals also occur disseminated in the greenstones. A circumstance which appears to greatly influence the localization of the ores is the crossing of the lines of junction by lines of fracture or by the greenstone dikes which cut all the rocks. These facts, taken in connection with the physical and chemical structure of the ore masses, have led Mr. Bell to intimate that the deposits originated primarily from a state of fusion, though he admits that they may have been subsequently more or less modified by other agencies. Mention is made of the occurrence of sperrylite at the Vermilion mine, but unfortunately the occurrence of platinum in the massive pyrrhotite is not noted. The book includes four appendices, treating of the microscopical character of the rocks of the region, by Prof. G. H. Williams; altitudes; lepidoptera of the region, by H. H. Lyman, and a glossary of Indian geographical names.

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 Algoma Nickel Mines.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In your issue of the 4th inst., the following article appears:

Algoma Nickel Mines.—The three mines of the Canadian Copper Company are still closed down pending the decision of the courts in Ohio as to certain matters in dispute between the company and Mr. S. J. Ritchie, their former managing director here.

As this report is absolutely and utterly false, we shall be pleased if you will contradict it in your next number.

The Canadian Copper Company,
By H. P. MCINTOSH

(This information, in The Engineering and Mining Journal of February 4th, 1893, came from a well-informed correspondent in that district, who should have been aware of the facts.—Ed. E. and M. J.)

The Percentage of Iron in Magnetite.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I have noted with some interest Mr. D. H. Browne's criticism and Dr. Raymond's comments upon the analysis of a Gunflint Lake ore, published in your issue of December 31st, 1892. It is not surprising that this analysis should attract attention, for, though it is known that the FeO in magnetite is variable, yet in this instance it is unusually high, and there is nothing in Mr. Russell's letter indicating that such analysis is not to be regarded as common or characteristic of the ores of that region. His recent contributions to current metallurgical literature would indicate Mr. Browne to be one of considerable experi-

ence in iron ores, and no doubt he was familiar with the variation of FeO in magnetites, even to the formation of the pseudomorph martite. The reference of the analysis to the formula FeO. FeO_2O_3, serves but to emphasize the unusual character of these results in their departure from what may be termed the normal magnetite with 31% of protoxide, while Gunflint Lake ore has apparently about twice that amount. Assuming Dr. Raymond's suggestion of 4FeO, Fe_2O_3, the soluble portion has 64·285% of FeO, while 77·35% of FeO more nearly corresponds to the analysis; quite a radical difference in composition, though the difference in total iron in the ore calculated on these different bases shows no such striking dissimilarity. Taking 77·35% of FeO, as preseut in the soluble portion, the ore has about 62·15% of FeO and 79·14% of the total iron present in the ferrous condition instead of the 65·77% which Dr. Raymond's formula seems to demand. If we may be permitted to so express it, 7·589 FeO, Fe_2O_3, or 15 FeO, $2Fe_2O_3$ more nearly corresponds to the analysis than the 4FeO. Fe_2O_3 suggested by Dr. Raymond. It has been the writer's experience that the occurrence of metallic iron is not infrequent in the samples prepared for analysis from ores of iron or other base, when these ores are of a hard nature. Such iron had been derived from the mortar and pestle or other crushing apparatus, and sometimes, in case of a soft mortar and pestle, in quantity sufficient to give a seriously iucorrect result. I first noticed it in crushing some Southern very hard brown hematites, the results in iron in different samples being very irregular with no apparent good reason. Insertion of a magnet soon revealed the trouble, and the use of a good steel mortar, though laborious, effected a remedy. Possibly Mr. Browne has had a similar experience which, in view of the remarkably high percentage of protoxide, suggested to him the presence of metallic iron in the sample of Gunflint Lake ore, the large insoluble residue indicating that a hard siliceous ore might be the sample treated. At all events, he was not alone in regarding this analysis with suspicion.

CAMDEN, N. J., February 4th, 1893. G. W. WHYTE.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I would disclaim any intention of referring discreditably to the able chemist of the Canadian Geological Survey, Mr. Hoffman. As I know from experience that a chemist can never personally conduct all analyses that pass through his office, and in Mr. Hoffman's case the possibility that the analysis was his own work seemed to me very slight, my criticism was of the analyst by whom the determination was made, and the head chemist was to blame only in permitting it to pass without comment.

My criticism was based upon two points: First, the determination of iron, particularly in so siliceous an ore, by dissolving in acids, filtering and determining iron in the solution is poor practice. Unless the residue is perfectly white, consisting of pure silica, is apt to contain some iron. For this reason I was inclined to doubt the analysis. Looking into the matter a little further, I noticed that the analysis could be explained only by the presence of metallic iron, or by the existence of a large proportion of ferrous oxide. Now, Dr. Raymond admits that my calculations are correct, but proposes the formula $4FeO.Fe_2O_3$, and prefers to believe the ore an abnormal one rather than suppose the figures incorrect. Unfortunately, this formula does not "closely approximate the Gunflint Lake analysis."

Let me explain. We will suppose 100 grams of the ore to consist, as the analysis shows, of 19·65 grams of insoluble residue, containing no iron, and 80·35 grams of soluble iron oxide. As the ore had 61·08% of iron, this soluble oxide must have 76·01% iron. Now, if these oxides were entirely ferrous oxide (an exceedingly improbable condition), the percentage of iron would be 77·7%, so there must be a little ferric oxide present.

Dr. Raymond's formula $4FeO, Fe_2O_3$ gives only 75.1% iron, while the ore calls for 76·01%. The calculation, $8FeO\ Fe_2O_3$ gives 76·1% iron, which corresponds very closely with the analysis.

Now, it is much easier for me to suppose that the sample contained iron from the crusher or mortar, than to suppose the soluble portion of the ore contained 78·2% of such an unstable and chemically active reagent as ferrous oxide. If, however, further investigation should show that the analysis is correct and the sample a representative one, there should be a ready market for the ore as a mineralogical curiosity.

CLEVELAND, January 31st, 1893. DAVID H. BROWNE.

Electric Communication Without Wire Conductors.—Interesting experiments have recently been made under Mr. W. H. Preece, with a view to electric communication between distant points without wire connection, namely, through air, water, or earth, says the *Engineer*. Mr. Preece proposed to conduct experiments in three different methods—first, by running a wire along the shore on light poles for a distance of about a mile, and a second wire from stem to stern of the ship, the two acting upon each other inductively through the intervening space; secondly, by suspending a short line over the side of the ship, so that it might dip into the sea in the direction of the end of the shore line, to work by conduction through the sea; and, thirdly, by running out a light cable from the shore to the ship, terminating in a coil at the bottom of the sea, near the ship, but not attached to it, while another coil is placed on board. These two coils are expected to act inductively, and to give ample sound on telephones by means of rapid alternations. The experiments by the first method have been carried to a successful issue within the last few days, the shore wire having been erected along the Welsh coast, commencing at Lavernock Point, a little south of Cardiff, and proceeding for a mile in the direction of Lavernock House. The lightship was represented for the occasion by the island of Flat Holme, in the Bristol Channel, and the line there erected, parallel to the first and three miles distant from it, was about half a mile long. The shore line was furnished with a powerful generator at Lavernock Point, and the island line with a sounder to receive the messages. The result was that the words dispatched into the mainland wire were heard on the island with perfect distinctness, but we can scarcely admit that Flat Holme represents the conditions of a ship.

THE CONDITION OF THE MINING INDUSTRY IN 1892.

Written for the Engineering and Mining Journal by H. M. Beadle.

MONTANA.

At the beginning of 1892 the mining industry in Montana was in a prosperous condition. Though the price of silver had fallen, there was a general belief that the Fifty-second Congress, which had just convened, would enact some legislation in the interest of silver, that would at least prevent any further decline in the value of the white metal, if it did not pass a law for its free and unlimited coinage. Now the business of mining is greatly depressed, and though the output of the mines is far greater than it was a few years ago, there is less profit in mining than at any time since the settlement of the country. The causes of this depression in mining may be found in the continued low price of silver, the stagnated condition of general business of the country, which, beginning in the east, reached the mountain section of the country last of all, but has continued there the longest, and the bad season, the floods being more continuous and disastrous in June than in any year since the white people have known the country.

The depression has chiefly affected silver mines. In gold mining there is now greater activity than during many years past. Gold prospects are eagerly sought after, and not only have new mines been discovered and new mills erected, but several old properties, which were thought to have been worked out, are again in operation, and the outlook is most favorable for a large increase in the production of gold in 1893.

The awakened interest in gold mining has caused the mine owners of the State to examine the merits of new machinery offered them, and the result is that seven cyanide plants have been, or are being, erected in the State, and a number of Crawford gold extractors and Bryan mills are now being used, and more will undoubtedly be put in during the year.

The general depression has affected coal mining to an appreciable degree. While coal is coming rapidly into use for domestic purposes wherever the railroads penetrate, the main reliance of the coal companies are the smelters and the railroads. A few mines have been opened in a small way in the Flathead country, but the business cannot be called prosperous.

Mines producing argentiferous lead ores are found in all parts of the State, but the strictly lead camps are Castle, Barker, in Meagher County, and that part of Jefferson County immediately west of the Missouri River. The Cumberland, the only producer in Castle, shut down early in the year, and since that time there have been no shipments of ore or bullion from that camp. The evident cause is the cost of transportation, Castle being 70 miles from Livingston, the most accessible railroad point. In June, the floods almost destroyed the branch railroad to Barker, and for three months there were no shipments of ore. Since that time the shipments have been small, and that camp is suffering from the depression in the mining business equally with all the camps of Montana.

The awakened interest in gold mining has been felt in every county in the State. The Bald Butte property, about 25 miles from Helena, just in the edge of Deer Lodge County, is proving to be one of the great gold mines of the State. It is not more than three miles from the Drumlummon, which has long enjoyed the reputation of being the greatest gold mine in Montana. The Bald Butte company completed the new twenty-stamp mill, begun last year, in February, and have driven a tunnel which crosses the north vein of their property and intersects the south vein. A drift has been made on the latter vein, and an upraise is being driven to connect with the shaft in the workings above. This drift, with the levels above, show a continuous ore-shoot 2,000 feet long, the ore milling over $15 a ton. A body of galena has been discovered in the east end of the 200-level, which carries a large amount of gold. Ten tons of it, shipped to the smelter, yielded over $2,500 a ton. The extent of this body of ore has not been determined. The north lead has been opened over 400 ft., showing a large body of ore, of an average width of 10 ft., which milled over $15 a ton. The deepest working on the south vein is 400 ft. below the apex. The north vein is in slate; the south vein is in a dike of diorite, which cuts the slate, which is the bedded rock of the country, east and west. The strike of both veins is nearly east and west, the underlie to the south. It is believed, though not yet fully determined, that the south vein cuts through the diorite into the slate on the east. The average width of the ore body in this vein is 12 ft. The mill is situated about a mile distant on a stream below the mine. The ore is hauled to the mill in wagons over a good road, which cost the company some $3,000 to construct. The property is worked in the most conservative manner, but the wealth of the property is such that the number of stamps in the mill will soon have to be increased, and a tramway constructed to deliver the ore to the mill.

The Royal Gold, on Boulder Creek, Deer Lodge County, lying about eight miles from the Philipsburg branch of the Northern Pacific Railroad, is showing well for its development. The company has four locations on the lead which it is developing, and shafts sunk on the lode show that the ore shoot is continuous for half that distance. One tunnel has been driven on the lead some 600 ft., and another tunnel, some 150 ft. below, has been driven over 100 ft. The ore from the tunnels, upraise and shafts, has milled from $31 to $44. The ore body is from a few inches to 12 ft. in width, the average being about 3 ft. The vein strikes east and west, almost at right angles, to a steep ridge, the highest part of the vein being some 2,000 ft. perpendicularly above the bottom of the gulch below. Along the west side of this mountain the vein has been fairly well explored. The company first put in a 5-ft. Huntington mill, but during the summer commenced the erection of a ten-stamp mill, which is now at work. The vein being worked by the company is in granite, and it is remarkable, not only for the extent of the ore-shoot, but for the character of the quartz, which varies so little in value along its whole strike as well as in its depth. It is reported that the property has been sold to a company composed of New York capitalists.

The Empire properties, near Marysville, are practically worked out. The Whippoorwill claim has a large body of low grade ore in its workings, but the gold cannot be saved on the plates or by the vanners, and its value is not sufficient to warrant the company to put in extra machinery or apparatus to save it. The ore in the Empire claim is exhausted, none of any value having been found below the 400-level, though two winzes have been sunk over 100 ft. on the vein and several hundred feet of levels run. The Golden Leaf company last spring purchased two claims on a lode known as the Bell Boy for $40,000. So far the ore found in this vein has been yielding sufficient gold and lead to pay about $9 a ton, after paying the expense of hauling two miles and milling. The company will soon begin to sink, when the worth of the property will be better determined. This mine is about one-half mile northwest of the Bald Butte. The vein, which is in slate, lies east and west, and dips to the south. So far as explored, it varies in width from a few inches to 25 ft. The body of the ore is of rather low grade, but there are very rich streaks running through it, which makes the average value as stated.

The awakened interest in gold mining has caused work to be resumed on several properties in the State, which were abandoned 10 and 15 years ago. Among these are the Penobscot, Belmont and Whitlatch-Union properties. The Penobscot is one of the historic mines of the State, having at one time been practically owned and worked by Captain Frue, the inventor of the Frue vanner. Though it was abandoned some 10 years ago, and sold out by order of court, Mr. J. Henry Longmaid, the able manager of the Golden Leaf properties, has come into possession and erected a 10-stamp mill upon it. The result of a six-days run was the saving of $1,250 of gold from 610 tons of dry ore. The number of tons of ore of this grade in sight cannot be accurately calculated, as the mine has fully 300 ft. of water in it, but it is known to be very large. Before the present year is closed, the number of stamps in the mill will be doubled, for the body of ore in sight when the water is pumped out will justify the addition of that number of stamps, and vanners also.

The Belmont mine, at Marysville, was wholly owned by Captain Frue. The ore is refractory and hard to save, as Mr. L. S. Trent, now western agent of Fraser & Chalmers, found when he closed down the mine and mill 10 years ago. Last summer Mr. V. D. Becker, of New York, obtained possession of the property as agent for the Jewel Mining Company, repaired the old mill, erecting 10 stamps with necessary pans and settlers, to work. The result was so satisfactory that he put in 10 more stamps, with four Frue vanners. He has also added a Corliss engine of 125 H. P. He expects to add 10 more stamps to the mill, with whatever machinery is best for saving the metal. The successful developments on the Bald Butte and Bell Boy properties, and the starting of the Penobscot and Belmont mines again, have awakened great interest in gold mining in that immediate locality, and many properties are being developed there which have had but little work done upon them for years.

The company operating the Whitlatch-Union property, four miles south of Helena, has sunk a shaft on the incline nearly 400 ft. in ore all the way. Levels are being run, and some stoping is being done. The ore is reduced in a 5-ft. Huntington mill, the clean-ups showing that the rock carries from $12 to $40 gold to the ton. There is ore sufficient now in sight to supply the mill for a year. When the developments have been made, additional machinery for reducing the ore will be put in.

Since the beginning of the year seven mills, operating 75 stamps, have been erected and in addition to these, five Crawford gold extractors, one Huntington and one Bryan mill have been put in operation, equal to about 25 additional stamps. One Austin pyritic smelter was erected at Boulder during the year at a cost of $100,000. This shows the extent of the awakened interest in gold mining.

It is unfortunate for mining in Montana that disaster has overtaken the Montana Company, operating the Drumlummon properties, at Marysville. The floods in June greatly damaged the property; the burning out of their working shaft shortly after stopped all work in the lower levels, and the attachment of their property by the St. Louis Mining Company, for damages arising from alleged trespassing on the property of the latter company, has brought the Montana to the verge of disaster. The recent action of the stockholders in providing sufficient funds to meet the indebtedness of the company, to prosecute further exploration and defend the lawsuit, will undoubtedly enable the mine to greatly increase its output the present year.

The Alice, Moulton, Lexington, Bannister and the silver properties of the Butte and Boston companies, of Butte, have been in operation, but with greatly reduced forces, for the greater part of the year. The stoppage of the Blue Bird mine in March also materially lessened the silver product of Silver Bow County, in which Butte is located. Small operators of silver properties all over the State have closed down their mines, or are operating them with the smallest number of men possible. The Granite Mountain and Bi-Metallic properties, at Granite, have greatly reduced their working forces and, consequently, the output of their mines.

On the other hand, the Puritan, at Granite, is enlarging its operations, and the owners claim that its development warrants them in believing that it contains as much good ore as the Granite Mountain. The Queen of the Hills, at Neihart, is showing up remarkably well, and promises to be one of the great silver mines of the State. An electric hoist has been placed upon the property, and a mill for the reduction of its ore has been contracted for. The North Home, in Jefferson County, has become renowned for the large amount of horn silver ore found therein. It is not much more than a prospect at this time, for sufficient depth has not been reached to warrant the permanency of its ore bodies; but one rich chimney of ore has yielded largely for over 200 ft. in depth, and there are several others on the property just as large and rich on the surface.

The Elkhorn, in Jefferson County, which contains a great deal of lead, is showing up better in depth than any mine in Montana, but its output will not be greater than it was last year. The lead-silver properties at Castle must remain idle until a railroad is constructed to that place, for the ore will never pay to ship or work so far from a railroad.

The Red Mountain Milling Company has erected an 80-ton concentrator on Red Mountain, 20 miles south of Helena, in which the low grade silver-lead ores of that and other mines in that locality are being treated.

At this time it is impossible to state with accuracy the metal product of the State for the past year. The following estimate, it is believed, will be near the truth: Gold 150,000 fine ounces, value $3,100,774.50; silver 14,500,000 fine ounces, coinage value $18,747,050; copper 164,040,000 pounds; lead 12,500 tons.

THE ANALYSIS OF FERRO-SILICON AND SILICEOUS SPIEGEL.*

By T. W. Hogg.

It is the general impression that high percentage ferrosilicon and siliceous spiegel are very imperfectly attacked by nitrohydrochlorie acid, and that these alloys cannot be decomposed in this way. This misconception has arisen from two causes. Firstly, if the alloy is not in a fine state of division the particles are coated with a layer of silica which prevents all further action of the acid. In the second place, where the alloy has been sufficiently pounded after the usual treatment of the acid, the mixture is always evaporated to dryness, and gently heated in order to render insoluble that silica which may have passed into solution. After then dissolving the residue in hydrchloric acid, filtering and washing and igniting, the silica thus obtained is always contaminated largely with oxide of iron. This circumstance has naturally produced the impression that the alloy is only partially decomposed. This, however, is not the case, for if the ferrosilicon or siliceous spiegel be in a very fine state of division, vigorous boiling with nitrohydrochlorie acid will perfectly decompose it in 15 minutes. The silica which is thus formed is contaminated with graphite only. The physical condition of this silica, however, is peculiar, for if it is gently heated in contact with an iron salt in the dry state, it takes up ferric oxide and retains it with such tenacity, that no ordinary amount of boiling with hydrochloric acid will purify it. This peculiarity suggests that it is simply necessary to filter off the silica before evaporating, and to evaporate the filtrate to dryness by itself in order to obtain the small quantity of dissolved silica.

In dealing with low percentage alloys the quantity of silica which passes into solution is much greater than in the higher ones, and the quantity varies usually from 0·1 to 0·3% in alloys containing 10 to 15% silicon. For works purposes, therefore, an addition of 0·2% may be made to the quantity found by filtering off at once, and the evaporation to dryness may be safely omitted. In this way the operator may have the silica ready to ignite in 30 minutes from the time of weighing out.

The rapidity and perfectness of the decomposition in nitrohydrochlorie acid depend entirely upon the fineness of the particles. It is therefore advisable to grind the powder in an agate powder.

The method here described has been in use for ten years at the Newburn Steel Works, England, and it is rare that a silica is obtained which is not perfectly white after ignition over a blowpipe. Occasionally titanic acid may be present, and in cases where great accuracy is required this may be separated in the usual way by treatment with sulphuric and hydrofluoric acids.

THE ESTIMATION OF MANGANESE IN ORES

Mr. Albert H. Low describes in the "Journal of Analytical and Applied Chemistry," a new method discovered by him for estimating the manganese in ores. The length of time occupied by the entire analysis is said to be never greater than 20 minutes, and none of the usual constituents of ores interfere with the working of the process.

The following solutions should be prepared: (1) A standardized solution of potassium permanganate, approximately 1-10th normal. (2) A solution of oxalic acid containing 11·46 grammes of $C_2H_2O_4$. $2H_2O$ per litre; the exact strength of this solution is to be determined by titrating with the permanganate in the presence of hot dilute sulphuric acid in the usual way, and then its value calculated on the basis that $C_2H_2O_4$. $2H_2O$ = Mn.: it will be found that 1 cc. will be equal to 0·005 gramme of Mn. or about 1% when 0·5 gramme of ore is taken for analysis. (3) A saturated solution of bromine in cold water, an excess of bromine in the bottle; under the conditions to be described 25 cc. of this solution will precipitate about 35% of manganese.

In carrying out the analysis 0·5 gramme of the ore is treated in a 16-oz. flask with whatever acids are necessary to decompose it. Usually 5 to 10 cc. of hydrochloric acid or aqua regia are sufficient. After all traces of free acid have been removed by heat, the solution is diluted with 75 cc. of hot water and an excess of zinc oxide added. The solution is boiled to effect complete neutralization of the acid. An excess of the bromine solution is then added; about 25 cc. is usually sufficient, and never more than 50 cc. should be added. The solution is boiled for a moment or two until the excess of bromine is expelled, and an excess of zinc oxide should all the time be observed in the bottom of the flask. When all the red fumes have disappeared the solution is filtered on a paper 5 in. in diameter and the flask and precipitate washed several times with hot water. The precipitate and filter are replaced in the flask and about 50 cc. of dilute (1·9) sulphuric acid added. Into this mixture is run from a burette an excess of the oxalic acid solution, and the mixture is heated to boiling; afterward more oxalic acid is added if necessary, so as to complete the solution of the precipitate. After diluting the solution with hot water, the excess of oxalic acid is titrated with the permanganate solution. The amount of oxalic acid actually consumed by the MnO_2 is thus arrived at and the percentage of manganese can then be calculated.

* Abstract of a paper in "Chemical News."

THE ORIGIN OF FLORIDA PHOSPHATES

By Professor Cox.

In my opinion the phosphate deposits of Florida are due to the mineralization of an ancient guano. It is true that phosphorus in combination with other elements is almost universally distributed. In the form of apatite, a crystalline phosphate of lime, it is found in crystalline rocks. In this form it no doubt owes its origin to waters holding phosphate of lime in solution.

Phosphate of lime is also found in all arable soils. The analysis of fifty virgin soils made by Dr. Robert Peter, chemist to the Geological Survey of Kentucky, gave an average of one-tenth of one per cent. of phosphoric acid. It is from the soil that all plants derive their phosphate of lime, and from plants all animals derive, directly or indirectly, the phosphate of lime which constitutes the largest part of their bony structure, and that is contained in their excretions.

The extent and volume of the excrements of sea birds are illustrated by the immense deposits of guano that were found on many islands in the Pacific Ocean, off the rainless coasts of Chili and Peru. These deposits have been found more than 100 ft. thick. The excrements of birds, therefore, furnish a source for an almost unlimited supply of phosphate of lime, when the conditions are favorable for their accumulation and preservation. Florida presented these conditions as the peninsula first rose above the level of the sea. But here, unlike the islands of the Pacific, the guano was exposed to excessive rains which leached out the soluble mineral salts, and left the insoluble phosphate of lime, which became hardened into stone by the ordinary process of mineralization.

The foundation rock forming the peninsula of Florida is an easily weathering limestone that belongs to the lower part of the Tertiary formation, and its horizon in the great rocky series of the earth's crust is known to geologists as the Eocene epoch. This Eocene limestone, where it was subjected to the action of various ocean movements, was worn and weathered into irregular shapes, and when elevated so as to be protected against the action of the sea it formed a roosting place for the innumerable birds found in the region, and provided a safe repository for their excretions.

In the Anthony region the Eocene limestone is excessively weathered into irregular shaped cones, and numerous potholes. These potholes vary from a few inches to ten feet or more in diameter, and from two or three to thirty or forty feet deep. They were undoubtedly formed just as potholes are forming now on the rocky shores of the ocean, lakes and rivers where a loose stone has found lodgment in a small cavity, and is moved around by the water until it grinds out a hole, at the same time wearing itself away. All the interstices in the rock, as well as the potholes in the Anthony region, are filled with phosphate. As the bed of phosphate leaves the limestone projections it spreads out into the depressions.

The sand which covers the phosphate, or forms the overburden, and spreads over almost the entire peninsula of Florida, has, in my opinion, been blown over the State from the ocean and gulf beaches. I can find no evidence that the Eocene limestone has been submerged since it was first elevated above the sea.

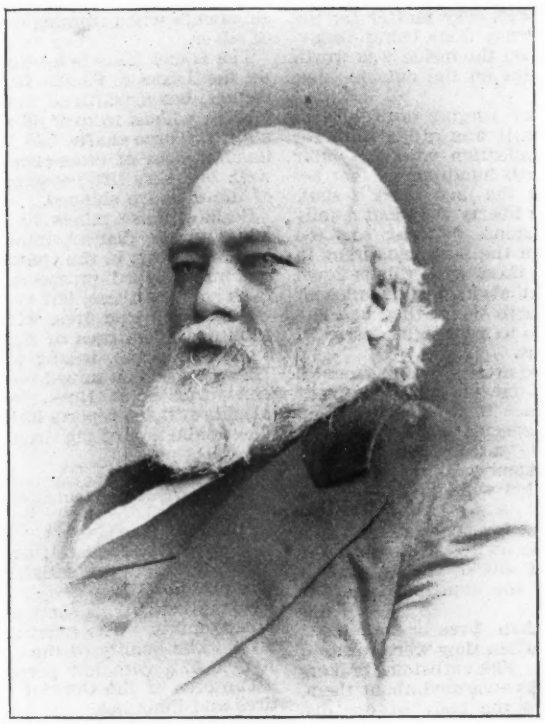
Sawdust Brick.—Experiments are to be made with a light brick for interior partitions, ceilings and other places where crushing strength is not required. With ordinary clay and sand about 50% of fine sawdust will be mixed; the brick will be molded under heavy pressure and then burned until the sawdust is consumed,

THE LATE DR. FREDERICK AUGUSTUS GENTH.

By the death of Dr. Frederick Augustus Genth, which occurred at his home in Philadelphia, on Febuary 2d, America lost one of her most renowned mineralogists and chemists. As a mineral chemist, Dr. Genth was unrivaled, while, as a mineralogist, his name ranks with those of Dana, Shepherd, Silliman and J. Laurence Smith.

Dr. Genth was born in Waechtersbach, Hesse-Cassel, on May 17th, 1820. After receiving his early education at the Gymnasium at Hanau, he studied successively under Liebig, at Heidelberg, then at Giessen and afterward under Bunsen, at Marburg, receiving at the last mentioned university in 1846 the degree of Ph. D. For the three following years he served as assistant to Dr. Bunsen and then came to the United States, where he has resided ever since. In 1872 he was called to the chair of chemistry and mineralogy in the University of Pennsylvania, at Philadelphia, a position which he held up to a few years ago when the demands on him for private analyses and private tutorship at his own laboratory, in South Tenth street, Philadelphia, made it necessary for him to withdraw from the professorship. He also held the office of chemist to the Geological Survey of Pennsylvania, and to the Board of Agriculture of the same State. He was a member of many scientific societies, and was elected to the membership of the National Academy of Sciences in 1872.

The identity of no fewer than eighteen new minerals is due to Dr. Genth. These are: Barnhardite, whitneyite, rhombic tungstate of lime, melonite, calaverite, montanite, cosalite, kerrite, maconite, willcoxite, dudleyite, schirmerite, psittacinite, magnolite, endlichite, iansfordite, nesquehonite, aguilarite. Dr. Genth's contributions to the literature of mineralogy have been very numerous, and have continued with marked regularity from the year 1842 until the 102d communication in 1891. Twenty of these additions to our knowledge were made while he was still in Germany and appeared in Liebig's "Annalen" and Leonhard Bronn's "Jahrbuch." Most of his writings while in this country are to be found in the "American Journal of Science," and the proceedings of the American Philosophical Society of the Academy of Natural Sciences; the remainder take the form of official reports to the Geological Survey and Board of Agriculture of Pennsylvania. Of all his works, perhaps those best known are his "Researches on the Ammonia-Cobalt Bases," published jointly with Dr. Wolcott Gibbs; and his reports on the Mineralogy of Pennsylvania and the Mineralogy and Geology of North Carolina.



THE LATE DR. FREDERICK AUGUSTUS GENTH.

The Volatilization of Carbon.—M. Violle communicates to *Comptes Rendus* an article on his experiments to determine the temperature of the electric arc and of the volatilization of carbon. To ascertain the temperature of the electric arc M. Violle experimented with currents varying from 10 ampères at 50 volts up to 400 ampères at 85 volts, and found that the intrinsic brilliancy of the positive carbon was identical in all the arcs. From this he concluded that the temperature of the arc is constant, and is coincident with that of the volatilization of carbon. In order to measure this temperature he used a 400-ampère arc, the end of the positive carbon of which became white hot for a length of one centimeter after five or six minutes. Before commencing the experiment a hollow was made about two centimeters from the tip of the carbon, so that when, owing to the wearing away of the carbon, there only remained a button of the same brilliancy throughout, a slight blow caused the button to break off. A calorimeter was arranged about 10 centimeters away from the arc, and directly the button broke off it fell into the calorimeter. From several experiments of this kind M. Violle calculated the temperature of the arc and of the volatilization of carbon to be 3,500° C.

AN OLD COMSTOCK DODGE.

Written for the Engineering and Mining Journal by Dan de Quille.

In Nevada, in the old flush times of silver mining on the world-famed Comstock lode, was practiced the deviee of instantly imprisoning the set of men who in running a drift or cross-cut chanced to cut into a body of rich ore. In the manufacturing regions of the East we hear of "lock-outs," but in the silver mines "lock-ins" were the events that brought crowds upon the streets and caused Virginia City, standing over the mines, and San Francisco, standing by the sea, 300 miles away over the Sierras, to roar alike with excitement.

No sooner was the cry raised in Virginia City of "Miners shut down in the Savage!" than the wire told the news to the thousands of speculators in San Francisco, and then surging crowds repeated the cry: "Miners shut down in the Savage!" The fact of the miners being imprisoned in a mine was good evidence that a find of ore had been made, but as to the extent and value of the strike all "outsiders" were in the dark, and were kept in the dark until the "insiders" had satisfied themselves in regard to the size and richness of the deposit of ore found, and had either bought or sold stock in the mine to the best advantage. It was for this that the miners were shut down. "Insiders" had all the light it was possible to obtain, while "outsiders" were all in the dark, yet that did not prevent the latter from gambling as recklessly in the shares of the mine as though they had full and reliable information in regard to the amount and richness of the ore found. The outsider gambled against thousands of other outsiders who knew no more than himself the value of the find.

When the cry was that the miners were shut down in the Chollar, the Potosi, the Hale & Norcross, or any other mine, there was always an excitement and such a rush for the stock as to send it booming upward. After the boom was under full headway it was an easy matter for the insiders to either buy or sell without their transactions being discovered. At such times a hint from a true friend on the inside was worth hundreds of thousands of dollars to a speculator on the outside—yes, millions in the time of a great deal.

It may be thought that while on the surfaee surging crowds filled the streets, and all was uproar and excitement, it was rather hard for a party of men to be cut off from all communication with the outer world and imprisoned in the bowels of the earth hundreds of feet below the light of the sun. The fact was that the men liked a shut-down. Although temporarily deprived of their liberty they had a jolly good time of it down in the subterranean regions. Nothing was too good for them. Huge baskets of eatables from the best restaurant in the city were sent down to them, and to wash these good things down they not only had plenty of beer and ale, but also an abundance of the finest champagne. Bedding was sent down to them; they had the daily papers and took the work they had to do in very light doses, all having plenty of time in the cooling-off stations.

Although thus well provided, for the men were utterly cut off from all communication with the outer world. Could one of them have sent a note to a stock dealing friend on the surface it would have been worth a small fortune to both him and the speculating friend. But absolutely nothing was permitted to go to the surfaee from the imprisoned men. A scratch on the bottom of a dinner pail or a seemingly innocent verbal message from a husband to his wife might tell outsiders whether to buy or sell.

To be shut down in a mine was a good thing for poor men when a big "strike" of ore had been made, as the mine owners nearly always generously carried for them a few shares of stock. They also, if requested to do so, bought shares for such of the imprisoned men as had money and were dealing in stocks.

The men were seldom shut down for more than three or four days. As may be imagined, they were all in demand when they were released from the mine and appeared upon the streets. The curbstone brokers and all manner of dealers and dabblers in stocks swarmed about them, all hungry for exact information in regard to the body of ore discovered. The men, however, were heroes for but a few hours, for as soon as they were released outsiders were permitted to enter and inspect the mine in which the find had been made.

It being observed that a "shut-down" of miners always caused a boom in the stock of the mine in which it occurred, it was not long before some companies shut down their men when there was nothing more in sight than an insignificant stringer of low grade ore. A few of these "fake" shut-downs brought the practice into such disrepute that the announcement of the men being shut down in a mine was received on the street with jeers and hoots. That killed the business of imprisoning miners in the lower levels of the Comstock for all time.

In the "bonanza mines" was employed what was called the "secret shift." This was a shift or crew comprised of old and picked men, all staunch friends of Mackay and the other "bonanza kings." When it was expected that a drift or cross-cut would tap a body of ore, the work to be done was placed in the hands of the secret shift. In case of ore being accidentally cut into by the ordinary miners, they were sent to some other part of the mine, and the boss of the secret shift called out his crew and took charge of the development of the find. The boss and all hands belonging to this secret shift were as "mum as oysters" in regard to their work—were a crew of mutes.

The Gruson Works to Be Leased.—It is stated on good authority, says *Industries*, that the celebrated Krupp works at Essen, Germany, are about to absorb Gruson's Iron works at Magdeburg. Gruson's works have made an excellent name as manufacturers of armor plates, quick-firing guns and other war material, and they were keen if not formidable competitors. The terms of the contract of consolidation are that Krupp's will take over Gruson's for a term of 24 years and guarantee the Gruson stockholders a dividend of 9% per annum.

CONDITION OF THE MINING INDUSTRY IN 1892.

Written for the Engineering and Mining Journal by E. T. Dumble.

TEXAS.

The mineral deposits of Texas, which exist in sufficient quantities for profitable working, are as follows: Copper, lead, zinc, iron and manganese, gold and silver. In addition to these bismuth and tin occur, but the extent of the deposits is unknown. Bituminous coal, brown coal, lime, building stones, cement materials, rock salt, gypsum, mineral paints, asphaltum, diatomaceous earth, clays, kaolin, glass sands, etc., marbles, sardonyx, agates, aragonite or Mexican onyx, alabaster, etc.

Precious Metals.—The deposits of ores of the precious metals occurring in connection with those of copper, lead and zinc, are found both in the Central Mineral District (Llano, Mason and adjoining counties), and in Trans-Pecos Texas. In the Central District some prospecting has been done during the year, and numerous finds reported. Some of the materials brought to the Survey laboratory for examination are of fair value and very promising, but no great amount of work has been done on these deposits.

In the Trans-Pecos district, the mines which have been operated for several years have been worked steadily and are yielding as well as ever. These are the Shafter and Cibolo mines, near Shafter, Presidio County, and the Hazel mine, in the Diablo Mountains.

The Presidio Mine was discovered in 1880, and the metal is found in pockets and benches of free milling ore of irregular shapes and sizes, generally isolated from each other, imbedded in a limestone country rock, thus forming chamber deposits. The Cibolo has the same general character, but in addition has an ore body situated in a well defined fissure, and a contact deposit. These mines are both operated by one company, who work their own mill and ship the product as bullion. The mill (ten stamps) averages 30 to 35 tons of ore per day, which yields from 40 to 45 ounces per ton. Their monthly shipments when running on full time are from 30,000 to 40,000 ounces of silver.

The Hazel Mine is located about 10 miles north of Allamore Station on the Texas & Pacific Railroad. The vein, which is nearly perpendicular, has a width of nearly 34 ft. at the top, but below the 500-ft. level it widens to over 40 ft. The walls are a fine grained red sandstone. Three shafts, 575, 375 and 42 ft. deep, respectively, with many hundred feet of cross-cuts and drifts, have opened the mine up very well, but very little stoping has been done. Only the richer portion of the ores are shipped.

Besides these mines in operation there are several other smaller mines in the district, among which may be mentioned the Bonanza and Alice Ray, in the Quitman Mountains, and other equally promising but undeveloped prospects. Small shipments may have been made from some of these, but the amount would not be much.

Iron.—The iron ores, which are of excellent quality, are widely distributed. The ores of East Texas occurring in connection with the tertiary deposits, belong to the hydrated oxides classed as limonites. These have been mined on a small scale for local consumption in the iron furnaces at Rusk, New Birmingham and Jefferson. The old Alcalde furnace reports having used 11,000 tons of ore to October 31st. The production of pig iron during the last eleven years, is as follows:

	Tons		Tons.		Tons.
1881	3,000	1885	1,843	1889	4,544
1882	1,321	1886	3,250	1890	10,865
1883	2,381	1887	4,383	1891	20,902
1884	5,140	1888	6,587		

Lack of an adequate fuel supply other than charcoal has up to this time prevented the satisfactory development of the iron industry in this region.

Our investigations show an iron bearing area in this district of 1,000 square miles. The average thickness of the deposit is not less than 2 ft. The quality of the ore is good, the iron (metallic) varying from 40% to 57% with low percentages of phosphorus and sulphur.

The ores of the Central mineral region comprise magnetites, hematites and limonites. The quality of these deposits is already known from our published analyses of them. During this year some work has been done at two localities. The Iron Mountain Mine made a trial shipment of three cars of magnetic ore to Birmingham, Ala., which was favorably reported on, but the mine is such a distance from the railroad that the ore cannot be shipped profitably under present conditions. Another company is opening up the deposit on the Babyhead belt, in the neighborhood of Bessemer, on Little Llano Creek, and as they are very near the railroad, will be able to commence shipping as soon as the mine is ready to work. No work has been done on the iron ores of Trans-Pecos Texas.

Coal.—The past year shows a slight improvement in the mining of bituminous coal; some of the old mines having enlarged their output and one or two new ones having been opened. The mines of the Texas & Pacific Coal Co., near Thurber, have been greatly enlarged, and they have now a capacity of 2,000 tons per day. The mines in Wise County and near Bowie are also being operated. Lack of proper transportation facilities is, however, a great hindrance to the development of these mines. In the vicinity of Thurber, at the Adair Mine, a shaft has been put down, but I have heard of no shipments of coal. In Coleman County, Mr. Gibson has opened the upper of the two seams and is making preparation for shipment. At Eagle Pass the Hartz mine has been operated during the year, and Mr. J. Owen has made a second opening on the same seam on the line of the Galveston, Harrisburg & San Antonio Railway at McKenzie's. I have no record of shipment from the mine so far. These are on the Texas portion of the Fuente coal basin, which is being operated much more extensively on the west side of the Rio Grande.

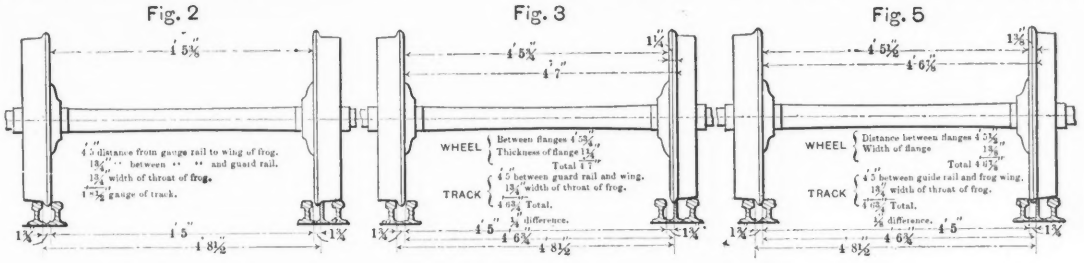
Brown Coal.—The mining of brown coal received a fresh impetus from my investigations and reports on the utilization of lignites, and is now being prosecuted in several localities. At Alba the mining is being carried on very slowly, coal only being taken out on occasional orders. At Rockdale two mines are in active operation, both of which are

shipping their output. A mine has lately been opened between Elgin and McDale, the brown coal from which is sold in Austin and San Antonio. The Lytle and Kirkwood mines in Atascosa and Medina counties, which have been in operation several years, find ready market for all they can mine in San Antonio, where it is used in breweries, ice factories, etc. The Laredo mine has been worked for some years, but I have no record of its output for the present season. The other mines have an output of about 25,000 tons.

Lime.—The principal source of lime is found in the limestones of the cretaceous, some of which are especially adapted for its manuture, and furnish most of the lime used in the State.

Building Stone.—The output of building stone has been mainly from the granite quarries of Burnet County, and the red sandstone, which is being worked near Quito, in Ward County.

Salt.—Salt is being made in quantities at Colorado Springs, in Mitchell County, and at Wills Point, Van Zandt County. While the source of supply at both places is in great beds of rock salt, no mining is done, but water is admitted to the bed, saturated, pumped to the surface, and the salt produced by evaporation.



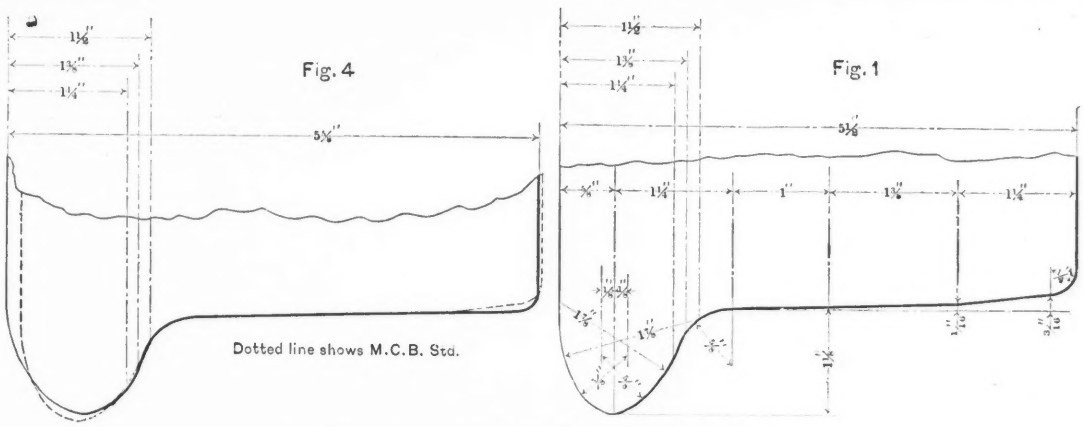
WHEEL FLANGES AND GAUGES.

Gypsum.—Only one plant in the State, so far as I am aware, is doing anything with the immense gypsum deposits of the Permian. At Quanah there is a factory manufacturing plaster of paris and ground plaster. This factory has been in operation the greater part of the year. The workings in the mineral paints, asphaltum, diatomaceous earths, clay, kaolin, glass sand, etc., do not amount to anything as yet, and the same is true of all the ornamental stones.

THE FLANGES OF RAILROAD WHEELS.*

By G. W. Rhode.

The standard distance between the backs of the flanges of railroad car wheels is 4 ft. 5⅜ in., but in fitting the wheels on the axles a variation is allowed of ⅛ in. each way, so that the standard distance is allowed to vary from 4 ft. 5¼ in. to 4 ft. 5½ in. These standards were fixed by the Master Car Builders' Association, in 1885, when in unison with the Railroad Master Mechanics' Association they decided on the shape of the flange as shown in Fig. 1.



STANDARD TREADS AND FLANGES FOR CAR WHEELS.

It was decided in 1887 to increase the limits, so that now car wheels and axles may be rejected if the distance between the backs of the flanges is less than 4 ft. 5 in. or greater than 4 ft. 5¾ in., or if the distance between the outsides of the wheels is less than 5 ft. 5 in. The reason for this latitude is that by this means a common standard is obtained for both the 4 ft. 8½ in. and 4 ft. 9 in. gauges. The minimum limit, 4 ft. 5 in., is fixed because this distance is the distance between the guard rail and the wing of the frog in both gauges. This is shown in Fig. 2, where the 4 ft. 8½ in. gauge is illustrated. In this case the space between the gauge and the guard rail is 1¾ in. and a similar space between the frog point and the wing of the frog; while in the 4 ft. 9 in. gauge the same spaces are made 2 in. wide, Any wheels measuring less than 4 ft. 5 in. between flanges would have a tendency either to mount the guard rail or by crowding their way through to bring about stresses likely to produce broken axles. This minimum dimension thus enables the same wheels and axles to run on both gauges. The maximum dimension, 4 ft. 5¾ in., is also arranged with the same object, but in my own opinion this dimension is too great and a mistake was made when 4 ft. 5½ in. was exceeded. In Fig. 3 it will be seen that the maximum between flanges is 4 ft. 5¾ in.; thickness of wheel flange, 1¼ in.; total, 4 ft. 7 in. With a 4 ft. 8½ in. track, the distance from guard rail to wing of frog is 4 ft. 5 in.; distance between wing of frog and frog point, 1¾ in.; total, 4 ft. 6¾ in. This is not in keeping with good practice, for it allows a wheel mounted to the maximum limit to strike a frog point on a 4 ft. 8½ in. track with a full ¼-in. of wheel, and thus it results that frog points are difficult to maintain on both gauges. Not only does it ruin the frogs, but the wheels will also occasionally take the wrong side of the frog points, and so derail the train. When derailing accidents happen, the track and the wheels are so shattered and distorted that there is no evidence as to the cause. Otherwise, in my opinion, this excessive maximum would soon be found to be the source of danger.

There is another point that I should like to place before the master car builders of this country, as I believe it to contain a decided element of danger which will increase as times go on unless some official notice is taken of it. This is the looseness of specifications as to the thickness of the flange. Many car wheel makers are casting the flanges too broad, and at present very few railroads pay any attention to the testing of the thickness of the flanges supplied to them. The Master Car Builders' standard, as shown in Fig. 1, fixes the width at 1¼ in., and some people, when measuring it, would read it 1⅜ in. But there is no rule laid down as to the maximum limit. We have found it necessary to adopt standard maximum and mimimum gauges, so that we can measure every flange that comes to the Chicago, Burlington & Quincy Railroad. The use of these two gauges makes it possible to use a wheel gauge, which prevents the acceptance of any thick flanges.

As an example of the evil effects of a thick flange, I quote a case recently before me, when a wheel with a flange, as in Fig. 4, was sent for acceptance. Where, in the standard flange, the thickness is 1¼ in., or, as some would reckon it, 1⅜, this flange in question measured 1⅜ in. or 1½ in. The standard wheel of maximum measurement between flanges (Fig. 5) has the following dimensions: Distance between flanges, 4 ft. 5½ in.; width of each flange, 1¼ in.; distance over flanges, 4 ft. 8 in. This allows ½ in. play on a 4 ft. 8½ gauge. With a 1⅜ in. flange, the distance over flanges is 4 ft. 8¼, which allows only ¼-in. play on a 4 ft. 8½-in. track. If we choose to reckon the flange in question 1½ in. thick, no play is left on a 4 ft. 8½-in. track. Now let us see what will happen at frog points on the 4 ft. 8½-in. track, reckoning the width of the flange 1⅜ in. The distance between wheel flanges is 4 ft. 5½ in., the width of flange is 1⅜; total, 4 ft. 6⅞ in. The distance from guard rail and wing of frog is 4 ft. 5 in.; wing of frog to frog point, 1¾ in.; total, 4 ft. 6¾ in. The flange would therefore not clear the frog points by ⅛ in.; and if the width of the flange is 1½ in. it will not clear the frog points by ¼ in. This case relates to the maximum standard width between flanges, 4 ft. 5½ in. According to the present rule that 4 ft. 5¾ in. is to be accepted, such wheels with flanges 1⅜ in. thick would not clear the frog points by ¾ in.

I therefore propose that this maximum limit of 4 ft. 5¾ in. be abolished, and that a maximum breadth of flange be fixed.

* Abstract of paper read before the Western Railway Club, January 17th.

Compound Telephone Wires.—For a year or more bronze has been used for telephone and telegraph wires with success, and in damp districts, such as the sea coast or where fog prevails, a compound wire consisting of a steel core with an outside layer of copper has been employed. Dr. Elsässer, of Berlin, states that a new kind of telephone wire is being experimented with in Germany. This wire consists of an aluminum bronze core with a copper-bronze envelope. It is said to have a low electrical existence and is of great tensile strength.

CONDITION OF THE MINING INDUSTRY IN 1892.

Written for the Engineering and Mining Journal by M. H. Joseph.

NEVADA.

Owing to the continued low price of silver, mining in Nevada is paralyzed. On the Comstock there are less than 70 stamps running, instead of the usual 350. There never was a period since its organization when Eureka County was so prostrated. There are not over 140 miners at work for day's wages in the entire county, and less than 200 are leasing, tributing, and prospecting on their own account. The County Assessor's books show that for the year ending September 30th, 1892, the actual profits were $117,627 more than for the corresponding year previous; which may be accounted for by the employment of a smaller number of men on day's pay during 1892. For the year ending September 30th, 1891, the total production of ore in the county was 27,664 dry tons, which sold for $904,523.27, giving an average value of $32.70 per ton. The total cost of extraction, freight, and reduction amounted to $781,807.39—leaving a net profit of $122,715.80. The total production of ore for the year ending September 30th, 1892, was 24,533 tons, which sold for $790,714.22, giving an average value of $22.43 per ton. The total cost of extraction, freight, and reduction was $550,471.36, and the net profits $240,342.86. The production of gold as compared with silver averaged (assay values) about 30%. The lead product for the year ending September 30th, 1892, did not exceed 5,000 tons. The prospects for the year, 1893, are not at all encouraging, with silver and lead both ruling at low figures in the market, but if the prices of those metals are to rise in the market, this is a propitious time for the purchase and development of mines. A limitation in the production of silver must necessarily cause a corresponding limitation of both gold and lead in Nevada, and particularly in Eureka County. Smelting and refining operations in Eureka County having ceased indefinitely, dry ores are not profitable to mine except in cases where the grades are high. The great discouragement arising from the low price of silver, followed by the decline in the lead market, has had such a demoralizing effect that miners have become tired of prospecting and are seeking new fields and other occupations.

The leading mines of Eureka County, according to the Assessor's books, have yielded as follows:

For the six months ending March 31st, 1892, the Cortez mines (Limited), yielded 3,747 tons of ore, which realized $244,441.58, being nearly one-third of the entire value of the production of the county for the year ending September 30th, 1892. The average value per ton of the Cortez ore was $65.24. On account of the low price of silver the company last spring suspended the extraction of ore. At present it employs only 10 or 12 men, who are driving a tunnel for general development and another for ventilation. It is said, however, that preparations are being made for a resumption of work. The Diamond mine yielded during the year ending September 30th, 1892, 8,996⅜ tons of ore, which realized $188,100.33; equal to $20.90 per ton. The Eureka Consolidated mine and furnace products for the same period were 6,226¾ tons of ore, which realized $119,288.63, equal to $19.16 per ton. The Richmond Company during the same period sold ore and refining products amounting to 1,513½ tons, realizing $40,074.37, or $26.48 per ton.

Esmeralda, like all other counties in the state, is in a very depressed condition, and the outlook is by no means encouraging. Only one company, the Mount Diablo, in Columbus District, is running, with 75 men at work in the mine and 25 in the mill.

The Phoenix Company (formerly the Indian Queen), of Oneola District, ran during a part of last summer with 18 men and shipped about 100 carloads of ore to different works, but the force has been reduced to 7 men.

St. Louis District, 100 miles south of Candelaria, has been the only district newly opened up during the year, and only 25 men are employed there. The ore carries gold, silver, and lead, several carloads of which were shipped to the Selby Works, near San Francisco, and netted the owners about 300 ounces. One carload of ten tons shipped by Many & Welsh netted $550. This is a promising district.

The Tule Canyon placer diggings have yielded about $50,000. Sixty men, half of them Chinese, are employed.

In Hawthorne, Silver Peak, Aurora, Garfield, and Marietta districts the outlook is not bright, and there is nothing of note to mention. In one or two cases "strikes" have been reported, but are not generally regarded as especially worth mention. Plants for the treatment of tailings by the cyanide process have been erected in Pine Grove and Silver Peak districts, in the extreme north and south ends of the county, and if successful, other plants will doubtless be erected, as there are many thousand tons of tailings available in the county. To sum up, there will be little prospect of any particular stir in Esmeralda County while silver remains so low, as even gold mining in silver-producing sections commands but little encouragement or attention.

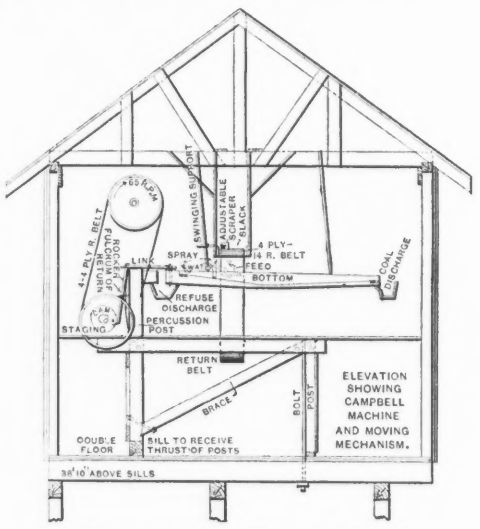
Up to November 30th, 1892, for eight months, the Eureka & Palisade Railroad Company reported shipments of ore as follows: From Eureka County, 13,302 tons; White Pine County, 1,857 tons, and Nye County, 78½ tons. The Nye County products were very rich, and came from Morey, Reveille, and Hot Creek districts. No information from the Belmont or the Barcelona district is at present available.

Launch of the Harbor-Defense Ram "Katahdin."—This ram, built upon the design furnished by Admiral Ammen, was launched at Bath, Me., on February 4th. The ram is provided with a number of tanks, which when filled with air give her a convenient free-board for coasting, but when filled with water depress the vessel so that only the turtle-back can be seen. Her machinery consists of two sets of horizontal triple-expansion engines. The estimated maximum horse power is 4,800 and she has two screw propellers. The vessel must attain a speed of 17 knots per hour to be accepted.

PRACTICAL RESULTS FROM THE CAMPBELL COAL WASHER.

Written for the Engineering and Mining Journal by William B. Phillips.

After experimenting for more than a year with an apparatus for washing coal, Prof. A. C. Campbell, of the Vanderbilt University, Nashville, Tenn., finally decided upon the form herewith illustrated. His experiments were conducted at the works of the St. Bernard Coal Company, Earlington, Ky., and much of the success attained is due to the indefatigable perseverance of Mr. John B. Atkinson, vice-president, and Mr. B. W. Robinson, mining engineer. A description of the plant was given by Frank Cawley, Mech. Eng., then with the St. Bernard Company, in the Eighth Annual Report of the Inspector of Mines for Kentucky, 1891. Mr. Cawley also contributed no little to the mechanical construction of the machine. Plates 1 and 2 are from drawings by Mr. Cawley. Plate 3 is a working drawing specially prepared for this paper by Mr. Robinson. Mr. Cawley's description of the machine is herewith condensed: The machine or table is 8 or 10 ft. long, the efficiency appearing to be about the same between the two lengths. The width is 30 in. on the working surface. The bottom is made of No. 20 galvanized iron, and the sides of ash or oak. Above the bottom is another sheet of iron* of same size and gauge, which is called the "false bottom." This is perforated with peculiarly shaped slots, and is held about ¼ in. from the first or true bottom by strips. These bottoms have a peculiar curvature, which by experiment has been found necessary to give the best efficiency. The table is suspended on hangers from above which allow it to move endwise through from 3 to 6 in., at the end of which stroke it strikes a percussion post, firmly braced to receive the blow, and so arranged that the strains are all transmitted vertically to the building. Water is supplied to the table between its bottoms and by two spray pipes, one at the head or percussion end, and the other just in front of the coal feed, 2½ ft. from the head. An inch pipe under from 10 to 20 ft. head will supply the water required by one table.



CAMPBELL COAL WASHER.—FIG. 2.

Motion is given to these tables by a combination of cams, rockers and levers of a peculiar nature. The required motion is to move the table back from the percussion post with a slow and gentle movement, and return it with a movement slow at first, but increasing rapidly in velocity until the post is reached. The principle on which the table operates is that during the slow or backward portion of the stroke the coal that is on the table is slightly moved and jarred, and the impurities, which are heavier than the coal, are thus caused to sink. On the return stroke all the work of entirely separating the impurities is done, for it is the rapid forward movement that carried off the impurities, while the coal is nearly stationary, being, however, finally carried toward the "tail" or coal discharge end by a distance equal to the length of the stroke. The impurities lie underneath the coal, and having gained momentum are carried toward the head, stroke by stroke, until finally discharged. When the table is fairly at work each stroke discharges coal over the tail and dirt over the head. Thus far Mr. Cawley.

In my own experience with the Campbell washer, which is based on about 9,000 tons of coal, I found that each table would wash from 40 to 45 tons a day, consuming about ½ a horse power in energy, and requiring 300 galls. of water per ton of coal washed, 200 for washing and 100 for sluicing. The cost of washing varied from 2 to 3c. per ton of coal. One attendant readily manages six machines, and the total cost of washing, including power and water, is less than 3c. per ton washed coal; repairs of machine very light, consisting principally of renewals of cheap wooden false bottoms.

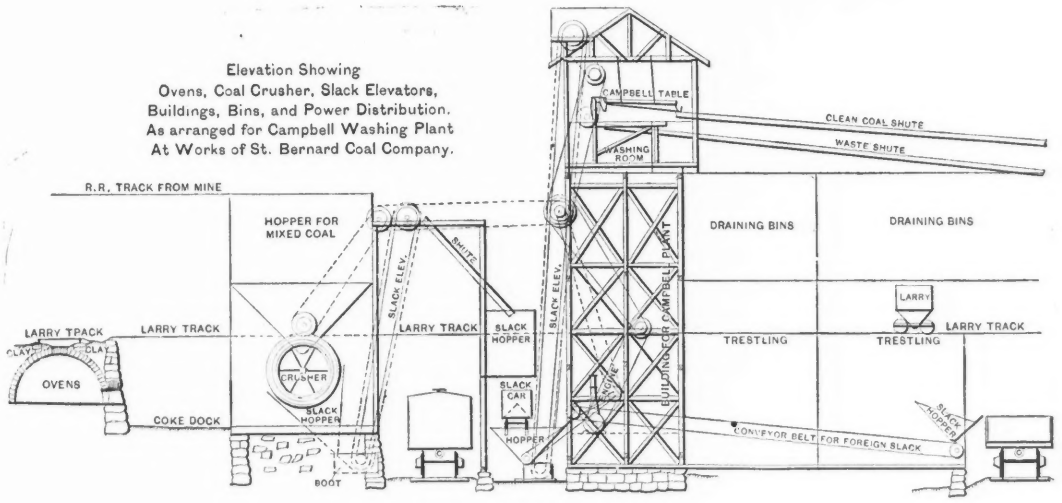
During the greater part of the time the operations were restricted to "slack" coal, i. e., coal passing a ¾-in. screen. The average fineness of this coal was as follows: Left on a ½-in. screen, 26%; left on a ¼-in. screen, 33%; left on a ⅛-in. screen, 17%; passing ⅛-in. screen, 24%.

The average fineness after washing was as follows: Left on a ½-in. screen, 22%; left on a ¼-in. screen, 35%; left on a ⅛-in. screen, 21%; passing a ⅛-in. screen, 22%.

The average amount of dirt in the unwashed coal was 12·71%,

*Replaced in the present machine by a wooden bottom made of oak strip roughly sawed, each strip being 30 in. long by 4½ in. wide.

which in the washed coal became 2·73%, or a reduction of 78·74%. The average amount of coal passing over the head with the dirt was 1·64%. The sulphur was reduced from 4·20% to 3·18%, or 24·27%, and the ash from 10·73% to 8·56%, or 20·24%. Of sulphur estimations there were made 84, of ash 96, of dirt in washed coal 35, and of coal in dirt discharged 8. So that the results obtained represent not only a large amount of coal, but a considerable number of analyses as well. During most of the time the above observations were made, considerable quantities of very fine and dirty slack (carrying 25% dirt) were used in the washer, either mixed with coarser slack or separately. Since that time the use of this fine slack has been discontinued, and results show much less dirt left in the washed coal; 12 examinations showing but an average of 1·56% dirt left in coal, with 0·99% coal lost in final dirt.



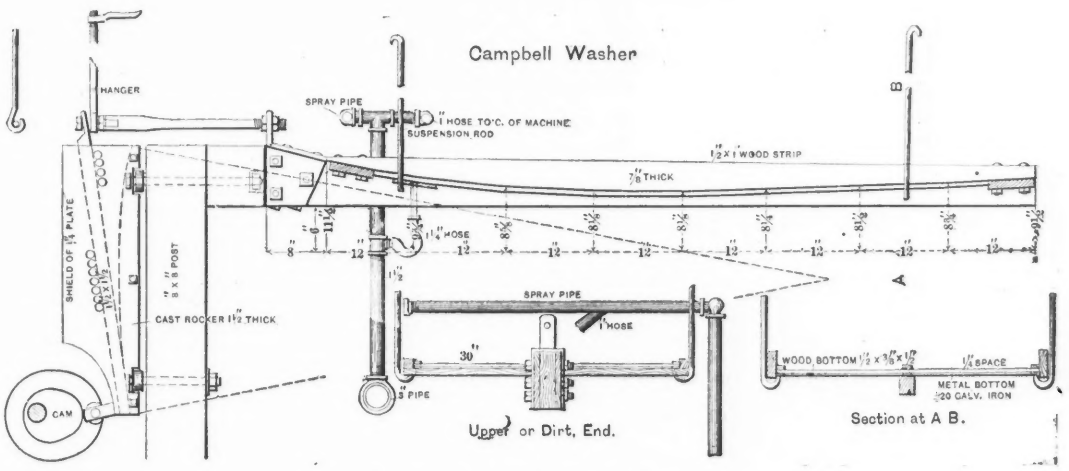
CAMPBELL COAL WASHER.—FIG. 1.

The coals used, No. 9 and No. 11, of the Kentucky series, are white ash, free-burning coals, excellent for steam and domestic purposes, but carrying too much ash and sulphur for the production of high grade blast furnace coke. They make a firm, long-fingered coke of good structure, and the use of it is extending, shipments to Kansas City, St. Louis and El Paso for lead smelting and to Chicago and the Northwest for use in bakeries and stoves being constantly on the increase. If the coke could be brought to contain not over 12% ash nor over 2·25% sulphur, it would doubtless be used by some blast furnace men, especially where local ores contain sufficient manganese to aid in the elimination of the sulphur.

The physical condition of the sulphur in the coal appears to influence its reduction in a marked degree, the more finely divided it is the more difficult of separation. The difference between coals, even from the same field, in this respect is a remarkable circumstance, and one that has always to be considered when the erection of a washing plant is contemplated. The sulphur in some coals is in a state of most minute subdivision, and will defy almost every attempt to get rid of it. I have before me now the analysis of a piece of soft coal of a beautiful jet black color, conchoidal fracture and fatty appearance. There is no visible sign of sulphur, and yet it is present to the extent of 3·0%, with ash 7·40%. Along side of it is a piece of almost identical appearance, and yet it contains only 0·71% sulphur, and 1·40% ash. It is not unusual for some coals of the very best appearance to contain over 5% of sulphur and 8 to 10% ash.

It is in dealing with such material that the Campbell, in common with all other coal washing machines, has the greatest difficulty. It is not so much the removal of the visible sulphur that concerns the practical coal washers, as of the invisible—the sulphur that is so intimately commingled with the coal as to afford no point of attack.

The Campbell is a good machine, in the saving of coal an excellent machine, but neither it nor any of its close rivals can be expected to eliminate the very finely divided sulphur under ordinary conditions. Possibly the Luehrig washer, with its feldspar bed for sludge, will handle this class of stuff to better advantage, but the Luehrig does not appear to save coal as well as the Campbell. As a coal-saver the Campbell is to be recommended, and the simplicity of its construction and operation is a point also very much in its favor. At present the only place where it may be seen in daily operation is at the works of the St. Bernard Coal Company, Earlington, Hopkins County, Ky. Six tables are working there, each washing about 40 tons of slack per day, all of which is coked in bee-hive ovens.



CAMPBELL COAL WASHER.—FIG. 3.

The machine has also been tried, as a concentrator, in the Lake copper districts, and the results of the trial will be given in an early issue of this journal.

THE RATE OF EXPLOSION IN GASES.*

By Harold B. Dixon M. A., F. R. S.

1. Berthelot's measurements of the rates of explosion of a number of gaseous mixtures have been confirmed. The rate of the explosion wave for each mixture is constant. It is independent of the diameter of the tube above a certain limit.

2. The rate is not absolutely independent of the initial temperature and pressure of the gases. With rise of temperature the rate falls; with rise of pressure the rate increases; but above a certain crucial point variations in pressure appear to have no effect.

3. In the explosion of carbonic oxide and oxygen in a long tube, the presence of steam has a marked effect on the rate. From measurements of the rate of explosion with different quantities of steam, the conclusion is drawn that at the high temperature of the explosion wave, as well as in ordinary combustion, the oxidation of the carbonic oxide is effected by the interaction of the steam.

4. Inert gases are found to retard the explosion wave according to their volume and density. Within wide limits an excess of one of the combustible gases has the same retarding effect as an inert gas (of the same volume and density) which can take no part in the reaction.

* Abstract of the Bakerian Lecture read before the Royal Society, January 19th 1893. Through *Chemical News*.

5. Measurements of the rate of explosion can be employed for determining the course of some chemical changes.

In the explosion of a volatile carbon compound with oxygen, the gaseous carbon appears to burn first to carbonic oxide, and afterward, if oxygen is present in excess, the carbonic oxide first formed burns to carbonic acid.

6. The theory proposed by Berthelot—that in the explosion wave the flame travels at the mean velocity of the products of combustion—although in agreement with the rates observed in a certain number of cases, does not account for the velocities found in other gaseous mixtures.

7. It seems probable that in the explosion wave—(1) The gases are heated at constant volume, and not at constant pressure; (2) Each layer of gas is raised in temperature before being burnt; (3) The wave is propagated not only by the movements of the burnt molecules, but also by those of the heated but yet unburnt molecules; (4) When the permanent volume of the gases is changed in the chemical reaction, an alteration of temperature is thereby caused which affects the velocity of the wave.

8. In a gas, of the mean density and temperature calculated on these assumptions, a sound wave would travel at a velocity which nearly agrees with the observed rate of explosion in those cases where the products of combustion are perfect gases.

9. With mixtures in which steam is formed, the rate of explosion falls below the calculated rate of the sound wave. But when such mixtures are largely diluted with an inert gas, the calculated and found velocities coincide. It seems reasonable to suppose that at the higher temperatures the lowering of the rate of explosion is brought about by the dissociation of the steam, or by an increase in its specific heat, or by both these causes.

10. The propagation of the explosion wave in gases must be accompanied by a very high pressure lasting for a very short time. The experiments of MM. Mallard and Le Chatelier, as well as the author's, show the presence of these fugitive pressures. It is possible that data for calculating the pressures produced may be derived from a knowledge of the densities of the unburnt gases and of their rates of explosion.

WESTERN NOTES FOR THE INSTRUCTION OF ASSAYERS AND CHEMISTS.*

By Stuart Cr asdale.

The methods in chemical analysis and assaying are so different in the Western States that Eastern chemists usually find that they have to revise their education when they come West, and young unemployed chemists, who have only had an Eastern or European education, find great difficulty in obtaining work. This article has been prepared with the hope of giving useful information concerning Western methods, both to the experienced chemist and to the student.

With a few exceptions, the methods used in the West are much more rapid, and time is an important factor in all determinations. Volumetric methods are used whenever they are practicable. Separate samples are weighed out for nearly every determination, so that as many as possible may be started at once. Two grammes, one gramme, or one-half gramme, as the case may require, are taken for analysis to avoid unnecessary calculation. Standard solutions are made so that 1 cc. equals 1%, or 0·5%. All these things, though small in themselves, mean a wonderful saving of time when a large number of determinations are to be made.

The work varies with the metallurgical process in use. It consists of the assay and complete or partial analysis of the raw materials and the metallurgical products. The raw materials consist of silicious, calcareous and barytic ores, as well as pyrites and oxidized iron and manganese ores, carrying gold, silver, lead and copper. The determinations to be made include the assays for gold, silver, lead and copper, and the wet determinations for lead, copper, silica, barium sulphate, lime, magnesia, iron, zinc, manganese, sulphur, arsenic and antimony. The metallurgical products consist of gold, silver and lead bullion, sulphides and lead carbonate precipitates from leaching works, copper and iron mattes, slag and flue dust. The principal determinations to be made on these, besides the assays, are lead, copper and sulphur, on all but the last two. The analysis of the last two will be governed by the constituents in the furnace charge. Besides the above there are numerous determinations to be made on the by-products that are constantly forming around leaching and amalgamation mills or a smelter; also, analyses of salt, furnace gas, coal, crude sulphur, water and occasionally qualitative tests and quantitative determinations on ore samples for platinum, tin, bismuth and other unexpected metals. Western ores seem to contain nearly everything. The methods used for the above determinations will be given in subsequent paragraphs.

The hours for work in a Western laboratory are usually from 8 a. m. to 4 p. m. Samples brought in after 2 p. m. are not started until the next morning, unless they are of special importance. Everything is done systematically; routine work usually occupies the morning and extra work is finished after that. When the work is done, the chemist is free. Some companies require a full day, from 8 a. m. to 6 p. m., whether there be much or little to do. Sunday work is universal, but in most places it is made as light as possible and can be finished by noon. In other places it is the same as any other day. The regular salary in Aspen for a chemist and assayer is $150 a month. Assistants and assayers, who have learned the business from a position as "helper" in an assay office, receive $125 a month. Chief chemists and assayers, having complete charge of the assay office and laboratory, receive $175 to $200 a month., Board and lodging at a private house is $40 a month. Table board is $8 a week, although in a few places it may be had for $6. Furnished rooms are $10 to $15 a month. Perhaps comparing these with Eastern prices will show more than anything else: Eastern Pennsylvania.—12 months' salary, at $60, $720; 52 weeks' board and lodging, at $5, $260; balance, $460. Western Colorado.—12 months' salary, at $150, $1,800; 12 months' board and lodging, at $40, $480; balance, $1,320. From each of the above statements must be deducted in about the same ratio the cost of clothes, laundry and incidentals. Since these will vary with different persons, the remainder of the calculation must be left for the reader. In all probability there will still be a balance in favor of the West. The salaries in Leadville, Colo., and in Butte, Mont., are practically the same as those just mentioned, while the cost of living is somewhat less. In Denver and Pueblo, Colo., and further east, on the plains, the living expenses are $25 to $50 a month less and the salaries are correspondingly decreased. The above cities include the principal mining and smelting centers in this section of the country and the salaries are practically the same in smaller camps.

As before stated, the essential feature in a chemist's knowledge for Western work is that of assaying. This subject cannot be more fully described than has been done in our best text books, but there are many little points on temperature, etc., that are of the highest importance, and yet the only way to learn them is to see the actual working of a furnace. The difference between an assay run in a "hot" furnace and one run in a "cold" furnace may be several ounces of silver to the ton, and yet, in spite of the fact that the proper temperature is described in the text books, how many students or inexperienced instructors will get it right?

The fluxing of ores will vary somewhat with the different mining camps. In most cases a plain scorification is used for all control work and specimen assays, while in some places it is customary to use the crucible assay, especially for the latter.

Perhaps the most troublesome ores in the United States to assay and analyze are the silver ores from Aspen. The gangue may be either limestone, dolomite, baryta or silica, carrying lead, zinc, iron and copper, wholly or partially combined as sulphide. Such ores not only necessitate a large number of wet determinations to make the proper ore mixtures, but even the scorification assay requires extra flux to get all the silver present.

Besides the assay of all the ore bought, there is considerable work to do with the furnace and mill products. Tailings, slags and other low grade material are assayed in crucibles, using one-half assay ton for each assay, while the salable products are made by scorification, the loss of silver in the slag and cupel being determined by an assay of the same, or by running a check assay with the original.

The number of assays made in a day will vary, of course, as the samples are received. All things being favorable, 125 to 150 assays are considered a day's work for one man.

Many of our Western cities have omitted the gas epoch, and start with electric-light plants, so that a convenient form of fuel for the laboratory is not available, even if the smelter or mill is fortunate enough to be located within reach of the city luxuries. Isolated gas plants are expensive to build and keep running in many parts of the West. Consequently a cook-stove or a brick sand-bath heated with coal or wood, or an iron plate heated with oil-stoves, serve for all evaporations. Alcohol lamps are used for glass-blowing, etc., and since the assay furnace usually precedes, or, at least, accompanies the laboratory, all fusions and ignitions are made in the muffle. Fusions are made in platinum. Ignitions are made in porcelain crucibles, annealing cups, or scorifiers, and the residue is brushed out carefully and weighed by itself.

The methods used for the various determinations may be briefly described as follows:

Silica and Barium Sulphate.—The ore is treated with strong hydrochloric acid or aqua regia or with strong nitric acid and a few drops of hydrochloric acid (if it is a sulphide) evaporated to dryness, taken up with strong hydrochloric acid, boiled, diluted, filtered, washed, first with hot water, then with a little hot ammonia acetate to remove any sulphate of lead that may be present, and finally with hot water, after which it is ignited and weighed. In the absence of barium sulphate this insoluble residue passes under the name of silica. If sulphate of barium is present the total weight is noted and the residue is fused with mixed carbonates in a platinum crucible. The fused mass is then digested with hot water which dissolves the alkaline silicates, leaving the barium carbonate insoluble. This is filtered off, dissolved in hydrochloric acid, and the barium reprecipitated with sulphuric acid. The weight of the barium sulphate thus produced gives the percentage of that compound in the ore and that weight substracted from the total weight previously obtained gives the percentage of silica. In slags (which are chilled by modern smelter practice) the silica is determined by treatment with hydrochloric acid alone in the usual manner. The barium, which in this case was combined with the silica and has passed into solution, may be determined from the filtrate in the usual manner; or, more conveniently, by adding a little sulphuric acid to the sample which is to be used for the lime determination and throwing the barium down with the silica. The combined weight less the weight of the silica previously obtained will give the amount of barium sulphate. This is calculated to BaO.

Iron.—This is usually determined in the filtrate from the insoluble residue in ores or in the filtrate from silica in slags. Both the permanganate and the bichromate methods are used without any modification; the latter is more popular, owing to its greater rapidity.

Lime.—A separate sample of the ore is dissolved in hydrochloric acid, and a little potassium chlorate is added to oxidize the iron. The solution is then diluted, and the insoluble residue filtered off; ammonia is added to the filtrate until alkaline, and then it is acidified with a strong solution of oxalic acid. Ammonia is added a second time until alkaline, or until a brown color is produced, and the solution is again acidified with oxalic acid, and heated to boiling. The oxalate of lime is then filtered off and washed until free from soluble oxalates and oxalic acid. The filter and precipitate are placed in a beaker containing hot dilute sulphuric acid (1:20) and the solution is at once titrated with standard potassium permanganate solution until a pink color is produced. One half the value in terms of Iron=CaO. To insure good results the iron must be in a ferric state and the oxalate of lime must

* Abstract of an article in the *Journal of Analytical and Applied Chemistry.*

be thoroughly washed. With these precautions it is not difficult to get closely agreeing results. In the presence of much lead the iron and lead are precipitated with ammonia and the lime is precipitated from the filtrate with ammonium oxalate and titrated as described above.

In slags the original solution is evaporated to dryness to separate the silica and the residue is taken up with hydrochloric acid. (If barium is to be determined, a few drops of sulphuric acid are added and the barium sulphate is filtered off and weighed with the silica.) The remainder of the analysis is the same as in that used for ores.

Some chemists prefer to ignite the oxalate of lime precipitate in the muffle, but it requires a high heat and is not so satisfactory as the volumetric method.

Magnesia.—When required, the determination is made from the alkaline filtrate of a lime determination in the usual manner. Sometimes the process is shortened by weighing out a new sample and after dissolving in hydrochloric acid and oxidizing with chlorate of potash, the iron and lime are precipitated together by means of ammonia and ammonium oxalate and filtered off. The magnesia is then determined as phosphate in the filtrate.

Zinc.—Von Schulz and Low's method is recognized as the standard. This with other technical methods has been described in the Engineering and Mining Journal, Vol. 54, p. 178.

Lead.—Lead in ore is always bought and sold on a fire assay, but wet assays are frequently made. None of the wet methods, however, seem to meet with universal approval, although a number have been proposed, each one claiming the essential features, accuracy, rapidity, and capacity of being used for all lead-bearing products. The method most commonly used is the bichromate method. The ore is treated with nitric acid and evaporated down with sulphuric to drive off the excess of nitric. The solution is then diluted and the insoluble residue containing sulphate of lead is filtered off and digested in hot ammonium acetate. This dissolves the sulphate of lead and after diluting it is titrated with a standard solution of potassium bichromate. The end reaction is determined by bringing a drop of the solution in contact with a drop of neutral silver nitrate solution on a porcelain plate, or better on filter paper. A red coloration shows excess of bichromate. Instead of converting the lead into sulphate the nitrate may be neutralized with ammonia or carbonate of ammonia, excess of sodium acetate added, and the solution titrated as above described. (With low leads this method will be from one to three per cent. higher than the fire assay, but with high leads it does not come up to the fire assay.) Another method consists in precipitating the lead as carbonate, dissolving in a measured quantity of normal nitric acid, adding neutral sulphate of soda solution, and titrating the excess of acid by standard alkali solution. The lead solution should be free from other metals.

Among the other methods which may be mentioned are Von Schulz and Low's (see Engineering and Mining Journal, Vol. 53, p. 641), now used by the Pennsylvania Lead Company, in which the lead sulphate is dissolved in ammonium chloride and reprecipitated by aluminum foil as metallic lead, and is weighed as such; Knight's method, in which the lead is thrown down as an oxalate and titrated (like lime) with potassium permanganate; Hawkins' bichromate method, in which the standard bichromate solution is added in excess. A measured quantity of standard ferrous ammonium sulphate is then added, and the excess of the latter is titrated back with bichromate, using potassium ferricyanide as an indicator; and Gallagher's method, in which the sulphate of lead is digested with strong sodium carbonate solution, and the precipitated carbonate, after washing, is dissolved in acetic acid and titrated with standard potassium ferrocyanide solution, using uranium acetate for an indicator as in zinc determinations. Still another method has been suggested, but so far the details have not been worked out. It consists in dissolving the sulphate of lead in sodium thiosulphate and titrating with standard sodium carbonate solution, using methyl orange as an indicator. In presence of lime this method is not available.

Copper.—The cyanide method is used for ordinary work. The battery assay is used a great deal among the copper works in Butte, Mont., in connection with the cyanide method. The two may be made to check very closely by using the Swedish method in connection with the latter, i. e., precipitate the copper with metallic zinc and then redissolve and titrate with potassium cyanide solution. In copper works where a number of matte samples are to be assayed for copper each day by the cyanide method, a check sample is made up with a weighed amount of copper and iron that corresponds closely with the copper and iron in the matte, and this is titrated with the matte samples, so the cyanide solution is restandardized each day.

Manganese.—Iles' method (see Engineering and Mining Journal, March 6, 1886) is the one in general use. The ore or slag is treated in a casserole with concentrated hydrochloric acid until decomposed. A little nitric acid or chlorate of potash is added to oxidize the iron and the solution evaporated with sulphuric acid until all the hydrochloric acid is driven off. The solution is then diluted to 150 cc. and boiled. An emulsion of zinc oxide (ZnO and water) is added in large excess which precipitates the iron. This precipitate is filtered off and washed, the filtrate heated to boiling and titrated with standard permanganate solution. Instead of filtering off the precipitate of iron and excess of zinc oxide the solution may be made up to 500 cc., and 100 cc. taken for analysis. The value of the permanganate solution in iron multiplied by 0.2946=Mn.

Sulphur.—For ores and sulphides the "acid" method is preferable, although fusion with potassium nitrate and sodium carbonate is used by some chemists; but this method gives high results owing to the formation of barium nitrate which is not readily soluble in water. The ore or sulphide is mixed with a little chlorate of potash in a casserole, and after placing in cold water or snow, strong nitric acid is added and the action is allowed to proceed slowly until solution and oxidation is complete. Instead of chlorate of potash, potassium bromide is sometimes used. For ores containing but a small amount of sulphide nitric acid alone is sufficient. When action is complete the solution is evaporated to dryness to drive off the excess of nitric acid, the residue taken up with hydrochloric acid, the solution diluted, the insoluble residue filtered off, and the sulphur determined in the filtrate as usual.

Iles' method for sulphur in slags is given as follows: One or two grammes of finely pulverized slag are fused in a silver crucible with 25 grms. of caustic potash for twenty minutes. The fused mass is allowed to cool, then dissolved in water and the oxides of iron, etc., are filtered off, 30cc. of bromine water are added to the filtrate and the solution is acidified with hydrochloric acid, boiled to drive off the excess of bromine, filtered if necessary, and the sulphur is precipitated in the filtrate as usual by means of barium chloride.

Arsenic.—Pearce's method as described in Sutton's Volumetric Analysis is considered as reliable as any. Instead of neutralizing the nitric acid solution with ammonia, pure zinc oxide added in excess has been found to be equally as good and much more convenient. Another method, by Messrs. E. N. and J. D. Hawkins, is as follows: Treat the sample with nitric acid; if decomposed evaporate nearly to dryness, and then evaporate once with hydrochloric acid to destroy the nitric. Take up with hydrochloric, dilute, make strongly alkaline with caustic soda, and precipitate with hydrogen sulphide. This precipitates the heavy metals, leaving the arsenic and antimony in solution. The latter seldom occurs and no attention is paid to it. Filter, wash, and decompose the filtrate with sulphuric acid. Allow to stand several hours and then filter off the precipitated sulphide of arsenic. Dissolve in hot nitric acid or hydrochloric acid and potassium chlorate and evaporate to small bulk. Dilute and add magnesium mixture and ammonia until strongly ammoniacal. Allow to stand twelve hours and filter off the magnesium-ammonium arsenate. Wash with 15% ammonia water, dissolve, precipitate off the filter with dilute nitric acid (1:1) allowing the solution and washings to run into a platinum crucible. Evaporate to dryness, ignite and weigh as $Mg_2 As_2 O_7$. If the precipitate is ignited with the filter the arsenate is reduced and arsenic is volatilized. If the substance is only partially decomposed treat the soluble part as described until the sulphide of arsenic is precipitated by sulphuric acid. Fuse the insoluble portion with six or eight times its weight of equal parts of sulphur and sodium carbonate at a low heat for 20 minutes to half an hour. Disintegrate in hot water and filter. Add sulphuric acid to the filtrate to precipitate the sulphide of arsenic, filter, combine this precipitate with the one previously obtained, and proceed as before.

Antimony.—This determination is seldom required in ordinary work. The reader is referred to Crookes' select methods for a method of analysis.

The foregoing methods will cover all the analyses required in ordinary work. Special determinations must be obtained from the text books and periodicals as they are needed.

DECISIONS OF THE DEPARTMENT OF THE INTERIOR AFFECTING THE MINING INDUSTRY.

MINERAL LAND—AGRICULTURAL CLAIMANT.

1. Proof of mining operations being carried on upon a tract that has already been adjudicated as mineral, and the subsequent abandonment of such operations as being no longer profitable, leaves with a mineral claimant the burden of proof to show the present mineral character of the tract.

2. Where land has been mined over, exhausted of its minerals, and abandoned for several years those facts constitute a sufficient rebuttal of its previous mineral character. There can be no more conclusive test of its non-mineral conditions, than a trial by actual mining, and an abandonment of the land because it would no longer pay mining expenses.—*Decision of Secretary of January 17, 1893, affirming that of the Gen. Land Office Comr., in the case of Thomas vs. Thomasson, involving various lots of land entered at Sacramento, Cal.*

DIVIDENDS PAID BY MINING COMPANIES DURING JANUARY, 1893.

NAME OF COMPANY.	Paid in Jan.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in Jan.	Paid since Jan. 1st.
Alaska, Tr'dw'll, Alaska	$75,000	$75,000	Idaho, Cal	$7,750	$7,750
Belden Mica, N. H.	5,000	5,000	Kennedy, Cal.	50,000	50,000
Bimetallic, Mont	40,000	40,000	Lexington, Colo.	3,000	3,000
Centennial-Eureka, Utah	15,000	15,000	Minnesota Iron, Minn	210,000	210,000
Champion, Cal.	3,400	3,400	Mollie Gibson, Colo.	150,000	150,000
Colorado Central, Colo.	13,750	13,750	Morning Star D., Cal.	7,200	7,200
Daly, Utah	37,500	37,500	Napa Cons., Cal.	20,000	20,000
De Lamar, Idaho	100,000	100,000	Pacific Coast Borax	15,000	15,000
Enterprise, Colo.	50,000	50,000	Parrott, Mont.	18,000	18,000
Golden Reward, S. Dak.	5,000	5,000	Red Cloud, Idaho	10,000	10,000
Great Western Quicksilver, Cal.	12,500	12,500	Seven Stars, Ariz.	97,500	97,500
Hecla Con., Mont.	15,000	15,000	Standard, Cal.	10,000	10,000
Homestake, S. Dak.	12,500	12,500	Utah, Utah	5,000	5,000
Hope, Mont.	25,000	25,000	W. Y. O. D., Cal.	3,000	3,000
			Total	1,015,900	$1,015,900

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 31ST, 1893.

490,659. Process of Treating Ores. William B. Jackson, Pueblo, Colo.

490,660. Process and Composition of Matter for the Manufacture of Steel. John B. Jenkins, Pittsburg, Pa., Assignor to the Hutchinson-Jenkins Steel Company of West Virginia.

490,706. Bronze. John D. Becker, Peoria, Ill.

490,723. Pyrometer. William R. Roney, Chicago, Ill.

490,793. Coal or Ore Jigger. Vernon H. Rood, Jeansville, Pa.

490,816. Method of Cleansing Silver. Christopher J. Theuerner, Newark, N. J.

490,847. Process of Treating Ores Containing Silver. Arthur L. Grant and Charles G. Richardson, Toronto, Canada; said Grant Assignor to Arthur Bawden English, same place.

490,849. 490,850. Ore Concentrator. George Johnson, San Francisco, Cal.

490,891. Electric Warming Bottle. Thomas Ahearn, Ottawa, Canada.

490,911. Ore Separator. Wilhelm Krug, Kries Siegen, Germany.

490,922. Centrifugal Pump and Ventilator. Friedrich Pelzer, Dortmund, Germany.

490,954. Manufacture of Carbon Filaments for Electric Lamps. Thomas A. Edison, Llewellyn Park, N. J.

490,961. Process of Producing Metallic Alloys. William H. Greene and William H. Wahl, Philadelphia, Pa.

490,973. Guide for Stamp Mills. Edmund Major, Terraville, S. Dak.

490,982. Cam. Giacomo Parcho, Sierra City, Cal.

490,984. Rope Leader for Winding Drums. Norton H. Pine, Eureka, Cal.

491,035. Process of Manufacturing Steel. Taylor Allderdice, Assignor to the Carnegie Steel Company, Limited, Pittsburg, Pa.

PERSONALS.

Mr. Eben E. Olcott, of this city, who has recently returned from a professional visit to Peru, has left for Wardner, Idaho.

Mr. M. R. Hunt, of Ashland, Wis., has been appointed furnace manager of the new furnaces at Norwood, Mich., which are under course of erection by the Gogebic Iron and Steel Company.

Mr. F. G. Myhlertz, chief night chemist of the Edgar Thomson Steel Company, Braddock, Pa., has resigned to accept the position of chemist to the Morristown Furnace Company, Morristown, Pa.

Mr. Samuel James, recently in charge of the smelters of the Pioche Consolidated Mining Company, at Pioche, Nev., is now connected with the Mingo smelter, at Salt Lake, where he has entered a year's engagement.

W. S. Godbe, of Salt Lake, and John Longmaid mining engineer, of Montana, are examining the Day and Onondaga mines, at Pioche, Nev. It is reported that Mr. Longmaid may remain some time in the interest of the Bullionville Mining and Reduction Company.

At the annual meeting of the Technical Society of the pacific Coast, held in San Francisco, Cal., last week, the following officers for 1893 were elected: President, C. E. Grunsky; vice-president, Charles D. Marx; secretary, Otto von Geldern; treasurer, Geo. F. Schild; directors, George W. Dickie, John Hayes Hammond, Frank Soule, Louis Falkenau, and William F. C. Hasson.

OBITUARY.

Lyman W. Coe, President and organizer of the Coe Brass Company, in Torrington, Conn., died on the 9th inst. at Torrington, aged 73.

Benjamin F. Howey, a leading slate manufacturer of Warren County, N. J., died at Knowlton Township, N. J. on the 1st inst., aged 67 years.

George H. Sanderson, ex-mayor of San Francisco, Cal., died in that city on the 1st inst. He went to California in 1849 and engaged in mining. He subsequently entered mercantile pursuits.

Francois Van Rysselberghe, the well known electrician, died at Antwerp on the 3d inst., aged 45 years. He had much to do with the introduction of the telephone in Belgium and elsewhere in Europe. He was the inventor of the meteorgraph.

John Carter died at Missoula, Mont., on Thursday, February 2d. He went to Montana in the early '60's, and became quite prominently identified with its mining industry. Later he went to the Coeur d'Alenes, where he discovered the Tiger mine at Burke, his partner being John M. Burke.

Richard Randolph died in Baltimore, Md., on the 9th inst., in the Mercantile Library. Several years ago he had charge of the engineering work on the Valley and Metropolitan branches of the Baltimore & Ohio Railway. He had charge of the construction of the Belt Tunnel until a few months ago, when he was made consulting engineer.

Arthur T. Woods, formerly professor of mechanical engineering at Illinois State University, and later professor of dynamic engineering at Washington University, St. Louis, Mo., died at Chicago on the 7th inst., aged 34 years. He was a graduate of the United States Naval Academy, and later served in the navy. He was noted as an author of mechanical books and papers, and at the time of his death he was one of the editors of the "Railroad Gazette."

SOCIETIES.

The Canadian Society of Civil Engineers held a students' meeting at the society rooms, Montreal, Friday, February 10th. At this meeting a paper on "The Disposal of Sewage at Marlborough, Mass.," by Mr. J. M. McPhail, student, Can. Soc. C. E., was read.

The annual election of officers and directors for the American Institute was held in this city on the 9th inst., and resulted as follows: President, J. Trumbull Smith; vice-presidents, Walter Shriver and Zachariah Dederick; trustees, James G. Powers, Vincent C. King and John A. Mapes; auditor, Moses Slater.

The Engineers' Club of St. Louis met on February 1st, 1893, President Moore in the chair, and 27 members and one visitor present. Mr. J. W. Schaub read the paper of the evening, on "The Detroit Union Depot Viaduct." The paper covered the full details of the design and construction of the viaduct, and was fully illustrated by drawings and photographs. Discussions followed by Messrs. Flad, Johnson, Baier, Nipher, Crandon, Crosby, Moore, McMath and Bruner.

A regular meeting of the Boston Society of Civil Engineers was held Wednesday evening, January 25th, with President Henry Manly in the chair and about 50 members and visitors present. Mr. John C. Trautwine, Jr., of Philadelphia, was introduced by the president, and made a short address thanking the society for the invitation to join in the pleasant excursion they had had that afternoon to the lighthouses in the harbor, and for the opportunity afforded him to meet the members of the society. Mr. Edward P. Adams then read the paper of the evening, on the "Lighthouse System of the United States." The paper covered in a very comprehensive manner the history and theory of lighting our coast, and the present organization of the system. The paper was illustrated by drawings and photographs of the various forms of lighthouses, beacons, buoys, sirens, etc. The reading of the paper was followed by a short discussion on the subject of the paper by Major W. R. Livermore, Engineer Corps, U. S. A., Lighthouse Engineer of the First and Second Districts, comprising the coast of Maine, New Hampshire and Massachusetts.

INDUSTRIAL NOTES.

F. A. Houdlette & Co., the well known iron and steel firm, of Boston, Mass., filed a petition in insolvency on the 8th inst.

The rolling mills of the Harris Forge Milling Company, at Irondale, Minn., were destroyed by fire on the 3d inst.; loss, $125,000.

The Trinidad American Asphalt Paving Company has been incorporated under the laws of New Jersey, with a capital of $500,000. It will have offices in the principal cities of the country.

In answer to a Senate resolution, Senator Sherman has submitted a report from the Foreign Relations Committee showing that the expenditures of the Nicaragua Canal Company up to January 1st, 1893, including $893,105 capital stock, were $8,885,230, and the expenditures since December 15th, 1890, were $2,648,342.

The Lidgerwood Manufacturing Company, of New York, have issued a new catalogue of their hoisting engines, boilers and suspension cableways, including the Harris-Miller system. Many of the manufactures which have been illustrated in Engineering and Mining Journal will here be found in a shape for ready reference.

The Chicago Iron Works, manufacturers of general mining machinery, engines and boilers, of Chicago, Ill., have issued, for private distribution, a new catalogue of their extensive line of mining machinery and appliances of interest to mining men. It is handsomely bound and illustrated, and is altogether a creditable production for this enterprising firm.

A press dispatch states that notices have been posted in the Pottsville Iron and Steel Company's rolling mills at Pottsville, Pa., of a reduction to be made on and after the 15th inst. Heaters will be reduced from 52 cts. to 50 cts. per ton on finished iron, and from 52 to 40 cts. per ton on steel. Puddlers' wages will be reduced from $3.50 to $3.25 per ton. The wages of the other employes of the mill will be reduced in proportion.

There was a well attended meeting at the Academy of Natural Sciences, at Philadelphia, Pa., on the 7th inst., and papers on the minerals in Pennsylvania were read by Abraham Meyers, A. T. Cope and E. Goldsmidt. A course of 25 lectures on the "Present Aspects of Geological and Paleontological Science, with Special Reference to the Regions About Philadelphia and 100 Miles Around," will begin next week. Professor Angelo Heilprin will conduct them.

The Pennsylvania Railroad Company has finished a new engine in the shops at Altoona, Pa., in the nature of an experiment, the main point being the enlarged driving wheel, coupled with great weight. The drivers are 7 ft. in diameter, of four-coupled style, and each pair carries a weight of 20 tons. The four bogie wheels are 42 in. in diameter, and carry 25 tons. The engine alone weighs 145,000 lbs., the tender, 69,440, and the combined weight, when coupled up in ordinary service shape, is. 96 tons.

The Link Belt Machinery Company, of Chicago, Ill., has secured the services of Mr. Howard K. McLean as superintendent, and of Mr. Thomas R. Griffith as engineer of construction. Mr. McLean has been superintendent of the Wyoming Valley Manufacturing Company, of the Vulcan Iron Works, Wilkes-Barre, Pa., and of the Pittston (Pa.) Engine and Machine Company. Mr. Griffith was for eight years mechanical engineer of the Pennsylvania Railroad Company's coal mines. The Link Belt Machinery Company is now prepared to offer special mining machinery.

The report comes from Pittsburg, Pa., that the object of the visit of Mr. Carnegie, Commodore Folger, President Frick and others of the Carnegie Steel Company to the works at Homestead was not merely to make and inspection, as reported. It is said that there has been dissatisfaction at Washington because of delay in filling the contract for the armor plate for the cruiser "Monterey," and the visit had partly to do with that subject. It has been ascertained that the output of finished work during the month of January was the largest in the history of the plant, either before or since the strike.

The California Appellate Court, on February 4th, handed down a decision which will prevent the Standard Oil Company from securing a monopoly of the sale of kerosene on the Pacific coast. The question turned on the legality of the decision permitting Whittier, Fuller & Co., San Francisco, the largest coast oil dealers, to use the new double tank and dry compartment car, by which they secured practically free transportation of oil from Chicago to San Francisco. The Standard first devised the patent car with an oil tank at each end and a dry compartment in the center. Whittier, Fuller & Co. had their car in the field with dry compartments at each end and an oil tank in the center. Then the Standard, in collusion with the Southern Pacific, tried to get an injunction restraining the Northern Pacific from hauling Whittier's cars.

The Buffalo Forge Company, of Buffalo, N. Y., has issued a new general catalogue of the fans, blowers, forges and ventilating apparatus manufactured by it, covering 286 pages, which represents and describes fully every detail of its system of heating and ventilating, besides furnishing instructive tables of trials and tests of machines, traps, wheels, dryers, blowers, exhausters, etc. The book is valuable for reference in making calculations and for requirements in the furnishing of hot blast equipments, etc. The catalogue is a compendium of practical information based upon experience and experiments, and as such is a welcome addition to the library of every mechanical engineer. Among the illustrations are the Buffalo steel plate steam and pulley fans, horizontal and upright engines, hot blast steam heating apparatus, blowers and exhausters, disk ventilating fans, hand and power blacksmith drills, punch, shear and bar cutters, and stationary, portable and heating forges.

The American Casualty Insurance & Security Company, in inviting its general agents throughout the country to New York, has inangurated a new departure so far as casualty companies are concerned. The general agents met the general managers, Messrs. Beecher, Schenck & Co., on Monday and Tuesday, and business in the North, South, East and West was discussed. On Monday Dr. W. H. Mahler read a paper on "Losses and Adjustments." On Tuesday Mr. Thomas F. Powers' talk of "Inspections" and Mr. Robert Lewell on "The Company, Its Stockholders and Agents." This company was incorporated in 1890, and since then its business has advanced so rapidly that it now holds the front rank among that class of companies. From the annual report for 1892 it is learned that the assets are $2,607,675; the liabilities are as follows: Reserved premium fund, $1,186,531; reserve for unpaid losses, $281,387; capital stock $1,000,000; net surplus, $139,756. During the year the number of risks in force increased from 18,723 to 24,838, a gain of 6,115; the premiums in force increased from $1,650,763 to $2,357,374, a gain of $706,611. The company has a large and constantly growing business among mining companies, among which may be mentioned the Maid of Erin Silver Mines (Limited), of Colorado, and the Bullion-Beck Mining Company, of Utah; insuring them under a "partial contribution clause" against all claims on account of disabling injuries to or death of any of the employees of the company.

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.

2,910. A small canning factory outfit; capacity about 3,000 cans per day. Texas.

2,911. Staves, kiln dried and jointed, 29 in. × 4 ins. × ⅜ in.; also heads, kiln dried, 17¼ in. in diameter, and patent coiled hoops, 6 ft. 6 ins. Florida.

2,912. A small second-hand steam hammer. Mississippi.

2,913. 30-lb. second-hand iron or steel rails. Alabama.

2,914. A 25 HP. portable boiler. Florida.

2,915. Hand or power threshing machinery. South Carolina.

2,916. Pipe threading machine, 2 in. to 4 in. Kentucky.

2,917. A good second-hand tram engine to run on wooden tram, to haul 5 to 10 tons. Florida.

2,918. A grist mill, including fixtures, elevator, etc. Georgia.

2,919. Prices, etc., of excelsior machinery. Texas.

2,920. Addresses of manufacturers of ferroid. New Jersey.

2,921. 1½ miles of 40-lb. steel T-rails. North Carolina.
2,922. A saddle tank engine about 15×24. North Carolina.
2,923. Machinery for a canning factory of a capacity of 2,000 to 5,000 cans per day. Florida.
2,924. Prices, catalogues, etc. of machinery for oil mills. Florida.
2,925. A second-hand turbine water wheel with register gate of sufficient capacity to drive saw mill under 6 ft. head. North Carolina.
2,926. A good second-hand saw mill. North Carolina.
2,927. Estimates on cotton mill of about 10,000. spindles. Alabama.
2,928. Catalogues of wood working tools. Pennsylvania.
2,929. An outfit for a steam cotton gin. Texas.
2,930. An 8 or 10-HP. gas engine or electric motor. Texas.
2,931. Grist mill outfit. Texas.
2,932. Machinery for making barrel staves, the barrel to be 20 in. South Carolina.
2,933. A road sprinkler for a small town. Tennessee.
2,934. A 40-HP. return tubular boiler and fixtures, and a full 25-HP. self-contained, first-class engine. North Carolina.
2,935. Engine and boiler. Ohio.
2,936. Two or three miles of 30-lb. steel rails. Texas.
2,937. Planers. Ohio.
2,938. A good grist mill and corn crusher. Florida.
2,939. Saws. Ohio.
2,940. Coppered wire. Kentucky.
2,941. Belting. Ohio.
2,942. Shafting. Ohio.
2,943. Pulleys. Ohio.
2,944. Veneer cutting machines, etc. Ohio.
2,945. A 12-HP. engine and boiler. Tennessee.
2,946. Burners, kilns or furnaces for making charcoal. Idaho.
2,947. An outfit for a canning factory. North Carolina.

GENERAL MINING NEWS.

ARIZONA.

Cochise County.

Tombstone Mining and Milling Company.—Work at the Lucky Cuss below water level is still being vigorously pushed. The shaft is now down about 180 ft. below water level, which will be continued to 200 ft., when drifting will be begun. Little trouble is experienced with the water, while the ore is said to increase in richness, with depth, says the Tombstone "Epitaph." At the Toughnut a drift on the 300 level is being worked with encouraging results. A strike of some importance has been made near the Good Enough mine, which is being worked from the 400 level of the main shaft. Work on the shaft at Seventh street, after reaching a depth of 75 ft., has been stopped and the diamond drill placed in operation.

Yavapai County.

Commercial Mining Company.—According to the Prescott "Journal Miner," eight deeds have been filed for record conveying the title to certain mining property to the Commercial Mining Company. The consideration named in each instrucent is nominal. The deeds were executed by William E. Dodge and D. Willis James, the Copper Basin Mining Company, the Hackberry Mining Company, R. Van Buskin, Doane Merrill, Bernard Vogt, Joseph Mayer and C. E. Mills. A fire occurred on the 5th inst., at Copper Basin, entirely destroying the reduction works of the company, consisting of smelter, chlorinadon and leaching works. Full particulars have not yet reached the company's office in this city. It was said there that the loss would probably not exceed $25,000. There was no insurance. The origin of the fire is unknown.

CALIFORNIA.

Amador County.

Amador Gold Mine (Limited).—We reprint the following from the Jackson "Amador Ledger": In 1886, A. P. Minear secured a bond on the McKay mine, a mile south of Jackson. When the terms were settled upon and the agreements made a company was incorporated under the name of the Amador Gold Mining Company. John I. Minear was made superintendent, while Manager A. P. Minear devoted himself to interesting capitalists in the enterprise. In the spring of 1887 Senator Wallace, of Pennsylvania, took a large block of the stock and put up some $50,000, with which prospecting was carried on. A second shaft, having three compartments, was sunk south of the old one, while levels and crosscuts were run and substantial timbering done; hoisting works and a 60-stamp mill, to which rock was to be conveyed by means of a tramway, were contracted for—the mill to be erected a mile below the hoist. As the work progressed and money became due the financial backers of the concern, including Senator Wallace and a number of his friends, found the strain more than they cared to bear. A. P. Minear was then commissioned to go to England and interest other capitalists in the enterprise. This he succeeded in doing, an English company organizing under the name of the Amador Gold Mine (Limited), and taking a large interest in the concern. By the agreement between the American and English contingent, the former were to have control of the operations of the property, although the Americans still retained a majority of the stock. The Amador Gold Mine (Limited) took possession of the property June 1, 1889, retaining J. I. Minear as superintendent. The English people, in September of 1889, became dissatisfied with the reports from the superintendent, and sent James E. Dye out as financial agent to look after their interests, he leaving England on November 18th of that year. Upon his reports, commissioners representing the Londoners were sent out, with full power to act. In February, 1890, they installed J. P. Darling as superintendent, J. I. Minear retiring. At this time there was an indebtedness on the property, for labor, material and contracts of about $35,000, part of the amount being secured by an attachment by the builders of the mill—the Pacific Iron Works. This was paid off, and in May of 1890 Whitaker Wright leased the property for six months at $10,000 per month, the owners in England agreeing to pay the expenses of running the concern, through their financial agent, James E. Dye, charging the same to the lessee. When Wright's lease expired there was due the Pacific Bank for drafts drawn by the financial agent on the company in England, and not paid, about $25,000; to Ginocchio Bros., of Jackson, about $1,600; Knight & Co., $500; the Blue Lakes Water Company, $3,000; B. F. Richtmyer, $118 for cablegrams; E. G. Freeman, $123; Crocker & Co., $120; L. J. Fontenrose, $336; California Powder Works, $467; S. Bright, $420; Chichizola, $853; wages due, $5,200. The laborers all excepting J. P. Darling, took liens upon the property for the amounts due them in the latter part of November, 1890. Mr. Darling placed a lien on the property in 1891 for his claim of $2,290. Mr. Dye did the same thing with his claim of $1,800 in the following year, while all the creditors secured judgments against the company, some attaching and others merely bringing suit. In May, 1892, the laboring men were given judgments for the amounts of their liens, and H. R. Lounsbery, of New York, liquidated all these claims excepting that of J. P. Darling. This judgment is now being foreclosed by the Sheriff, the sale of the property having been set for the 28th inst.

Kennedy.—The "Amador Record" is authority for the statement that this mine cleared up $68,000 for December. It is the largest monthly clean-up ever made by the mine.

Monterey County.

New Idria Quicksilver Mining Company.—The McGarrahan claim bill, which recently failed to pass over the President's veto, was favorably reported to the Senate again on the 5th inst., but amended so as to meet the objections raised in the veto message. Under the present bill the claim goes to the Court of Claims with that judicial body sitting upon it simply as a body of inquiry Its findings will not be a judgment, but more in the nature of a recommendation. After the court has passed upon the legality of Mr. McGarrahan's claim, he will be compelled to come back to Congress and make a fight for an appropriation.

San Bernardino County.

(From our Special Correspondent.)

The San Jacinto Estate, Temescal.—The hope which was very general at the close of last year, that the tin mine would soon again be in operation, has not only not been fulfilled, but it appears unlikely that work will be resumed in the near future. This week a quantity of the movable property of the company was sold by the Sheriff at auction to satisfy accounts of parties to whom the company was indebted at the time of the closing down.

COLORADO.

Chaffee County.

The Denver "Republican" says that a recent assay of ore from the Minnie Bell mine, at Grier camp, gave 219 oz. silver and 10% lead. At Monarch the Eclipse tunnel has reached the vein, and shipments will be resumed soon. Superintendent Abbott thinks that 500 miners will be employed there in three or four of the leading properties before the summer is over.

Dolores County.

The Denver "Republican" of the 4th inst., says: "The miners at Rico are still on a striks. Several new men went to work to-day on the Rico-Aspen, but it is thought that not many of them will remain there long, as the union men are taking advantage of every chance they have to induce them to quit work and let the union take care of them or send them to other camps to get work. Orders from the head officers to local managers are to close down the mines unless they can be worked in accordance with the reduced schedule again. The latest advices from Telluride are to the effect that the mines owned by the Sheridan also closed down on the 1st, and that when they do start up again it will be on the $3 schedule."

Gunnison County.

The Gunnison land office has rendered an important decision in a hearing on title to certain coal lands located at Crested Butte. R. C. Evans filed on a quarter section of coal land in 1880, when the land belonged to the Ute Indian Reservation. The land office refused to accept pay for the land, and the filing ran out in 1881. After the land had been taken from the Indians and was subject to filing, Byron McMaster filed upon it for Dr. W. A. Bell, who represented the Durango Trust Company. It was brought out in the evidence before the register and receiver of the land office that McMaster deeded the land prior to the date of his filing, also the price paid the government was $10 per acre, when it should have been $20 per acre, as it was withing the limit of the $20 per acre land. A portion of this land is the tract that has been worked under royalty by the Colorado Coal and Iron Company, and from which large quantities of coal have been shipped. The local land office decided that R. C. Evans was entitled to the land under his filing. The decision is of more than ordinary importance, and the case will now be taken to the general land office at Washington. The Durango Trust Company has been in peaceful possession of the land for 10 years, receiving the royalties on the sale of the coal, thinking that the title to the land was perfect.

Pitkin County.

Holden Smelting and Milling Company.—Manager Morse, when interviewed by the Aspen "Times" in reference to a reported reduction in wages at the company's works, stated that none had been made; that an increase of hours had been ordered, and that in some cases the wages had been raised. He said that this had been done to reduce expenses, and that also in this way they hoped to get better results. The increase of hours is from eight to ten hours, and from ten to twelve hours. The new order went into effect on the 1st inst.

Pueblo County.

Colorado Coal and Iron Development Company.—President Meeks says: "Sufficient funds are already assured to meet all fixed charges and operating expenses for at least two years, with the prospect that before the expiration of that time sufficient sales will be made to retire all of the $700,000 of first mortgage bonds, so that the stock will receive the benefit of all sales thereafter."

San Miguel County.

Shipments of ore and concentrates of ore from Telluride for the week ending February 3d: Smuggler-Union, 187 tons; Sheridan Consolidated, 88 tons; Hector Mining Company, 11 tons; Humboldt, 33 tons. Total shipments since January 1st, 1,738 tons.

IDAHO.

Boise County.

Banner.—The tunnel is now in 2,000 ft. Machine drills have been put in place to cut the remaining 1,500 ft. to the vein. Some ore is being taken out of the Wolverine shaft, owned by the same parties, and it is proposed to start the mill in a short time.

Bella.—The tuunel is in 200 ft.; 400 ft. more must be run to cut the vein. It is reported that a leaching mill will be erected as soon as roads are opened.

INDIAN TERRITORY.

Choctaw Coal and Railway Company.—The Philadelphia "Stockholder" says that the plan for the rehabilitation of this company, which has been expected some time from the committee having the matter in charge, was presented last week at a meeting of the stockholders. The plan avoids foreclosure, does not assess the stock, makes a way for the completion of the road to South McAlester and Oklahoma City, and a branch into what is known as No. 3 mine, and a spur into Fort Reno, and provides for a construction company, which shall have charge of carrying the scheme into effect. The present first mortgage is to be put aside to allow the creation of a new mortgage on the railroad and coal properties to secure $4,330,000 5% bonds, representing $1,000,000 upon the coal properties, and $15,000 a mile upon 222 miles of road, of which the construction company shall take so many at the rate of 90% of their par value, as shall be sufficient to provide for the indebtedness of the receivership, the expense of reorganization, and a betterment and interest fund of $350,000, and for new construction, the balance, estimated at $1,030,000, to be retained in the treasury, under the control of a voting trust that is to be created, and continue until full interest upon the second mortgage bonds shall have been punctually paid for five consecutive years. The second mortgage referred to is to secure $2,214,000 5% bonds, not bearing interest until 1896, unless it is earned. There is also to be an issue of non-cumulative 5% income bonds, estimated not to exceed $3,800,000, which are to be given as a bonus, hundred for hundred, with the first mortgage bonds, which the construction company is to agree to purchase at 90, in amount sufficient to complete and equip the road, as already set forth. The present stockholders and creditors are, however, to have the right to subscribe, pro rata, for the new first mortgage bonds at 90, with a bonus of 50% in the income bonds. Thus the securities of the rehabilitated company will be as follows:

Total first mortgage 5% gold bonds.		$4,330,000
To pay receivers' indebtedness and reorganization expenses, estimated at	$1,000,000	
To provide $350,000 for betterments and interest as found necessary estimated approximately as follows:		
New equipment	$200,000	
To extend to mines	50,000	
To pay interest on first mortgage bonds to and including Jan'y, 1894	100,000	350,000
		$1,350,000

Requiring bonds	$1,500,000	
To complete road to South McAlester and Oklahoma City, with branch to No. 3 mine and spur into Fort Reno (estimated to cost $1,620,000)	1,800,000	
Requiring in bonds	1,030,000	4,330,000
Note: The estimates of expenditures are only approximate, but if not exceeded the original issue would be:		
Upon the coal properties	$1,000,000	
At the rate of about $10,000 per mile on 222 miles of railroad	2,300,000	
Reserve for future betterments and expenses	1,030,000	
Total issue authorized (equivalent to $1,000,000 upon the coal property, and $15,000 per mile of railroad)		4,330,000
Second mortgage bonds on all the property, but at the rate of $10,000 per mile on 222 miles of railroad, to be issued at par to the present creditors of the company, who are also to receive interest on their claims down to December 21, 1893, in income mortgage bonds, at par		2,214,000
Income mortgage bonds (more or less)		3,800,000
Common stock		3,750,000

MARYLAND.

Maryland Coal Company.—Stockholders of the Maryland Coal Company met in New York February 7th and re-elected the old board of directors. The annual report submitted shows a net profit of $96,948, out of which was paid $94,500 in dividends. Balance carried to profit and loss, $2,448. Shipments during the year were 286,213 tons, against 406,464 tons in 1891, a decrease of 120,251, caused by inability of the Pennsylvania Railroad Company to transport the coal. The company paid off $20,000 of its first mortgage bonds during the year, leaving total bonded indebtedness now $100,000.

MICHIGAN.

Exploratory work at the Waverly and the Lotta goes steadily on. The recent find at the latter is showing up a very extraordinary width, and if length and depth shall be found proportionate to it there will be a new town, on the Sturgeon, says the Norway "Current."

Breen.—The Loeffelholz company, after sinking a shaft 280 ft. and doing considerable cross-cutting and drifting at the Breen mine, have suspended operations, stored their machinery and discharged the men.

Copper.

Calumet & Hecla Mining Company.—At No. 5 Calumet, the most northerly shaft of the Calumet & Hecla, work was commenced on the 3d inst. No stoping has yet been done north of this shaft, still there are large blocks of ground ready to come away, rich in mineral. No. 7 South Hecla is now the only shaft not yet in running order, but it will be ready for duty before the end of February. We understand, says Portage Lake "Mining Gazette," that the amygdaloid lode overlying the Osceola, which has been cut by a cross-cut of the 31st level, between Nos. 3 and 4 Calumet shafts, is about 34 ft. wide on the pitch of the lode. In driving the cross-cut through this lode about 3 tons of barrel work were taken out; the stamp rock is of a lean character. There are, we believe, several amygdaloid lodes between the Calumet & Hecla and the Osceola; the one referred to is the lode overlying the Osceola, and has before been cut in the Tamarack, but has never been worked to any extent. It is possible that this lode will yet prove to be one of the productive lodes of the district. Sixteen heads are now doing duty in the Calumet & Hecla mills. Two of the heads in the Calumet mill are running on solid foundations, and a few more days will see a third head fitted with a solid foundation. The solid foundations are to be put under all the heads, and the work of putting them in will continue until they are all supplied. The electric pumps in the South Hecla are working well, and the management are well pleased with their performance. The levels in this branch of the mine are to be lit up with electric lights. Another set of electric pumps is being put in at No. 4 Calumet.

Iron.

(From our Special Correspondent.)

Most important work, both from a mining and a geological point, is going on at Section 21, a suburb of Ishpeming. Two large three-compartment shafts, placed 1,000 ft. apart, and the same distance from the diorite upon which the ore lies, are now down nearly 400 ft. each. Both have passed through the same kind of ground—a schistore jaspilite, highly laminiferous; the laminae being altogether composed of alternate strata of jasper, very hard, and soft hematite ore. As the miners reach the great ore body known to be under them, from previous workings at the Winthrop, the ore strata increases in thickness and purity, while the jasper "dies out," and is itself more highly charged with iron, until it may be said to be highly silicious ore. Lying on all this deposit is a most ponderous and strong massive jaspilite unheaval which runs west to the Fitch mine, on Section 24 of the adjoining township. Overlying this is a large quartzite field, which is looked upon as one of the best indications of the now celebrated Ishpeming ore basin. As one goes farther north the arenaceous slate are found on the quartzite in great thickness until one meets the northern edge of the basin, where knobs and ranges of various trap gneiss and basaltic rock show themselves. But northeast from these shafts is lowlying ground, through which runs one of the effluents of the Escanaba River, across which are large areas of high diorite bluffs extending nearly all the way to Marquette, interspaced with many and extensive valleys, in which are found ore bodies large enough to be worked as mines. In one of the valleys is Lake Angeline, and the many mines around its shores; in another is the Saulsbury; the Foster in another, and various other explorations and locations in others. The valuable mines on Section 16 are at the western foot of this diorite area. A tongue of this same diorite runs west and forms the true foot of the New Bush, Saginaw Albion, Goodrich and Fitch mines. This, then, is a rough sketch of the main geological features of this part of the Ishpeming basin. Where other things are equal, ore is found completely enveloping some of these diorite knobs, as the new discoveries at the Wiuthrop are now proving. One diorite knob also forms the foot against which lies both Lake Angeline and Saulsbury, one mine being north and the other south of the same hill. It has been fashionable to speak of the ore here as lying in bodies, which fashion the old-school geologists first started, but yet after nearly a half-century's mining the bottom has not yet been reached, and the new school begins to have doubts as to the correctness of the old-school fellows. It may be we are as yet working upon the overflow of ore, and that between these diorite knobs there may be fissures which extend down to unknown depths filled with ore all the way. This, at least, would appear to be the case at Michigamme, Champion and Republic, and so far as yet known, it is the case with the specular and hematite ores. This question will, in a measure, be settled by the miners at Section 21 in time. Let us wait and see.

Iron—Gogebic Range.

Brotherton Mining Company.—The annual report shows that the company mined 116,723 tons of ore in 1892; and this ore, with that left over from 1891, making 150,000 tons in all, was sold early in the season at $4.25 a ton. The net profit was more than $80,000, which enabled the directors to declare a dividend on December 13th, 1892, of $1 a share. The stock of the mine sold for $3 a share last winter, and is now quoted at $2.55. The president advised the company to mine all the ore possible in 1893, and if 50 cts. a ton profit cannot be made, to take what can be secured. In 1892 it cost the company $1.22 6-10 a ton to mine and place the ore on board the cars at the mine. At present 208 men are employed. The taxes, $3,396.28, an increase of $1.00, which the directors refuse to pay. An inventory taken January 1st, 1893, shows that the company owns $26,099.10 worth of building and mining equipments. The treasurer's report shows that he handled $263,157.69 last year. The Brotherton will mine 125,000 tons of ore in 1893.

Iron—Marquette Range.

Lake Angeline.—The new mine of the Lake Angeline company, being opened up at the east end of the lake, grows steadily more promising in appearance, as work of development progresses, and the indications are that this will soon be an important part of the company's possessions in Ishpeming. What would appear to be a new lense of ore is coming in farther east than anything yet found; and while the diorite is in close proximity there is a chance for a few thousand tons, providing this rock makes downard at as sharp an angle as it usually observes in this section. The new deposits help in maintaining the old-time product of the mine as indicated by the shipments of the year just closed, they being the largest for any year in the history of the property.

Iron—Menominee Range.

Finlay Company.—The exploration of this company, on Section 25, has been suspended and the machinery removed.

The Mastodon.—This mine has something more than 20,000 tons of ore in stock, and will continue to add thereto until the present stockpile ground is full, which will be accomplished some time in March.

MISSOURI.

Jasper County.

(From our Special Correspondent.)

Joplin, Feb. 6th.

The lead and zinc mines of this district have not opened up the new year under the most favorable conditions, as the weather has been exceptionally cold or wet during the past five weeks, so that the mines have either been frozen up or drowned out, some of the large operators having run quite steady but under many disadvantages. The zinc ore market opened the first week in January at an average of $22.50 per ton, and has about held at that price up to the present time. Lead ore opened at $20.50 per thousand, and closed last week at $21.50 per thousand. There is quite a large amount of ore on hand throughout the district which is being held for better prices. Following were the sales ore from the different camps from January 1st to February 4th: Joplin mines, 6,826,630 lbs. zinc ore and 849,780 lead, value, $90,592; Webb City mines, 2,135,890 lbs. zinc ore and 131,920 lead, value, $26,449; Carterville mines, 9,018,420 lbs. zinc ore and 538,500 lead, value, $110,258; Zincite mines, 535,830 lbs. zinc ore and 23,360 lead, value, $6,257; Lehigh mines, 10,670 lbs. of zinc ore and 6,730 lead, value, $290; Oronogo mines, 41,530 lbs. zinc ore and 734,390 lead, value, $16,493; Carthage mines, 242,900 lbs. zinc ore and 8,000 lead, value, $2,890; Galena, Kans., mines, 3,654,490 lbs. zinc ore and 974,370 lead, value, $57,862; district's total value $311,091; Granby, Newton County, Mo., mines, 30,000 lbs. zinc ore and 21,380 lead, value, $749; Wentworth 40,00 0lbs. zinc ore, value, $340; Aurora, Lawrence County, mines, 1,897,000 lbs. of zinc and silicate ore and 192,000 lead, value, $18,258. Lead and zinc belt's total value for the past five weeks, $330,438. Mr. E. Hedburg, who has been superintendent of the Roaring Springs Land and Mining Company property in Gordon Hollow for the past two years, has resigned his position and accepted the management of a lead mine in Tennessee. Col. H. H. Gregg has closed down his famous Scotia mines in Gordon Hollow to wait for an advance in the price of ore and better weather. In the meantime the Colonel is giving his time to the duties as our World's Fair Commissioner. F. M. Sharp's mine on the Rex Mining and Silver Company's land still continues to be a steady and large producer, and last week turned out 110 tons of high-grade zinc ore. The Crossman Mining Company, on the same land, are mining steady and making a large output. A new tract of land is just being opened up between Joplin and Webb City, known as the Roberts land. Not less than fifty shafts are now being sunk, several of which are taking out conconsiderable lead.

MINNESOTA.

A press dispatch from Duluth says that the fight for the control of the Mesaba road, which has been waged between the two factions of the stockholders, ended on the 3d inst. K. D. Chase and Donald Grant disposed of their interest for a price said to be $1,500,000, and there is no longer a minority. The purchasers were the Merritt syndicae, composed of the Merritts, of Duluth, the Rockefellers and the Steel Barge Company. The injunction proceedings begun by Grant and Chase to prevent the alliance between the Merritts and the Eastern capitalists will now be discontinued, and the road will be able to accept the $2,000,000 loan offered, and to complete its road into Duluth and its ore docks there.

Iron.

Concerning the ore output of 1893, the West Duluth "News-Tribune" says: "The output of the Vermillion Range and those Mesaba mines that will ship over the Duluth & Iron Range road for next seasou is about figured out by the Iron Range people, and they expect to haul to Two Harbors docks not less than 1,800,000 tons of ore, as compared with 1,051,000 in 1891 and 880,231 in 1890. This is a very remarkable increase, and far greater than the Minnesota mines, or any other, have ever shown for one season. About 6,000 tons a day are being hoisted at the Minnesota and Chandler mines now, and there are at these two properties 320,000 tons in stock piles, about equally divided. The Zeuith mine at Ely is also hoisting a good deal of ore, and the Cincinnati has a stock pile of 20,000 tons. The output of mines on the Duluth & Iron Range road for 1893, and the shipments from Two Harbors docks will be about as follows, the figures beiug given by a prominent stockholder of the road and iron company:

Minnesota mine	600,000
Chandler mine	700,000
Zenith mine	200,000
Pioneer mine	25,000
Canton mine	50,000
Cincinnati mine	250,000
Hale mine	50,000
Total	1,875,000

"While there may be a slight shriukage in these figures, they are as nearly correct as it is possible to make them at this time. The Minnesota Iron and Standard Ore companies will neither be severely affected by the dullness of the ore market, for both have their market established and know where their ore is to be placed. While other ranges may very seriously curtail their product in 1893, the Minnesota iron mines will, combined, ship two and one-half times the total of any preceding season."

MONTANA.

The Montana Southeastern Railroad Company, which has just been incorporated, will run from a point near Butte; theuce up Black Tail Creek to the summit of the main range of the Rockies; thence up the Little Pipestone and Fish creeks to the valley of the Jefferson River; thence up said valley and the valley of the Ruby River to the summit of the Rockies in Madison County, with a branch to Bozeman from some point in the valley of the Jefferson River; also from some convenient point on the main line southerly to Dillon, and up the valley of the Beaverhead River, and a branch from near the valley of the Ruby River east to the valley of the Madison; thence up the Madison River and its tributaries to the summit of the main range on the southwest boundary of the State.

Helena, February 1.—The State Legislature has passed a bill establishing a State university at Missoula and an agricultural college at Bozeman. Representative Fleming introduced a bill making it obligatory to allow all stockholders who own

10% of the stock entrance into any mine for inspection.

Jefferson County.

Bloomington.—The owners are running in a 300-ft. tunnel. It is now in about 125 ft., and has already cut three small ledges of ore.

Mount Powell Mining Company.—This company has let out 1,000 ft. of tunnel work on the upper and lower levels. Besides the above, the company is extending the middle tunnel and sinking a number of winzes.

Meagher County.

Neihart.—Shipments of ore are averaging well, notwithstanding the severity of the weather. The Galt company is gradually increasing its force, and the Broadwater is being put in shape for machinery.

Park County.

Henderson Mountain Mining and Milling Company.—It is reported that the new cyanide mill of this company is doing good work. From 20 to 30 men are employed, and about 40 tons of ore are treated daily.

Silver Bow County.

A meeting of engineers and advocates of the flue and county bonding schemes was held January 24th. Letters were received detailing experiences in Denver, but attention was called to the fact that the flues in Denver are constructed for the purpose of precipitating oxides, and not of getting rid of smoke. It was finally decided that flues would be more efficient than stacks, and the committee indorsed the plan of bonding the county to pay for the work. A committee of lawyers was appointed to inquire into the legality of bonding the county for such a purpose, of which there is considerable doubt, and still another committee was appointed to secure estimates of cost, etc.

Apex.—This property is now being operated by Weber, Tonkin & Co. A new shaft-house has been put up. The shaft is down 220 ft., and regular shipments are made.

East Oro Butte.—This mine is now leased to Remick, Clark & Co., who are drifting on the 300-ft. level. It is said that two ledges have been cut, and that prospects are very encouraging.

Poulin.—At present 16 men are employed on this mine, the work being confined to the 300-ft. level, where a winze is being sunk on the ledge. Regular shipments or ore are being made, but no high-grade quartz has heen taken out.

NEVADA.

Elko County.

The following are the latest weekly official letters from the superintendeuts of Tuscarora mines:

Belle Isle Mining Company.—The stopes above the 250-ft. level have been extended northward in good ore up to the break. Good ore is now making south of the upraise.

North Belle Isle Mining Company.—The stope above the south 400-ft. level, and those above the north 300-ft. level, are yielding about the same.

In the other Tuscarora mines no change has taken place.

Crown Point Mining Company.—The latest weekly official letter says: "The west cross-cut from the southwest drift, 150 ft. south of the shaft on the 400-ft. level, is out 240 ft. The face is in porphyry, with a little quartz running through it. Started a raise from the sixth floor on the 160-ft. level, following a streak of quartz from 6 in. to 18 in. wide. The raise is now 30 ft."

Storey County—Comstock Lode.

The Morgan mill has started up for a run on Consolidated California and Virginia ore. About 100 tons a day will be crushed, and only one-half of the stamps will be in operation.

Belcher Mining Company.—At the annual meeting of this company 82,169 shares were represented, and the old directors were re-elected, with the exception of W. E. Miles, whose place has been filled by George D. Edwards. The only change in officers was the substitution of W. E. Sharon for S. L. Jones as superintendent, and the salary of the position was cut down to $200 per month. The company has an indebtedness of $12,000 and, according to the San Francisco "Report," will soon levy an assessment. The latest weekly official letter says: "The west cross-cut from the south drift, on the 350-ft. level, is out 114 ft. The face is in porphyry, with a streak of quartz running through it. The west cross-cut, 25 ft. north of the winze, on the 350 level, is out 64 ft. The face is in porphyry and streaks of low-grade quartz. The north drift from the winze, on the 350-ft. level, was advanced to a total length of 143 ft. and stopped. A north raise was started from this drift, 75 ft. north of the winze, and is now up 10 ft., showing a small streak of low-grade quartz in the top. Are stoping out about 15 tons of ore per day from the stopes just above and helow the 300-ft. level."

Justice Mining Company. The latest weekly official letter says: "The south drift from the north stope on the 822 level is out 99 ft. The pay streak is 3 ft. wide, and the ear samples average ahout $25 per ton. We are stoping on about 9 tons of ore per day, the assays of which average about $25 per ton."

Savage Mining Company.—The latest weekly official letter says: "We have hoisted 553 cars of ore from the 950, 1,100, 1,400 and 1,450 levels; shipped to the Nevada mills 525 tons, and milled 525 tons. Average car sample assay, $24.23; average battery assay, $20.03. Bullion yielded for the week, $7,360.50. Shipped to the United States Mint at Carson, January 31st, 354 lbs. bullion. On the 950 level the north prospecting drift from the eighth floor of the old stopes is advanced 47 ft.; face in porphyry and quartz giving low assay. On the 1,100 level are stoping ore from the 11th floor up to the 22d floor. On the 1,300 level in the main south drift, at a point 120 ft. south of the shaft, we have started a west cross-cut and advanced same to 20 ft.; face is in quartz and porphyry; this cross-cut has passed through 6 ft. of good ore. On the 1,400 level the east cross-cut from the north drift, started 50 ft. north of the ore stopes, is advanced 36 ft.; face in quartz and porphyry. We are still repairing the main south drift, and the east drift connecting with the ore shoot on this level. On the 1,450 level we are stoping ore upward from the end of the west cross-cut, started 100 ft. from the south boundary."

(From our Special Correspondent.)

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

Mines.	Tons Hoisted.	Car Sample Assay.	Tons Milled.	Average Battery Assay.	Bullion Product for Week.	Bullion Shipped.
Belcher	105	.....	....	.....	.....	.....
Con. Cal. & Va..	450	[2]26·95	....	.....	.....	.....
Con. New York	132	29·70	132	30·19	.....	[3]186 lbs.
Kentuck...	21	.....	129	.....	.....	[4]$4.62.34
Overman.....	.....	.....	.....	.....	.....	[5]$7,500.00
Potosi.....	426	25·64	426	24·51	.....	.....
Savage.....	[2]553	24·23	525	20·03	7,369.50	[3]354 lbs

[1] Mine sample. [2] Cars. [3] Crude bullion. [4] Received in San Francisco, of which $2,129.74 was gold and $2,692.60 silver. [5] Received at San Francisco.

The Washoe mill has heen started for a run on ore from the Justice mine.

Crown Point Mining Company.—A raise has been started from the sixth floor, 160 level, following a streak of quartz varying from 6 to 18 in. in width. The raise is now up 30 ft.

Hale & Norcross Mining Company.—An order has heen made by the court, in the suit of Fox vs. the directors of the company, and others, substituting as defendants in the place of the late W. S. Hobart, the executors of his estate, E. T. Bridge and J. Cross. The new defendants at once filed a notice of their intention to move for a new trial, alleging that they had not yet had an opportunity to be heard. The motion is based on alleged irregularities, and it is further charged that the amount of damages allowed is so exeessive as to warrant a belief that the judgment of the court was the result of prejudice. Needless to say, the ahove action of the new defendants is only a legal form to perfect an appeal, and has no further significance.

NEW MEXICO.

A press dispatch from Santa Fe says that Mr. W. C. Hadley, of Sierra County, who for several years past has supplied the director of the United States mint with statistics on New Mexico, has just forwarded his report for the year 1892, and it shows that for the first time in the history of New Mexico the gold production exceeds the silver output. He places the total of the precious metal produced hy New Mexico in 1892 at $1,850,000, of which 50.41% is gold.

Grant County.

It is reported that the Silver City & Northern Railroad will he extended to the coal fields between Silver City and Gallup this year, says the Silver City "Sentinel." Work will he commenced within a few weeks, and as soon as the road reaches the coal fields the company will put large smelters at work reducing the iron ores at Hanover. If the plan for getting cheap fuel to the camp proves sucessful, it is quite certain that the Mineral Point Zinc Company will ereet large works at or near Hanover for the treatment of zine ore. With cheap fuel at Hanover the copper mines of the Santa Rita Copper and Iron Company could be worked on an extensive scale.

The gold strike at Pinos Altos, which was reported last week, is being developed, and the results so far are satisfactory. The shaft is now down 22 ft., and the vein at the hottom of the shaft is 6 in. wide. An assay of the ore, it is said, returned 13 oz. in gold per ton and 4 oz. in silver.

Manhattan Gold Mining and Milling Company.—The contractors who are driving the Montana tunnel on this company's property at Pinos Altos, are making more rapid progress now. The rock is getting softer, and it is prohahle that the vein will be reached by the middle of March. The tunnel will strike the vein helow the deepest workings in the mines, and will reduce the cost of mining the ore considerahly.

OHIO.

Wood County.

Manhattan Oil Company.—This company has acquired full control of the Pemberville field. Eleven producing wells are located upon the leases, which in January produced nearly 11,000 barrels of oil. There is a report that Robert Miller, the Eastern oil king, has disposed of all his oil property in Wood and Hancock counties, to Bradford, Pa., parties for $350,000.

PENNSYLVANIA.

Coal.

All the company hands, runners, drivers and door tenders at the Clear Spring Colliery, in Pittston, went on a strike on the 6th inst. They say they were not paid for extra time worked. They also ask for the aholishment of the hour system of paying.

A number of meetings of local railroad operators have been held lately at Pittsburg with the reported ohjeet of trying to form a combine which should include al. the coal mines in the Pittsburg district. It is said that it is now well under way, and is projected somewhat on the plan of the Hocking Valley coal trust. If successfully formed about 100 mines will be interested and the aggregate capital will be about $15,000,000. G. R. Miles, of the Pittsburg coal agency, and Alexander Dempster are said to be the leaders in the matter. It is said the combine is to he known as the Western Pennsylvania Coal Company, and that it is designed to compete with the Hancock Valley combine.

The report comes from Pittsburg that a combination of all the railroad mines in Western Pennsylvania, to be known as the Western Pennsylvania Coal Company, is forming. Plans, it is said, are almost completed, and there is now fully $15,000,000 from 100 operators in the pool. Three meetings of the operators have heen held and another has been called. The intention is to establish uniform prices and curtail expenses. The combination includes all the mines on the Pittsburg, Virginia & Charleston, Baltimore & Ohio, Pittsburg, McKeesport & Youghiogheny, Pittsburg & Bellevernon, Pittsburg, Chartiers & Youghiogheny, Chartiers Valley, Moon Run, Mountain Run and Pan Handle railroads. On these different roads there are not less than 100 different mines, all of which are expected to come into the combine. The majority of these, according to the report, have already done so. The originators of this scheme say that the object of the combination is to enter into competition with the Hocking Valley pool.

Delaware, Lackawanna & Western Coal Company.—All the mines of this company, in the Lackawanna and Wyoming valleys, employing about 13,000 persons, have heen put on eight hours' time per day.

Philadelphia & Reading Coal and Iron Company.—This company has made the following classification for railroad shipments, as regards the collieries under its control, which went into effect February 1st: Mahonoy: Tunnel Ridge, North Mahonoy, St. Nicholas, Boston Run, Gilberton, West Shenandoah, Draper, Mahonoy City, Elmwood, Kohinoor, Turkey Run, Indian Ridge, Hammond, Schuylkill, Bear Run, Shenandcah City, Mahonoy Jig; Shenandoah; Preston No. 3, Ellangowan, Maple Hill, Girard, Girard Mammoth, Knickerbocker, Bear Ridge, Yates Jig: Locust Mountain: Locust Gap, Locust Spring, Richardson, Glendower, Oak Hill, North Ashland, Bast, Alaska, Merriam, Monitor, Thomaston, Reliance. Mt. Carmel, Alaska Jig: Schuylkill White Ash; Potts, Beechwood, Eagle Hill, Otto White Ash, Mt. Hope and Oakdale Jig.

Special Coals.—Lykens Valley: West Brookside, Lincoln; Lorherry; Middle Creek, Good Spring, East Franklin; Shamokin; Buckridge, Bear Valley, Excelsior, Henry Clay, North Franklin; Schuylkill Red Ash; Phœnix Park, Pine Forest, Corhin, Otto Red Ash.

A press dispatch from Pottsville says that 46 of this company's collieries in the Schuylkill region have resumed operations. The remaining seven collieries operated by this company it is expected will resume toward the latter part of the week. The difficulty experienced in securing cars to ship the coal from the collierles is rapidly being removed. The coal train hlockade is rapidly breaking.

SOUTH DAKOTA.

Harney Peak Tin Mining and Milling Company.—Concerning the closing down of this company on February 2d the Deadwood "Daily Pioneer" says: "The number of men thrown out of employment is said to be upward of 400. This sudden change in the policy of the Harney Peak people is all the more confounding on account of recent reported rich strikes in the Tenderfoot and other mines of the company, and of the late heavy expenditure in mill improvements and approval and acceptance of such additions to their property. Some insinuate that the company has got tired spending money on barren property, but there are many who believe there is plenty of tin ore in the Harney Peak mines, and that the shutdown is attributable to internal differences in the corporation. A mine operator gave as his opinion that the English stockholders had got tired putting up money for the New York stockholders to spend. It is a well known fact that there has been a strong difference of opinion between the English and American stockholders concerning the

operation of the property. The former desired to place the operations under experienced Cornwall tin miners, but to this the New York stockholders objected, and it is not improbable this difference may have led up to the present suspension." A more sensible view is that the company closed down, as we long ago predicted, because there was not enough tin to the ton of ore.

Lawrence County.

Deadwood and Delaware Smelting Company.—This plant was closed down on January 30th for the purpose of cleaning boilers and making repairs. Of late there has been a shortage of coke, and the old project of the Elkhorn Railroad Company of running a track to the smelter has been revived. The old Oro Fino mill, which now belongs to this company, has been thoroughly overhauled and is ready to start.

Seabury-Calkins Mining Company.—It is reported that the prospecting with the diamond drill is progressing well. It is down 295 ft. below the surface.

Seabury-Calkins Mining Company.—Reports from the property are very encouraging, says the "Deadwood Pioneer." The diamond drill, which was started at the bottom of the 165-ft. shaft, is down 295 ft., a total depth of 460 ft. It has penetrated small strata of lime, shale and porphyry, and is now in what appears to be a thin stratum of the latter. The company is prepared to go down 1,000 ft. if necessary. The conditions thus far encountered, and the surrounding developments, suggest the presence of the dry ores of the Bald Mountain district, and it is thought that the drill will penetrate the third contact of ore. The company is at present taking ore from its property and storing it in bins, owing to the fact that the cost of local treatment has been increased from $5 and $6 to $11 per ton. The ore is a black manganese and soft gouge matter, of which there is large quantity, a low estimate of its average value being placed at $22 per ton.

UTAH.

Crescent Mining Company.—This company is suing the Alliance Mining Company for $10,000 for the flooding of a certain level which caused a suspension of work. The plaintiffs further allege a breach of contract entered into regarding certain extensions and claim that the Alliance company sold water belonging to the plaintiffs, contrary to the terms of said contract.

Dalton Gold Mining & Milling Company.—The annual meeting of this company was held at Salt Lake January 30th. About 395,000 votes were cast in favor of a new board of directors, and the following were elected: A. C. Standart, J. E. Caine, H. C. White, J. H. Hughes, I. Jennings, E. Morris and J. E. Jennings. From the manager's report it is learned that during the year a working tunnel 5×7 ft. in the clear was driven about 380 ft. At 200 ft. from the mouth of tunnel No. 3 a vein of quartz was encountered on which 200 ft. of drifting was done when a vein of pay ore was found. The shaft connecting tunnels Nos. 1 and 2 was continued from the level of No. 2 about 56 ft. The shaft has been sunk all the way on a rich chimney of ore, which continued to the bottom of the shaft and from which all the rich ore shipped has been taken, and the drift from tunnel No. 3 will strike this chimney of ore at a depth of about 155 ft. below the bottom of the shaft, the face of the drift being on January 15th about 130 ft. from the shaft. The mill was not run, as without improvements it does not save the gold. A mortgage of $5,000 was taken up. There is now on hand 80 tons of crude ore, 150 tons of tailings and 200 tons of milling ore.

Cache County.

La Plata Land Case.—In this case the Register has decided that the east half of the section and east half of the northwest quarter are essentially mineral ground, which should be segregated from the railroad grant and be declared mineral land while the west one-half the northwest quarter and the southwest quarter of the section can better be devoted to agricultural purposes. In support of the decision relating to the mineral section of the land, an opinion is quoted from the Secretary of the Interior, in which he says: "Land is mineral in character, and as such excepted from the grant to this company (Casey et al. vs. Northern Pacific), where the developments and its results display such promise that a prudent and reasonable man would be justified in expending money and labor in legitimate mining operations."

The decision is applicable to the Sun Rise claim and the Consolidated Mountain Boy and Loretto lodes.

Juab County.

Herkimer Mining Company.—The shaft is down 500 ft., and drifts are being run north and east at the rate of 12 ft. per day. Sixteen men are employed.

According to the Salt Lake "Tribune," mining at Tintic is at a standstill.

Nothing new has developed in the shutdown at the Beck. Both the men and the company remain firm, and there is no prospect of a compromise very soon. The company has made provision for a long fight, and the end seems a long way off.

Many of the miners formerly employed at the Beck are now doing assessment work on claims they own in Tintic. The shutdown gives them time to develop their properties.

Tuesday night's (January 31st) shift was the last at the Mammoth, the miners refusing to accept the cut in wages.

The few men at the Eureka Hill and Keystone and the 60 odd at the Centennial-Eureka, are the only ones employed in Eureka and Mammoth. To be sure, there are a few minor properties in Mammoth and around Silver City employing a few men each, but what was at one time the scene of the greatest activity in Utah is now closed down indefinitely.

The "Tribune" says: The low price of silver is the real cause of all this depression. While many adhere to the idea that it really means a desire on the part of the mine managers to reduce wages, the fact remains that with silver at a dollar or over no thought of a reduction in wages would have found a response in the breast of one of them.

Mammoth Mining Company.—A meeting of the directors of the company was held February 2d for the purpose of conferring with F. E. Goodhart, of London, the representative of the English stockholders. The resignation of Superintendent W. M. Nesbitt was accepted, to take effect at once. No new superintendent was appointed, as the mine is closed down pending the adjustment of the question of wages. The company wished to reduce the wages of miners to $2.50 per day, and the miners refused to continue work at that rate. The date for the annual meeting was set for March 14th.

Salt Lake County.

James M. Garvey *et al.* vs. York Mining Company.—A decision has been given in favor of the plaintiffs which gives them a stay of 30 days to prepare a statement for a new trial. The action brought by the plaintiffs was to set aside action of defendants in levying an assessment upon the stock.

Salt Lake City.—The copper syndicate has offered to erect its smelting and refining works at this place upon condition that it receives 160 acres of land free and $100,000 in cash.

Salt Lake City.—At a meeting of the business men and Board of Trade held in this city January 30th, it was decided to invite the Mining Congress to hold its sessions in the city on June 5th, 6th and 7th. It is proposed to have three excursions—one to Bingham, one to Park City and one to Tintic. A committee of seven, with Mr. McCormick as Chairman, has been appointed to raise the necessary funds, about $5,000 in all.

Uintah County.

Wasatch Asphaltum Company.—This company shipped during the week ending January 31st 350 tons of asphaltum from the mine near Clear Creek Station, and 100 tons of gilsonite from the mine near Fort Duchesne, shipments being made via Price all to Buffalo. At the Clear Creek mine 10 more miners have been put on, making the force now 42 men. The company has started the old mill in North Salt Lake to turn out a carload of paving mastic per day to supply orders.

VIRGINIA.

Powhattan County.

James River Coal Company.—Mr. L. A. Gabanyi, civil and mining engineer, has made a report on this company's property, in which he says: "This colliery lies on the south bank of James River, 17 miles west of Richmond, It is situated on the western outcrop of the main basin of the 'Richmond coal field.' This basin possesses three coal seams, of which the upper two have been worked to a limited extent, chiefly by means of two small shafts. In 1885 efforts were made by the late John Bladon to sink a new and larger shaft, but his sudden death stopped the operation temporarily. The James River Coal Company has bought the lease of that of the Powhattan Coal Company and pumped the water out of the old workings, which are in good condition. The greatest amount of work has been done in the top vein, which is of good coal, 10 × 12 ft. thick. The company has sunk a new slope 8 × 7 × 6 ft. from the surface into the top vein with a 35 degrees pitch. With this slope the two lower veins will also be opened up shortly. The company has under a lease for 23 years, with the privilege of renewal, exclusive mineral rights on 1,897 acres, 500 of which are good timber land.

WASHINGTON.

Stevens County.

Colville Smelter.—According to a special correspondent of the Spokane "Review," this smelter was sold January 27th under execution issued on a judgment for $10,000 in favor of the Stevens County Bank.

WYOMING.

A press dispatch from Cheyenne states that the private mine owners of the coal mines along the Union Pacific system have declared war against the Union Pacific Railroad Company's raise of coal freights, and Senator Holliday has introduced a bill in the Legislature similar to the law in operation in Kansas, providing for the appointment of three railroad commissioners, with power to fix uniform rates for passengers and freight. Under Jay Gould's plans an order was issued by S. H. H. Clark, January 15th, reducing the price of coal at the mines 25c. a ton and adding the amount of deduction to the freight tariff. Private mine owners say that this means the closing of their mines and the discharge of 500 of their employés at Rock Springs and other towns; that it wipes out the value of their properties. Mr. Clark says that the new rate is absolutely necessary to make the road pay, and will oppose any effort of the private owners in the direction of legislation.

FOREIGN MINING NEWS.

BOLIVIA.

It is reported by cable from Valparaiso that petroleum of good quality has been found at Santa Cruz.

BRITISH COLUMBIA.

Kootenai County.

The Kennedy-Wagner group of mines in the new Lardo-Slocan country is to be transferred to a Spokane company. Assays of the ore of these claims show from $10 to $30 in gold and from 115 to 550 oz. silver.

Slocan.

This region has been recently visited by Mr. Wm. Newton, an interview with whom was published in the Spokane "Chronicle."

"I visited most of the principal mines in the Slocan," said Mr Newton, "and am well pleased with the showing made by them. The Bluebird, Freddie Lee, Washington and Dardanelles are all busy shipping ore. The Lucky Jim is working five men, but would employ more if the buildings were large enough to accommodate them. This mine now shows a 42-inch ledge with 11 in. of ore that will carry 65% lead and 72 oz. of silver per ton. I believe the bond on this property will be taken up as soon as it matures.

"I also visited the Grady mine, owned by Mike Grady, an old-time prospector. This shows a 42-in. vein, 8 in. being gray copper, worth $800 a ton, and the remainder concentrating ore. Ore is now being shipped from this mine to Nakusp. A company has bonded Joe Bushway's claim on St. Mary's River for $40,000, and I am informed bonds have also been secured on adjoining claims. This ledge is 22 ft. wide, and can be traced 180 ft. on the surface of the ground. The ore carries 52 oz. of silver to the ton. Machinery has been shipped in and work has already commenced on this mine.

"William McCullough is developing his property on the same river and has struck a ledge of concentrating ore 65 ft. wide. It yields 16 oz. of silver to the ton and concentrates in the ratio of 7 to 1. The ledge can be traced 600 ft. on the surface.

"In the upper country another good discovery has been made. John Lodge has found a 9-in. vein of gray copper ore at the head of the Duncan River that runs $800 to the ton. This property is located 45 miles from the head of Arrow Lake. I am going to the Lardo before the snow disappears, and as I was there seven years ago I know there are valuable properties there that have not yet been located."

CHILI.

On January 19th, the Chilean Legislature approved the Peruvian corporation agreement. This will place at the disposal of the Peruvian corporation the sum deposited by Chile in the Bank of England, enabling the company to pay the old Peruvian bondholders £3 cash per £100 of the old bonds.

The Chilian Legislature has now before it a bill for the sale of the government nitrate properties, which has received the approval of the Standing Committee of Finance. Its main provisions, as summarized by the "Chitian Times," are as follows: "No sale shall take place until after six months' advertising in the 'Diario Oficial,' and three months in London, Paris and Berlin papers. The minimum price not to be under that paid by the Government plus interest at the rate of 4½ per cent. per annum from the date of acquirement to the date of sale. The price to be paid 50 per cent. down, and the remainder in two yearly instalments of 25 per cent. plus interest at the rate of 4½ per cent. per annum. The purchasers to be allowed to anticipate the payments if they should choose to do so. The transfer of ownership to be made without recourse against the State, but the purchasers to have the right to apply to the courts with respect to boundaries and recovery of property." The London "Economist" says of the bill: "If the sale of these properties be determined upon, the existing nitrate producers will be placed in a somewhat difficult position. They have, as our readers know, entered into a combination to restrict the output so as to keep up prices. If, however, the Government properties are sold to other parties the supply will be increased, and the object of the combination defeated; while, on the other hand, if the existing companies acquire the new Government properties, they will be saddled with additional capital and other expenses without any compensatory advantages, seeing that their producing power is already greater than the nitrate market offers scope for."

GERMANY.

In 1892, Luxemburg produced 4,793,000 tons of pig iron.

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 142 and 144.]

NEW YORK, Friday Evening, Feb. 10.

The mining stock market shows signs of improvement. A better feeling prevails, brought about by an increased inquiry for mining shares. The usual rumors of a "boom" in the Comstocks are afloat,

and preparations for its reception are now making. These rumors make their appearance at periodic intervals, and are not always followed by the said "boom" itself. The brokers say that it is about time something happened to break up the uninterrupted dullness of the past few months. Certainly, judging from certain signs, the outlook is more promising than for some time past.

The Comstocks are in better demand and somewhat firmer in price. There were sales of 700 shares of Best & Belcher at $1.45@$1.65. Consolidated California & Virginia was quiet, only 200 shares being sold at $2.60@$2.70. Of Crown Point 700 shares changed hands at 75@85c. Hale & Norcross advanced from 95c. to $1.45, with total sales of 450 shares. Comstock Tunnel stock was traded in to the extent of 1,000 at 9@10c. Other sales were as follows: 100 shares of Alta at 25c.; 100 shares of Bullion, at 70c.; 350 shares of Chollar, at 70@75c.; 800 shares of Julia, at 12@16c.; 650 shares of Mexican, at $1.70@$2; 350 shares of Union Consolidated, $1@$1.20; 1,000 shares of Utah, at 20c.@25c.; 400 shares of Gould & Curry, at 95c.@$1.05; 150 shares of Ophir, at $2.15@$2.30; 100 shares of Sierra Nevada, at $1.40; 300 shares of Yellow Jacket, at 75@90c.

Of the California stocks Belmont shows sales of 600 shares at 20c, and Brunswick Consolidated of 2,600 shares at 8@9c. The superintendent of the Brunswick Consolidated Gold Mining Company, writing from Grass Valley, Cal., on the 1st inst., says, "We have finished the 700 station and are now turning the drifts. We have not taken down any ledge. There is no change in either of the drifts on the 600 level." There was a sale of 200 shares of Bulwer at 25c. There were no sales of Standard Consolidated this week. The total output of the Standard mine during the month of January amounted to $16,800; the total expenses for the same time were $14,400. This leaves a net profit of $2,500 for the month.

Of the Colorado stocks Leadville Consolidated was very quiet; the total sales for the week amounted to only 400 shares at 18@20c. Of Little Chief 600 shares were sold at 20@22c. Chrysolite shows transactions of 1,500 shares at 20@23c.

The Black Hills stocks were in but little request. There was a sale of 100 shares of Caledonia at $1. The official lists of the Consolidated Stock and Petroleum Exchange report sales of 600 shares of Sullivan Consolidated at $1.

Phœnix, of Arizona, was heavily traded in during the week. The price declined from 46c. to 25c., and 11,000 shares were sold within this range of values.

According to the official sales lists of the Consolidated Stock and Petroleum Exchange, Monte Cristo was traded in to the extent of 8,200 shares at $2.95@$3.15, and El Cristo 1,400 shares at 40@51c.

The annual financial statement and report of the Horn Silver Mining Company will be issued to the stockholders next week.

Boston. Feb. 9.

(From our Special Correspondent.)

We note a little more activity in copper mining stocks the past week, and a slightly improved tone in prices. The Montana stocks were in better demand, and Boston & Montana advanced from $33¼ to $34¼ with reaction, in later sales, to $34. Butte & Boston improved from $10½ to $11⅜, losing only ⅛, and closing at $11¼ and in good demand at this figure.

Calumet & Hecla sold at $307 and later ex-dividend $5 at $303.

Tamarack advanced from $161 to $164 with reaction to $163 and shows a good degree of firmness.

Osceola showed considerable strength in the early dealings and sold up to $37½, but in later sales it fell off to 36¾, closing 36½ bid, 37 asked.

Quincy advanced on the better outlook from $136 to $138, with later sales at $136½. There is quite a good demand for the stock at about $135, and it would not be difficult to sell a good deal at this price.

Franklin quiet but steady at an advance of ⅜ over last week, with sales at 13¾. There was little better demand for Centennial, which sold at $8, and Kearsarge improved from $11½ to $12¼ on small dealings.

Tamarack, Jr., sold at $19.

Atlantic advanced from $9½ to $10, and is wanted at this figure.

Wolverine sold at $1⅜@$1½, with later sales assessment paid (50c.) at $2¼.

We note sale of National at $1¼.

The balance of the list is neglected.

Quincy sold this afternoon at $137¼, an advance of ¾, but Tamarack declined on small sales to $161.

San Francisco. Feb. 3.

(From our Special Correspondent.)

While dull trading has continued to be the prevailing feature of the market during the past week, prices have been steadier, and in many cases have shown trifling advances on the ruling rates a week ago. A significant fact has been the strong feeling in some of the north end Comstocks, particularly in the case of Mexican. The mine has never in the past, and it seems absolutely certain to say, it never will in the future produce a dollar in bullion, and consequently it is not intrinsic value that is causing the stock to be in demand. Consolidated California & Virginia sold during the early days of the week much the same as a week ago, but yesterday and to-day showed trifling advances, selling for $2.50. Mexican has been steady at $1.50; Ophir at $1.80; Sierra Nevada at $1.30, and Union Consolidated at 95c.

The middle Comstocks have not shown any particular strength, even Potosi, that has been attracting some attention, selling five cents under last week's ruling rate until to-day, when it sold to $1.40. Savage has been in fair demand for $1.15, while Best & Belcher has sold for $1.35; Chollar for 70 cents; Gould & Curry for 90 cents, and Hale & Norcross for 75 cents.

The scheme for resuming work on the lower levels of the Comstock mines, and for all the companies operating on the lode to pool their interests in carrying on the work of pumping the water has not yet been perfected, and probably will not be until Mr. Mackay arrives here a month hence.

Meantime the South End and Gold Hill stocks are not being largely dealt in, with one or two exceptions. Belcher at 90c. this week has shown a 10c. advance on last week's ruling price and has sold steady. Bullion, while showing no advance, has been in good demand at 60c., over 2,000 shares changing hands at the two sessions of the Board to-day. Alpha sold for 20c.; Alta, for 15c.; Challenge, for 50c.; Crown Point, for 70c.; Justice, for 10c.; Overman, for 15c.; Kentuck, for 20c.; Occidental, for 15c., and Yellow Jacket, for 75c.

As usual a sufficiency of outside stocks were sold to obtain a quotation and no more. Bodie Consolidated sold for 15c.; Bulwer Consolidated, for 15c., and Mons, for 10c.

In the Tuscarora group, Belle Isle, Grand Prize, North Belle Isle, North Commonwealth and Nevada Queen were held to-day for 5c. and Commonwealth, Del Monte and Navajo for 10c.

The Quijotoa stocks have been a drug on the market for some time and this week has been no exception. Central, Crocker, Locomotive and Peerless have gone begging at 5c., while 5c. was bid for Peerless.

At the close this afternoon the Comstocks were steady at the above rates.

SAN FRANCISCO, February 10th (*By telegraph*).—The opening quotations to-day are as follows: Best & Belcher, $2.15; Bodie, 15c.; Belle Isle, 15c.; Bulwer, 10c.; Chollar, 60c.; Consolidated California & Virginia, $2.65; Gould & Curry, 95c.; Hale & Norcross, $1.25; Mexican, $1.80; North Belle Isle, 10c.; Navajo, 10c.; Ophir, $2.15; Savage, $1; Sierra Nevada, $1.30; Union Consolidated, $1.05; Yellow Jacket, 65c.

ASSESSMENTS.

COMPANY.	No.	When levied	D'l'nq't in office.	Day of sale.	Amt. per share.
Alpha Cons., Nev...	10	Dec. 20	Jan. 24	Feb. 14	.10
Andes, Nev	39	Jan. 21	Feb 24	Mar. 16	.25
Belle Isle, Nev.....	17	Jan. 9	Feb. 14	Mar. 8	.10
Best & Belcher, Nev.	53	Jan. 16	Feb. 21	Mar. 14	.25
Caledonia, Nev. ...	45	Jan. 28	Mar. 2	Mar. 23	.10
Con. Imperial, Nev.	59	Dec. 20	Jan. 24	Feb. 14	.25
Crown Point, Nev..	59	Dec. 20	Jan. 24	Feb. 14	.25
Exchequer, Nev..	35	Jan. 26	Mar. 1	Mar. 22	.10
El Leopoldo, Mex..	2	Jan. 26	Mar. 3	Mar 28	.05
Gold Mountain, Cal.	4	Dec. 21	Jan. 28	Feb. 15	2.00
Gray Eagle, Cal....	70	Dec. 15	Feb. 6	Mar. 2	.07
Hale & Norcross, Nev.....	103	Jan. 7	Feb. 10	Mar. 3	.50
Independence, Nev.	18	Jan. 27	Mar. 6	Mar. 29	.05
Jack Rabbit, Cal.	2	Dec. 29	Feb. 6	Feb. 28	.05
Justice, Nev.....	53	Jan. 6	Feb. 9	Mar. 2	.10
Morgan, Cal.....	16	Jan. 28	Mar. 6	Mar. 30	.10
Navajo, Nev.....	24	Jan. 9	Feb. 13	Mar. 7	.10
Nevada Queen, Nev	53	Jan. 16	Feb. 21	Mar. 14	.25
North Belle Isle, Nev.....	22	Jan. 26	Mar. 3	Apr. 3	.10
North Commonwealth, Nev.....	4	Jan. 24	Mar. 2	Mar. 7	.10
Overman, Nev.	66	Jan. 10	Feb. 14	Mar. 30	.25
Scg. Belcher & Mides, Nev.....	11	Jan. 8	Feb. 7	Feb. 27	.25
South Eureka, Cal..	2	Jan. 4	Feb. 10	Mar. 6	.02
West Va. Con. & C., Nev.....	1	Jan. 19	Feb. 23	Mar. 15	.25
Yellow Jacket, Nev.	53	.....	Jan. 6	Feb. 14	.30

METAL MARKET.

NEW YORK, Friday Evening, Feb. 10, 1893.

Prices of Silver per Ounce Troy.

Feb.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.	Feb.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.
4	4·86¾	38¼	.....	....	8	4·87¼	38⅜	85⅝	.637
6	4·86¾	38⅜	.....	....	9	4·87¼	38¾	83⅞	.637
7	4·87	38¾	.....	....	10	4·87¼	38⅜	83½	.636

Attention has been turned this week on the silver question to Washington. The vote of the House on Thursday indicates there is not much change of heart in that quarter, and it emphasizes the fact so often stated that there will be no silver legislation this session of Congress. Commercially the price of silver the past week has been very steady, and bullion has been in request.

The United States Assay Office at New York reports the total receipts of silver for the week to be 127,000 ounces.

Government Silver Purchases.

The government has purchased during the week the following quantities of fine silver at the accompanying prices per fine ounce:

February 6th, 378,000 oz, at 83·7@83·8c.
February 8th, 317,000 oz., at 83 95@84·15c.
February 10th, 580,000 oz., at 83 99@84.

Gold and Silver Exports and Imports at New York for Week Ending February 4th, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of
	Exports.	Imports.	Exports.	Imports.	Exports.
Week....	$1,008,625	$20,804	$537,350	$189,676	$4,335,535
1893.....	11,744,560	104,064	3,031,134	264,961	17,396,769
1892.....	473,372	635,169	2,748,769	139,692	2,447,280

During the five days ending February 10th the exports and imports, so far as ascertained, have been as follows: Exports, gold, $55,225; silver, $613,629. Imports, gold, $8,155; silver, $132,300. Besides the above it is expected that from $2,500,000 to $4,000,000 in gold will be exported to-morrow, February 11th, via French steamer. Of the silver exported $308,700 was American bullion and $295,000 was Mexican coin.

NOTES OF THE WEEK.

The past week has been full of interest to financiers and economists. On Monday Senator Hill, of New York, in a curious and ambiguous speech, moved to take up the bill which Senator Sherman presented at the last session of Congress, repealing the Act of July 14, 1890, known as the Sherman Act. The motion was voted down, as was perhaps the desire of its mover, by a vote of 42 to 23.

On Thursday the Andrews-Cate bill repealing the Sherman Act was brought up before the House and refused a hearing.

The action of the Senate and House destroys all hope of a repeal of the silver purchase act at this session of Congress, although it may be possible that part of the opposition to the bill was due to its banking provisions and to Mr. Cate's amendment providing for the immediate coinage of all the silver bullion in the Treasury.

Although this result has been expected, it has not failed to depress prices, and holders of stocks here and abroad have sold freely.

Gold continues to be exported in abnormal quantities and the feeling that we are rapidly reaching a silver basis continues to gain strength.

For the time being, the exports of gold will not be reflected in the daily statement of the Treasury, for the National Banks of New York City, in order to allay alarm, have contributed about $6,000,000 in gold certificates to the Treasury, receiving legal tenders therefor. Although this adds nothing to the active amount of gold held by the Treasury, by diminishing its gold liabilities it enables it to maintain a small stock above the $100,000,000 required by law. President Simmons, of the Fourth National Bank, when questioned by us to how long the banks would continue this policy, refused to give a direct answer, but said: "We are all creatures of the National Treasury and our welfare is identical with its welfare. We do not care to have much gold in our vaults; it is safer in the Treasury, and when we pay it in we receive legal tender notes which the government is pledged to redeem in gold at presentation."

Domestic and Foreign Coin.

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

	Bid.	Asked.
Mexican dollars.....	$.65½	$.66
Peruvian soles and Chilian pesos.....	.60	.61
Victoria sovereigns.....	4.86	4.88
Twenty francs.....	3.85	3.88
Twenty marks.....	4 71	4.78
Spanish 25 pesetas.....	4.78	4.81

Copper.—There is a decidedly better inquiry, although the flatter reports from London have not been without an effect, and the amount of business transacted has not been as great as it should have been. Lake copper has been sold at about 12·10@12·10⅛, at which prices it appears that more is to be had. Smelters show no inclination to give way, however. Somewhat lower values have been accepted for casting, the mutual understanding between the principal smelters having come to an end. We quote 11¼@11⅜, according to brand and quantity. The opening saw the London market firm at £46 for spot and 10s. higher for three months prompt, but afterwards, under pressure to sell and rather small consumptive demand, gave way, closing at £45 7s. 6d. and £45 17s. 6d. respectively. Prime electrolytic copper is freely offered abroad at about £53@£53 10s. c. i. f. continental ports, while Lake is held for from £56 to £57. Refined and manufactured we quote as follows: English tough, £48@£48 10s.; best selected, £49@£49 10s.; strong sheets, £58@£58 10s.; India sheets, £53@£53 10s., yellow metal, 5¾d. Manufacturers complain that business being rather dull they are unable to run on full time.

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

To Liverpool—	Copper Matte.	Lbs.	
S. S. Bovie.....	1,445 bags	158,469	$7,000
To Liverpool—	Copper.		
S. S. Britannic.....	17 bbls.	15,690*	$1,800
" Etruria.....	100 "	125,000	15,009

To Havre—	Copper.			
S. S. La Normandie	541 pigs	194,318	$19,000
" "	796 bars	221,309	23,000
" La Gascogne	45 bbls.	56,250	7,000
To Havre—	Copper Matte.		
S. S. La Normandie.....	228 bbls.*		$16,315
To Rotterdam—	Copper.		
S. S. Maasdam	654 bars	112,049	$13,446

*In transit.

Tin—Business has been good, and the transactions many. Consumers are evidently growing more nervous and have concluded pretty large contracts for forward delivery. Importers show great reluctance to sell ahead, this being due principally to the fact that the London market is higher than ours and the East Indian than that. Spot tin has been sold at 20¼@ 3-10. March at 4 10@ ¼, and April at ⅝@ ⅜. In England, prices have been very steady at about £91 7s. 6d. for spot and £92 7s. 6d. for futures, which are the closing quotations.

Lead.—Although somewhat irregular, the market is very still. The fluctuations have been large, business being done at 3·975 early in the week, then at 3·925, and, it is said, even at less. Buyers then came out very freely and, refiners holding back with supplies, values at once hardened and have now to be quoted at 3·975@4c. New York with corresponding figures ruling elsewhere. It looks as if production had fallen off quite materially of late, as is usually the case during the first few months of the year when the cold weather interrupts mining. The foreign lead market continues to be rather much depressed, and, the advices of shipments from Australia being for heavy quantities, prices were lowered and are £9 12s. 6d. for Spanish and 2s. 6d. more for English lead.

Chicago Lead Market.—The Post-Boynton Strong Company telegraph us as follows: "Market has been much firmer at 3·75c., and latterly sales of some 200 tons have been made at that price. Consumers are looking around for futures especially."

Spelter.—Very little is doing in this article, the market for which is quiet, with quotations at 4·35 New York well maintained. The English market, however, is lower, being quoted for ordinaries at £17 5s., and for specials at £17 10s.

Antimony is somewhat cheaper, and we have to quote Cookson's at 10¾, L. X. at 10@12, and Hallett's at 10⅛.

Nickel is quiet, with prices unaltered at 48@52c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 10, 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 February 4th, 1892, and for the corresponding week ending February 4th, 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 February 11h, 1892, and February 4th, 1893, and During Both Years to These Dates.

Fuel used.	Week ending Feb. 4, 1892.		Week ending Feb. 4, 1893.		From Jan., 92.	From Jan.,'93.
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	94	38,970	70	32,600	194,850	163,400
Coke.	164	138,990	137	131,600	694,950	658,000
Charcoal...	55	11,820	39	8,900	59,100	44,500
Totals....	313	189,780	246	173,100	948,900	865,500

The decrease in the output of pig iron up to the week ending February 4th is about 83,400 tons. This would seem to indicate that producers are becoming somewhat apprehensive of the course of trade during the next few months, and are preparing to meet any decline that may come along.

We are still making more pig iron than the country wants, and a further decrease in output is not undesirable.

Prices: 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, $57 @$57.50. Spiegel, $26.50.

Steel Rails.—Quotations are still $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, 6¼@7½c.; 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. Feb. 2.

(Special Report by Rogers, Brown & Co.)

While prices still continue weak, inquiry is increasing rapidly and some good sized sales are being consummated. Consumption apparently is growing and forcing purchases. The present demand for iron, if continued, will certainly stop further decline in price, if indeed it does not cause a sharp advance.

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, $13.90@$14.15; Alabama car wheel, $19; Hanging Rock charcoal, $20.50.

Buffalo. Feb. 8.

(Special Report by Rogers, Brown & Co.)

Nothing of importance has transpired during the week. Prices remain where they have been and the volume of business is fair, but chiefly confined to moderate sized purchases, frequently repeated, indicating small stocks in the hands of consumers generally.

We quote on the cash basis f. o. b. cars Buffalo: No. 1 X foundry strong coke iron, Lake Superior ore, $15.00; No. 2 X foundry strong coke iron, Lake Superior ore, $14; Ohio softener, No. 1, $15; Ohio 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, $13.90 @$14.15; Alabama car wheel, $19; Hanging Rock charcoal, $20.50.

Chicago. Feb. 9.

(From our Special Correspondent.)

Agents and furnace men here look for greater activity in February than obtained last month, and there is now a little stronger feeling in crude iron with no disposition on part of furnaces to make any further concessions. The developments in the Mesaba iron ore range had led some Northern producers of pig iron to expect lower prices for ore; this may be true of the Bessemer but not of the non-Bessemer or foundry ores, and the amount of this latter to be brought down the coming season will be much less than was expected. Under these circumstances the new ore fields will prove a less important factor in establishing values than was at first supposed. Hence the additional feeling of confidence in the pig iron trade here. The foregoing we have direct from the agents of the largest producers of crude iron in this district. With probably two exceptions, and those the largest Southern manufacturers of pig iron, furnaces there are inclined to further weakness, with a tendency to meet Northern quotations on the lower grades. Manufactured iron and steel are in very little better demand than they were in January, though there is a better feeling in bars and dealers a trifle firmer, but beams and channels are easier. The competition from the West Superior mill in Minnesota will be felt by Western agents of Eastern plate mills.

Pig Iron.—The opinion of local furnace men that February would show a more active movement than last month has already been verified. Last week sales were greater than during any week this year, not only in small but also in large lots Transactions were for round lots of 1,000 tons and upward, covering requirements well into summer. The low prices now current, which are slightly under those quoted, are proving attractive to buyers, and quite a number of good inquiries are still pending. While sellers look for no higher prices in the near future, there is almost an absolute certainty that they will go no lower on account of the steady reduction in output and increasing consumption. Southern coke iron manifests greater weakness, and several sales of No. 2 foundry and No. 2 soft grades have been made at very low figures, but leading companies still hold to $10 Birmingham, Ala., for average grade No. 2, equal to $13.60 Chicago. Lake Superior charcoal iron, though quiet, is firm as quoted.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.07@$17.25; Lake Superior coke, No. 1, $13.50@$14.50; No. 2, $13.00@$13.50; No. 3, $12.75@$13; Lake Superior Bessemer, $14.25; Lake Superior Scotch, $14.25@$14 75; American Scotch, $16 25@$17; Southern coke, foundry, No. 1, $14.25; No. 2, $13.35; No. 3, $13.00; Southern coke, soft, No. 1, $13.35; No. 2, $13.00; Ohio silveries, No. 1, $17; No. 2, $16.50; Ohio strong softeners, No. 1, $17; No. 2, $16.25; Tennessee charcoal, No. 1, $17; No. 2, $16.50; Southern standard car wheel, $20@$21.

Steel Billets and Rods.—Quotations remain unchanged at $23.50 for billets and $32.50 for rods.

Structural Iron and Steel.—There is a fair tonnage in sight with every prospect of increased activity for structural work, viaducts, extensions to elevated roads already completed, bridges, etc. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, $1.90@$2; tees, $2.15@$2 25; universal plates, $1.95@$2; sheared plates, $1.95@$2; beams and channels, $1.95@2.25.

Plates.—Demand from the outside is increasing but locally there is very little improvement. Steel sheets, 10 to 14, $2.30@$2.40; iron sheets, 10 to 14, $2.20@$2.30; tank iron or steel, $1.90@$2; shell iron or steel, $2 50@$2.75; firebox steel, $4.25@$5.50; flange steel, $2.75@$3; boiler rivets, $4@$4.15; boiler tubes, all sizes, 60%.

Merchant Steel.—Consumption of soft steel for manufacturing purposes continues large, and the tonnage of steel now being shipped to the Northwest will far exceed past record. Low prices have of course stimulated general trade in these specialties. Tool steel is quiet. Quotations are: Tool steel, $6.50@$6.75 and upward; tire steel, $2@$2.10; toe calk, $2.30@$2.40. Bessemer machinery, $2.10@$2.20; Bessemer bars, $1.70@$1.75; open hearth machinery, $2.30@$2.40; open hearth carriage spring, $2.10@$2.20; crucible spring, $3.75@$4.

Galvanized Sheet Iron.—There is only a moderate demand, but the market is in good shape. Discounts are easy at 70% and 10% off on Juniata and 70 and 15% off on charcoal, and jobbing quantities at 70 and 5% off on the former and 70 and 10% off on the latter.

Black Sheet Iron.—Orders are rather more frequent from miscellaneous consumers, and the outlook more encouraging. Quotations on iron sheets are 2·85c. for No. 27, common; steel sheets are 2·95c. Jobbers quote 3@3·10c. for iron and 3·10@3·05c. for steel, same gauge.

Bar Iron.—The outlook has improved both as regards tonnage and price. There is a fair inquiry from jobbers and consumers and the situation better from mill standpoint than it was two weeks ago. Mill lots are quoted at 1·55c. Chicago, with half extras, and 1·65@1·70c. from store according to quantity.

Steel Rails.—The situation shows no material change. Orders so far are mainly for small quantities, but there is a better inquiry, and the action of several of the leading Eastern railroads in placing round lots may induce Western systems to follow a similar policy. Quotations are $30@32 according to quantity. Other track material is dull at $1·65@1·70c. for iron and steel splice bars; track bolts, square nuts, 2·55c.; hexagon, 2·65: spikes, 2·05@2·10c. according to style.

Nails.—In steel cut nails local mills report a fair demand for the season at $1.57½, 30c. average; jobbing trade dull at $1.65 in small lots. Wire nails are steadier and in better demand at $1.55 base Chicago; jobbers quote $1.65@$1.70 from stock.

Scrap.—Demand, though light, is better than it was last month, but prices continue weak. Railroad, $15.50; No. 1 forge, $15; No. 1 mill, $9.50; fish plates, $16.50; axles, $19; horseshoe, $16; pipes and flues, $7; cast borings, $6; wrought turnings, $8; axle turnings, $9.50; machinery castings, $10; stove plates, $6.50; mixed steel, $10.50; coil steel, $15; leaf steel, $15.50; tires, $14.50.

Old Material.—Business in iron rails is at a standstill, and dealers quote $18@$18.50, some holders ask $18.75, with no transactions reported. Steel rails are very dull, at $11.25@$13.50, according to length and condition; selected for rerolling are $15

Philadelphia. Feb. 8.

(From our Special Correspondent.)

Pig Iron.—A good deal of quiet buying has been done this week both of standard brands and brands not standard, but at prices that show intense anxiety on the part of makers to get rid of stocks and secure orders for the future. The probabilities are that a large volume of business will be done in the near future. No. 1 Foundry is $15@$15.25 per standard, and for No. 2 $13.50@$14.50 according to make. Forge irons are $12.50@$13.25. Bessemer $15.50 at furnace.

Muck Bars.—Only a few small lots were sold at $23.75.

Steel Billets.—A good run of small orders is reported at $24@$24.25. Larger orders will probably be placed in a few days as inquiries are more active and conditions are more favorable to makers. There is some cutting on Western billets.

Merchant Iron.—The run of small orders continues and prices are very low. Car builders are helping to keep the trade from becoming demoralized.

Nails.—The revision of the card is expected to impart a stronger tone to the market.

Skelp.—If manufacturers would accept 1·50 there would be no difficulty about business.

Wrought Iron Pipe.—Discounts are fluctuating and it is impossible to give prices. Considerable business is in sight and buyers will dictate prices.

Sheet Iron.—Activity prevails in all branches, but prices continue very low for all kinds. The anxiety for business forbids any early improvement. Best refined, $2.75@$3.50. Best soft steel 2¾@4c

Plate and Tank.—All interest is centered in the ship iron contracts to be placed by the Cramps. Prices are low even on small orders; as for large orders, it is impossible to obtain actual selling prices. Tank plates, $1.80; shell, $2.10; flange, $2.40 for steel.

Structural Material.—The placing of orders for nearly four thousand tons structural material for the Atlantic steamers to be built here is announced. These orders will be followed by others in a few days. Structural material for buildings will also be ordered freely this month, specifications for several contracts having been just received.

Steel Rails.—Contracts for 65,000 tons of rails have been placed in this State, of wbich two-thirds were secured by eastern Pennsylvania mills, including a 4,000 ton lot for export to Cuba. Quotations, $29; actual selling price unknown.

Old Rails.—A good demand at $18@$18.50.

Pittsburg. Feb. 9.

(From our Special Correspondent.)

Raw Iron and Steel.—The condition of business in iron and steel has been marked by a fair amount of activity. The advance in Bessemer, noted in our last, has been maintained. There is no scarcity of work, but tbe constant desire to secure business ahead tends to keep prices down to a low point, and for the time being without much prospect of any material change. Dealers view the placing of the Pennsylvania order for rails as a very encouraging feature, which is usually accepted as a starting point for other roads; that is to say, when the Pennsylvania company feels satisfied that prices are safe for the year, other companies as a rule generally adopt tbe same idea, and begin to provide for their requirements accordingly; consequently a considerable accession of orders for rails is looked for in the near future. Prices of many articles are unsatisfactory; they will undoubtedly so continue until lifted out of it by the sheer force of an increased demand. The first movement is being made and it is useless to grumble because prices fail to advance as rapidly as we would like. While tbere seems to be a gradual stiffening it will require time and considerably more business before we can look for any material advance. Large bodies move slowly, and as the capacity for production is vastly greater than in any former year in the history of the country it is not to be expected that prices will show an immediate advance. Buyers in some certain instances show hesitancy in placing orders, and hold off contracting for material required to meet pressing wants in the hope that better terms may he secured by waiting. The consumption continues heavy, but the market is largely in buyer's favor. The leading producers appear to be determined to hold their iron firmly at existing prices. A well informed dealer has tbis to say: "The second week of the second month may be said to he one of almost assured activity; after that there may be a short period of hesitancy, but the chances are now in favor of a continued active movement and a steady appreciation in prices. The one absolutely sure thing is that there will he no decline, and once that idea becomes fixed it will not be long before this is an advance." An Eastern dispatch says: "In the department of manufactured iron and steel prices are very irregular. The Cramp contract for 20,000 tons of plates for the new Inman steamships is said to have been taken at very low prices, and in every other line unprofitable rates are talked of." Steel Rails—We hear of no further transactions of importance since those previously noted; prospects are good, however, and it is probable that several large contracts will be given out before the close of the month. Asking rates, $29 f. o. b. cars at works.

The latest—Good news and true. It bas been discovered that Bessemer pig is scarce. During the past 24 hours prices advanced with sales 8,000 tons prompt and March delivery $13.50@$13.60 cash. Some dealers are holding for $14. The present are the highest prices for several months.

Coke Smelted Lake and Native Ore.

5,000 Tons Bessemer, this month	$13.50 cash.
3,600 Tons Bessemer, prompt	13.60 cash.
3,000 Tons Bessemer, Feb. March	13.40 cash.
2,500 Tons Bessemer, March	13.35 cash.
2,000 Tons Bessemer, Spot	13.50 cash.
1,500 Tons Bessemer, March	13.50 cash.
1,000 Tons Bessemer	13 40 cash.
1,000 Tons Bessemer	13.30 cash.
1,000 Tons Bessemer	13.25 cash.
1,000 Tons Bessemer	13.40 cash.
1,000 Tons Grey Forge	12.25 cash.
1,000 Tons Mill Iron	12.25 cash.
1,000 Tons Grey Forge	12.25 cash.
600 Tons Grey Forge, all ore	12.75 cash.
500 Tons No. 2 Foundry	13.25 cash.
500 Tons Bessemer	13.00 cash.
200 Tons No. 1 Foundry	14.00 cash.
200 Tons No. 2 Foundry	13.00 cash.
100 Tons White and Mottled	12.00 cash

Charcoal.

125 Tons No. 1 Cold Blast	26.50 cash.
100 Tons No. 2 Foundry	19.00 cash.
100 Tons No. 3 Cold Blast	26.50 cash.
75 Tons Cold Blast Southern	24.00 cash.
75 Tons Warm Blast	18.00 cash.

Steel Blooms, Billets and Slabs.

3,000 Tons Billets and Slabs, Feb., March at mill	21.75 cash.
2,000 Tons Billets, March, April, May at mill	21.65 cash.
2,000 Tons Billets, prompt	22.00 cash.
1,000 Tons Billets, Feb., March, April at mill	21.60 cash.
1,000 Tons Rod Billets, next 3 mos., at mill	21.50 cash.
650 Tons Billets, prompt at mill	21.65 cash.
500 Tons Billets and Slabs, March, April at mill	21.70 cash.

Muck Bar.

750 Tons Neutral, March	24.30 cash.
600 Tons Neutral, Feb	24.25 cash.
500 Tons Neutral	24.25 cash.
450 Tons Neutral	24.25 cash.

Ferro-Manganese.

120 Tons 80%, delivered	59.20 cash.

Iron Skelp.

620 Tons Sheared Iron	1.72½ 4 m.
600 Tons Narrow Grooved	1.52½ 4 m.
450 Tons Wide Grooved	1.52½ 4 m

Steel Skelp.

200 Tons Wide Grooved	1.45 4 m.

Steel Wire Rods 5 Gauge American.

860 Tons 5 gauge American, at mill	29.60 cash.

Blooms and Billet Ends.

000 Tons Billet and Bloom Ends	15.25 cash.

Sheet Bars.

350 Tons Sheet Bars, at mill (active)	28.50 cash

Old Iron and Steel Rails.

700 Tons Old Steel Rails	15.50 cash.
500 Tons Old Steel Rails	15.00 cash.
500 Tons American T's, Youngstown Del	19.50 cash.
300 Tons American T's, " "	19.50 cash,
200 Tons American T's, " "	19.50 cash.

Scrap Material.

400 Tons No. 1 R. R. W. Scrap, net	15.00 cash.
100 Tons Light Steel Scrap, net	13.50 cash,
100 Tons Open Furnace Scrap, gross	14.50 cash.
300 Tons Cast Borings, gross	8.00 cash.
100 Tons Wrought Turnings	11.00 cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Feb. 10th.

PRODUCTION OF BITUMINOUS COAL for week ending February 4th and year from January 1st:

Statement of shipments of anthracite coal, (approximated) for week ending February 4th, 1893, compared with the corresponding period last year:

	Feb. 4, 1893.	Feb. 6, 1892.	Difference.
Wyoming region	455,763	373,468	Inc. 82,295
Lehigh "	139,788	113,784	" 26,004
Schuylkill "	234,280	249,866	Dec. 15,586
Total	829,831	737,118	Inc. 92,713
Total for year to date	3,581,604	3,588,605	Dec. 7,001

EASTERN AND NORTHERN SHIPMENTS.

	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.	3,480	13,427	8,415
Cumberland, Md.	61,563	287,527	326,034
Barclay, Pa.	1,575	8,282	25,615
Broad Top, Pa.	12,183	72,202	64,175
Clearfield, Pa.	88,776	371 479	381,165
Allegheny, Pa.	23,958	91,723	114,014
Beach Creek, Pa.	32,731	164,673	233,581
Pocabontas Flat Top	56,507	225,650	256,963
Kanawha, W. Va.	52,709	296,436	216,631
Total	333,482	1,534,399	1,626,670

WESTERN SHIPMENTS.

	1893. Week.	1893. Year.	1892 Year.
Pittsburg, Pa.	34,868	133,999	142,948
Westmoreland, Pa.	44,854	178,569	179,425
Monongahela, Pa.	20,082	82,022	44,342
Totals	99,804	394,581	366,715
Grand totals	433,286	1,928 980	1,993,385

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending February 4th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 112,253 tons; year 526,007 tons; to corresponding date in 1892, 606,397 tons.

Anthracite.

An arrangement has been made between the Jersey Central and the Pennsylvania Railroad companies that adds an important factor to the existing situation. This is, in effect, tbat there will hereafter be a closer drawing of the bonds that connect the traffic of these roads so far as concerns the transportation of anthracite. The coal from the Nanticoke region near Wilkes-Barre, which has been going over the Pennsylvania to tidewater by way of Sunbury and Harrisburg, will be given to the Jersey Central. It will pass over tbis road to Phillipsburg and be then delivered to the Belvidere Division of the Pennsylvania, and so on to Trenton and tidewater. In return for this concession the Jersey Central will deliver to the Pennsylvania at Phillipsburg the coal it may bave for points on the Belvidere Division.

Considering the fact that the Jersey Central hauled 586,000 tons less last year than the year before and lost on this deficiency over $1,000,000, its endeavor to provide for the future is natural and commendable. Wbetber this arrangement will enable it to recoup its loss remains to he seen.

The plan is feasible, and an alliance with the Pennsylvania will stand the Jersey Central in better stead than its former alliance with the Reading. The Reading and the Jersey Central are now just where they were a year ago, but the Jersey Central has in the meantime narrowly escaped a receivership because of its entanglement in tbe mesbes of the combine, and is $1,000,000 out of pocket.

If it had not been foreed to withdraw from the combine by the efforts of the Attorney-General of New Jersey it might have found itself paying even more heavily for other folks' fun. There are some people, however, who will have fun, no matter what it costs. The Jersey Central was paying at the rate of $3,000 per day for tbe privilege of belonging to the combine, and really it should be properly grateful to Attorney-General Stockton for depriving it of this very expensive honor. Now that this road and the Pennsylvania are, in a measure, allied against the combine, we may expect to bave what Horace Greeley used to call "mighty interesting reading." This may come when the question of adjustment appears upon the scene.

So long as the present active demand continues this troublesome matter will be kept in abeyance, but it will come to tbe front with the advent of spring, and tben tbe Jersey Central and Pennsylvania will be in a position to ask for wbat they want.

It is possible that the Reading foresaw the alliance between these roads, and desired to make good the difference in freight by securing a strong foothold in New England. This would enable it to get a long haul, and tbis means more money for transportation.

It was stated by the daily "Philadelphia Stockholder" in its issue of February 7tb, 1893, that "it was most fortunate for the coal producing and carrying companies that tbe deal of a year ago was made. Many of the former were on the brink of bankruptcy and the combination alone saved them."

The benevolent character of the combine is thus beautifully shown, and we are disposed to thank our esteemed contemporary for pointing out a feature that had escaped us.

According to the Bureau of Anthracite Coal Statistics, the shipments from the various regions for the week ending February 4th may be approximated as follows:

	Gross tons.
Lehigh	139,788
Schuylkill	234,280
Wyoming	455,763
Total	829,831

Of this amount the Reading shipped 435,000 tons. The total for the year is 3,581,604 tons, as against 3,588,605 tons for the corresponding period of last year, a decrease of 7,001 tons. The shipments for the week ending January 28th, 1893, are approximated as follows in gross tons: Lehigh, 128.547; Schuylkill, 227,520; Wyoming, 548,601; total, 904,668, making the total for the year up to that date 2,751,-773 tons, as against 2,851,487 tons for the corresponding period of 1892, a decrease of 99,714 tons.

The report of G. M. Williams, inspector of the Fourth Anthracite District of Pennsylvania. for the year 1893 has been rendered. It is very full and interesting, and evidently prepared with great care. It reacbed us too late for insertion in this issue of the JOURNAL, and, as we will refer to it next week more in detail we give here merely the summary and the comparative figures of 1890 and 1891.

Production, gross tons, in 1890, 6,967,708; 1891, 7,639,250, and in 1892, 7,549,605. Number of days worked in 1890 176, in 1891 190 and in 1892 197. The number of fatal accidents in 1890 was 100, in 1891 96, and in 1892 83, and the number of tons mined for each life lost was in the three years, respectively, 69,677, 79,595 and 90,959. The steady improvement in the safety of the miners is the most gratifying feature of the report.

Bituminous.

The improvement in the trade is more marked than it has been for some time, in spite of the unstable condition of coast wise freights. Brokers say that rates cannot be quoted.

The demand for soft coal over the entire country is entirely unprecedented in tbe history of the trade. Tbere is hardly a large town or city that is not suffering for coal to-day, and this is noticeably the case in tbe West and Northwest. In Philadelphia, even, prices are $2.75@$2.90, as against circular prices of $2.40@$2.50. In New York coal is selling for $3.50@$4, while the nominal price is from $3.25 to $3.50.

The scarcity is said to be due to the lack of cars, and yet this is being corrected as rapidly as possible.

The combine that has been on the way for some time is losing a great opportunity, for there is now a demand for coal that would tickle a combination migbtily. The combine may yet come to light, hut at present it is hiding, waiting perhaps for the evidences of tbe unpopularity of the anthracite combine to become less pronounced.

Boston. Feb. 9.

(From our Special Correspondent.)

There is less stringency in tbe bard coal market than noted a week ago. Arrivals are freer and retailers' stocks have been replenished to a considerable extent, yet the yard owners continue to extort 75c. per ton more for coal than they did five weeks or more ago. Cargo coal is very firm. Stove is strong at $5.75; egg, $5.40; and broken, $5. The Lehigh & Wilkes-Barre Co. are reported to be still cutting prices.

The prices quoted here are net f. o. b. New York: free burning coal, stove, $4.75; egg, $4.40; free broken, $4; chestnut, $4.65. Lykens Valley (at Philadelphia): broken, $4.85; egg, $5.45; stove, $6; cbestnut, $5.

Bituminous coal is scarce but firm. It is not bringing as much as last week, yet it is higb. George's Creek coal on cars here is worth $5.25 per ton and Clearfield $4.75. Bituminous coal will be scarce on this market for six months to come. Large consumers, who have not as yet made known their condition, will soon be in the market for coal and they with others will take up all the stocks that arrive for some time.

Freight rates are lower but are still quite firm. From New York to Sound points they are especially strong. From New York to Boston, 75c.@$1.; from Philadelphia, $1.40@$1.65; from Baltimore, $1.50@$1.75; from Newport News, $1.25; from New York to Sound points, 80c.@$1.50.

In a retail way trade is quite good. It is less in volume than it was, yet is sufficient to keep all the yards very busy. Prices are firmly held. They are: Stove, $7; nut, $7; egg, $6.75; furnace, $6.50; Franklin, $8.25; Lehigh egg, $7; Lehigh furnace, $6.75; bituminous, $4.25@$5.

The receipts of coal at this port for the week ending February 4th were 14,258 tons of anthracite and 10,881 tons of bituminous, against 23,621 tons of anthracite, and 10,589 tons of bituminous for tbe corresponding week last year. Since January 1st the receipts have been 81,811 tons anthracite and 60,319 tons bituminous, against 127,146 tons anthracite and 47,396 tons bituminous for the corresponding time last year.

Buffalo. Feb. 9.

(From our Special Correspondent.)

Items of interest at this port are few and far between. The servere weather has caused the coal trade to be in an excellent condition for many weeks past, and according to prognostics the same condition of affairs may be expected for some weeks to come. Anthracite coal is in good supply, and bituminous coal arrivals just keep pace with the demands of consumers. Nominally there has been no change in quotations for bituminous coal, but the market is extraordinarily strong and dealers independent as to whether you "take it or leave it."

The following statistics, etc., were compiled by Mr. William Thurstone, the secretary of the Merchants' Exchange.

COAL TRADE OE BUFFALO, N. Y.

The anthracite and bituminous coal trade of Buffalo for the past four years is shown by the following figures:

IMPORTS BY CANAL.

	1889.	1890.	1891.	1892.
Anthracite, net tons.	100,885	41,266	817	54,760

EXPORTS BY CANAL.

Bituminous, net tons.	11,673	25,872	34,060	29,216

IMPORTS BY LAKE.

Bituminous, net tons.	.....	.....	.....	.....

EXPORTS BY LAKE.

Anthracite, net tons.	2,151,670	2,152,810	2,358 895	2,822,330
Blossburg, net tons.*	5,000	5,000	7,000	5,000
Bituminous, net tons.*	.....	.....	.....	25,000

IMPORTS BY RAILROADS.

Anthracite, net tons.*	4,237,685	4,398,424	4,506,987	4,750,060
Bituminous, net tons.	2,198,327	2,344,467	2,405,084	2 627,441
Blossburg, net tons.*	22,500	25,000	23,000	25,000

EXPORTS BY RAILROADS.

No statement or estimate to hand of the movement.

The coal commerce of Oswego, N. Y., by canal, for three years was as follows:

IMPORTS.

	1890.	1891.	1892.
Anthracite coal, net tons.....	3,132	2,465	7,081
Bituminous coal, net tons.....	None.	None.	1,806

EXPORTS.

Anthracite coal, net tons.....	2,862	3,386	2,154

The lake shipments of anthracite coal in net tons, from Erie, Pa., were as follows for three years:

	1890.	1891.	1892.
To Lake Michigan ports.....	255,891	334,288	323,567
" Lake Superior ports.....	49,450	82,411	60,270
" Lake Erie ports.....	6,583	6,999	9,980
Total net tons.....	311,924	423,698	397,817

RECAPITULATION.—TOTALS.

	1889.	1890.	1891.	1892.
Imports Anthracite, net tons*...	4,338,570	4,349,690	4,507,804	4,750,000
Imports Bituminous net tons.....	2,198,327	2,344,467	2,405,084	2,627,441
Imports Blossburg, net tons*.....	22,500	25,000	23,000	25,000
Exports Bituminous, net tons.....	11,673	25,872	34,060	29,216
Exports Anthracite, net tons.....	2,151,670	2,152,810	2,358,835	2,822,330
Exports Blossburg, net tons*.....	5,000	5,000	7,000	5,000
Exports Bituminous, net tons.....	.....	.....	.....	25,000

ANTHRACITE WHOLESALE CIRCULAR PRICES.

The following were the circular wholesale prices of anthracite coal during 1892 per gross ton:

FREE ON BOARD VESSELS.

1892.	Grate.	Egg.	Stove.	Chestnut.
Jan. 1.....	$4 80	$4.90	$4.90	$4.90
March 24.....	4.55	4.55	4.55	4.55
May 2.....	4.80	4.80	4.80	4.80
June 1.....	4.85	5.05	5.05	5.05
July 1.....	5.05	5.30	5.30	5.30
Sept 1. to Dec. 31.....	5 35	5.60	5.60	5.60

ON CARS AT BUFFALO OR SUSPENSION BRIDGE.

1892.	Grate.	Egg.	Stove.	Chestnut.
Jan. 1.....	$4 50	$4.60	$4 60	$4.60
March 24.....	4.25	4.25	4.25	4.25
May 2.....	4 50	4.50	4.50	4.50
June 1.....	4.50	4.75	4.75	4 75
July 1.....	4.75	5.00	5.00	5.00
Sept. 1 to Dec. 31.....	5.05	5.30	5.30	5.30

The retail prices of anthracite per 2,000 lbs., screened, delivered in the city limits, during the year, were as follows:

1892.	Grate.	Egg.	Stove.	Nut.	Pea.	Blossburg.
Jan. 1.....	$5 00	$5 00	$5.00	$5.00	$3.75	$4.00
May 2.....	5.00	5 00	5.00	5.00	4.00	4.00
June 1.....	5.00	5 25	5.25	5.25	4.00	4.00
July 1.....	5.25	5.50	5.50	5.50	4.00	4.00
Sept. 1 to Dec. 31	5 50	5.75	5 75	5.75	4.25	4.00

BITUMINOUS PRICES.

The range of prices during 1892 for bituminous, delivered to manufacturers, gas works, propeller lines, tugs, etc., was from $1.75 to $2.75 per net ton, in car lots, according to description; the price at retail, for choice, for family use, was about $4.00 to $6.00 per net ton delivered.

CITY DOMESTIC CONSUMPTION.

About 300,000 tons of anthracite and 3,500 tons of bituminous coal were consumed by families in this city during 1892.

* Partly estimated.

SHIPPING DOCKS AND COAL POCKETS.

The shipping docks and coal pockets at this port are:

Name.	Average shipping capacity, daily, tons.	Average capacity of pockets, tons.
Western New York and Penn. R. R.	2,500	3,000
Delaware & Hudson Canal Co.....	3,500	5,000
Delaware, Lackawanna & Wes. R. R	5,000	4,000
Reading (Lehigh) Docks, Nos. 1 and 2	6,000	12,000
Erie Docks (N. Y., L. E. & W. R. R.).	2,500	3,000
Pennsylvania Coal Company.....	3,000	3,300
Reading Docks.....	7,000	6,500
Totals.....	27,500	36,800

Outside the city limits at Cheektowaga is the stocking coal trestle of the Delaware, Lackawanna & Western, with a capacity of over 100,000 tons storage. Also at the same place the Reading (Lehigh), has its trestles and stocking plant of 175,000 tons storage capacity, with a shipping capacity of 3,000 tons daily; and has nearly completed a transfer trestle for loading box cars, with a capacity of 100 cars daily. And at the same point the Erie has a stocking plant, with average daily capacity of 1,000 tons and storage capacity of 100,000 tons. The Reading has a 160 pocket trestle at Cheektowaga, 1,000 ft. long, with a storage capacity of 300,000 tons, and a daily shipping capacity of 5,000 tons. The structure is covered with an iron roof; four Brown hoists are in operation. This company has also, at the foot of Georgia street, in the city, a large trestle and pocket for the convenience of the retail trade, and in connection with their docks, with a capacity of 2,000 tons.

The Buffalo, Rochester & Pittsburg has terminals on Ganson and Michigan streets, fronting on the Blackwell Canal, with a water frontage of 1,100 ft.; also a town delivery yard, with a hoisting plant for loading and coaling vessels.

DISTRIBUTION OF EXPORTS BY LAKE.

The distribution of exports of coal by lake from this port, during the year 1892, as ascertained by an examination of the daily reported list of departures have been previously published by THE ENGINEERING AND MINING JOURNAL.

LAKE FREIGHTS ON COAL FROM BUFFALO TO CHICAGO AND OTHER PORTS.

The following statement shows the highest and lowest freight rates on coal per net ton, from Buffaly to the ports named, during the season of 1892:

	Cts.	Cts.		Cts.	Cts.
To Chicago.....	40	75	To Washburne...	25	50
To Milwaukee....	40	70	To Sheboygan....	40	65
To Lake Superior Ports.	20	50	To Toledo.....	25	40
			To Detroit.....	25	40
To Green Bay....	40	75	To Racine.....	45	90
To Sagmaw.....	40	50	To Bay City.....	30	45

Chicago. Feb. 9.

(From our Special Correspondent.)

The agents of several of the leading shippers and producers of anthracite coal state that they do not and cannot obtain a sufficiency of box cars to load on dock for Western consumption, and what they do send forward, even on most urgent "wires," is delayed in transit on account of the severe weather now prevailing throughout the West and Northwest. Trains have been abandoned, and in several instances passenger trains have been held for hours at way stations because of drifted snow having blocked the tracks. All-rail coal is coming forward in somewhat better shape, but demand continues in excess of supply. Some of the shippers' stocks at South Chicago are cleaned up of all sizes, and dependence is now upon all rail coal. Much of the extraordinary heavy demand for the past few weeks is due to the continued scarcity of bituminous coal, and quite a number of the smaller steam plants in the business portion of the city have been and are now raising steam with anthracite coal. In several instances crushed coke is being used for the same reason. Retail coal is active and all dealers report doing a splendid business and many of them several days behind with their deliveries. Teams are kept going from early morning until well into the night. Some of the larger shippers expect to have much stock left on dock at end of season.

Bituminous coal shippers and operators one and all declare that the present condition of the market is positively without precedent. They truly say—even a coalman can be truthful sometimes—that the gradual giving out of the natural gas belt in Indiana, and the consequent necessity to use coal for gas manufacture, the confiscation of coal by railroads, and the heavy demand caused by the continued severe weather make it difficult to supply consumers. Indeed, it is only by the utmost exertion on the part of the coalmen that a sufficient supply of steam coal is obtainable from day to day, and then some of the office buildings have run so short that the elevators have had to stop running to permit of sufficient steam for heating purposes. Reports seen by the writer from mines in Ohio, Indiana and Illinois indicate clearly that they are not averaging more than half time, largely on account of the shortage of empty cars, though the heavy rains early in the week, followed by zero temperature, have had a good deal to do with it. Shippers of Illinois and Indiana coal are wholly unable to supply the demands made upon them; particularly is this the case for dealers and consumers west of this point, and they look for no change until the weather moderates. Orders and new business from other than regular customers are received only contingent on ability to fill. Indiana block coal at this writing sells freely at $2.75 on track, an emergency price, and shows, more plainly than anything else could, the stringency of the situation. Some towns in Iowa are bare of coal and considerable suffering has ensued.

Coke is again in short supply on account of blockades and scarcity of cars. The curtailment of shipments of Connellsville has created quite a good demand for outside coke. Crushed coke is being used by several of the smaller office building steam plants on account of the scarcity of soft coal.

Quotations are: $4.65 furnace; $5.05 foundry, crushed; $5.40 Connellsville; West Virginia: $3.90, furnace, $4.10 foundry; New River foundry, $4.75; Walston: $4.65 furnace, $5 foundry.

Circular prices are at the following rates: Lehigh lump, $6.50; large egg, $5.85; small egg, range and chestnut, $6.10. Retail prices per ton are: Large egg, $7.25; small egg, range and chestnut, $7.25.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, $3.40; Hocking Valley, $3 20; Youghiogheny, $3.25; Illinois block, $2; Brazil block, $2.60@$2.75.

Pittsburg. Feb. 9.

(From our Special Correspondent.)

Coal.—The strike still in full operation. The first six weeks of the present year the entire coal shipments from Pittsburg do not exceed 2,500,000 bushels. The pools and harbor are bare of coal for the present at least. Pittsburg is about to lose the coal trade by the river. The big firm of W. H. Brown & Sons are about to transfer their business to the Kanawha; this is no bluff but reality. Their shipments for years from Pittsburg will average 15,000,000 bushels.

Capt. Harry Brown, the active manager, said today: "This is no bluff. We are forced into it in order to fill our heavy contracts. We have already commenced operations on the Kanawha and are also getting coal from Alabama. The miners here refuse to work for the rates paid the railroad miners in the same district. We can mine coal in the Kanawha at 2@2½c., besides being 250 miles nearer the market." The firm of W. H. Brown & Sons is one of the largest coal firms in the country, their business reaching millions. They operate three large mines on the Monongahela and two on the Youghiogheny; they also do a coke business and own perhaps the largest fleet of steamers entered at this port, as follows: The Harry Brown, Alice Brown, Charles Brown, Sam Brown, Jim Brown, Mariner, Percy Kelsey, Voyager, Corsair, Vanguard, Volunteer, Charley Clark, Cruiser and thousands of barges.

The stocks of coal afloat between Natchez and this city on the first were: Natchez, 4 boats; Bayou Sara, 2 boats; Baton Rouge, 20 boats; Plaquemine, 24 boats; Nine Mile Point, 28 boats; Total, 78 boats. Consumption during January, 37 boats, 1 barge.

Connellsville Coke.—The blockade in the coke trade has been lifted, and consequently the shipments are assuming their normal proportions once more. One of the curious features in the business is that while the production decreased 1% in the region and the tonnage over 1,200 tons the shipments increased over 2,000 cars. This can be accounted for from the fact that the railroads have about cleared the blockade; as the weather improves a better supply of cars may be looked far.

The shipments from the region for the week aggregated 128,060 tons, while the production amounted to 123,265 tons, showing that a considerable amount of stock coke has been shipped from the yards.

To Pittsburg, 1,750 cars; east of Pittsburg, 1,850 cars; points west of Pittsburg, 3,140 cars; total, 6,740. Western shipments increased 890 cars; Eastern shipments, 980 cars, and Pittsburg shipments, 380 cars; a total increase of 2,250 cars.

CHEMICALS AND MINERALS.

NEW YORK, Friday Eveuing, Feb. 10.

Heavy Chemicals.—The market for heavy chemicals, generally speaking, is quiet. A fair business has been done during the week under review, and no marked change has taken place in the position of any chemical excepting bleaching powder, which is firmer and slightly higher owing to the shortness of supplies on the spot. Consumers of heavy chemicals are well supplied at the moment, and to this fact is doubtless due the present quiet condition of the market. Prices have undergone little or no change. We quote this week: Caustic soda, 60%. 2·95@3·10c.; 70%. 2·70@2·85c.; 74%, 2·72½@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.; 58%, 1·20@1·30c., according to package. Sal soda, English, on the spot, 1·05@1·10c.; American, 90@95c.; bleaching powder, 2·37½@2·62½c.

Acids.—While the market just now is rather quiet as compared with the market a few weeks ago, a comparison with the corresponding period of 1892 and 1891 shows that the present year has been more prosperous to the manufacturers than the past few years. The trade has been interested in the reports of internal dissension in one of the oldest companies in the business. Nothing definite has been learned further than the fact that there has been a change in officers, and that some dissatisfaction exists in certain quarters. We quote: Acid, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, $1.75@$2.25, 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 ; oxalic $6.15@$6.50. Blue vitriol is quoted all the way from $3.25 to $3.75; glycerine for nitro-glycerine, 11¼@ 12½ according to quality and quantity.

Brimstone—This market continues quiet. There has been a slight decline in prices, notwithstanding the increase in freights, one shilling per ton for April shipments. The large stocks on hand on the other side and the light demand are the main causes. Quotations are as follows: Best unmixed seconds, on the spot, $20.75; to arrive, March steamer, $19; best thirds, on the spot, $19.75; to arrive, March steamer, $18.50.

Fertilizing Chemicals.—There is very little change to report in this market. The demand continues fair and the scarcity of ammoniates keeps prices high and steady. Our quotations this week are as follows: Sulphate of ammonia, $2.97½@$3 for bone goods and $3@$3.05 for gas liquor. Dried blood, $2.90@$3 per unit for high grade and $2.80@ $2.90 for low grade; acidulated fish scrap, no stocks on hand; dried scrap, nominally $26 f. o. b. fish factory. Azotine, $2.85@$2.90. Tankage, high grade, $30@$32; low grade. $29@$31. Bone tankage, $23.50@$24; bone meal, $23@$25.

Phosphate Rock.—There is a better feeling in this market. Quotations are unchanged : $4.7 for 55% rock, free alongside at Charleston.

The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, $1.12; Philadelphia, $1.14½ ; Charleston and Savannah, $1.17 cwt. basis, 48@50% in 50 ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis, 90%: New York and Boston, $2.07 ; Philadelphia, $2.09½ ; Charleston and Savannah, $2.12 ; sulphate of potash, 96-99%, basis 90%, is 4% higher.

Muriate of Potash.—There is no change to report of muriate. Prices for 1893 are as follows: New York or Boston $1.78; Philadelphia, $1.80½; Southern ports, $1.83.

Kainit.—Quotations are as follows: New York, Philadelphia and Boston, $8.50 for foreign invoice weight and test, and $9 for actual weight; Charleston, Savannah and Wilmington, $9.25 for invoice weight and test; and $9.75 for actual weight.

Nitrate of Soda.—There has been an advance in the price of nitrate of soda on the spot, due to the exceedingly small stock on hand. There is very little to be had. Quotations are as follows: On the spot, $2.40@$2.50. To arrive, near by, $2.20@$2.25. March arrivals, $2.15@$2.17½. Future shipments, $1.72½.

Messrs. Mortimer & Wisner, the well known nitrate brokers of this city, send us the following interesting statistics, issued under the date of the 1st inst.:

	1893.	1892.	1891.
	Bags.	Bags.	Bags.
Imported into Atlantic ports from West Coast S. A. from Jan. 1, 1893, to date	19,991	66,404	60,372
Imported into Atlantic ports from Europe	5,225	.....	.....
	25,216	66,404	60,372
Stock in store and afloat Feb. 1, 1893, in New York	6,156	61,92-	84,624
Boston	220	1,060	.....
Philadelphia	.....	.....	.....
Baltimore	200	1,200	5,000
To arrive, actually sailed	272,000	172,000	188,000
Visible supply to May 1, 1893	278,576	236,122	277,624
Additional charters	166,000	206,000	320,500
Total supply, when shipped.	444,576	442,122	598,124
Stock on hand, Jan. 1, 1893	15,454	53,585	36,454
Deliveries past month	34,094	55.867	12,202
Total yearly deliveries	.....	685,158	634,207
Prices current Feb. 1, 1893	2¼	1·85@17/8	1·80@1·82

CURRENT PRICES.

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

Acid—Acetic, chem. pure .16@.17
Commercial, in hbls. 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 .08¼
Aqua Ammonia—(in chys) 18°℔lb.03@.04
20°, ℔ lb .04@.05
26°, ℔ lb .05@.05½
Antimony—Oxymur, ℔ lb .04@.06
Regulus, ℔ lb .10@.11¼
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@.07¼
Californian, at mine, ℔ ton $12.00@$25.00
at San Francisco, ℔ ton. $15.00@$29.00
Barium—Carbonate, pure, ℔ lb .45
Carbonate, commercial, ℔ ton .06@.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
Chromium—Pure, ℔ lb .40
Commercial, ℔ lb .12
Cobalt—Oxide, ℔ lb $1.90@$2.00
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ℔ lb. 03½@.03½
" " 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 .02½@.10
Epsom Salt—℔ lb .01@.01¼
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@.01¼
47°, ℔ lb .02@.02½
Kaolin—*See China Clay.*
Kieserite—℔ ton $9@$10
Lead—Red, American, ℔ lb .06¾@.07¼
White, American, in oil, ℔ lb. .06¾@.07¼
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 lbs $22.00
Brick, ℔ ton of 2,240 lbs $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@$25
Mineral Wool—Ordinary slag .01¼
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 slick .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. .80¼
Salt—Liverpool, ground, ℔ sack .70
Domestic, fine, ℔ ton $7@$7.50
Common, fine, ℔ ton $4.50@$5
Turk's Island, ℔ bush .26@.28
Salt Cake—℔ ton $10.00@$15.00
Saltpeter—Crude, ℔ lb .03¼@.04
Soapstone—Ground, ℔ ton $8@$
Block and slab according to size.
Sodium—Prussiate, ℔ lb .22@.24
Phosphate, ℔ lb .04@.06
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 .$0
Talc—Ground French, ℔ lb .01½@.01¾
American No. 1, ℔ lb .01¼@.01½
American No. 2 .006
Terra Alba—French, ℔ lb .65@.80
English, ℔ lb .65@.80
American, No. 1, ℔ lb .60@.70
American, No. 2, ℔ lb .45@.56
Tin—Crystals, in kegs or bbls .14@.10
feathered or flossed .20
Muriate, single .07@.08
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 .06½@.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), per gram .$5.00
Osmium—(Metallic), per oz. $65.00
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

STOCK MARKET QUOTATIONS.

Pittsburg, Pa. Feb. 8.

COMPANY.	B.	A.
Bridgewater Gas Co.	27.00	40.00
Chartiers Val. Gas.	10.75	11.25
Enterprise Mining Co.	1.50	2.75
Hidalgo Mining Co.	5.50	6.50
Luster Mining Co.	10.25	10.30
Manufacturers' Gas.	....	30.000
N. Y. & Clev. G. D.	50.00	51.50
Pennsylvania Gas	....	10.25
People's N. G. & P. Co.	14.50	15.00
Philadelphia Co.	21.88	22.00
Wheeling Gas Co.	17.50	20.00
W'house Air Brake Co.	132.00	135.00

Aspen, Colo. Feb. 4.

Name of Stock.	Bid.	Asked.
Argentum Juniata	$0.63	$0.65
Aspen Contact	1.25	1.50
Aspen Deep Mining	.10	.11
Best Friend	.10	.12
Bi-Metallic	.12	.14
Bushwacker	.20	.23
Delia S.	1.90	2.00
Gold Valley Placer	....	.15
Little Annie	.10	.11
Mollie Gibson	8.00	9.00
Pontiac	.10	.12
Smuggler	16.50	17.00
St. Joe & Mineral Farm	.11	.13
U. S. Paymaster	....	.20

St. Louis. Feb. 8.

The closing quotations were as follows:

Stock.	Bid.	Asked.
Adams	.80	1.00
American & Nettie, Colo.	.20	....
Bi-Metallic, Mont.	....	10.00
Elizabeth, Mont.	.47½	.50
Granite Mountain, Mont.	3.90	4.60
Hope	3.50	4.00
Montrose Pl	....	.04
Small Hopes	....	....

Helena, Mont.

(Special report by F. M. DAVIS.)

Prices highest and lowest for the week ending February 4th.

Stock.	H.	L.
Bald Butte (Mont.)	$3.00	$2.25
Benton Group (Neihart), Mont.	.30	.25
Combination (Phillipsb'g), Mont.	1.50	1 25
Cumberland (Castle), Mont.	.25	.15
Elizabeth (Phillipsb'g), Mont.	.40	...
Florence (Neihart)	.25	.20
Helena & Victor, Mont.	.75	.75
Iron Mountain (Missoula), Mont	.85	.75
Poorman (Cœur d'Alene), Idaho	.80	.70
Ontario (Mont.)	1.60	...
Whitlach Union & MacIntyre.	.50	.40

Denver.

Prices and sales for the week ending February 4th, 1893:

	High.	Low.	Sales.
Anaconda	$0.34	$0.30½	3,800
Bangkok-Cora Belle	.02½	.02¼	4,300
Claudia J.	.01	.01	100
Diamond B.	.01½	.01½	8,700
Gettysburg	.03	.03	100
Gold Rock	.05	.05	600
Justice	.01½	.01½	1,000
Park Consolidated	.06	.05	2,000
Paul Gold	.00¾	.00¾	200
Pharmacist	.28½	.28½	100
Puzzler	.08½	.07½	2,900
Work	.09	.08¼	3,200
Total sales			27,000

Duluth. Feb. 3.

LISTED STOCK.

	Par.	Bid.	Asked
Biwabik M. Iron Co.	100	35.00	42.00
Cincinnati Iron Co.	25	2.00	2.05
Clark Iron Co.	100	.17½	....
Cosmopolitan Iron Co.	....	.10	....
Great Northern Min. Co.	100	7.75	9.00
Kanawha Iron Co.	100	1.00	1.50
Keystone Iron Co.	....	....	1.00
Lake Superior Iron Co.	25	2.60	3.25
Lincoln Iron Co.	....	.10	....
Little Mesaba Iron Co.	100	....	4.00
Mountain Iron Co.	100	75.00	95.00
Minneapolis Iron Co.	100	.10	....
Mesaba Moun. Iron Co.	100	24.00	24.25
Shaw Iron Co.	100	5.00	6.50
Security Land & Exp. Co.	10	20.00	30.00
Washington Iron Co.	100	....	1.25

UNLISTED STOCKS.

Allegheny Iron Co.	10	....	.75
Aurora Iron Co.	..	....	1.00
Athens Iron Co.	100	....	10.00
Buckeye Iron Co.	100	....	10.00
Chandler Iron Co.	25	....	44.00
Chicago Iron Co.	100	....	3.00
Charleston Iron Co.	100	1.10	1.50
Champion Iron Co.	100	.25	.75
Comstock Iron Co.	100	.15	....
Columbia Iron Co.	100	....	4.00
Detroit Iron Co.	25	....	.75
Dayton Iron Co.	100	....	.25
Great Western Mining Co.	100	3.30	3.45
Horton Mining Co.	10	.05	.15
Homestead Iron Co.	25	.04	.05
Kentucky Iron Co.	100	.20	.40
Kakina Iron Co	25	....	2.50
Lackawanna Iron Co.	100	.35	.50
McCaskill Mining Co.	..	.10	.12½
McKinley Iron Co	100	....	28.00
Mesaba Chief Iron Co.	100	4.25	4.50
Mesaba Iron Co.	..	.05	1.00
Myrna Iron Co.	10	....	.25
Northern Light Iron Co	100	.05	.50
New York Iron Co.	25	....	.40
New England Iron Co.	100	2.75	4.50
Ohio Mining Co.	100	9.00	10.00
Oneota Iron Co	100	....	.60
Pennsylvania I. & S. Co.	100	.20	.40
Rouchleau Iron Co.	100	.50	.80
Republic Iron Co.	25	....	.70
Red Hematite Iron Co.	100	....	.30
Standard Ore Co.	25	2.00	3.00
Towanda Iron Co.	100	1.00	2 00
Zenith Iron Co.	25	2.00	3.00

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Feb. 4.		Feb. 6.		Feb. 7.		Feb. 8.		Feb. 9.		Feb. 10.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.													
Alice, Mont.													
Amador, Cal.													
Atlantic, Mich.													
Belcher, Nev.	1.10								1.00				220
Belle Isle, Nev.													
Bodie Cons., Cal.													
Bos. & Mont., Mont													
Breece, Colo.													
Bulwer, Cal.									.25				200
Caledonia, S. Dak.	1.00												100
Catalpa, Colo.													
Chrysolite, Colo.	.21	.20	.22		.23				.23				1,500
Colorado Central, Colo.													
Commonwealth, Nev.													
Comstock T. bonds, Nev.													
" scrip., Nev.													
Cons. Cal. & Va., Nev.					2.70	2.60							200
Crown Point, Nev.	.80		.85				.80	.75					70
Deadwood, Dak.													
Enterprise													
Eureka, Cons., Nev.													
Father de Smet, Dak.													
Freeland, Colo.													
Gould & Curry, Nev.	1.00	.95					1.05						400
Grand Prize, Nev.													
Hale & Norcross, Nev.	.95		1.00				1.40		1.45				150
Homestake, Dak.													
Horn-Silver, Utah													
Independence, Nev.													
Iron Hill, Dak													
Iron Silver, Colo													
Leadville Cons., Colo.					.20						.18		400
Little Chief, Colo.	.22								.20				600
Martin White, Nev.													
Mono													
Mt. Diablo, Nev.													
Navajo, Nev.													
N. Belle Isle, Nev.													
Ontario, Utah													
Ophir, Nev			2.15								2.30		150
Overman, Nev.													
Plymouth, Cal.													
Quicksilver, Pref., Cal.													
" Com., Cal.													
Quincy, Mich.													
Robinson Cons., Colo.													
Savage, Nev.													
Sierra Nevada, Nev.	1.40												100
Silver Cord, Colo.													
Silver King, Ariz.													
Silver Min. of L. Valley													
Small Hopes, Colo.													
Standard Cons., Cal.													
Yellow Jacket, Nev.			.90	.85					.75				300

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Feb. 4.		Feb. 6.		Feb. 7.		Feb. 8.		Feb. 9.		Feb. 10.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha, Nev.													
Alta, Nev.	.25												100
American Flag, Colo.													
Andes, Cal.													
Astoria, Cal.													
Augusta, Ga.													
" bonds.													
Barcelona, Nev.													
Belmont, Cal.	.20								.20		.20		600
Best & Belcher, Nev.	1.45		1.55		1.65		1.55		1.55		1.55		700
Bonanza King, Cal.													
Brunswick, Cal.	.09		.09								.08		2,600
Bullion, Nev.	.70												100
Butte & Bost., Mont.													
Castle Creek, Idaho													
Chollar	.75								.75	.70			350
Comstock T., Nev.	.10	.09											1,00
Con. Imperial, Nev.													
Con. Pacific, Cal.													
Crescent, Colo.													
Del Monte, Nev.													
El Cristo, Rep. of Col.	.49				.40						.51	.40	1,400
Emmett, Colo													
Exchequer, Nev.													
Independence, Nev.													
Julia, Nev.	.13	.12			.16								800
Justice, Nev													
Kentuck, Nev													
Lacrosse, Colo.													
Lee Basin, Colo.													
Mexican, Nev.	1 70		1 70		1.90						2.00		650
Middle Bar, Cal.													
Monitor, Colo.													
Monte Cristo, N. S. of C.	3.25	3.15	3 15	3.00	3.05	2.95	3.15	3.05	3.15	3.00	3.15	3.10	8,200
Nevada Queen, Nev.													
N. Standard, Cal.													
N. Commonwealth, Nev.													
Occidental, Nev.													
Oriental & Miller, Nev.													
Phœnix Lead, Colo.													
Phœnix of Ariz.	.46		.45	.43	.43	.40	.38	.35	.40	.34	.35	.25	11,000
Potosi, Nev.	1.50												100
Rappahanuock, Va.													
S. Sebastian, S. Sal.													
Santa Fe, N. M.													
Scorpion, Nev.	.16	.14											200
Seg. Belcher, Nev.													
Shoshone, Idaho													
Silver Hill, Nev													
Sullivan Con., Dak.	1.00		1.00										
Sutro Tunnel, Nev.													600
Syndicate, Cal.													
Tornado Con., Nev.	.05	.04	.04								.04		2,700
Union Cons., Nev.	1 10	1 00	1.15				1.15				1.20		350
Utah, Nev.	.25	.20					.25	.20					300

*Ex-dividend. †Dealt in New York Stock Ex. Unlisted securities. ‡Assessment paid. ‖Assessment unpaid. Dividend shares sold 5,320. Non-dividend shares sold, 32,350. Total shares sold, 37,670.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Feb. 3.		Feb. 4.		Feb. 6.		Feb. 7.		Feb. 8.		Feb. 9.		SALES.
Atlantic, Mich.	9.75	9.25					10.00		10.00				190
Bodie, Cal.													
Bonanza Development													
Bost. & Mont., Mont.	34 50	34.00	34.50	34.25	34.50	34.00	34.25		34.25	34.00	34.00		1,926
Breece, Colo.													
Calumet & Hecla, Mich.	307										303		35
Catalpa, Colo.													
Central, Mich.													
Cœur d'Alene, Id.													
Con. Cal. & Va., Nev.													
Dunkin, Colo.													
Eureka, Nev.													
Franklin, Mich.			13 38								13.50		52
Honorine, Utah.													
Horn Silver, Utah.													
Kearsarge, Mich.	12 50	12.00	12.25										260
Lake Superior, Iron.													
Little Pittsburg, Colo.													
Minnesota Iron, Minn.													
Napa, Cal.													
Ontario, Utah.													
Osceola, Mich.	37.63	36.88	37.25		37 13		37 00	36.63			37.00		1,202
Quincy, Mich.	138	136			138	137½	137		138	136½	137¼		155
Ridge, Mich.													
Sierra Nevada, Nev.													
Silver King, Ariz.													
Stormont, Utah.													
Tamarack, Mich.					163	161			164	163	163	161	133
Tecumseh, Mich.													

NAME OF COMPANY.	Feb. 3.		Feb. 4.		Feb. 6.		Feb. 7.		Feb. 8.		Feb. 9.		SALES.
Allouez, Mich.													
Arnold, Mich.													
Aztec, Mich.													
Brunswick, Cal.					11.50								
Butte & Boston, Mont.	11.50	11 00	8.00	11.00	8.00	11.50	11 75	11.50	11.75		11.25		446
Centennial, Mich.	7.75								8 00	7.50	8 00		280
Colchis, N. Mex.													
Copper Falls, Mich.													
Crescent, Colo.													
Dana, Mich.													
Don Enrique, Mex.													
Geyser, Colo.													
Hanover, Mich.													
Humboldt, Mich.													
Hungarian, Mich.													
Huron, Mich.													
Mesnard, Mich.													
National, Mich.													
Native, Mich.											1.25		100
Oriental & M., Nev.													
Phœnix, Ariz.													
Pontiac, Mich.													
Rappahanuock, Va.													
Santa Fe, N. Mex.													
Sheshone, Idaho.													
South Side, Mich.													
Tamarack, Jr., Mich.													
Washington, Mich.											19 00		85
Wolverine, Mich.	1.75	1.63			1.50		2 25				2.25		1

Dividend shares sold, 3,953. Non-dividend shares sold 2,986, Total shares sold, 6,939.

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last	Dividends. Total paid.	Dividends. Date & amount of last.
1	Adams, s. L. C.	Colo.	$1,500,000	$10			$637.500	Jan.. 1892 .05
2	Alaska-Treadwell, g.	Alaska	5,000,000	25			1,450,000	Oct. 1892 .37½
3	Alice, s.	Mont.	10,000,000	20			975,000	Nov.. 1891 .06¼
4	Alma & Nel Wood., g	Idaho	300,000	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			175,800	Mar.. 1892 .05
9	Atlantic, C.	Mich..	1,000,000	40,000	25	288,000 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 00 Aug. 1892	.10	300,000 Dec.. 1879 .25
18	Belcher, s. G.	Nev..	10,400,000	104,000	100	3,16 (00 May 1892	.25	15,397,000 April 1876 1.00
19	Bellevue, Idaho, S. L.	Idaho	1,250,000	125,000	10	1. 000 Dec.. 1889	.25	200.000 Jan.. 1890 .10
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	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	130,000 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 .06¾
28	Caledonia, G.	Dak..	10,000,000	100,000	100	505,000 May. 1885	.15	192,000 Oct.. 1890 .08
29	Callope, S.	Colo..	1,000,000	1,000,000				140,000 Jan.. 1891 .00¾
30	Calumet & Hecla, G	Mich..	2,500,000	100,000	25	1,200,000		38,850,000 Dec. 1892 5 00
31	Centen'l-Eureka, S.L.	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		34,000	10			114,000 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	500,000	05			657,000 Mar.. 1892 .50
47	Crescent, s. L. G.	Utah.	15,000,000	600,000	25	60,000 Oct. 1892	.10	288,000 Oct.. 1888 .03
48	Crown Point, G. S.	Nev..	16,000,000	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 .03
50	Daly, s. L.	Utah.	3,000,000	150,000	20			2,650,000 Jan.. 1893 .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			560,000 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.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.
1	Alliance, s. G.	Utah.	$100,000	$1	$120,000	Feb.. 1891 .2
2	Allouez, C.	Mich.	2,000,000	25	737,000	Jan.. 1890 .7
3	Alpha Con., G. S.	Nev..	3,000,000	100	299,000	Sept. 1892 .1
4	Alta, s.	Nev..	10,080,000	100	3,369,880	Jan.. 1892 .1
5	American. C.	Idaho	5,000,000	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	3,220,000	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, G.	Cal..	1,000,000	100,000	5	9,000 Mar.. 1892 .03
31	California Con. L. 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..	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	*				890,000	Oct..	1889	.05
57	Elkhorn, s. l.	Mont.	1,000,000	200 00	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
60	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	3,125,000	Dec..	1885	.20
62	Franklin, c.	Mich..	1,000,000	40,000	25	220,000	June	1871		1,100,000	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	90,000	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	4,911,250	Jan..	1893	.25
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	.03
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..	1,000,000	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					1,825,911	June	1891	1.25
141	" com., q	Cal...	5,700,000	57,000	100					645,867	July.	1882	.40
142	Quincy, c.	Mich..	1,250,000	50,000	25	200,000	Dec..	1862		6,470,000	Feb.	1893	3.00
143	Red Cloud	Idaho	1,000,000	200,000	5					153,000	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	*				4,346,325	Aug..	1891	.25
148	Ridge, c.	Mich..	500,000	20,000	25	219,939	Mar.	1886	50	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..	1892	.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	Silde	Colo..	500,000	5,000	100					20,000	Nov..	1891	4.00
162	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.	1886	.25	50,000	Jan..	1881	.25
164	Standard, g. s	Cal...	10,000,000	100,000	100	100,000	June	89	.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	520,000	Apr.	85	3.00	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	2	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	2,184,000	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..	1884	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	100,000	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 C..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..	189	.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	.03
86	Hector, g.	Cal...	1,500,000	300,000	5	45,000	Jan..	1889	.1
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.	189	.56
111	Merrimac Con., g. s.	Colo..	5,000,000	500,000	10				
112	Mexican, g. s.	Nev...	10,000,000	100,000	100	2,917,580	ct..	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, i 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.	189	.0
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..	189	.50
151	Proustite, s.	Idaho	250,000	250,000	1	*			
152	Puritan, s. g.	Colo..	1,500,000	150,000	10	*			
153	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.		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.	189	.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	July	188	1.00
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.	1880	.2
171	South Hite, g.	Cal..	10,000,000	100,000	100	195,000	Jan..	1882	.05
172	South Pacific, g.	Cal..	500,000	100,000	5				
173	Stanislaus, g.	Cal..	2,000,000	200,000	10				
174	St. Kevin, s. g.	Colo..	100,000	100,000	1	*			
175	St. Louis & Mex., s.	Mex..	,000,000	500,000	10	*			
176	St. Louis & St. Elmo.	Colo..	000,000	200,000	10				
177	St. L. & St. Felipe, g.s.	Mex..	[illegible]	150,000	10				
178	St. L. & Sonora, g. s.	Ariz..	3,000,000	300,000	10	*			
179	Stemwinder, l. s.	Idaho	500,000	500,000	1				
180	Sunday Lake, i.	Mich..	1,250,000	50,000	25				
181	Sullivan Con., g.	Dak..	600,000	200,000	3	*			
182	Sylvanite, s.	Colo..	5,000,000	500,000	10	*			
183	Taylor-Plumas, g.	Cal...	325,000	65,000	5	3,575	Mar..	1892	.01½
184	Telegraph, g. s.	Cal...	325,000	65,000	5	3,575	Mar.	1892	.01½
185	Telegraph, g. s.	Mex..	100,000	100,000	1	70,000	Feb..	1892	.10
186	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	100	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	
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.	. 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,[illegible]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.	Feb. 4. H.	Feb. 4. L.	Feb. 6. H.	Feb. 6. L.	Feb. 7. H.	Feb. 7. L.	Feb. 8. H.	Feb. 8. L.	Feb. 9. H.	Feb. 9. L.	Feb. 10. H.	Feb. 10. L.	Sales
Adams Express	160	159											23
Albany & Susq.													
Am. B'k Note													
Am. Coal													
Am. Cotton Oil	46⅞	46½	47½	46⅝	47⅜	45⅞	47¾	46½	48¾	46½	47⅝	47	21,151
do. pref	82		83½	82¼	82⅝	82¼	82		83¼	82½	82½		4,720
Am. Express	119				120						120	119	17
Am. Dist. Tel.	58				59		58		57½				320
Am. Sugar Ref.	133⅞	129¾	134¾	132½	134⅜	132¾	134	132⅝	134½	133	133¼	132¼	147,040
do. pref	104	103⅞	104	103¾	104	103¾	103¾	103½	104		103¾	103¼	3,369
Am. T. & C. Co.			92½	91⅝	92		92		92½				319
Am. Tobacco	115⅜	114⅝	115¾	114½	115¼	113½	114	112⅝	112⅞	110⅞	110⅞	109¼	49,475
do. pref	108		107¾		107⅞		108	107⅜	107½		107½		471
Atch., T. & S.F.	35⅛	35	35	34¼	34⅜	34⅛	34⅜	34¼	34½	34⅛	34¼	34	15,079
Atlantic & Pac.	4												100
Balt. & Ohio			97¼		96								740
do. pref													
Balt. & O., S.W.													
do. pfd	6¾	6¼					6⅞		7½	7¼			1,800
B., C., R. & N.			60										5
Bos. A. L. pfd.													
Buff. R. P.							36¼						100
do. pref													
Cambria Iron													
Canad'n Pacific	86½		86½		86½	86¼	86		86⅛	86			858
Canada South	57⅞	57¼	58	57½	57⅞	57¼	57¼	56¾	57¼	56¼	56½	56⅛	6,650
Cen. Iowa													
do. pref													
CentralPacific							28		28	28	27¾		270
Char., Col. & A.													
Ches. & Ohio	25½	25	25⅛	24⅜	24⅝	24¼	24½	23⅞	24⅜	23⅜	23⅞	23⅜	28,369
do. 1st pref													
do. 2d pref													
Chic. & Alton			145										200
do. pfd													
Chic., Burl. & Q.	102⅛	101½	101¾	100⅝	101¼	101¾	100½	99⅞	103¾	99¼	99¾	99¼	33,800
Chic. & East Ill.					70	69½							779
do. pref	104¼		104⅜	104	104⅝	104½	104½		104⅝		103¾		782
Chic. Gas Trust	92	91½	91⅞	90	91¼	90¼	90¾	90¼	92	90¼	91⅜	90⅝	32,288
Chic., Mil. & S.P.	81⅜	81	81¾	80⅜	80¾	80	80⅜	79⅝	80¾	79½			125,653
do. pref	124⅝		124⅝	124	124¼				124				2,400
Chic. & N'west.	115⅝	115¼	115½	114½	114¾	114⅜	114⅜	113¾	114⅝	113	113½	113	14,401
do. pref									145½				135
Chic., R.I. & Pac.	87¾	87⅛	87⅞	86½	87¼	86⅜	86¾	85¾	86¾	85¼	85⅞	85⅛	36,050
Chi., S.P., M.&O.											57¼	56⅜	5,400
Chi. Stock Yds.									102				100
do. pref													
Cit. Gas, Bklyn.													
C., C., C. & St. L.	57⅜		57¼	56½	57⅜		56⅝	56⅛	56	53¾	54⅞	54	9,963
do. pref					97		97		96				260
Clev. & Pitts.													
Col. C. & I.	24	23⅝	25¼	24	25¾	24¾	25½	25	25½	24⅜	24¼		11,366
Col. Coal	2												
Colorado Fuel	68¼	66⅝	70	68	71	69¼	70¾	70	71	70	70¾	69	12,353
do. pref					108½	107⅞							55
Col., H V. & Tol.			30⅞	30	30½	30	30¼	30⅛	30¼		30¼	30	3,452
do. pfd			72½	72	71				71¾				260
Col. & H. Coal	22⅞		22				21¼	19½			20½	20¼	2,600
do. pfd													
Commer. Cable													
Cons. Coal													
Cons. Gas			137	136½	136		135	133¾	134⅜	133	133		5,880
Del. & Hud. C.	136	135½	135	134	135	134	134¼	133½	134⅜	133½	133¼	132¼	7,968
Del., L. & West.	155¼	154¾	154½	153½	153⅞	153½	153⅞	153⅜	154	152¾	152½	149½	8,912
Des. M. & Ft. D.	9												10
Denv. & Rio G.													
do pref	56¼		56¼	56	54½		54½		55⅛	54½	54⅝		1,225
Dis. & C.F. Tr'st	43⅝	40½	43½	42½	42¾	41	41¾	39½	40⅝	36¾	38½	36⅞	202,630
do. ex-div													
Dul., S. S. & A.			13⅛	13			12¾				12¾		300
do. pref			30										100
E. T., Va. & Ga	5⅞	5½	5½	5¼	5⅛		5						2,181
do 1st pref	33½												110
do. 2d pref	11⅝		11		10½	10¼	10						800
Edison Ill. Co. of N. Y													
Edison E.L. Co.	131	127	130		129		129½	126	127	126½	125¾	125½	2,696
Edison Gen. El.	111⅜	111⅛	111⅞	111¼	111⅝	111¼	111⅛	110⅞	111	110¼	111	110½	7,939
do. pref													
Erie & West.													
Evans. & T H.	145½												100
Flint & P. M.													
do. pref													
Gt. Nor. pref			141		142½		141¼		141½		131¼		760
Green B. & W.													
do. t. r.	13½	13¼	13¾	13⅛	13¼	13	13						869
G. B. & W., pref													
do. t. r.							26						31
Houston & Tex.									6¼		6¾		100
Hunt. & B. Top.	38		38		38½	38¼	38⅝						362
do. pref	54½		55		54½		60⅞	60¾	54½				82
Ill. Cent.			103½	102¾	103	102¾	105	102¾	102¾		100		2,180
Int. Cond. & Ins			66										100
Iowa Central													
do. pref.							33						100
Kan'wha & Mich			14										145
Keokuk, D. M.													
Laclede Gas	24¼		24½						24½		24		910
do. pref	73	72⅞	72¾				74	73½	74¾	74			500
Lake Erie & Wes			23¾								23¼		210
do. pref.			79⅛						78½	78			848
Lake Shore	130		130	129⅜	129½	129	128½		129	128⅞			3,446
Lehigh C. & N.	54⅛		54⅛		54¼	54⅛	54¼	54⅛	54⅛	54			1,114
Lehigh Valley	60¾	60⅝	60¾	66½	60¾	60½			61	60⅝			980
Long Island	114	113			113		112		110½	110	109		934
do. ex-div													
L. Erie & St. L.													
do. pref.													
Louisv'le & N'sh	75¾	75⅜	75⅞	75¼	75⅝	75⅛	75	74½	75½	74⅛	74⅞	74¼	25,815
Louis., E. & St. L													
do pref			49				48		48				300
L., N. A. & C.			24¾		25⅜		25	24¾	25¼	24¼	24½		1,207
L., St. L. & T.			25¼	25⅛							25		200
Mahoning Coal													
do. pref													
ManhattanCon.	169	168	168¼	164	167	164	165¾	164	166	165⅛	165	164½	12,588
Maryland Coal									26½				100
Memphis & Char.													
Mexican Cent.									11⅝		10¾		100
Michigan Cent.							105½		105¼				300
Minnesota Iron					66								100
do pref													
Minn. & St. L.			18						18½				1,200
do pref	48¾	48											
M., L., S., & W.													
do. pref													
M., Kan. & Tex.			15		15⅝	15½	15¼	15⅛					2,630
do. pref			26	26	26¼	26			26	25⅛	25⅛	25	1,316
Missouri Pac.	58¼	58	58	57½	57⅞	57½	57½	56⅜	57⅛	56⅛	56½	56⅛	8,610
Mobile & Ohio	35						34⅞				34⅛		200
Morris & Essex							154¾						100
Nat. Cord. Co.	144¾		146⅜				148						208
do. pref	116½	115½	117	115⅜	115½	114½	115½	114½	115½	115	115¼		4,610
do. New	72¾	72	74⅞	72¾	74⅞	73½	74¾	73⅝	75	73⅞	74	73¼	88,059
Nat. Lead Co.	49⅜	49	49⅞	48½	49⅛	48⅛	49	47½	48	47¼	48¼	47	19,248
do. pref			94⅞	94⅞	95	94⅝	94¾		94	93¾			1,663
Nat. Linseed Oil	39	38½	40	39⅛	40	39¾	39¾	39½	39				1,210
Nat. Starch	26		25⅞	25½	25⅜	24⅝	24⅜	23	25½		24¼		2,450
do 1st pref													
do. 2d pref	93½	90	93	90	90				90	88			786
New Cent. Coal							10½	10½					200
N. C. & St. L.					88				89				400
N. J. Central	130	129	129½		127¾	126¼	127¾	127	128	126	125¼	125	3,442
N. Y. Central	110½		110½	110⅜	110¼	110	110½		110⅜	109⅞	110¼		2,005

COAL, RAILWAY AND OTHER STOCKS.

Name of Stocks.	Feb. 4. H.	Feb. 4. L.	Feb. 6. H.	Feb. 6. L.	Feb. 7. H.	Feb. 7. L.	Feb. 8. H.	Feb. 8. L.	Feb. 9. H.	Feb. 9. L.	Feb. 10. H.	Feb. 10. L.	Sales.
N.Y., Chi. & St.L.			18⅛		18⅛		18⅜	18	18½		18¼	18	700
do. 1st pref													
do. 2d pref													
N. Y., L. & W.													
N. Y., L. E. & W.	25¼	25⅛	25½	25	25⅜	25	25⅛	24⅞	25⅛	24½	24⅝	24⅜	13,040
do. pref			56										100
N.Y., N.H. & H'rt			258½	258	260		260		261	259			614
N. Y. & N. Eng.	49½	48⅜	50⅞	49	51	49⅜	50¾	49⅜	50½	49½	50¼	49	84,995
N.Y., Susq. & W.	19½		20⅜	19⅜	20⅛	20	19⅞	19¾	20	19⅝			6,945
do. pref	69⅝		70						69½				380
N.Y. & North	16½												100
do pref	34⅝	34	34⅜	33¾	34		34⅛	34	35½	33	33½	33⅛	3,350
Norfolk South.									60				100
N. & West.	9⅛												100
do. pref	37½						37¼	37	36¾	36½			280
Nor. Amer. Co.			11½	11	11¼	11¼	11⅛	11	11¼	11			2,115
North. Pacific			18⅜	18¼	18⅜	18¼	18⅜	18	18⅜		18½	18	1,063
do. pref	49	48¾	50⅜	49	50¼	49¼	50	49½	50⅜	49⅛	49⅞	48½	50,645
Ohio & Miss.													
Ohio Southern	45½		45½										200
Ontario & West.	18¾	18⅜	18⅝	18⅜	18⅛	18⅜	18⅝	18½	18⅝	18¾	18½	18¼	3,700
Oregon Imp.					20⅞	18	20⅞	20½	21½				175
Ore. R. & N.			83										13
Ore., St. L. & U. N.					22½	22¼	22½		22½	22			470
Pacific Mail	24⅞		25¼	24¾	25¼	23	24	23	24	23½			5,550
Penn. R. R.	55⅛	55	55⅛	55	55⅛	54⅞	54⅞	54¾	54¾	54¼			4,553
Peoria, Dec. & Ev. R.			18	17¼			17¼						825
Phil. & Reading	50½	49⅞	50⅛	48⅞	49¾	49	49½	48⅞	49⅞	48½	49⅛	47⅛	228,720
Pitts., F.W. & C.													
Pitts. & W., prf.							35		34¾				149
P., C., C. & St. L.					20	20			19¾				516
do. pref			62	61	60½	59⅝	60		61	60			1,205
Pullman P. C. Co.	198¼	197½			198½		197¾		198½				1,244
Rens. & Sara.													
Rich. & W. P.	11¾	11¼	11¾	10⅝	10¾	10½	10¼	9⅝	9⅞	9½	10¼	9⅝	59,625
do. pref	42¾	41	43	42	41	40	40¼						1,800
Rio Grande & W													
do. pref													
Rome, W & O.			112										7
So. Cotton Oil						55			54¾		55		150
So. Pacific	33⅞	33¾	33⅝	33¼	33½	33¼	33⅜	33¼	33¼		33⅛		2,340
St. L. & San. Fe.													
do. pref													
St. L. & Southw.			7⅝	7⅜	7⅛				14⅛				560
do. pref	14⅜	14	14⅛	14¾	14⅝	11¼							1,708
St. P. & Duluth	47	46½	47¾	47	47		47		46½	46			2,700
do. pref			105¼										296
St. Paul, M.&M.											113⅜	112⅞	
St. Paul & Omaha	57⅝	57	57½	55¾	57½	56	57⅜	56	58⅜	56⅝	57¼	56⅜	46,215
do. pref	120¾	120½	121	120			121		120½	120	120		710
Tenn. C. & I.	36	35¾	35¾	34⅝	35¼	34⅝	35	34½	35	34½	35¼	35	6,210
do. pref													
Tol. & O. Cent.													
do. pref.													
Texas Pacific	9⅞	9¾	10	9¾	9⅞	9½	9⅝	9½	9¾	9½	9½		2,225
do. Land Tr					13½								240
Tol., A.A. & N.M.	39⅞	39¼	39¾		39½	39⅛	39½	38¾	39¼	38⅞	39	38⅝	4,110
Tol., St.L. & K.C.					14								100
do. pref													
Union Pacific	41⅛	41	41¼	40⅜	40⅞	40⅜	41⅛	40	40¾	39½	40	39	24,351
do. Den. & G.	16¼												10
U. S. Express	68		69		67¾	67							39
U S. Rubber	45⅝	45¼	45	44⅝	45¾		45	45	44	44			1,881
do. pref			95		96				96				212
Wab., St.L. & P.					12¾	12	12⅝	12½	12¾	12¼	12⅛		4,968
do. pref.	24¾	24¼	25⅛	24¾	26¼	24¾	25⅞	25⅜	26⅛	25½	25½	25¼	20,440
Wells, Fargo Ex							145						5
Western Union	98⅞	98½	98⅝	97⅝	98½	97½	98	97½	98¼	97⅜	97¾	97¼	23,961
do. ex-div													
Wheel. & L. E.									19¾				125
do. pref.	65⅞						65⅞		65	63½			255
Wisconsin Cent.													

Total shares sold, 1,690,428.

San Francisco, Cal.

Names of Stocks.	Closing Quotations. Feb. 3.	Feb. 4.	Feb. 6	Feb. 7.	Feb. 8.	Feb. 9.
Alpha			.15			
Alta		.15	.15	.15	.15	.15
Belcher		.85	.85	.80	.75	.75
Belle Isle	.10					
B. & Belch	1.35	1.45	1.55	1.45	1.40	1.45
Bodie	.15	.15			.10	.10
Bulwer	.15	.15		.15	.15	.15
Chollar	.70	.65	.60	.65	.60	.60
Com'w'lth						
Con. C. & V.		2.60	2.70	2.55	2.65	2.65
Con. Pac.						
Crown Pt.		.75	.75	.65	.65	.80
Del Monte						
E'rekaCon	1.50					
G'ld & C'y	.90	.95	1.00	.95	.90	.90
Hale & N.	.75	.80	.75	1.30	1.25	1.25
M. White						
Mexican	1.50	1.60	1.80	1.70	1.80	1.75
Mono	.20			.10	.05	.05
Mt. Diablo						
Navajo	.05					
Nev. Qu'n.						
N. B'lleIsle	.10					
N. Co'w'th						
Ophir	1.75	1.90	2.10	2.05	2.10	2.20
Potosi		1.35	1.35	1.50	1.40	1.50
Savage	1.15	1.15	1.15	1.10	1.05	.95
Sierra Nev	1.30	1.35	1.25	1.30	1.25	1.35
Uni'n Con	.95	1.00	1.05	1.05	1.05	1.05
Utah		.20	.20	.15	.15	.20
Yel. Jack	.75	.70	.75	.65	.60	.65

Baltimore, Md.

Company.	Bid.	Feb. 9. Asked.
Balt. & M. Car	....	.10
Conrad Hill	....	.10
Cons. Coal	.28	.30
George's Creek Coal	1.05@1.06	1.06
Howard C. & C.	1.10	....
Lake Chrome		.05
Silver Valley	.72@.80	.80@.82

Deadwood.

	Bid.	Feb. 4. Asked
Deadwood Terra	$1 35	$1.75
Double Standard	.22	.25
Golden Reward	1.40	1.50
Hawkeye	.62	.65
Iron Hill	.14	.15
Isadora	.25	.30
Mutual	.01¼	.01¾
Ruby Bell	.22	.25
Seg. Iron Hill	.01	.01½
Tornado	.25	.30

Foreign Quotations.

London.

	Jan. 28. Highest.	Lowest.
Alaska Treadwell	£2¼	£2
Amador, Cal	1s. 3d.	9d.
American Belle, Colo.	2s. 6d.	....
Can. Phosphate, Can.	£½	£¼
Colorado, Colo	£⅛	....
De Lamar, Idaho	£1⅜	£1¼
Dickens Custer, Idaho.	7½d.	4½d.
Eagle Hawk	....	....
Eberhardt, Nev	£⅛	....
Elkhorn, Mont	£1⅜	£1¼
Emma, Utah	1s. 3d.	9d.
Esmeralda, Nev	....	....
Flagstaff, Utah	10½d.	7½d.
Golden Leaf, Mont	....	....
Jay Hawk, Mont	9s. 6d.	8s. 6d.
La Luz, Mex	1s.	6d.
La Plata, Colo	1s.	6d.
Maid of Erin, Colo	£13-16	£11-16
Mammoth Gold, Ariz.	1s.	6d.
Mount McClellan	4s.	3s.
Montana, Mont	3s.	2s. 6d.
New Consolidated	....	....
New Guston, Colo	14s.	13s.
New Hoover Hill, N.C.	2s. 6d.	....
New Russell, N. C	....	....
New Viola, Idaho	....	....
Old Lout, Colo	....	....
Parker Gold, N. C	....	....
Pittsburg Cons., Nev.	2s. 6d.	1s. 6d.
Poorman, Idaho	7s. 6d.	6s. 6d.
Plumas Eureka, Cal.	£9-16	£7-16
Richmond Con., Nev.	15s.	10s.
Ruby, Nev	6d.	3d.
Sierra Buttes, Cal	£⅜	£¼
" Plumas Eur., Cal.	£9-16	£7-16
Silver King	....	....
United Mexican, Mex.	£3-16	£1-16
Yankee Girl, Colo	4s.	3s. 6d.

Paris.

	Jan. 26. Francs.
Belmez, Spain	615.00
East Oregon, Ore	....
Golden River, Cal	130.00
" " parts	30.00
Laurium, Greece	630.00
Lexington, Mont	91.25
" parts	2.40
Nickel, New Caledonia	800.00
Rio Tinto, Spain	393.75
" " oblig.	517.00
" " " 2d	512.50
Tharsis, Spain	116.00
Vieille-Montagne, Belgium	500.00