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CONTENTS.

THE production of gold in the Witwatersrandt district, South Africa, amounted to 1,215,864 oz. in 1892, exceeding that of the previous year, 728,752 oz., by nearly half a million ounces. The production for the month of December exceeded that of any previous month of 1892, or indeed of any similar period in the history of the Randt. The output increased steadily from 84,560 oz. in January to 117,748 oz. in December. These ounces are of impure gold bullion. It would be a very great advantage and convenience if the Transvaal returns were made in *fine* gold.

THE great increase in the production of lead in this country last year, as stated in these columns a week ago, occasioned much surprise and, as usual, some incredulity. While we stated that the imports and exports of lead would be given in the volume of the "Mineral Industry," and this would cover the lead which was produced here from foreign ores and bullion, whether in bond and exported or used here, yet our attention has been called to this by Mr. THOS. J. PHILLIPS, Secretary of the National Lead Company, as a possible cause of misconception, and it has been suggested that lead refined here from foreign bullion in bond should not be included in our production though it is reported in our imports and exports. The ore and bullion imported and exported will be given in our volume of the "Mineral Industry."

The official returns of imports and exports of lead in ores or bullion are not obtainable until near the end of January, and for this reason we did not give such figures as we had concerning the treatment of ore in bond. Even after deducting the lead exported it will be found that the consumption in this country in 1892 exceeded by several thousand tons the consumption in 1891.

THE Dux lignite mines in Bohemia, at which the unfortunate explosion happened on the 24th inst. by which it is supposed over 100 men lost their lives, are situated near Bodenbach, in the mining district of Brüx. The district, which is the most important in Bohemia, gives employment to 13,771 men, 512 women and 238 children, which enormous force produced in 1891 4,000,000 metric tons of coal, of which 200,000 came from the mine at which the accident occurred.

It would be thought that with this large production all precautions would be taken for the safety of the workmen, but, judging from the repeated accidents that have occurred, this has not been done. The record of the district is the worst in Austria, so far as fatalities are concerned.

It would seem probable that the Guibal fan, 8 metres in diameter, and supplying 3,000 cubic metres of air per minute, with an auxiliary one of 800 cubic meters capacity at the Fortschritt shaft, was insufficient to properly ventilate the mine.

What makes this accident the more distressing is that few mutual aid societies, which could relieve the pressing necessities of the families of the dead and injured, have been organized at this mine, although in other parts of Bohemia they are quite common.

MINE owners in the Cœur d'Alene are feeling uneasy over the continued low price of lead. They declare that, in order to make a profit under existing circumstances, freight rates must be lowered, if not the wages of the miners. It is thought that if they had smelting facilities at Spokane Falls costs would be much reduced. It is doubtful, however, if a smelter at Spokane, the construction of which is now proposed, would find in the immediate vicinity the various classes of ores which make smelting a thorough and economical process.

Lead ores, of which there is a plenty, are not the only ones to be desired. It is the proximity of Denver to the basic ores of Aspen, the ferruginous ores of Leadville, and the acid ores of New Mexico and Colorado, as well as the lead ores of Aspen and Leadville that make it a great smelting center. At Spokane there would be a sufficiency of lead ore, but it would be in concentrates, which would require a preliminary roasting with consequent losses of lead and which, through their fineness, even when partially agglomerated, lessen the capacity of a stack. Both charcoal and coke would be expensive, the latter having to be brought from Colorado or from Pennsylvania. It becomes a close question, therefore, whether the expenses of smelting at Spokane would be counterbalanced by the freight reduced through the shipments of lead bullion instead of crude ores. This question should be studied thoroughly before any investment is made.

THE Virginia City (Nev.) *Territorial Enterprise*, which for years has been controlled by the Comstock ring, has finally suspended, Messrs. Mills, Newland and others having no further use for it. In its last breath, no longer in fear of the exacting tyranny of its owners, it says, with surprising courage for a Nevada paper, that what the Comstock needs to be worked profitably, is organized, concentrated, united and intelligent effort, and that the incapables, fattening themselves at the expense of stockholders, must be done away with. We are glad to be thus supported in our oft-repeated statement that the stockholders must unite, and the ring, incapable of honest work, should be overthrown.

This suspension, we understand, was caused by the new management

of the paper publishing some live mining news in place of the usual stereotyped and unreliable reports of the mining superintendents. Attention was called in these articles to the promise of certain proposed development work, and as the policy of the ring is to leave the stockholders in the dark, no less to its intentions than to its doings, its disapprobation was expressed in a prompt order to suspend publication. It is to be deprecated that in what was our greatest, and yet may be one of our leading mining camps, that the newspapers should be permanently enjoined against publishing such matter as interests and may guide its real mine owners, the otherwise unprotected stockholders.

During our almost single-handed crusade against the iniquitous Comstock management, we took pride in the fact that we were the only journal in the country which had the courage of its convictions in exposing Comstock rascalities, but now that our victory and that of the Mining Stock Association of San Francisco has borne fruit we are pleased to note the conversion of the *Territorial Enterprise*, and, though defunct, congratulate it that its last words were its best.

THE PERCENTAGE OF IRON IN MAGNETITE.

Mr. DAVID H. BROWNE, chemist of the Canadian Copper Company, in a letter published in the ENGINEERING AND MINING JOURNAL of January 14th, page 28, condemns a reported analysis of iron ore made in the laboratory of the Canadian Geological Survey. He says the figures are "evidently erroneous, and, if not a typographical error, they reflect little credit on the analyst." Mr. BROWNE's only ground for this declaration is that the analyst reported 61·08% metallic iron, and 19·65% insoluble residue, to bear out which figures "the Gunflint Lake ore must contain metallic iron." This proposition he proves by asserting that 61·08% of metallic iron in the form of magnetite would make 84·2% of magnetic oxide, and the same amount of iron as hematite would form 87·2% of ferric oxide—in either case, leaving much less than 19·65%, the proportion of insoluble residue reported.

Mr. BROWNE is too hasty in pronouncing the report discreditable to the analyst. He is, apparently, not aware that Mr. HOFFMANN, the chemist and mineralogist of the Canada Survey, is one of the leading authorities in his department, and that his discovery of native iron on the north shore of Lake Huron, in 1890, constitutes one of the ablest recent contributions to our knowledge of the processes of oxidation and reduction involved in the formation of iron ore.

But it is not, as Mr. BROWNE seems to imagine, necessary to assume the presence of metallic iron in order to explain the figures which he criticizes. What they more probably indicate is the presence of an excess of ferrous oxide in the magnetite. This has been repeatedly observed by first-rate chemists. In some analyses the proportion of the ferrous is greater than that of the ferric salt, although the accepted formula, FeO, Fe_2O_3, represents only 31% of the former to 69% of the latter. Such a mixture (or, if it be preferred to speak of it as a definite oxide, the magnetic oxide, Fe_3O_4) corresponds with Mr. BROWNE's calculations. But the trouble with his deduction is that this compound does not always constitute the whole of a magnetite.

The observed excess of ferrous oxide in specimens of magnetite may possibly bear an interesting relation to their mode of genesis. Thus, it has been held that magnetite has sometimes been produced by the action of heat upon spathic iron ore. But the artificial heating of this ore produces a magnetic mixture of oxides similar to hammer scale, which Berthier represented by the formula 4 FeO, Fe_2O_3; and this formula closely approximates the figures of the Gunflint Lake analysis.

On the other hand, it is a well-known fact that magnetite of normal composition may be altered, not only by higher oxidation, yielding ferric oxide, but also by reduction through organic matter, giving ferrous oxide. DANA (8th ed., p. 226) says the latter "may" become a carbonate or siderite: but I do not understand that this is absolutely necessary as a part of the reaction.

The above is sufficient to convict Mr. BROWNE of a hasty judgment. I happen to know that the analysis he calls in question was correctly reported, and that Mr. HOFFMANN stands by the result as correct: and I have no hesitation in saying that his word is authoritative.

On the other hand, I will say frankly that I do not think it wise for the Canada Survey to permit such an analysis to go forth without a special note upon its exceptional character. For, while this variation of the constitution of magnetite is well known to chemists, it is, so far as I am aware, never characteristic of large quantities of the ore. The ordinarily accepted formula represents the most stable combination of the two oxides; and the abnormal excess of ferrous oxide is, I believe, found in "specimens" only. In the letter of Mr. RUSSELL, printed in the JOURNAL of December 31st, 1892, and criticized by Mr. BROWNE January 14th, the emphasis was laid upon the non-titaniferous character of the ore in question, and the percentage of iron was not specially considered. I have no doubt the analysis was correct for the specimen analyzed; and, while I have no reason to believe that any large quantity of the ore would confirm it as to metallic iron, I think it likely to be truly representative of the ore as to its non-titaniferous character. At least, in my experience with titaniferous ores, I have never been able to get, from any part of a deposit bearing that character, samples which did not show it. The percentage of titanic acid may vary; but I think it is not likely to disappear.

R. W. R.

THE GOLD MINES OF MEXICO.

The product of gold in Mexico cannot be judged by the coinage returns even when to these the usual 5% allowance for contraband bullion is added. Gold bars are so easy to smuggle across the border that the temptation to avoid the heavy mintage charges is great. Thus it is that the published returns are much lower than the actual production. In the State of Sonora, for instance, the amount of gold officially credited to its mines is less than the production of any one of several of them.

Mexico's production of gold, however, has never been considered an important factor in that of the world, and the small amount of it credited to that country has been attributed generally to an absence of gold veins which could be worked profitably. It is by no means an uncommon statement that there are no gold mines in Mexico, or at least so few that they are scarcely worth taking into account. A few years ago this was true in a measure, but in later years the number of productive gold mines has so increased that the possibility of Mexico becoming a large producer in future years is by no means precluded.

This development has been due, as in the case of the silver mines, to increased facilities for working the low grade ores in which gold is usually found, not to discoveries of bodies which had not been previously known to exist, although several new mines of importance have been opened up. Speaking generally, the gold mines of Mexico are confined to the northwestern states, such as Chihuahua, Sonora, Sinaloa and Durango, the middle western states Jalisco and Michoacan, and the southern states Oaxaca, Morelos and Chiapas. The great silver states, such as San Luis Potosi, Hidalgo and Zacatecas, contain few gold mines, although the latter state has one of the richest in the republic.

In Sonora there are many silver veins which contain gold and a few mines, including the famous Mulatos, the value of whose ores is in gold alone. The mines of Prietas, such as the Prietas, Colorado, Grand Central and Creston, have all yielded large quantities of the more precious metal, although in these veins it is invariably associated with silver, the gold value of the bullion produced by amalgamation being in excess, however, of the silver.

In the western portion of this State and extending into Chihuahua is a district which abounds in gold veins, although few of them have been worked to a profit. This belt of country, which is nearly circular, contains such mines as the Mulatos, which, it is known, has been a considerable producer, although its commercial value has been disputed, and the mines of Pinos Altos, which contain both gold and silver. To the north of Mores interesting prospects have been discovered, and there are legends of mines of fabulous richness existing in this district.

In Sonora, north of Alamos, veins containing both gold and silver are found, and in the Sierra Madres, east of Alamos, near the Chihuahua boundary line, is the formerly rich gold and silver property of RAMOS HERMANOS.

Near Batopilas, the famous silver mining camp of Chihuahua, are the gold deposits of Cerro Colorado, which were discovered in 1887 by BECERRA HERMANOS. This mine, a large mass of porphyry seamed with auriferous quartz, has been a producer to a considerable extent during the past year.

In Sinaloa there are a number of mines which yield gold with their silver, but although placers are known to exist and a great excitement occurred over some remarkably rich veins some ten years ago, no success has been made with purely gold properties. Those of San Jose de Gracias and those near Cosala have proved failures.

In Durango the production of gold is only incidental to that of silver. There are many mines, however, which produce both metals. In Zacatecas the largest gold mine is the Mesquital del Oro. The production of this property is said to be about $50,000 monthly. From the veins near the city of Zacatecas considerable gold is produced, although silver is by far the most important metal.

In Jalisco there are more gold mines than silver; several of them owned individually are producing largely. Michoacan has the El Oro mines, owned by an American company, which has been a steady producer since 1880, although unprofitably worked. The mines of Tlalpujahua, near by, also contain with the silver considerable quantities of gold. In Angangeo some gold is found also. On the Pacific side placer and vein mines are about to be worked by Americans.

In Morelos and Chiapas the veins contain both gold and silver, but Oaxaca is undoubtedly the most promising undeveloped gold field in the republic.

The veins here are broad and of comparative high grade. Few of them have proved in depth, but the completion of the new railroad will undoubtedly stimulate the mining industry in this state, of which President DIAZ is a native, and in which he takes great interest.

It will be seen, therefore, that the distribution of gold in Mexico is by no means limited, although it is as a rule confined to the western portion of the republic. The fact that the gold veins are generally low grade, as in this country, has prevented their exploitation, as their frequent inaccessibility has raised the cost of working enormously. Then, again, the comparative absence of aqueous erosion in geologically recent periods has prevented the formation of placer deposits, the working of which in this country has always antedated the vein mining, and which has paved the way for successful lode operations.

With the extension of the Mexican railroad systems the gold production will increase; but even now, should the onerous bullion tax be removed, the present production would startle those who believe Mexico has no gold mines.

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 Maud S. Mine, Montana.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Your correspondent Mr. W. F. Smith, indignant at having been at the expense of an expert examination of a proposed mining investment which proved to be worthless, asks, "Cannot some law be formulated and adopted by which to hold venders of mining 'fakes' strictly responsible, even though they but try to dupe investors?"

There is a simpler remedy: Require the vendors to deposit sufficient money to pay for a professional investigation of their proposition, which if the scheme is legitimate they will manage to do, and stipulate that the costs shall be met by them if their representations are false. This is a very efficacious method of winnowing chaff from grain in the steady succession of seductive mining schemes with which investors are tempted. If some of the well-known firms engaged in mining enterprises and the like put themselves to the expense of examination of every proposal submitted to them, the balances on the credit side of their ledgers would be smaller, and those of the engineers who are willing to travel to the ends of the earth (cost paid) for good round fees would be correspondingly larger.

NEW YORK, Jan. 23, 1893. S.

Timber Tests.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Allow me to recall to you and your readers the discussion held in your columns a year or so ago with reference to the United States Timber Examinations.

Although I believe, theoretically, the weight of opinions expressed was toward favoring government interest in the matter, practically your position has prevailed in the failure of Congress to appropriate sufficient funds for the work.

We have carried it on with the small allowance made, and believe to have brought to solution at least one important question, namely, whether the timber of the Longleaf pine, bled for turpentine, is in any way affected by the process.

The result that neither its strength nor its durability suffers from the process removes a popular prejudice from a product the unrestricted use of which may be considered true economy; and the appreciation of its value resulting from our work may be fairly estimated at over one million dollars per year.

With the present political outlook there is even less likelihood of the government carrying on this class of work with that liberality which is true economy and which ought to be practiced in removing ignorance and prejudice.

The engineering professions, railroad builders, architects, wood working and other industries are no doubt most directly and pecuniarily interested in this work, and may, if properly appealed to, see their profit in obtaining the information which comes from it.

Since you believe that such work should and could be done by private enterprise, I take the liberty of suggesting that you make good your belief and policy by paving the way for private enterprise to engage in the investigation, for it is quite evident that, without a special co-operative effort, no beginning in that direction will be made.

I suggest, therefore, that you will appeal to the fraternity and collect the funds with which to continue these investigations. The work is now, I believe, placed on a satisfactory business basis so as to make such co-operation with the government machine promising in results; the working plans can be modified to suit the somewhat changed aspect of conditions, and I think we could guarantee value for the expenditure of, say, $50,000 of private funds in the next three years, that will repay such an effort.

If you or any of your readers in sympathy with your position on this question will take hold and advance such a proposition, I shall be pleased to outline a plan of co-operation and of work to be done.

WASHINGTON, D. C., Jan. 19, 1893. B. FERNOW, Chief of Forestry Division.

[While the ENGINEERING AND MINING JOURNAL thinks such work as this properly belongs to private enterprise, and that the interested parties, railroads, engineers, architects, etc., could well afford to contribute the necessary amount to carry on the work, we do not consider it any part of our duty to collect funds to do all the work we think the government should not do. We will gladly give Mr. Fernow the opportunity to lay his plans before our readers, and we believe it to the interests of those we have mentioned to carry on his work.—ED. E. & M. J.]

The increase of journal friction in the cold weather is illustrated by the fact that the coal cars on inclined tracks from the mines to the railroad have now to be started by pinch bars.

THE PERSISTENCE OF ORES IN LODES IN DEPTH.

Written for the Engineering and Mining Journal, by John F. Blandy.

I have read with much interest the article by Prof. Wm. P. Blake, on "The Persistence of Ores in Lodes in Depth," in the Engineering and Mining Journal of January 7th. The interest lies, however, most in the record of facts and observations. From the study of such observations each one can then draw his own conclusions. Professor Blake's conclusions are summed up in the closing paragraph of his article, viz., "Whatever view we may take of the source of the mineralization of lodes, we may conclude from the evidence that it is deep-seated, and in a homogeneous country rock we may be expected to extend as far as we can reach downward in mining operations." I am free to say that I do not so interpret the evidences as showing that the mineralization is necessarily deep-seated. My observations have led me to consider each vein as a new study, not to say that veins (I refer only to fissures) have not a general likeness, but each has to be viewed with its surroundings, and it is best to start with the idea that the one under examination is something new. Lateral secretion has always seemed to me the most plausible and natural method of filling the veins. True, there are many details which our limited knowledge of the movement of atoms through rocks do not enable us to comprehend.

If I see native copper distributed uniformly through a homogeneous belt of close-grained rock in microscopic particles, I conclude that a fissure cutting such a belt must be enriched by it. Or, if I find belts of amygdaloid in a district where there are no fissures, carrying large economic quantities of copper, and similar belts in an adjoining district, cut by many fissures, with no economic value, but the fissures rich in metal, I naturally conclude that lateral secretion has been in play. In several places in Arizona the solid granites and porphyries show gold in economic quantities, and one would conclude that like results would obtain in fissures cutting these rocks. These are plain cases, however; the complicated ones are where we have a variety of ores in one vein. Possibly, close investigation might in every case show that the inclosing rocks carry the various minerals in minute quantities. The granites around Prescott, Ariz., are very far from being homogeneous, and probably there is far less of that quality in all granites and other massive rocks than is apparent to the eye. There are places in the Prescott granite field where rich placers exist with no signs of veins near them. If, therefore, the inclosing rocks carry the ores or metals, why should we seek for some distant source from whence the ores were brought in solution and deposited in the fissures?

It may be said this will explain the surface ores or outcroppings, but how about it in depth? What is great depth in a mine? The depth to which we, with our best appliances, are able to reach. A minute is a very long time to a man suffering acute pain, but very short to one hurrying to catch a train. A horizontal mile is a short distance that a man can walk in 15 minutes, but in depth a distance that centuries of work have not been able to attain. I do not therefore think that our limited depths should be taken into consideration.

Professor Blake instances mines that are dry in depth, but it does not prove that there is absence of moisture in the rocks; and as long as that moisture exists, lateral secretion can take place. It is generally understood that the waters that have to be pumped from the mine have percolated from the surface, and therefore every endeavor is made to catch the water in the upper levels. If the vein is tight, they can be caught much better than if loose or cavernous. If the water does not find its way down easily, does not the ventilation of the mine carry off as much water as the vein produces in the lower levels, and thus make a dry mine? We know that with depth the mine becomes much warmer. The cold air descending is capable of carrying much less moisture than that ascending from a warm mine. This is especially noticeable in cold countries, where the upcast shaft sends forth in winter a column of apparent steam. I do not know that any measurements have been made to show the amount of moisture carried off in this way.

That the ores in the croppings have been affected by the surface, and that this influence extends down to what is called water level, is well known. This question of water-level in Arizona is an uncertain factor. I can instance a vein which is perfectly dry in the croppings and at the depth of 150 ft., whereas a vein 250 ft. from it has good springs of water in the croppings. Both croppings run down a steep hillside. The Congress gold mine has reached a depth of 1,000 ft., and has not yet found water. It, however, shows honeycombed quartz near the surface. This dryness is no doubt due to climatic influences, but these influences have acted but for a day in the geologic history, since there are abundant evidences that this was once a well-watered country, and therefore they could not have had much effect on the filling of the veins.

Let us suppose a vein inclosed in homogeneous rock, and that the source of the ore supply is deep-seated. Have we not a right to expect that there will be considerable uniformity of deposit at the various levels? Such is not, however, the case, as all mines have large areas of good and barren stopes.

Lately I saw a sheet of iron, 48×10 in. in size, upon which zinc had been deposited by a electrolytic process. Were the natural forces uniform in their action, we should expect a uniform deposit on such a plate. Many spots on the plate were quite clean, most of them along the edges. The rest of the surface was covered by the deposit, varying in depth from a scale to 1½ in. It is well known that when chemical activity has commenced at any one point, immediately the forces are more energetic around that point. Cannot we explain in that way the occurrence of the chimneys and bunches of ore in a vein if we suppose them to be due to lateral secretion?

In a tunnel in California, I noticed, some six months after the tunnel had been driven, a sparkling, waving fringe of alkaline salts some 3 to 4 in. in length, hanging to the roof, and on the walls and floor many patches of incrustations of the same salts. The tunnel was a cross-cut

adit. The inferences to be drawn from this was, first, that the stuff had come out of the solid rock; next, that that on the walls and floor was by exudation, and that on the roof by vaporization. Had the latter been by exudation, it would have been stalactitic. I could cite other examples which have helped me to form my opinion.

Though I do not contend that all veins have been filled in this manner, still I think the majority can be brought within that class. Many veins might be cited which have increased in value in depth, and they should be studied with all their surroundings to properly understand them.

There are two individuals who are diametrically opposite and fixed in their beliefs on this subject—the vender of "prospect holes," who will assert positively that the vein will increase in value in depth, and the chlorider, who has dug out his "pocket" of ore and swears that the vein does not go down. The rest of us can still continue to argue the question and may never reach a conclusion.

THE NICARAGUA CANAL AND AMERICAN SHIPPING.

Written for the Engineering and Mining Journal, by S. H. North.

In 1849 the future Emperor Napoleon, in a discussion on the relative merits or formation of a canal through the Isthmus of Panama and through Nicaragua, advocated the latter route for the canal, as preferable from several points of view. During his remarks he uttered these words: "It (the canal) would run in a straight line about 278 miles, enhancing the prosperity on either bank of more than 1,000 miles of territory, taking into account the sinuosities of the lakes and the course of the internal rivers," and "the effect that would be produced by the annual passage through this fine country of two or three thousand ships, exchanging foreign produce with that of Central America, and spreading everywhere activity and wealth, would be almost miraculous." These words, true as they are, do not touch the limit of the influence and effects of the construction of the Nicaragua Canal. Not only will it be the means of developing and enriching the country contiguous to the canal, but the United States, by its position and prominence in natural resources, will have an unprecedented opportunity of extending her foreign trade in iron and steel manufactures, in cotton goods, etc.—an opportunity we may be certain she will take full advantage of.

The Nicaragua Canal will be to America, precisely what the Suez Canal was and is to Great Britain, in fact more. The countries with which the United States will trade are nearer through the canal, than are the Asiatic countries and Australasia, via the Suez to England. Passing through the Egyptian Canal a vessel saves over 3,000 miles in the voyage from London to China; over 4,000 miles to Bombay. From London to San Francisco there is a diminution of over 7,000 miles via Nicaragua, instead of via Cape Horn; from New York the decrease is over 10,000 miles; by the canal, from New York to Canton there is a saving of 5,000 miles, against the Cape Horn route. These instances are sufficient to show that, so far as distances are concerned, the Americans will enjoy greater advantages from the Nicaragua Canal than England did from the construction of Suez. Then again the very countries whose markets were made so easily available to British produce by the Suez Canal are the same markets which will be placed within the reach of the manufacturers of the United States. Prior to the severance of Egypt from Asia by the Snez waterway, competition was an almost unknown factor to be considered, at any rate in comparison with its intensity now. Native labor and native products of India, China, Japan, and other countries in this hemisphere, held their own to a much greater extent on account of the slowness of transportation. Subsequently to the opening of the canal British manufactures have been shipped to these countries in greatly increased quantities. With the boundless resources of the United States; with their means of producing cheaply, it cannot but be expected that the stimulus given to American trade will be even greater than that imparted to English trade by the use of Suez. Considering that all the commodities which are transferred from Great Britain to Asia and Australasia are to a large extent the working up of American raw material, grain being Britain's principal import from this country, it can be seen that the United States is quite able to supply the demands of China, Japan, India, etc., burdened with less freight charges, insurance, etc., than the same articles shipped from England. The natural resources of the United Kingdom are more than duplicated in the States, and it is hardly likely that the former country can produce manufactures so cheaply as to be able to compete successfully, so far as price is concerned, with the products of the United States in those markets. China and India receive by far the largest quantities of cotton goods exported from Great Britain. Both in the Northern and Southern States the manufacture of cotton goods has very substantially increased during the last few years. The climate is well adapted for the growth of the fiber, and the products therefrom can be obtained at favorably low rates, while the quality and durability of the goods are, if anything, of a higher class than those turned out from the factories of England. By the time the Nicaragua Canal is opened for commerce, the manufacturers will, if they are wise and prescient, have placed themselves in a position to transmit a good proportion of their manufactures to Asiatic and other countries. Again, there are considerable quantities of iron and steel wares which have their destinations in India, China, Japan, etc., and similarly the South American republics, whose requirements in this line are very considerable, will be close at hand for the delivery of United States products. It is not necessary to amplify this phase of the question. There are, of course, other industries common to the States, the productions from which would find sales in Asiatic and other markets. The one main and very important fact to the country is that it will have the power to give a great revival to the shipping trade of the United States, and it remains with us to decide as to whose bottoms these manufactures shall be carried in. It is some long years since the American shipbuilding trade was of any magnitude. At the present time her shipping industry is mainly, almost wholly, confined to the lakes and coasting trade. If she is to ship her own commodities to foreign lands her shipping facilities will need to be greatly extended. Let us look for a moment at the result induced by the opening of the Suez Canal, upon the British shipping trade and manufactures. The following table shows the tonnages entered and cleared from the ports of the United Kingdom since 1869 at the end of which year the Suez Canal was opened:

	Entrances. 1 = 1,000 tons.	Clearances. 1 = 1,000 tons.
1869	17,198	11,712
1870	18,113	18,526
1875	22,693	23,583
1880	29,073	29,662
1885	31,862	32,419
1890	.....	.....

Then if we turn to the cotton trade, we find that great increases occurred immediately subsequent to the opening of the canal, in the quantity of goods shipped:

	Piece goods, million yards.
1869	2,868.6
1870	3,267
1880	4,495
1890	5,125

A more notable augmentation in imports took place in the wool trade:

	Total imports. 1 = 1,000 lbs.
1869	263,947
1870	266,329
1875	371,864
1880	476,088
1890	630,236
1892	737,594

In the year 1870 likewise the iron industry appears to have received a fresh impetus, due to some extent to the lessened distance separating the two hemispheres, and thus reducing the cost of transport, therefore the price of the commodity itself:

	Pig iron produced, tons.	Bessemer steel, tons.
1869	5,445,757	160,000
1870	5,963,515	215,000
1875	6,365,462	620,000
1880	7,721,833	1,044,382
1885	7,297,295	1,504,127
1890	7,875,130	2,014,843

Perhaps the most direct and most conclusive evidence of the effect of the canal upon British industry may be seen in the tonnages passed through the canal since its opening:

	British tons.	Foreign tons.	Percentage of British.
1870	289,234	146,677	66.28
1875	1,454,258	433,320	72.33
1880	2,432,932	624,489	79.58
1885	4,864,019	1,471,704	76.77
1889	5,352,886	1,430,341	78.91

This great addition to the shipping of a country represents an enormous amount of goods removed. All these shipments have gone eastward to China, India, Australia, and other countries in that direction, and if this indicates the effect of the shortening of the sea route from Great Britain to the East, it also suggests a faint forecast of the possibilities which the United States manufacturers and shipbuilding firms might reasonably expect from the construction of the Nicaragua Canal. The prospects are more expansive, even more certain, for the United States than they were for the United Kingdom when Suez afforded its facilities. For the last ten years the American shipping industry has made little progress, as the following table shows:

	Tons.		Tons
1882	40,097	1888	26,719
1883	39,646	1889	53,553
1884	35,631	1890	80,378
1885	41,028	1891	105,618
1886	14,908	1892	51,374
1887	34,354		

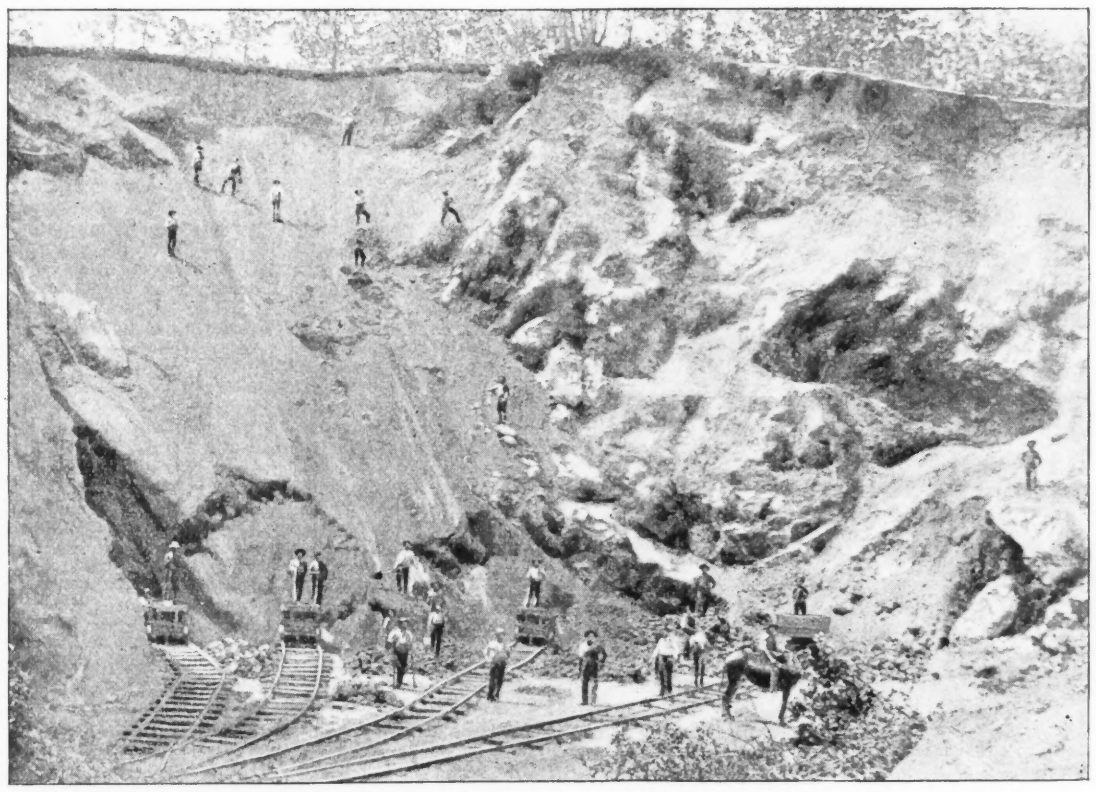
It is needless to say that with such an insignificant tonnage a large foreign trade would be impossible, but the United States has been capable of meeting great requirements before, and it would be foreign indeed to her characteristic to allow the Nicaragua Canal to be a mere geographical fact to her manufacturers—a fact utilized by other countries to the exclusion of her own vessels by foreign competition.

The first electric railroad on the overhead trolley system ever built in England has just been opened to public traffic between the towns of Walsall, Wednesbury, Darlaston and West Bromwich in Staffordshire. Overhead distribution of heavy currents has never been adopted in England, partly on account of the attendant danger and partly for æsthetic reasons, and the line that we now speak of would never have been built if the Electrical Construction Corporation had not invented a more convenient, artistic and safe method of suspending the wire and collecting the current than that to which we have become accustomed in this country. Steel columns are erected on each side of the road and cross arms projecting from the side of the columns near the top carry the conductors. The trolley arm is double jointed and can move when in its inclined position through a quadrant from the hind trailing position to a position where the vertical plane through it is at right angles with the track. Thus in the normal position the arm projects to one side of the car instead of trailing behind it, and the double joint allows of a great play in turning corners, where the distributing wire is straight while the the rails are curved. The trolley mast is well insulated and projects up from the upper deck of the car and does not interfere with the outside passengers. The suspending of the wire from the side by columns and arms is not a novelty, but the adaptation of this system in such a way as to enable the car to take the sharpest curves with only one straight piece of wire between the two main direction wires certainly is.

THE BROWN ORE DEPOSIT OF BAKER HILL, ALABAMA.

Written for the Engineering and Mining Journal, by Wm. M. Brewer.

The Baker Hill deposit is undoubtedly the most extensive brown ore bank in the State, as well as the biggest producer for the coke furnaces of Tennessee. The forty-acre tract of land on which it is situated lies in the extreme southeast corner of Cherokee county, a short distance from the Georgia line. It was purchased some time about 1866, by General Warner, the first president and founder of the Tecumseh Iron Company, who owned and controlled it as his individual property for some years, transferring it first to the Baker-Hill Iron Company, a corporation of which he was also president; and at a later date, when the present Tecumseh Iron Company purchased the property and interests of the older corporation, the property of the Baker-Hill Iron Company was included in the transfer. In appearance it is literally a mountain of ore, the apex being some 200 ft. above the level of the valley separating it from neighboring hills. The first work performed was in about 1876, when the ore was hauled by wagons to the Tecumseh furnace, one and a quarter miles distant, and there treated for charcoal iron. Although large quantities were so treated, mixed with other ore running lower in phosphorus, yet it proved to contain too high a percentage of that element for use even as a mixture in the manufacture of car wheel pig iron, for which the furnace was built. About 1890 the attention of the managements of the coke furnaces in Tennessee was directed to this ore, because of the high percentage of metallic iron it contained, often showing as high as 57% in carload lots, while the percentage of phosphorus, although too high for car wheel pig, was within the limit for coke iron. To facilitate shipment of the ore, which was then commenced on a large scale, a standard gauge switch 2½ miles in length was built, connecting the main tracks of the East Tennessee, Virginia & Georgia Railroad and the East & West Railroad of Alabama; the switch passing directly by the Baker-Hill dump. Although developments proved that the ore body was mostly solid, yet in the workings much gravel and clay were encountered containing large quantities of good ore in small lumps. In order to utilize such profitably, a double log washer of the old pattern with wooden logs, but improved by the addition of a revolving screen attachment to the discharge of the washer, was erected. A perforated pipe on which the screen revolves carries a strong current of water, which, playing on the material discharged from the washer, separates more thoroughly all sand and foreign matter from the ore, which after transit through the screen is discharged into the car ready for shipment, the sand and other matter passing through the holes in the screen to the waste dump. In making the transfer from the car, as brought from the mine into the washer, a stream of water forced through hose and large nozzle, such as is used in hydraulic mining, is employed. The track at the washer is raised high enough on trestles to allow a hopper bottomed car to be set over the washer box. This car, containing the material taken from the mine, is pushed into place by the company's own locomotive, and within half an hour from 40,000 to 50,000 lbs. of clean ore can be washed and loaded ready for shipment, because of the excellent system employed which brings the cost of transfer and washing down to the minimum price. A large proportion of the ore—probably 65%—is shipped direct from the mine without going through the washer, for, being blasted from the solid body of ore, washing is unnecessary; it is simply broken into lumps small enough to be handled. Owing to this fact the cost of mining and shipping the product of the bank, even including the transfer at the washer, maintaining the switch, cost of running and repairing locomotive, maintaining about three miles of water pipe line, including dams and an extra pumping station, is less than from almost any other brown ore deposit in the State. Usually about 70 men are employed at the mine. Here the workings consist of open cuts on the southeast and southwest sides of the hill. The highest of these cuts is known as the Incline bank; this opening is on the south side very near the summit of the hill, and the ore taken from it is sent to the dump and tipple, some 50 ft. below, by means of an incline tramway on which the loaded tram-car, as it descends, pulls up the empty one. The other openings are on almost the same level as the tipple, the grade of the floors being sufficiently higher to allow the loaded tram-cars to run down by gravitation. The largest of these, known as the Brown bank—the subject of the illustration—is on the southeast side. The main body of ore is exposed on the left hand side of the cut, where the face shows almost solid ore for a thickness of about 50 ft., and a short time back before the work had progressed beyond the highest point of the hill the thickness was nearly 90 ft. On the right hand side of the bank a clay and rock horse has come in and almost cut off the ore, but this gradually diminished in size, until it disappeared entirely near the center of the cut, leaving a face of almost solid ore about 100 ft. wide, as it showed when I recently visited the workings, and of an almost uniform thickness of about 50 ft. The face of this cut is being run to the left hand—as shown in illustration—toward the workings in the Incline bank, to strike the ore body under those workings and thus keep a continuity of face about 50 ft. in thickness. This objective point has now been reached, and the work on the Incline will shortly be abandoned. The next opening is on the same level as the Brown bank, but further toward the southwest. This is known as the Bluff bank. The cut has been run into the hillside in a direction toward the extreme left hand of the Brown bank. The face shows a body of almost solid ore of about the same thickness as in the other bank, but work has not been pushed here since the face of ore was exposed; consequently the width of the ore body shows much narrower. The distance between the faces of these banks is about 60 ft., with apparently solid ore all the way. Still farther toward the west on this same level another cut is being run toward this main ore body, so that eventually all three of these cuts, if the ore continues solid between their faces, as appearances would indicate, will center at one point. But that time, even with a full force working steadily, is in the far, rather than the near, future. Even then, it will only be necessary to drop down the hill another 50 ft. or whatever depth is desired, and open cuts onto a lower level, because the floors of the workings on the present level are on ore, and that still going down. It has been ascertained, so I am informed, that ore body went down for 150 ft. in depth below the original apex of the hill, and if the theory holds good that the brown ore deposits rest on the limestone, and go down to that depth, this body of ore will prove to be much deeper than present tests show. In surface area the Baker-Hill deposit covers, as nearly as can be estimated, about eight acres. Some idea of the capacity of the bank can be formed when shipments, aggregating in one month as high as 7,000 tons have been made. As in all brown ore deposits, rough stuff—horses of clay and rock—are occasionally encountered in the workings at Baker Hill; but all conditions considered, it is conceded that so far as development shows to-day this is the most extensive, and averages the best grade of hard ore of any



brown ore deposit in this State. Baker Hill is only a fraction of the property owned by the Tecumseh Iron Company, but it is the only deposit on which active operations are at present being carried on in this section by the company.

VARIATIONS IN THE MILLING OF GOLD ORES.—III. CLUNES, VICTORIA

Written for the Engineering and Mining Journal by T. A. Rickard.

Clunes is famous in the history of the colonies as the locality where on June 29, 1851, J. W. Esmond discovered the first gold in Victoria.* Its importance as a mining center has never been equal to that of the neighboring towns of Ballarat and Bendigo, but it is probable that no Australian mining district has done more useful work for the advancement of milling and mining. The history of its premier mine—the Port Phillip & Colonial—forms a large part of the early record of colonial "quartz reefing," and it is certain that in the history of milling in Australia that of the "Old Port Phillip" batteries forms the most important chapter.

Clunes commenced quartz mining in the colonies. While Ballarat was astonishing the world with the rapidly succeeding discoveries of nuggets of wonderful size, and while Bendigo, still exploiting the rich alluvium, had not yet learnt the value of the lodes whose white croppings were then only natural curiosities, Clunes was quietly laying the foundations of a great industry. It was fortunate that the difficult work of beginning was in the hands of the men who directed the affairs of the Old Port Phillip. The Port Phillip & Colonial Gold Mining Company commenced operations in 1857, at a time when the opinion was generally held, owing to the rash generalizations of Sir Roderick Murchison, that the gold in quartz veins was confined to a comparatively shallow horizon. From 1857 to 1881, from surface to 1,400 ft., the mine produced 1,204,908 tons of quartz, yielding gold to the value of £1,946,989, or at the rate of 7 dwts. 14 grs. per ton. The dividends which were paid amounted to £481,455.†

The portion of the mill which was first erected commenced crushing in May, 1857. At that date the treatment of gold quartz was a problem completely unsolved, and in the early years of its history the Port Phillip mill laid down the basis of colonial milling practice. In 1861 assays proved the loss in the tailings to amount to 6 dwts. 1 gr. per ton. By numerous changes, suggested by careful experiments, this loss was decreased until in 1870 it had been diminished to 17 grs. In 1862 the collection and treatment of the pyrites was commenced. In 1864 the plant was increased to 80 heads, and the first buddles were placed in position. In 1865 the first rock breaker was introduced.‡

As indicating the character of the work done at an early date the quotation of the following figures is permissible:

Year.	Quartz crushed.	Amount of gold.			Average per ton.		Loss per ton.		Value.			Dividends.		
	Tons.	Oz.	Dwts.	Grs.	Dwts.	Grs.	Dwts.	Grs.	£.	s.	d	£.	s.	d.
1861..	34,235	22,012	0	17	12	20	6	1	86,398	12	11	37,896	18	1
1862..	49,360	22,988	1	19	11	11	4	9	91,336	5	8	28,081	4	5
1863..	44,119	17,611	8	0	8	0	3	4	69,694	7	2	14,649	1	9
1864..	54,413	20,596	10	12	7	14	1	23	81,845	19	7	18,583	7	11
1865..	59,578	19,775	16	0	6	15	2	1	78,584	19	1	21,209	19	1
1866..	58,287	26,828	8	0	9	5	2	8	106,453	6	9	43,683	19	9
1867..	63,059	28,250	3	12	8	23	2	7	111,625	2	11	18,271	17	6
1868..	69,310	25,517	19	0	7	9	1	22	102,856	11	6	32,812	14	7
1869..	55,244	13,441	0	0	4	21	..	19	54,418	17	0	7,781	8	5
1870..	65,229	18,613	11	0	5	17	..	17	75 199	12	4	19,889	19	0

The ore from the mine passes through two rock breakers, preceded by sizing bars ("grizzlies"), before entering the mill, which consisted of several sections erected at different periods.

Number of heads.	Weight of "heads" or shoes.	Date of erection.
20	2½ cwt.	1857
24	2½ cwt.	1858 and 1859
12	2⅝ cwt.	1869
24	3¾ cwt.	1864

There are four stamps to each mortar box; four sections, three batteries each, one on one side of the building, and three sections, two of three and one of two batteries, upon the other. The stamp heads or shoes are square. The mortars are provided with back and front discharge. The crushing capacity is at the rate of 2 tons 12 cwt. for the 56 light stamps, and 3 tons 12 cwt. for the heavier section. The speed is at the rate of 82 drops per minute, and the drop has a height of 8 in. The issue or depth of discharge is maintained as far as possible at 4½ ins. The grating is of copper, pierced with 81 round holes per square inch. The pyrites concentrated (on Munday's Cornish buddles) has amounted to ¾% of the ore crushed. It's average contents have been 4 oz. 1 dwt. 14 grs. of gold per ton. The bullion is of 23·1·5 carats, or 965 fine. The retort percentage has averaged 38.

The business of the mill has always been carried on in a most systematic manner. The following tabulated statement of product is taken direct from the mill records for the four weeks ending May 21, 1873:

Where amalgam was produced.	Ozs.	Dwts.	Retorted, ozs.	Dwts.	Per cent. of total.
Beds	1,466	..	673	11	59·02
Boxes	708	3	249	12	21·87
Blankets	408	2	121	12	10·66
Mills	383	..	96	7	8·45
Total	2,965	5	1,111	12	

The other statistics were as follows: Number of stamps, 80; tons crushed, 5,023; hours worked, 518, or 21·58 days; average duty per stamp, 2·9 tons; yield per ton, 4 dwts. 10·12 grs.; loss in tailings per ton, 20·16 grs. total contents per ton, 5 dwts. 6·28 grs.

Of the total quantity crushed, 2,702 tons, or more than half, passed through the rock breakers of the amalgam. That coming from the "beds," or mortar box, retorted 46%; from the "boxes," or wells, 35%; from the blankets, 30%; from the Chilian mills, 25%.

Of the total product obtained by direct amalgamation, more than half came from the mortar box, indicating the free milling nature of the ore. No mercury is used in the mortar box. Of the total, 80% went no further than the wells immediately ontside the mortar box.

The lower part of the sheet indicates the character of the extraction during that particular month. Of the average contents of the ore, —viz., 5 dwts. 6·28 grs.—only 20·16 grs. were lost, giving a yield of 4 dwts. 10·12 grs. per ton, equal to 84% of the contents of the ore. At the present time the Port Phillip batteries are idle, but the milling practice, which they inaugurated, is to be seen reproduced in a modified form in the newer mills of the South Clunes United and the Dixon's North Clunes. The comparative table will illustrate the different features of the methods employed:

COMPARATIVE TABLE OF THREE CLUNES MILLS.

Mill.	Stamps.	Weight of stamp	Drops per minute.	Height of drop.	Depth discharge.	Capacity per stamp.	Capacity.	Grating.	Holes per sq. inch.	Concentrates.	Contents of concentrates.		Bullion fineness.	Retort.	Loss of mercury per ton.	Wear of gratings.	Water per stamp per minute.
		Lbs.		In.	In.	Tons.	Tons.	Copper plate.		%	Oz.	Dwt.	Per 1,000	%	Gr.	Days	G'lls.
Port Phillip.	{56 / 24}	{728 / 896}	82	8	4½	3	240		81	¾	4	1	970	38	5¾	30	6
S.Cl'n. Unit..	60	896	80	8	4½	2½	150		100	⅝	3	5	968	42	5½	25	8
Dixons N. Clunes...	80	896	80	8	7	3⅛	100		180	3	3	0	978	40	5½	*	10

* Information not obtained.

The South Clunes United mill contains 60 stamps in six sections of two batteries of five each. The weight of the stamp is 8 cwt. The speed is at the rate of 80 drops per minute. The height of the drop varies from 6 to 8 inches. The depth of discharge or issue is kept fairly constant at 4½ in. As the die wears down, sand is packed underneath, and when about two inches have been worn away, a second "false bottom" is placed under what remains of the die. This false bottom consists of a plain iron casting of a sufficient length to serve for two dies. One of half the length is used for the center stamp. The rate of crushing averages 2·4 tons per 24 hours. In 12 months, working 16 hours per day and 6 days per week, there were crushed 28,820 tons. The "grating," or screen, is of copper plate, 1½ lbs. of copper per square foot. It is perforated with 100 holes per sq. inch. The average wear at present is about a month, or say 25 working days, working full time. Iron punched gratings were found not to last for a week. The percentage of cencentrates is usually 1%, having increased slightly as depth has been attained in the mine. In the upper workings it was ¾%. The concentrates usually carry 3 oz. of gold per ton. Just now, however, the ore is poor and is yielding at the rate of 178 tons 19 cwt. 3 qrs. of pyrites, worth £560:12:18, from the crushing of 28,820 tons of ore. The bullion is 23¼ carats, or 969 thousandths fine. The percentage of gold in the amalgam varies from 36 to 45. The water consumed is at the rate of 8 gals. per stamp head per minute. The loss of mercury is unusually small and amounts to 5½ grs. per ton of ore crushed.

We will now follow the ore through the different stages of its treatment. The millstuff is trammed from the mine and discharged into the ore bins. There are no rock breakers, but self-feeders of a simple pattern pass the ore on into the mortar boxes, which are of peculiar design and are provided with both back and front discharge. No mercury is used in the mortar box. The pulp issuing from the battery passes through wells and then over blankets. The blanket washings are treated in revolving barrels with the addition of mercury. From the blankets, the tailings go to Cornish buddles which are further supplemented by ties placed outside the mill.

Such, briefly, is the mode of treatment. There are many interesting details to be noted. The mine is distant one-third of a mile from the mill, and the tramming and breaking of the ore are done under contract for 8 pence per ton. The feeding of the ore is regulated by a simple contrivance which is shown in the accompanying Fig. 1* H indicates the lower end of the shoot leading from the ore bin; to it is attached the lower end G of the iron rod F which, at its top end, has a disc E. This disc E is keyed to the rod and projects under the false or extra tappet D, upon the stem of the center stamp of a battery of five heads. When the feeding is low the stamp falls further than usual and in so doing causes D to strike E which communicates the shock to the ore shoot H, and so causes the ore to fall forward into the feeding hole N of the battery.

The disc or tappet is kept in place by keys. The order in which the stamps drop is 5-3-4-2-1. The shoes are of cast iron, 10 in. in diameter and 10 in. high. The dies or false bottoms are hexagonal in section; they are made of wrought iron and have a diameter of 10 in. and a depth of 6 in. New shoes weigh 196 lbs.; new dies 140 lbs. A shoe will crush 90 tons, and a die 420 tons before it is worn out. Cast iron shoes cost 12s. 6d. per cwt., and wrought iron dies 11s. 6d. per cwt., delivered at the mill.

* It was in August of the same year that gold was found at Bunnenying, starting the stampede to Ballarat, and in November that the Bendigo "rush" broke out.

† For these and other figures I am indebted to the courtesy of Mr. R. H. Bland, the manager and director of the company. I am also indebted to an interesting account of the mine by him, entitled the "History of the Port Phillip & Colonial Gold Mining Company."

‡ Previous to that time the ore was calcined to render it more readily broken and crushed. This practice has not yet altogether died a well merited death in Victoria and New South Wales.

* This drawing I owe to Mr. Thomas Hewitson, the manager. I am also under great obligations to him for information which he gave me.

The mortar box is provided with a double discharge, behind as well as in front. In both cases the distance from the bottom of the screen to the top of the die is kept at about 4½ in. The screens or gratings are similar in coarseness.

The front grating frame (P) is 5 ft. long by 13 in. wide, while that behind (O), is 5 ft. by 12 in. Both are placed in a vertical position and are covered by a "splash board," which slopes forward. The pulp issuing at the back passes over the lip Q and is conducted by the launder U to the front of the battery, where it unites with that which is being discharged in front.

The pulp discharged through the front grating passes over the lip V, and, uniting with that from the back of the mortar, goes over a perforated iron plate, R, called the distributor, by passing over which it is evenly spread over the width of wells and blankets which follow. This plate is 1 ft. deep, and 3-16 in. thick, perforated with holes 5-16-in. in diameter, drilled at the four corners of a square inch. Then follows the "apron," S, a plain wooden table 20 in. deep and 2 in. thick, which further aids the even distribution of the pulp. Two wells, T and W, succeed. They are covered and guarded from theft by a wooden rack kept under padlock. The first well, which succeeds the apron, has a drop of 10 in. and a depth of 4 in. It holds 50 lbs. of mercury. It will be noted that the upright board X compels the pulp to pass through the body of quicksilver in the trough before escaping, and so insures a contact with the quicksilver. The second well, W, which follows immediately after, has a drop of 8 in., a depth of 4 in., and also contains 50 lbs. of mercury. These wells, including the lip, are of cast iron; they have a curved inside contour, and are sunk into the wood of the frame which holds them. It has been found that iron wells are preferable to wood, since the iron has a beneficial effect upon the mercury, tending to keep it "lively," or chemically active, much as in pan amalgamation. The wells have an inside diameter of 3 in., and are placed so as to have a slight slope to one end, where a tap hole renders easy the removal of the mercury at cleaning-up time.

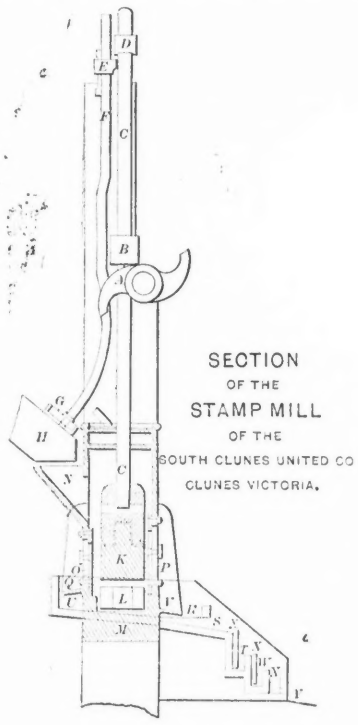


FIG. 1.

AMALGAMATING BARREL, CLUNES.

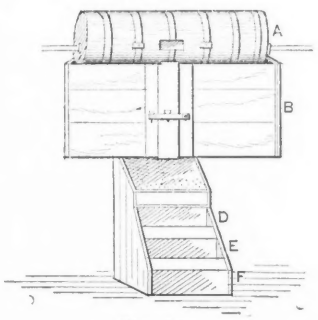


FIG. 2.

The pulp now goes over the blanket tables, Y. The blankets are spread upon tables which have a width which takes in both of the two five-head batteries forming a section. The total width is subdivided into seven partitions, each 18 in. across and 12 ft. long. The grade is ¾-in. per foot. Then follow five improved circular Cornish buddles (Munday's patent), and finally the tailings pass over the "ties," which are outside the building. These last have a length of 20 ft. and a fall of 1 in. per foot.

The gold saving is done by the mortar box itself, by the mercury troughs or wells, and indirectly by the blankets, buddles and ties. In the mortar box or copper no mercury is employed. The use of copper gratings would in itself prevent it, while the very free character of the gold does not necessitate its use at this stage of the treatment. The mortar box is a roomy one, and gives the gold an opportunity to separate itself from the pulp by the action of gravity alone. The dimensions are: Interior length of mortar, 58 in.; interior width, 16 in.; distance between dies, 1 in.; distance from end die to side of mortar, 2 in.; distance from die to back of mortar, 4 in.; distance from screen to die, 3 in.; distance from center to center of dies, 11 in. The mortar boxes are approximately rectangular in horizontal section.

In cleaning up, the grating frames are taken down, and the material found inside, between and around the dies, is shovelled into brackets and then passed over a common strong wire sieve or "riddle" 2 ft. in diameter, and of No. 4 mesh. One of these lasts for 12 months. The roughs from this operation are returned to the mortar box, and are used to reset the dies before starting again. At each fortnightly clean-up, from 1½ to 2 small buckets full are obtained. The fine is sifted into a blanket trough and then introduced into an amalgamating barrel.

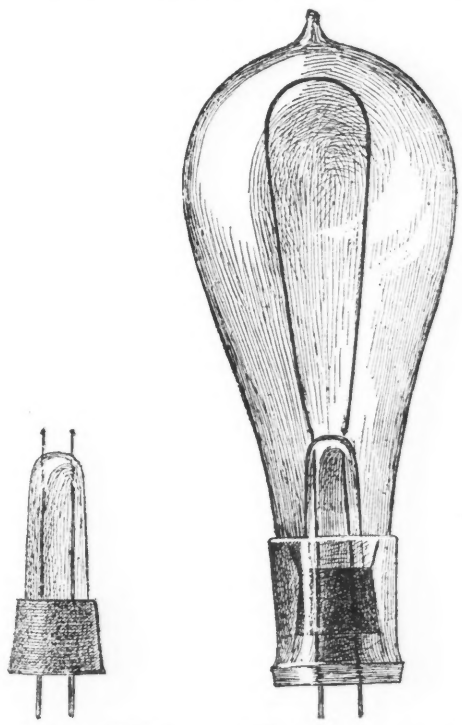
There are five such barrels in the mill. The accompanying sketch Fig. 2, will illustrate the arrangement. A is the barrel itself, having a capacity of 54 gallons. It maks 16 revolutions per minute, and is worked from 8 to 12 hours, 10 hours being the usual period. The water used is not warm. Seventy-five pounds (a bottle) of mercury are added to each charge, together with a bucket full of wood ashes.

When the amalgamation is completed the contents of the barrel are emptied into the wooden tank or box B, to be discharged first over a perforated iron plate C, and then to pass on to the three drop wells, D, E and F, having a drop of 12, 9 and 6 in. respectively. Nearly all the amalgam is caught in the top well, a small proportion only reaches the second, while the third is merely a safeguard, and is only cleaned up occasionally. This disposes of the treatment of the residues found in the mortar box.

(To be Continued)

THE NEW WESTINGHOUSE INCANDESCENT LAMP.

The new rival to the Edison incandescent lamp, of which we have heard a great deal lately, has been publicly exhibited at the works of the makers, the Westinghouse Electric and Manufacturing Company, of Pittsburg. The Westinghouse Company not only claim that they are enabled by this lamp to evade the hitherto all embracing Edison patent, but that the construction of the new lamp is so simple and the materials used so inexpensive that they can manufacture it at a greatly reduced cost. The essential features of the lamp are well shown in the accompanying illustration, for which we are indebted to the "Electrical World." The glass globe is formed with a shoulder, and is thickened out in the form of the neck of a bottle. The interior of the opening is conical, and is ground to correspond in shape to the ground conical stopper which carries the leading-in wires. The stopper is in the form of a single piece of glass cast round the leading-in wires. An important part of the invention is the use of iron instead of platinum for the leading-in wires. The substitution of iron for platinum effects a great saving in the cost of the lamp. It was not altogether the item of cost that induced the Westinghouse Company to make this alteration; they were also influenced by the necessity to have something stronger than platinum, because the outer ends of the leading-in wires are subjected to lateral strains while making contact with the terminals of the socket.



THE NEW WESTINGHOUSE INCANDESCENT LAMP.

In putting the lamp together the stopper and conical mouth of the globe are covered with varnish or cement, and the stopper is introduced into its place. The filament is attached to the inner ends of the leading-in wires, and the exhaustion of the globe from the other end proceeded with. This operation is done by the Sawyer-Man process. Nitrogen gas is introduced into the globe from time to time, and withdrawn again for the purpose of more perfectly extracting the oxygen and leaving practically only nitrogen in whatever small portion of atmosphere which it is impossible to extract. The atmospheric pressure from without helps to seal the stopper. In inserting the lamp in the socket it is simply pushed into the grasp of springs which hold the shoulders, and a twist of 90° brings the terminals of the lamp into contact with the circuit terminals of the lamp.

It has always been supposed that it was impossible to use iron wires embedded in glass on account of the greater coefficient of expansion of the iron wire. The manufacturers claim that their experience proves that this objection is not valid, and that the glass stopper does not show any tendency to crack.

EXPERIMENTS ON THE WASHING OF COAL FROM THE NELSON MINE, TENNESSEE.

Written for the Engineering and Mining Journal by George W. Whyte.

While I was chemist to the Dayton Coal and Iron Company, Dayton, Tenn., a certain firm, of excellent standing, proposed to put in a washing plant to treat the output of the Nelson mine for coking purposes.

The coal averages about 14% of ash, occasionally considerably more, and has, in the best pieces, a fixed ash of about 4·3%. It carries occasional lenses of slate, some pyrites and now and then a very little clay among "rashy" portions. Thin laminae of carbonate of lime are met with at times. The specific gravity varies in the good coal from 1·271 to 1·333, rising to 1·418 in "rash" and to 2·509 in slate.

There seems to be very little free earthy or aluminous matter distributed through the weaker portions of the coal, and the high ash is practically "fixed."

From numerous laboratory experiments the conclusion was reached that by curtailing the output of the mine by 24% we could get a coal of 9·45% ash, which would yield a coke of 15·75% ash.

It is not improbable that a coal with a slightly lower percentage of ash than the above might be obtained by washing, because portions of slate distributed through better quality of coal would then be removed, and these are included in the above estimate. It is possible to get a very low ash coke, compared with the present product, but not below 14%, and this cannot be attained with less than 20% to 22% loss in coal.

Fifty tons of run-of-mine coal were shipped to the establishment which proposed to erect the washing plant. It was washed in two lots, briefly as follows: The coal passes over a jigger screen with 1½ inch holes. The coal passing through the screen is conveyed to storage bins, while the remainder passes over a traveling band, for hand picking, and is crushed very small, clayey and brassy pieces are detached and the stuff is then conveyed to the same storage bins as hold the original small pieces, i. e., the coal smaller than 1½ inch. From these bins the coal is passed into a revolving sizing drum and classified into four sizes, from large nuts to smudge or gum coal.

The finest coal travels through a shute to bottom bashes, making 140 revolutions per minute, while the larger sizes pass to the top bashes, operating at about 72 pulsations per minute. From the top bashes the coal goes to the disintegrators and thence to lower bashes for rewashing. From these the coal is led through troughs into a revolving riddle of very small mesh, for separating the water and sludge from the coarser pieces, and so to the elevator. The sludge is caught in sludge-recovery tanks.

Feldspar is used in the bashes on the lower floor, and if any pyrites or other materials worthy of recovery are present, similar bashes are provided for their retention and concentration. In the first washing to which the coal was subjected, the sludge was kept separate from the pearl coal, but in the second they were mixed. Samples were taken every fifteen minutes from the various sizes of coal.

The analyses are as follows, calculated on a dry basis:

FIRST OPERATION

Material.	Vol. matter. Per cent.	Fixed carbon. Per cent.	Ash. Per cent.	Sulphur. Per cent.	Sp. grav.
Unwashed coal	24·31	55 95	18·78	1·00	1·301
Pearl coal	30·58	60·83	8·15	0·44	1·307
Sludge coal	.....	.....	14·10	....	...
Heavy coal	24·58	59·73	15·25	0·44	1·380
Slaty coal	24·37	57·46	16·50	1 67	1·370
Dirt from lower hopper	20·08	35·77	43·50	6·65	.....
Final dirt	23·00	31·00	44·00	2·01	.....

The dirt from the lower hopper contained 17·25% of good coal, i. e., such as carries 8% ash, and the final dirt 18·25%. Deducting these, the refuse still left contains considerable quantities of combustible matter, but which is practically in an irrecoverable form.

The unwashed coal yields 57·31% of good coal, which carries 9·34% of ash. The incorporation of the heavy and slaty coals brings the yield up to 63·8%, with 10·03% ash. The foregoing results are those actually obtained, but as, owing to a breakdown in the machinery, the refuse products were not rewashed, it is fair to assume the probable result had the operation finished normally.

On the basis then of only 7% of good coal left in the total refuse (the amount of coal in dirt of second washing), we obtain of coking coal 66·2% with 9·93% ash. This means, of course, that the elimination of 15% of ash from the original fuel involves a loss of combustible matter equivalent to 19% of pure coal free from ash. This loss is obviously due to the large amount of coal in intimate admixture with the mineral matter of the dirt, which constitutes about 34% by weight of the unwashed fuel.

SECOND OPERATION.

Material.	Vol. matter. Per cent.	Fixed carbon. Per cent.	Ash. Per cent.	Sulphur. Per cent.	Sp. grav
Unwashed coal	27·14	51·59	20·75	0·52	1·301
Pearl coal	.....	.....	9·24	....	.....
Sludge coal	27·82	60·72	10·70	0·76	.....
Heavy coal	.....	.....	15·25	....	.....
Dirt from lower hopper	.....	.....	65·00	....	.....
Final dirt	9·97	23·56	65·00	1·47	1·838

The percentages of ash in the heavy coal and in the dirt from the hopper are assumed. The pearl and sludge coals only were used for coking, as before, and they constitute 80% of the washed products, with 10·70% of ash. Including the heavy coal, the yield of coking fuel becomes 84%, with 10·8% of ash. The refuse is 16%, with combustible matter equivalent to 53% of pure coal free from ash.

The results of the two washings differ quite markedly from each other. The first lot of coal was evidently the dirtier of the two, and its dirt contained a larger percentage of irrecoverable coal.

As the two lots represent the average composition of the Dayton seam, the results of the two operations are averaged as follows:

	Coking coal recovered from unworked coal. Per cent.
Coal used for coking, 9·93% ash	67·50
Total coking coal (ash 10·31%) and assuming good coal in refuse in first operation to have been only 7%	72·70
Loss of combustible matter equal to pure coal fixed carbon, volume of matter and sulphur	13·00

Most of the coal was coked in the ordinary bee-hive oven, 11 ft. in diameter and 7 ft. high, at center. Some of the coal was also coked in the Simon-Carves oven.

When the ovens were opened the pearl coal was seen not to have fallen much; it looked dirty next the door and was rather sort, was bright in the middle of the stalks, but had a good many dirt particles in it. It had burned well down to the bottom, and was of columnar structure. The coke made from the sludge coal was of a dull color and very porous; behind the door was about 9 ins. of sooty matter, and the oven was only one-half filled.

The coke made from the coal of the second operation behaved much like the first, but was lumpier, denser and had a better "ring" than the former, and did not burn as well down to the bottom. On the whole, the cokes were hard, strong and well suited to metallurgical purposes. The analyses were as follows:

Description.	Moisture. Per cent.	Fixed carbon. Per cent.	Ash. Per cent.	Sulphur. Per cent.	Per cent. yield.	Time coking hours.
First operation—						
Pearl	.....	88·20	11·20	0 60	59·9	54-62
Sludge	.....	76·83	21·40	1·77	41·93	45
Second operation—						
Pearl) Sludge)	4·60	84·53	14·69	0·87	51·95	67
Simon-Carvis oven	6·70	84·76	11·50	0·76	....	....

These cokes show decidedly less ash than calculation demands from the analysis of pearl and sludge coals.

It now remains to compare the yield of coke with the original unwashed coal, and it will suffice to take the average of the results of the two washings. These calculations show that the average yield of coke from the washed products themselves is 54·67%, with 13·87% of ash, and as it has elsewhere been shown that the products actually used for coking constitute 67·50% of the original fuel, the yield of coke is therefore 36·90%, with 13·87% ash. Had the heavy and slaty coals also been coked, and the proportion of good coal in the refuse of the first operation been lowered to 7%, the yield would probably have been 39·74%, with 14% ash. "The comparison of these results with those obtained at Dayton Iron Works from the coking of the unwashed coal will corroborate the conclusions drawn from the analyses of the washed products, that the washing of the Dayton coal involves a serious and unavoidable loss of combustible matter."

My laboratory experiments had proved that with a loss of 21% of coal, we could get a coke with 14·75% ash. The actual test from about 50 tons of coal shows a loss of 27·30% of coal and a coke with 14% ash.

THE GREAT ADIT LEVEL IN THE HARZ, GERMANY.

In a recent issue of the "Berg und Huettenmaennische Zeitung," Dr. O. Brathuhn describes the latest extension of the Ernst August adit level, the deepest adit level of the Upper Harz. The new branch extends from the Johann-Friedrich shaft at Bockswiese to the Guete-des-Herrn shaft at Lautenthal, and is 4,753 yds. long. The total length of the adit level is, therefore, increased to 29,576 yds. The branch was driven in three sections, of which the first from Schwarzen mine in Lautenthal, to the Johann-Friedrich shaft, is interesting from a miner's and surveyor's point of view, as the survey affords an illustration of the accuracy with which the surface and underground surveys may be connected by means of magnetic instruments. On account of the dense forest the relative position of the two inclined shafts was not determined by special triangulation, but was deduced from the Ordnance survey.This is the first time that the triangulation points of the Ordnance survey have served as the sole basis of an important piece of underground work. The first determination of the floor level was made in 1876; as, however, in driving the Lautenthal section the floor became somewhat higher, and the adit somewhat shorter than originally planned, the levelling was repeated. The Lautenthal end was found to be 8 in. higher than it should have been, and this error was balanced off by a slight increase in the gradient in the Lautenthal section before holing. The transference of a point from the surface into the mine was done by means of the inclined shafts 1,100 ft. and 670 ft. deep respectively, and the orientation of the two sections, respectively 1,630 yds. and 1,991 yds., was effected by means of the magnetic needle. After holing it was found that the azimuth of the last line of the traverse in one section deduced from the last line in the other presented the small error of 1 min. 8 secs. The accuracy of this survey does not exceed that obtained in the older portions of the adit, but by the use of improved magnetic instruments, and with experience from former work, it was possible to make the survey in much less time and with greater certainty. The method of employing powerful magnets before the holing was found unnecessary, as a test of the direction determined a year previously with the aid of the magnetic needle gave an exact coincidence with the direction originally found.

Carborundum, the new material for making grinding wheels, has proved so efficient that the works at Monongahela City, Pa., are to be enlarged so as to produce 500 pounds per day. This material is composed of coke feldspar and an ingredient not specified, which are mixed into a plastic mass, molded in a hydraulic press and heated to a white heat. These wheels have been adopted by the Westinghouse Electric and Manufacturing Company and by the National Tube Works

A METHOD OF CARRYING A SURVEY LINE DOWN SHAFTS.

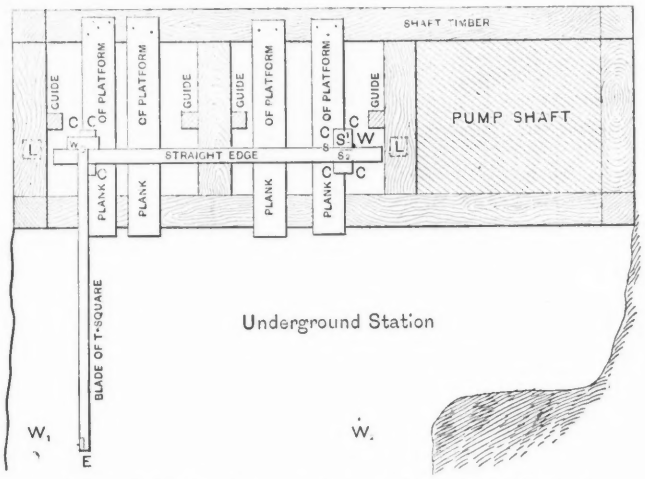
Written for the Engineering and Mining Journal by L. F. J. Wrinkle.

Reading "Surveying of Mines," in the Engineering and Mining Journal, Vol. LIII., page 669, I think there will be found some novel and useful features about this method of carrying a survey line down a shaft, as, after extensive experience on the Comstock lode, it proves easy, rapid and accurate. By it I have carried surveys from surface down mine levels—1,000, 1,200, 2,000 and 3,000 ft. deep—also to lesser depths, and often from one underground level to another, making therefrom good connections with no other assistants than the miners, and under adverse conditions as to heat, water and draughts of air in the shafts, the occupation of a shaft being only 4 or 5 hours in each case, this last being a matter of some importance where the mine is actively worked.

Comstock mine shafts commonly have two hoisting compartments 5×6 ft. and a pump compartment. The shafts generally bear about north and south, and the stations open out from the sides thereof to the east or west, the ends of the shaft abutting against the solid rock (see sketch). By hanging a plumb line in each hoisting compartment, one can get a base line of about 9 ft. The plumb line should be No. 18 or No. 16 annealed iron wire, wound on a reel provided with a handle and set in a frame to facilitate re-winding. Bobs should be about 25 lbs. in weight, and to be settled in water. Boxes, sufficiently watertight, can be made about 1 ft. square in cross-section and 2 ft. high, out of unplaned inch-boards at the mine, and the shape of the plumb bobs should be such as to afford 3 or 4 in. clearance from the sides of such boxes when immersed therein.

For the underground work, a light straightedge, say, ½×6 in.×11 ft., trued up before using, and a T-square with a blade from 6 to 12 ft. long, as the case demands, is required. The T-square can be made in a few minutes at the mine, by nailing to a blade of 1×3 in. or ½×4-in. stuff a head about 8 in. long, with notches to admit the plumb line next the blade.

On top of the shaft place a 2-in. plank about 12 ft. long, to reach over the two hoisting compartments. Have one edge of the plank planed to a straightedge. Over this edge the plumb lines are to hang in the shaft. By nailing cleats on the collar of the shaft for the



A METHOD OF CARRYING A SURVEY LINE DOWN SHAFTS.

straightedge of this plank to abut against, or in any other suitable way, arrange it so that this plank can be removed and replaced in exactly its former position. On the edge of the plank mark the places the wires are to hang when in position—that is to say, let one wire hang about a foot north of the south end of the south compartment and the other wire about a foot south of the north end of the north hoisting compartment.

Now, the surveyor instructs the mine carpenter, or other intelligent person, to replace this plank in exactly the position it now occupies over the shaft, as soon as he (the surveyor) shall have gone down the shaft and the cages are hoisted above it.

The assistant lets the wire down in the center of each compartment, starting it down as far as possible without swaying, letting it run off the reel steadily and rapidly until the bell signal is given to stop. When the wire has reached the proper depth, the surface assistant has to fasten it, by twisting around nails driven in the floor of the works, at its proper position over the edge of the plank.

The surveyor and three men go down on the cage taking eight planks for platforms, plumb bobs, settling boxes and all necessary tools. When they reach the level the cage is sent up; one man stays by the bell rope and watches out to give the stop bell when each of the wires comes down. The other two men throw a platform of two planks across each shaft, one set (6 ft.) below the station, in manner similar to the platform shown in the sketch. The northernmost and southernmost of those four planks are for the settling boxes to rest on, the intermediate planks for the surveyor to walk on. Of course these planks must be nailed to the wallplate for safety, and the surveyor is careful not to walk on the planks whereon the boxes containing the plumb bobs rest, so as not to shake them. The settling boxes must have each a cover with a hole in the center about 3 in. in diameter for play of the wire and a slot from said hole to rim of cover to admit of covering box after wire and bob are placed therein. When the plumb wire has been lowered from top to underground station the surveyor puts the 25-lb. bob in settling box, attaches the wire to the bob, letting the weight come on wire gradually, and makes sure that the bob swings free. The box is then filled with water, the cover put on and the lantern set on top of the cover. When both plumb bobs are thus attached, the platform planks are put across shaft at station level as shown in the sketch, the planks next the wires being kept about an inch therefrom and securely nailed to the shaft timber or wallplate. Then a small piece of white board (as the bottom of a candle box) is nailed with small nails to the plank as shown by c-c-c-c on sketch, so as to be free of the swinging wire about a quarter of an inch; then a lantern, L, is placed on the shaft timber approximately in line with the plumb wires.

The shadow of the swinging wire, W, will reach a limit, S1, on one side, and directly thereafter an equal limit, S2, on the other side of a perpendicular plane through point S and wire at top of shaft. The distance between S1 and S2 may be 3 inches or less than ¾ inch. In any case, unless some accident intervenes, the middle distance between any two immediately following extreme positions of the shadow is in the plane of the wire at rest. Such middle distance is quickly got by following the shadow on the board c-c-c-c with a lead pencil, marking the extreme points S1 and S2 of that vibration, transferring them to the edge of a strip of paper, folding the paper on itself so that points S1 and S2 shall coincide, then the crease in the middle is the position of S. For certainty, make three independent determinations of S at intervals of, say, five minutes. Having thus found and marked S on the white boards c-c-c-c in both compartments, the small straightedge is applied to both points S and nailed in that position to the planks. The T-square is then brought against the straightedge as shown in the sketch. The point W1 is made in the floor of the station in any suitable way. In order that T-square blade may be horizontal, it is often necessary to attach a perpendicular strip E to its end. The distance W-W1, having been marked off on T-square, exactly the same distance W-W2 can be set off by applying T-square to that end of straightedge. We have now defined the line W1-W2 in the station, parallel to W-W in the shaft, and also parallel to straightedge of plank over top of shaft, the position and bearing of which is given by the surface survey. If the underground station were open at end of shaft, a string stretched through points S-S would be all that would be needed to set points in the station parallel to the surface line defined by the edge of plank over shaft.

If there is any fear that the plumb lines do not swing free of shaft timbers, the lines can be moved by the surface assistant an agreed distance, and if an equal and corresponding change of position occurs below, the wires are free.

THE OCCURENCE OF PLATINUM IN CANADA.

Written for the Engineering and Mining Journal, by J. F. Donald.

Platinum in small quantity has been detected in association with alluvial gold in Eastern Canada, but no attempt appears to have been made to save it. In Ontario it has been discovered in the Sudbury district. Sperrylite (PtAs) is found in placers in the Sudbury district resulting from the decomposition of portions of the ore of the region. It is associated with silicates, and particles of pyrrhotite and copper pyrites, from which it may be freed by treatment with aqua regia and hydrofluoric acid. Sperrylite forms minute grains with brilliant crystalline faces, is of a tin-white color and has a specific gravity of 10·6. Some months ago a refiner of platinum in Newark, N. J., informed the writer that a New York dealer in platinum ware had sent him a quantity of sperrylite, and that he had successfully smelted it and returned the product in the form of wire. The presence of arsenic does not offer any serious metallurgical difficulty. Sperrylite brings a high price as a rare mineral.

A notable quantity of platinum has already been obtained from British Columbia. One firm in the United States claims to have purchased within the last year or two fully 2,000 oz.

An increased output may be expected as the Tulameen Hydraulic and Improvement Co. have made preparations to carry on hydraulic mining on a large scale. This company has erected a saw mill, having a capacity of 5,000 ft. per diem, and has constructed about two miles of flume, 5 ft. at base, 20 in. high, on sills placed on solid bed about 7 ft. wide, and having a grade of ½-in. in 12 ft. The water is taken from Eagle Creek, about 14 miles above Granite Creek, the only creek capable of giving the necessary quantity of water and pressure. In addition to this flume the company has on the ground, and ready for work, about 400 ft. of iron pipe and a monitor, which, where work is to be commenced, will work with a pressure of 900 miner's inches, and a drop of about 160 ft.

It was expected that this plant would be in active operation during the summer of 1892, but owing to a combination of circumstances but little actual mining has been done. In the first place the spring was late, and when it did open it was found that some repairs on the plant were required. Then again in the early summer negotiations were entered into with an English company for the sale of an interest in the Tulameen platinum mines, but owing to unavoidable delays it was not until the latter part of July that the mining engineer who was asked to report on this property was able to make his inspection. As a result of his examination very valuable data have been obtained. After "cleaning up" the results of the work already done in the earlier part of the summer and making an examination of the benches lower down the stream the engineer concluded that work had been commenced in an unfavorable spot, the amount of the gravel being small in comparison with that composing the large benches on the company's property lower down the river. These latter benches were tested under his direction and resulted as follows:

No. 1 Bench gave a return of 62 grains of platinum per cu. yd. and a few small colors of gold.

No. 2 Bench test gave a return of 15·60 grains gold per yard and 7·80 grains platinum.

No. 3 Bench test gave 5·90 grains per yard, mostly gold, both gold and platinum being very fine.

It will thus be seen that the proportion of gold and platinum varies, the average being about one-third platinum to two-thirds gold.

The results of the first "clean-up" were not as good as in the above tests (for the reason before stated), and as may be expected when the works are extended to the lower benches; it averaged about eight cents per yard, about three-fourths of this being platinum.

Numerous individuals are washing on a small scale in this Tulameen region, obtaining both gold and platinum.

The prospects are that the hydraulic company will operate vigorously during 1893, and a notable output may be expected from this the only important platinum district yet known in British Columbia.

This Tulameen ore varies greatly in size, some of it being exceedingly fine, while on the other hand nuggets of considerable size are not infrequently met with. The writer knows of several ranging in weight from one-fourth of an ounce to one ounce. According to the writer's experience metallic platinum constitutes about 70% of this ore.

The following statistics of the production of platinum are taken from the report of the Minister of Mines of British Columbia:

Year.	Quantity.	Value.
1887	1,400 oz.	$5,600
1888	1,500 oz.	6,000
1889	1 000 oz.	3,500
1890	Not stated.	4,500
1891	" "	10,000

The statistics for 1892 and a thorough article on platinum will be found in the "Mineral Industry" soon to be published.

THE PRODUCTION OF PIG IRON IN THE UNITED STATES DURING 1892

In the "Bulletin" of the American Iron and Steel Association, for January 21st, Mr. James M. Swank publishes the production of pig iron during 1892, and the stock of unsold pig iron on the hands of makers and agents at the close of the year. The total production during 1892 was 9,157,000 gross tons, as compared with 8,279,870 gross tons in 1891, and 9,202,703 gross tons in 1890. Our estimate of the production during 1892, published in our issue of January 7th, was 9,135,000 gross tons, a figure remarkably close to the official return. The production in the first half of 1892 was much larger than in the last half, the figures being as follows: First half, 4,769,683 tons; second half, 4,387,317 tons. The production in the first half of 1891 was, however, greatly exceeded in the second half, the figures being as follows: First half, 3,368,107 tons; second half, 4,911,763 tons. The extraordinary activity of the second half of 1891 was but slightly checked in the first half of 1892, but in the second half of 1892 this decline in activity was much more marked. Indications now point to a continuance of this decline.

The production of pig iron in 1892 by the nine Southern States of Maryland, Virginia, North Carolina, Georgia, Alabama, Texas, West Virginia, Kentucky and Tennessee was 1,890,167 gross tons, against 1,708,966 tons in 1891, and 1,744,160 tons in 1890. The production in 1892 was the largest the Southern States have yet reached. It was 146,007 gross tons in excess of the production in 1890.

The production of spiegeleisen and ferromanganese in 1892 was much the largest we have yet recorded. It amounted to 179,131 gross tons, against 127,766 tons in 1891, and 133,180 tons in 1890.

The stocks of pig iron, which were unsold, in the hands of manufacturers or their agents on the 31st of December, 1892, and which were not intended for their own consumption, aggregated 506,116 gross tons, against 596,333 tons at the close of 1891, and 608,921 tons at the close of 1890. Of the above-mentioned stocks at the close of 1892 there were 50,200 tons in the yards of the American Pig Iron Storage Warrant Company, and still under the control of the makers. In addition there were in storage warrant yards on December 31st, 29,500 tons which the makers no longer controlled. The stocks of unsold pig iron at the close of each of the last five quarters, including storage warrant stocks, which were still under the control of the makers, were as follows: December 31st, 1891, 596,333 gross tons; March 31st, 1892, 718,579 tons; June 30th, 1892, 737,946 tons; September 30th, 1892, 617,382 tons; December 31st, 1892, 506,116 tons.

The following stocks of pig iron, which were no longer under the control of the makers, were in storage warrant yards at the end of the last five quarters: December 31st, 1891, 30,900 gross tons; March 31st, 1892, 41,020 tons; June 30th, 1892, 37,908 tons; September 30th, 1892, 35,050 tons; December 31st, 1892, 29,500 tons. The total quantity of pig iron in storage warrant yards at the end of the last five quarters was as follows: December 31st, 1891, 51,900 gross tons; March 31st, 1892, 62,600 tons; June 30th, 1892, 72,900 tons; September 30th, 1892, 84,200 tons; December 31st, 1892, 79,700 tons. The foregoing figures of unsold stocks show a steady and gratifying decrease during the last two quarters of 1892.

The number of furnace stacks which were in blast on December 31st, 1892, was 253, against 240 on September 30th, 256 on June 30th, 279 on March 31st, and 313 on December 31st, 1891.

Further details will be found in the accompanying statistical tables.

Under the heading "Good-by to the Net Ton," Mr. Swank prints the following in the "Bulletin:" "Commencing with January 1st, 1893, the American Iron and Steel Association will hereafter publish all its statistics of the domestic production of iron and steel in gross tons of 2,240 lbs., abandoning the use of the net ton of 2,000 lbs. The use of the net ton was formally approved by the Association, at its meeting held in Chicago, in 1865, when this resolution was adopted: 'Resolved, That it is the belief of this convention that in all transactions there should be a uniform ton of 2,000 lbs. employed." The Secretary was at the same time authorized to obtain through a circular letter the views of the members of the association upon this question, and also of others who were identified with the American iron trade. This was done, with the result that 91 responses to the circular favored the net ton, and 18 the gross ton. Thereafter the net ton was used in compiling the statistics of the association. We abandon it now because we have learned that manufacturers generally prefer that we should use the gross ton. Careful readers of our statistics for the past few years will not have failed to observe that we have been gradually paving the way for this change, by giving in many of our tables both net and gross tons. Personally, we never liked the net ton, but now that we are satisfied that a large majority of our members do not like it any better than we do, we gladly place it on the retired list."

TOTAL PRODUCTION OF PIG IRON.

States.	Blast furnaces. In blast June 30, '92.	Dec. 31, 1892. In.	Out.	Total.	Production. Gross tons of 2,240 lbs. (Includes spiegeleisen.) First half of 1892.	Second half of 1892.	Total for 1892.
Massachusetts	1	2	2	4	4,178	3,768	7,946
Connecticut	2	5	4	9	9,856	7,251	17,107
New York	7	9	29	38	163,838	146,557	310,395
New Jersey	5	6	9	15	44,282	43,693	87,975
Pennsylvania	107	106	107	213	2,216,832	1,976,973	4,193,805
Maryland	2	3	10	13	49 981	49,150	99,131
Virginia	14	14	24	38	164,086	178,761	342,847
North Carolina	1	1	1	2	1,853	1,055	2,908
Georgia	1	1	5	6	3,330	6,620	9,950
Alabama	29	28	24	52	479,131	436,165	915,296
Texas	1	.....	4	4	6,403	2,210	8,613
West Virginia	3	3	1	4	80,238	74,555	154,793
Kentucky	1	3	6	9	32,649	23,899	56,548
Tennessee	12	10	10	20	157,214	142,867	300,081
Ohio	38	34	36	70	651,335	570,578	1,221,913
Indiana	1	1	1	2	5,431	2,269	7,700
Illinois	13	8	12	20	477,961	471,489	949,450
Michigan	10	8	14	22	91,190	93,231	184,421
Wisconsin	4	6	3	9	72,156	102,805	174,961
Minnesota	.....	.....	1	1	13,218	853	14,071
Missouri	1	2	6	8	30,634	26,386	57,020
Colorado	2	2	1	3	10,448	21,993	32,441
Oregon	1	1	.....	1	3,439	4,189	7,628
Washington	.....	.....	1	1	.....	.....	.....
Total, 1892	256	253	311	564	4,769,683	4,387,317	9,157,000
Total, 1891	294	313	256	569	3,368,107	4,911,763	8,279,870

PRODUCTION IN 1892 ACCORDING TO FUEL USED.

Fuel used.	Blast furnaces. In blast June 30, '92.	Dec. 31, 1892. In.	Out.	Total.	Production. Gross tons of 2,240 lbs. (Includes spiegeleisen.) First half of 1892.	Second half of 1892.	Total for 1892.
Anthracite	72	72	87	159	931,699	865,414	1,797,113
Charcoal	43	40	94	134	279,915	257,706	537,621
Bituminous	141	141	130	271	3,558,069	3,264,197	6,822,266
Total	256	253	311	564	4,769,683	4,387,317	9,157,000

PRODUCTION OF BESSEMER PIG IRON IN 1892.

New York	72,436	61,287	133,723
New Jersey	3,997	13,228	17,225
Pennsylvania	1,251,025	1,238,705	2,489,730
Maryland	44,248	43,976	88,224
North Carolina	1,853	1,055	2,908
West Virginia	80,238	74,555	154,793
Kentucky	16,815	7,542	24,357
Ohio	34 ,690	296,493	630,183
Illinois	389,588	411.073	800,661
Missouri	24,989	19.961	44,950
Wisconsin	2,800	.....	2 800
Minnesota	13,218	853	14,071
Colorado	10,448	20,968	31,416
Total	2,254,345	2,189,696	4,444,041

TOTAL STOCKS OF UNSOLD PIG IRON.

States.	Gross tons of 2,240 lbs. Dec. 31, 1891.	June 30, 1892.	Sept. 30, 1892.	Dec. 31, 1892.
New England	15,779	16,210	14,936	14,093
New York	62,167	61,469	52,717	45,627
New Jersey	20,481	30,919	30,626	23,083
Pennsylvania	136,229	218,804	170,876	113,115
Maryland	3,496	2,666	3,661	3,404
Virginia, North Carolina, Georgia and Texas	73,712	81.452	72.814	58 893
Alabama	48,532	67,966	55,982	68,318
West Virginia	3.393	7,000	6,150	5,230
Kentucky	8,024	5,303	2,278	6,321
Tennessee	13,191	35,853	32,904	25,818
Ohio	74,653	89,396	79,091	62,376
Michigan and Indiana	65,634	53,535	40,204	30,263
Illinois and Wisconsin	49,348	38,146	25,868	16,353
Missouri and Colorado	16,996	25,697	27,665	31,522
Pacific States	5,298	3,530	2,260	1,900
Total	596,333	737,946	617,382	506,116

STOCKS ACCORDING TO FUEL USED.

Bituminous	258,678	345,199	290,509	213,615
Anthracite	121,370	173,935	133,120	119,015
Charcoal	213,285	218,812	193,753	173,486
Total	596,333	737,946	617,382	506,116

THE MANUFACTURE OF PURE NITRIC ACID.

In a recent issue of "Industries," Mr. Oscar Guttmann describes the latest type of the Guttmann-Rohrmann plant for the production of pure nitric acid. Several important improvements have been made by Mr. Guttmann and his fellow inventor during the last few years in the nitric acid manufacture, the most noteworthy being connected with the apparatus used for condensing and purifying the nitric acid obtained by the action of sulphuric acid on nitrate of soda. Their system of condensation consisted in cooling the gases in long earthenware pipes, which were alternately connected on the top by bends and at the bottom by trapped bends, all discharging into a main drain pipe.

The latest form of plant is an improved form of this plant, and is shown diagrammatically in Fig. 2. The plant shown in Fig. 1 introduces a further improvement, to be described later on.

The earthenware cooling pipe B are arranged in a row, their tops being connected by bends and the lower ends fit in sockets in a chamber pipe C. There are diaphragms in the chamber, pipes between each paid of upright pipes, and short bends B^1 allow the condensed and to run down the pipe C, past the diaphragms. The condensed acid is collected in the vessel F, and any uncondensed acid leaves the vessel F through the pipe F^1, and goes for condensation to the Lunge-Rohrmann tower H, and subsequently to the receiver J, and to the chimney. An important improvement is the introduction of an injector in the pipe at D, which brings the gases from the retort to the condensation pipes. The object of this injector is to change by means of a blast of hot air the nitrous fumes into nitric acid before condensation, and so to dispense with the tedious method hitherto employed for removing nitrous acid from the condensed nitric acid by blowing air through the liquid. In this injector apparatus, a blast of hot air, previously heated in a coil in the retort flue to the temperature of the nitrous and nitric vapors, is injected into the pipe conveying the gases. These gases consist, as is well known, of 90% of nitric acid, 2–3% nitrous acid and 7–8% water in the form of vapor. The introduced air and part of the contained water vapor change the nitrous acid to nitric acid. Not only is the nitric acid thus purified, but the amount of contained water vapor is reduced, and thus a more concentrated form of nitric acid is obtained. Also the current of air increases the draught in the retort and reduces the temperature of distillation. The result of this reduction in the temperature of distillation reduces the amount of nitrous acid and water given off by the retort and decreases the amount of fuel used.

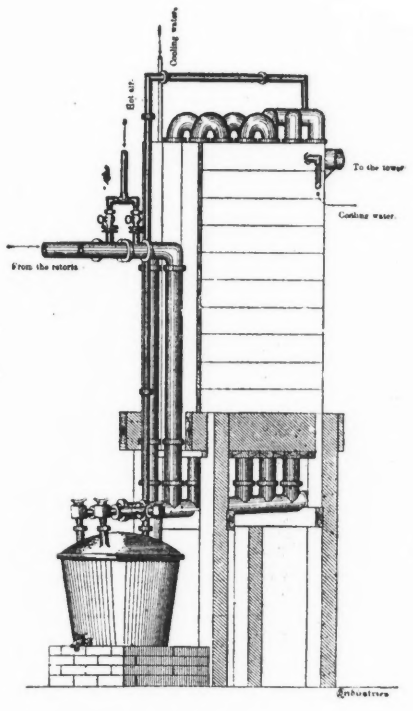


FIG. 1.

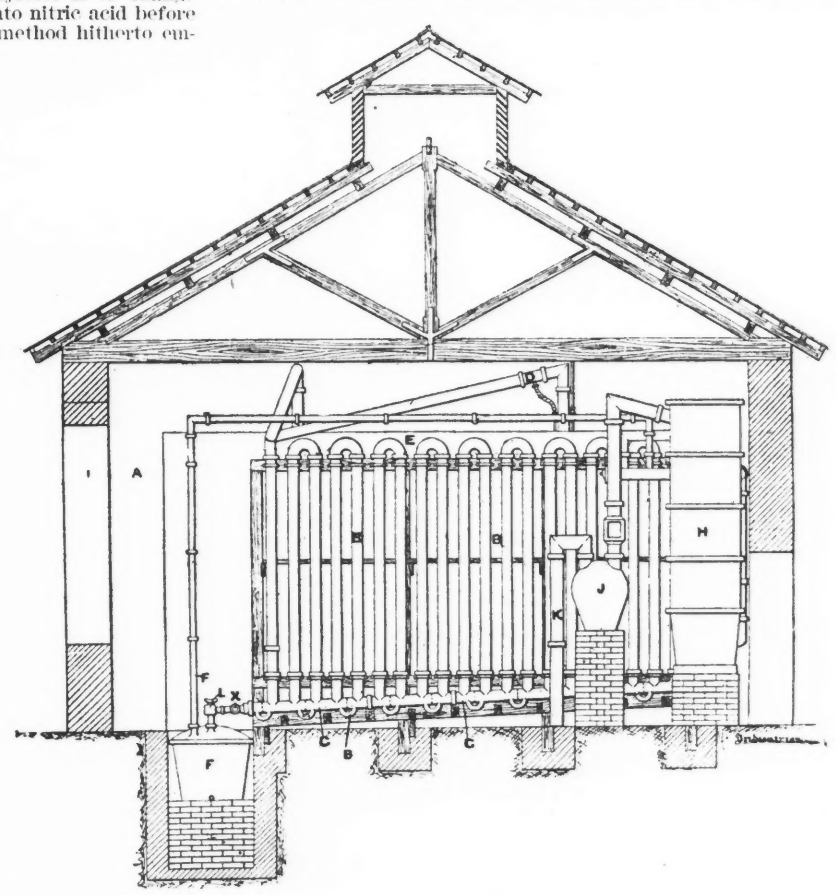


FIG. 2.

In Fig. 1 is shown a plant built on this principle, but with a cooling water jacket placed round the battery of earthenware pipes. A recent improvement in the quality of the pipes has made this addition possible. The rate of condensation is thus reduced to such an extent that the number of pipes has been reduced from 20 to 5. The pipes are surrounded by a water-tight wooden box, into which cold water enters at the bottom and leaves at the top. The rapid condensation thus produced induces a still stronger draught on the retort, and thus further reduces the amount of heating required. The coal used in this plant is 1 lb. for every 3½ lbs. of 96% monohydrate acid. Fully 98% of the theoretical yield of nitric acid is obtained at this strength in the pipes and only 2% is collected in the tower as acid of 76° Twaddell. The cost of condensation is estimated as one-half of what it used to be.

STEEL CASING FOR BLAST FURNACE HEARTHS.

In the "Foreign Abstracts" prepared by the Institution of Civil Engineers there is a short account taken from a paper by M. Boivin in the "Comptes Rendus de la Societe de l'Industrie Minerale" of a steel-cased blast furnace hearth used at Firminy, France. The hearth is 1·80 metres wide internally and has a wall 90 cm. thick. The wall is made up of 25 cm. of inside brickwork a middle rammed lining 50 cm. thick and an outside casing of cast steel, 15 cm. thick. The steel casing is 2·6 metres high from the bottom of the boshes to the ground, and about one-half of it is below the level of the hearth bottom. It is built up in rings formed of segments somewhat like those of a pit-tubbing. The rings are not complete circles, as a space of 70 cm. formed by two upright pillars is left on the tap-hole side and is filled with refractory material to allow the tapping level to be varied if necessary. The segments are made of annealed cast steel, and are 1 metre long, 48 cm. high and 15 cm. thick. Their average weight is about 10 cwt., and each has a perforated lug projecting in the center for convenience of handling. When built up they are in contact on the inside to a depth of 40 mm. The outer edges are shaped to form a groove of 30 mm. maximum width, which is filled with clay covered with a packing of asbestos clamped by the flat side of a piece of iron tee-bar covering the joint. The separate segments are connected by wrought iron rings which rest in grooves of a corresponding shape, formed in the sides and corners of the plates. The whole structure is further strengthened by outside hoops connected to the upright pillars. The weight of the casing is 27 tons. It is cooled by water constantly flowing over the outside.

The furnace was lighted on the evening of November 20th, 1891, and during the first hundred days blowing it made 8,004 tons of pig iron and 5,596 tons of cinder, or a total of 13,600 tons. From 30 to 33 tons of metal and 5–6 tons of cinder are considered as a minimum quantity at each tapping.

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 24TH, 1893.

490,318 Tunneling Machine. George H. Sherman, Detroit, Mich.
490,408. Indigo Blue Dye. Albert Herrmann, Höchst-on-the-Main, Germany, Assignor to the Farbwerke vormals Meisler, Lucius & Brüning, same place.
490,451. Method of Making Metal Plates. John B. Nau, New York, N. Y.
490,464. Method of Operating Diamond Stone Sawing Machines. George N. Williams, Jr., New York, N. Y., Assignor of one-half to Benjamin A. Williams, same place.
490,470. Apparatus for Burning Hydrocarbons Mixed with Air and Superheated Steam. John Burns, Rochester, Assignor of one-half to John H. Reynolds, Troy, N. Y.
490,497. Process of Purifying Pyrolignites. Frederick H. Pickles, Fairfield, and Robert H. Pickles, Marple, England.
490,535. Process of Manufacturing Purple Ore Bricks. Henry Bird, Plymouth, England.
490,547. Non-Inflammable Paint. Richard J. Doyle, Owen Sound, Canada.
490,548. Non-Inflammable Cement. Richard J. Doyle, Owen Sound, Canada.
490,631. Concrete Mixing Machine. Ernest L. Ransome, Oakland, Cal.
490,632. Concrete Distributing Apparatus. Ernest L. Ransome, Oakland, Cal.

PERSONALS.

Mr. Andrew Caruegie arrived in this city from Italy on the 23d inst.

Mr. James L. Flood, the well known mine owner, of San Francisco, Cal., is in this city.

Mr. Wm. M. Stewart has been re-elected to the United States Senate by the Nevada Legislature. He was the silver party candidate and received a unanimous vote.

James Gillespie Blaine, the late Secretary of State and Senator from Maine for many years, died yesterday, aged 62. Mr. Blaine held large interests in industrial enterprises, and at one time was interested with ex-Senator Jerome B. Chaffee in Colorado mines.

Mr. Benjamin F. Fackenthal has been elected president of the Thomas Iron Company, Hokendauqua, Pa. Mr. Fackenthal has for many years been the superintendent of Cooper & Hewitt Co.'s furnace at Durham. The position of secretary of the company was separated from that of treasurer, and James W. Weaver, of Easton, Pa., who has been bookkeeper for 11 years, was made secretary.

A professorship of mechanics in the School of Mines was also established, and Prof. R. S. Woodward, C. E., was appointed to the new chair. Dr. Woodward is connected with the United States Coast and Geodedic Survey, and has been in the government service during the greater part of the time since his graduation from the University of Michigan in 1873. For two years he held the professorship of civil engineering in the Columbian University, Washington, D. C. His experience has been extended on the Lake Survey, Transit of Venus Commission and the Geodetic and Coast Survey; and he has shown remarkable capacity as an investigator, as evidenced by his published writings, which have been numerous. He is recognized as one of the first mathematicians of the country; and has also gained distinction as a physicist, geodesist and astronomer.

At a meeting of the trustees of Columbia College on the 23d inst. a professorship of civil engineering in the School of Mines was created, to take the place of the professorship of engineering occupied by Professor Trowbridge before his death, and Prof. William H. Burr was appointed to the new chair. Professor Burr is now in charge of the Department of Engineering in the Lawrence Scientific School of Harvard University. He was graduated from the Rensselaer Polytechnic in 1872, and was called to the faculty as Assistant in Rational and Technical Mechanics, which position he held for a year, when he was made head of the department. He filled that chair for eight years, and during that period published two books, "The Stresses in Bridge and Roof Trusses, Arched Ribs and Suspension Bridges," now in its seventh edition, and "The Elasticity and Resistance of the Materials of Engineering." In April, 1891, he became vice-president of Sooysmith & Co., consulting and contracting engineers for bridges, bridge foundations, and pneumatic subaqueous work, tunnels, etc. He has also been associated with Alfred P. Boller, consulting engineer of New York City, on the large bridges now being built across the Harlem River. He has contributed to the papers and discussions of the American Society of Civil Engineers. A recent paper by him, "The River Spans of the Chesapeake and Ohio Bridge, at Cincinnati, O.," secured the Rowland prize of that society at its annual meeting in January last. He has since been engaged by the City of New York as consulting engineer on the Harlem bridges.

INDUSTRIAL NOTES.

The Mining Society of Chili, has asked the government to invite exhibitors of American mining machinery at Chicago to exhibit at Santiago in 1894.

The Lodge & Davis Machine Tool Co. have received large orders from the Illinois Central Railroad and the Milwaukee Street Railroad Co. for their improved machine tools.

The new docks at Two Harbors, Minn., to be constructed by Winston Bros., of Minneapolis, and R. B. Dear, of Duluth, are for the Duluth & Iron Range road, and give the road a total of 500 pockets, with a storage capacity of 90,000 tons. It will be at Two Harbors.

The great Gila Bend Canal, in Maricopa County, was completed yesterday, and the water will be turned on to-morrow. This canal receives water from Gila River, 40 miles below Phoenix; is 30 miles in length, 25 ft. wide on the bottom, and will carry water sufficient to irrigate 60,000 acres of fruit land.

The sub-committee of the House Committee on Naval Affairs, charged with the preparation of the Naval Appropriation bill, requested representatives of the Bethlehem Iron and Steel Company and Carnegie, Phipps & Co. to appear before them on the 25th and 26 inst. and explain the cause of delay in the delivery of armor plates and other naval steel.

The regular election of officers of the Virginia Miners' Union took place on the 14th inst. The following officers were elected to serve the ensuing term: President, Daniel McCormack (re-elected); vice-president, William Leary (re-elected); recording and financial secretary, B. Coyle (re-elected); Treasurer, A. Young (re-elected); warden, Fred Fissett; conductor, P. E. Hanna; finance committee—J. F. McDonnell, J. W. Flynn and Denis Kehoe. Library directors—William Liddle, Joseph Casey, Michael Carroll, Richard Kindle and Wm. J. Bolan.

The Berlin Iron Bridge Company, of East Berlin, Conn., has received the contract for rebuilding the tube mill of Curtis & Co., at Cohoes, N. Y., lately destroyed by fire. The new plant will be fireproof, constructed entirely of iron and brick, no woodwork being used. The building will be 132 ft. wide by 131 ft. long, with a wing on one side, 20 ft. wide by 74 ft. long.

The Iroquon Structural Steel Company, of Duluth, which is now erecting an open-hearth steel plant and a beam rolling mill, has made arrangements to put in one 175-ton coke furnace which will run on Mesaba ores, delivered at stockhouse at $2 ton, on a 62% guaranty. It is understood that two other furnaces are to go in at New Duluth. The 150-ton furnace of the Minnesota Furnace Company, at Duluth, has blown in after a six-months's idleness, and is running on $2 Mesaba ores. Its product, No. 1 Bessemer, goes to the West Superior Steel Company for plates for whaleback ships. The company has also the plate contract for the gunboat to be built at Dubuque.

The Pottsville Steel and Iron Company, of Pottsville, Pa., which, when running full, employs 1,200 hands in its furnaces, rolling mills and bridge works, is about to inaugurate a novel system of employees' insurance. For temporary disablement one-half of the weekly wages will be paid, limited to 50 weeks; loss of an eye, hand or foot, expenses and one-fourth of the year's wages; both eyes, etc., half of a year's wages; death within three months, expenses and a year's wages; no indemnity to exceed $1,500. Riots, strikes, etc., dissolve the insurance. Policy holders must pay 1 cent on each dollar earned. No refunding will be made in the event of discharge or voluntary retirement from the company's employ.

The Duluth, Mesaba & Northern road has let the contract for the sub-structure, 800 piles, for the largest single-ore dock in the world, to be put up at the foot of 31st avenue west, Duluth. It will be 2,500 ft. long, with 200 pockets on each side, with storage capacity for 7,200 tons, and shipping capacity for 2,500,000 tons a year. In the dock and approaches 10,000,000 ft. of pine and 2,000,000 ft. of oak and maple timber will be used. Its floor will be 52½ ft. above water, and it is 50 ft. wide. There will be four railway tracks on the dock floor. Work is already begun, and it is hoped to ship over it in August. It will not be fully completed before a year, and will cost $400,000.

The contract for over 10,000 tons of hull and protective deck plate for the new warships Brooklyn and Iowa have been awarded to the Carbon Steel Company, of Pittsburg, Pa. The work includes the hull plates, the nickel-steel protective deck oil-tempered and annealed plates and the necessary shapes. The bulk of the nickel-steel is to be oil-tempered and annealed, and will range from 3 to 5 in. in thickness. The protective deck plating is all to be nickel steel, the percentage of nickel to be about 3 or 4%. The whole of the material will be either steel or nickel steel. The value of the work approximates about $1,000,000. The Carbon Steel Company took this plum of the trade from eight competitors, the Otis Steel Company, of Cleveland; the Wellman Steel Company, of Thurlow; the Phoenix Iron Company, of Philadelphia; the Pencoyd Iron Company, of Philadelphia; the Paxton Rolling Mill Company, of Harrisburg; the Pottstown Iron and Steel Company, of Pottstown; the Carnegie Steel Company; the Linden Steel Company, of Pittsburg. The Carbon Steel Company has been in business for five years, having succeeded the firm of Graff, Bennett & Co., and occupies for a portion of its works the old Fort Pitt Iron and Steel Company's ground at Thirty-second street, Pittsburg. The firm is well equipped, having expended $1,000,000 within a few years in reconstruction and betterments. Half of this sum was expended last year in new buildings and machinery, and the plant is now complete. The plate mill has rolls 124 in. long and 34 in. in diameter, capable of rolling plates 10 ft. wide and from 10 to 14 tons weight. The material is conveyed from the heating furnaces, of which there are four, to the rolls by means of electric overhead cranes, and the same method is employed for transferring the material to the cooling tables, shears, and for handling the finished material. There are six 30-ton open-hearth furnaces, the product of the works being only acid open-hearth steel. The shears have a ten-foot stroke, and will cut up two and one-half inches in thickness. About 600 men find employment at the works.

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.

2,880. A rice screener and separator. Georgia.
2,881. Estimates on 4,800 ft. 4 in., also same number feet 5 in. wrought iron pipe for Colombia, S. A. New York.
2,882. Barrel machinery. Kentucky.
2,883. A rock crusher to supply 20-stamp mill for Colombia, S. A. New York.
2,884. Estimates on a knitting mill of 50 machines to make principally coarse goods. South Carolina.
2,885. Two automatic feeders for stamp mill for Colombia, S. A. New York.
2,886. A hand-power core drill, with equipment for going down 200 ft. South Carolina.
2,887. Catalogues and price lists of machinery for grinding wood pulp. Virginia.
2,888. About 1,200 sq. ft. fireproof roofing felt, for Colombia, S. A. New York.
2,889. Prices on prop timber for anthracite mines of Pennsylvania. Pennsylvania.
2,890. 220 tons 40-lb. second-hand steel rails, suitable for relaying. Georgia.
2,891. Two-in. line shaft, 55 ft. long. North Carolina.
2,892. A moulding machine and a matcher. North Carolina.
2,893. A swing cut-off saw and a resaw. North Carolina.
2,894. 300 tons second-hand 35 or 40-lb. steel or iron rails. Alabama.
2,895. A gig saw and a shaper. North Carolina.
2,896. A lathe. North Carolina.
2,897. A planing mill. Virginia.
2,898. A 20 HP. stationary tubular boiler. North Carolina.
2,899. A spoke lathe. Virginia.
2,900. 3,000 ft. water pipe, 4 in. to 6 in. diameter, inclusive, to stand 150 lbs. pressure. South Carolina.
2,901. A bark mill. Virginia.
2,902. A dry kiln and a combined tile and brick machine. Mississippi.
2,903. Stave machinery. Virginia.
2,904. Machinery, etc., to supply and operate water works. West Virginia.
2,905. A band saw mill complete, with trimmers, edgers and planers. Florida.
2,906. An engine and boiler. Virginia.
2,907. An electric light plant. West Virginia.
2,908. A rope transmission, direct drive from engine to counter shaft. Kentucky.
2,909. A 75 H. P. engine and boiler. Florida.

GENERAL MINING NEWS.

ARIZONA.

Cochise County.

Tombstone Mining and Milling Company.—The Lucky Cuss mine is producing at present about 350 tons of ore per month, which is shipped to the smelters at El Paso, says the Tombstone "Epitaph." Most of the ore being shipped comes from the third level, where a large chimney of manganese ore was recently struck. It is being worked both ways, by shaft and stoping, and is desirable smelting ore, being almost entirely free from silica.

Pima County.

(From our Special Correspondent.)

Crocker Mining Company, Quijotoa.—Some very good quartz, with black spar and talc through it, is showing in the face of the south drift on the west parallel vein, 300 level. The assays run well, and the drift was carried 50 ft. last week.

Peerless Mining Company, Quijotoa.—The vein is showing up strong in the north drift, 300 level, and fair grade ore is being taken out. The face of the drift is out 152 ft. from the main working shaft.

CALIFORNIA.

(From our Special Correspondent.)

Philip Cochran, a mining operator who has engineered several mining deals, none of which have been above suspicion, is in jail on the charge of obtaining money under false pretenses. In 1890 he induced several capitalists, H. B. Staab, C. J. Carl, C. Bevetheau, all of San Francisco, and F. A. Cornwall, of St. Louis, to form a company for the purpose of working a group of 10 gold mines in Montezuma district, Mexico.

Calaveras County.

(From our Special Correspondent.)

The Ulica Mine, Angels Camp.—The new development in the mine already reported is proving to be of great value, although probably not so rich as was anticipated. A clean-up amounting to $118,000 has been received at the San Francisco office.

Mono County.

(From our Special Correspondent.)

The Standard Consolidated Mining Company, Bodie.—A bullion shipment valued at $17,662.02, representing the product of the mine for the month of December, has been received at San Francisco.

Nevada County.

Brunswick Consolidated Gold Mining Company.—The latest letter from the superintendent, dated Grass Valley, January 18th, says: "Work at the mine has been going on steadily since my last letter; we have finished the sump and are now cutting a station at the 700 level. Will be ready to turn drifts in about a week. The 600 east drift has been extended 9 ft., and we have just cut a ledge, but not enough has been done on it yet to determine its value. The 600 west drift has been run 8 ft.

Placer County.

(From our Special Correspondent.)

Mayflower Gravel Mining Company, Forrest Hill.—Bullion valued at $9,500 has been received at San Francisco from the mine.

San Diego County.

(From our Special Correspondent.)

Banner Oil Company, Newhall.—For some time the company has carried on operations with many discouragements, the cost of sinking nesessitating several assessments. When down 450 ft. the borers struck a vein of oil sand, but this proved to be shallow, and water was again encountered. At 780 ft. last week a flow of gas was reached, and a day or two later oil sand was again encountered. This week persistent effort has been awarded, for the oil is rising solid 400 ft. The well will produce about 50 barrels of crude petroleum per day, worth $2 a barrel. At 700 ft. the drill passed through a 6-ft. vein of coal. The coal is reported as being of very good quality.

Tuolumne County.

Black Oak.—This mine near Soulsbyville, formerly owned by a St. Louis company, has developed an ore body at the 500-ft. level, which will average $200 per ton, says the San Francisco "Report."An air compressor and drills have recently been added to its plant,, and as soon as the new level is opened, which will be within a month, the mill will be in operation.

COLORADO.

Clear Creek County.

Barnum Tunnel and Gold Mining Developing Company.—This company will develop a group of gold mines in the Jackson and Coral mining districts made up of the following mines: Wandering Willie, Golden Grove, Micawber, Rosalie, Tam O'Shanter, Minnehaha and Highland Mary. The Barnum tunnel is at the base of Chicago Mountain, in which are the mines named in this group and others which the company may hereafter purchase if it so desires. The tunnel, according to the Idaho Springs "News," has already progressed about 100 ft., and having cut the Newton and Gen. Thomas, both steady producing mines, will then cut all the mines in the group. The ore cut by the tunnel at several points is said to have averaged $200 gold per ton. Electricity is used as a motive power for the drills and for illumination. The property has been favorably reported upon by A. W. Redd and Isaiah N. Smith, mining experts.

Custer County.

Bassick Mining Company.—The Denver "Republican" publishes the following account of this famous property: "The Hardscrabble district was thoroughly prospected in 1877 by E. C. Bassick. He located several claims near what is now the town of Rosita, and his work resulted in the development of the Bassick mine, which for some time was operated by the discoverer. During this period Mr. Bassick took over $500,000 worth of ore from the property, and the smelting certificates in existence to-day are said to show that one load of ore weighing 2,300 lbs. netted him a return from the Pueblo smelter of $60,000. The mine was then sold to a syndicate consisting of Dennis Ryan, of St. Paul, C. G. Francklyn, of New York, and others, and Mr. Bassick received $500,000 spot cash for his quit claim deed to the property. The Bassick Mining Company was reorganized and the management intrusted to Frank C. Brown. The policy pursued by the new management was simply one of development, and no ore was shipped that assayed less than $100 per ton. Notwithstanding this, $2,200,000 in gold was taken from the workings during the last two years of its operation. Then a dispute arose between the two principal owners, with the result that no one until very recently has been able to secure a perfect title to the property. About a year ago Henry F. Selleck secured an option on the mine, and from that time until now has worked toward getting it in shape for working. To-day the certificate will be filed, and the new company will start immediately in getting the water out of the workings. The company consists of Warner Miller, George P. Folts and C. R. Snell, of New York, and N. Maxey Tabor and Henry F. Selleck, of Denver. The capital stock is $5,000,000. The company is said to be a close corporation. The improvements put upon the property by the former owners consists of a large plant of hoisting machinery situated on the new shaft. There are two engines of 650 H. P. each with boilers of proportionate size. There is also a smaller hoisting plant upon the old shaft which is in good condition, and which will be utilized in the new work. Buildings, machine shop and everything necessary to the working of a large mine are upon the ground. In addition to this two Knowles pumps are now at the mine and are being put in under the direction of James Renshaw. These pumps have a daily capacity for removing 80,000 cu. ft. of water. The main shaft on this property was sunk to a depth of 1,400 ft. It was in this shaft that most of the work was done by the old company. Another shaft, however, was commenced about 100 ft. from this. It is 7×21 ft. in the clear, and has three compartments, sunk to a depth of 690 ft. The purpose of the new company is to sink this shaft so as to intercept the large body of ore in the bottom of the mine and have a shaft sufficiently large and strong to enable the management to handle the entire quantity of ore which may be met with, and to sink the shaft 3,500 ft. The formation is unlike anything yet discovered in Colorado, being in the end of an immense basin in the granite rock, filled with an overflow of porphyry. It is in this porphyry that the mineral-bearing rock exists, and is in the form of a mammoth cone, with the small end near the surface, the wales spreading out as depth is gained. While the greater part of the cone is mineralized and carries value sufficient to pay for working, it is of low grade ore. The greatest values are found in pebbles or boulders, which are covered with a coating of mineral varying in thickness from that of a sheet of paper to several inches. This coating is exceedingly rich. During the later workings of the mine an average of one ton each day was shipped, which returned $24,000 in gold and $3,000 in silver. The coating of the barren rock is greater in the lower levels. The exact extent of the vein is unknown, as a distance of 42 ft. has been worked across it without reaching the walls. The property consists of six and one-half regular mining claims, each 300×1,500 ft., with one placer claim and two mill sites, an aggregate of over 70 acres of ground. The title to each is under United States patent, and has passed to the new company. The management of the new company will be under the direction of Dr. E. H. Taft, and the officers for the first year are: Warner Miller, president; Henry F. Selleck, vice-president; George P. Folts, treasurer; N. Maxey Tabor, secretary. Work was to have been begun on the 23d inst.

El Paso County.

Pharmacist Mining Company.—This company has passed its January dividend. The company commenced paying monthly dividends in October, upon the belief that the Midland Terminal Railroad Company would be ready to haul ore by January 1st, or at least February 1st. It is now thought that the road cannot be ready for business before April 1st. It now costs them about $6 per ton to haul from the mine to the railroad the 200 or 300 tons of ore which this company ships monthly; the railroad will do the same work regularly and more quickly at not over $1 per ton. Members of the company state that the mine is in better condition than ever, but while awaiting the arrival of the railroad they will continue their output of mill dirt and save their high-grade ore.

Gunnison County.

Pitkin Mining and Milling Company.—A contract will be let to sink a 350-ft. shaft on this company's group of claims in Chicago park, the group embracing 22 claims. A large force of workmen is at work preparing to place in position the hoisting plant. The shaft is 4×12 ft. in the clear. The officers are: President, M. J. Sheridan; vice-president, A. H. Wright, treasurer, John Cudahay; secretary, F. W. Ferry; these with W. M. Fulton are the directors.

Hinsdale County.

Ute and Ulay Mines.—Superintendent Alex. Harvison reports the pay roll of the Ute and Ulay mines as at over 200. They have 17 air drills at work breaking down the large bodies of lead, and the production of these mines at the present time exceeds any shipping records ever made by them. Both sides of the concentrating mill are running night and day, and the new machinery recently added is working.

Lake County.

(Special by Telegraph.)

Leadville, January 26th, 1893.—Three important discoveries have been made in Leadville during the past week. In the Pawnolos mine development work has been in progress for some time past. The shaft was sunk 250 ft. and a drift 700 ft long was run. In raising from this a large chute of argentiferous iron ore 50 ft. thick was cut. In this chute stringers of lead carbonate ore were encountered, and within the past few days a streak assaying 68% lead and 1,127 oz. silver was opened. Insufficient development work has yet been done to prove whether much of this rich mineral exists, but the indications are that a rich ore body has been uncovered. This strike is specially important since the Pawnolos mine is situated on the northern border of the camp, and the discovery of ore at this point may result in the opening of the extension of the great ore chutes in this direction.

The Penrose people, while running a drift in the Orion ground last Monday, opened an excellent body of lead carbonate ore at a distance of 160 ft., samples assaying 65% lead and 203 oz. silver per ton. On Tuesday, the Bohn people, after fighting water at a cost of many thousands of dollars for many months past, finally broke into a body of carbonate ore. The ore body has not yet been penetrated sufficiently to show its thickness, and no assays have yet been made, but it is thought that the mineral will run high in silver. On Tuesday night the Sixth Street shaft encountered very promising looking contact material at a depth of 503 ft. and the management expects to open into carbonate ore within a few days. Over $300,000 has already been spent by the Sixth Street syndicate in sinking two shafts. No. 1 was abandoned some time ago and No. 2 was then commenced. Over 800 gallons of water per minute are being pumped at present from this shaft.

The developments in the Penrose, Bohn and Sixth Street mines are of particular importance, as all these properties are located on the southwestern slope of Carbonate Hill, within the city limits. The extension of the Carbonate Hill ore chutes into this ground was proved several years ago, and since 1889 much exploration work has been carried on in this portion of the district. Two mines, the Lucy B. Hussey and the Elk, especially the latter, became important producers, although at the present time they are doing little.

The sinking the the Bohn, Penrose and Sixth Street shafts has been attended by many difficulties on account of the great flow of water encountered as the contact was approached, and a large amount of money has been expended in the work. If the discoveries made in these properties during the past week prove to be good, they will undoubtedly lead to more prospecting work in this direction, as the porphyry-lime contact is known to extend beneath the city of Leadville, and the great ore chutes broken on the southwestern slope of Carbonate Hill by the Carbonate fault have been traced almost to Harrison avenue.

Ouray County.

The following items of late Ouray news are taken from our exchanges. A strike has just been made in the Carbonate King mine, consisting of a good ore seam 18 in. Regular shipments from this property will now commence. The American-Nettie ore bodies are improving, both in richness and extent.

A force of 12 men is taking out ore from the West View, which runs 2 to 5 oz. gold and 35 oz. silver to the ton. Eight cars have recently been shipped to Durango.

In the Cora Belle a large body of mineral has just been bored into with a diamond drill. It measures 8 ft. in thickness, is silver and copper ore, like that of the Yankee Girl and Guston, and is high grade. Shipments continue regularly. Better ore is being taken from the Pony Express at present than ever before, and its output could easily be doubled. The Iowa Chief started up again last week with Sam W. Gregory, of the Midnight mine, as manager, and P. H. Holmgrain superintendent. The men are at work driving two tunnels. The ore bodies are showing fine, and shipments will commence right away. The first 10 days of 1893 Ouray sent out 30 cars of ore to Denver and Pueblo. Double that amount has gone out from the southern part of the country over the Silverton railroad to Durango.

Pitkin County.

Cowenhoven Mining Transportation and Drainage Company.—The Cowenhoven tunnel was finished on the 19th inst. The entrance to the tunnel is situated in William's addition to the city of Aspen, on the east bank of the Roaring Fork River, near the foot of Smuggler mountain, and extends about 1½ miles in a general northeasterly direction to the end, near the St. Joe shaft, says the Aspen "Times." Work was commenced on July 29th, 1889.

Pontiac Mining Company.—The annual meeting of this company was held at Aspen on the 17th inst. There was represented 1,397,940 shares of stock. W. E. Newberry, Percy Hagerman, B. Clark Wheeler, A. A. Denman and A. J. Peck were elected as directors for the ensuing year. After the adjournment the newly-elected directors met and organized. The present officers are W. E. Newberry, president; A. A. Denman, treasurer; A. J. Peck, secretary, and B. Clark Wheeler vice-president and general manager. A dispatch from Aspen to the Denver "Republican" says: "A sensation has been caused by the developments at the meeting of the stockholders of the Pontiac Mining Company, at which new officers were elected and a report for the last year made. One year ago B. Clark Wheeler came into control of a large majority of the stock of the Pontiac company and elected himself president, and filled the directory with employes of his own printing office. Subsequently he borrowed various sums of money from J. J. Hagerman, giving Pontiac stock as security. The loans became due and the control of the Pontiac became vested in Mr. Hagerman, and at to-day's meeting of the stockholders the Hagerman influence elected the Board of Directors, Mr. W. E. Newberry being chosen president and A. A. Denman treasurer. It was devel-

oped that the 200,000 shares of treasury stock in the treasury of the Pontiac company at the beginning of the Wheeler administration, and which were valued at from 14 to 15 cents a share, had disappeared. Mr. Wheeler explained that he had sold these shares of stock to the Continental Divide Mining Company, taking the note of the company for the same. The note remains unpaid, and the significance of the transaction is that Mr. Wheeler himself is the Continental Divide Mining Company, and, therefore, as president and general manager of the Pontiac, he sold to himself, as president and general manager of the Continental Divide Mining Company, these shares of stock, amounting in value to more than $25,000, giving his note as president of the latter company to himself as president of the former company. It also transpired that a few days since, and in evident anticipation of the result of to-day's meeting, Mr. Wheeler had his dummy board of directors employ him for another year in advance as general manager of the Pontiac company. It is understood, however, that the reorganized company will not be bound by the action.

GEORGIA.

McDuffie County.

Mrs. J. Belknap Smith, mining near Thomson, produced recently $8,957.53 from 370 tons of ore taken from the depth of 84 ft. One hundred and forty hours' run ending Semtember 2d, with a five-stamp mill, yielded $1,494.75. It is supposed that 24 tons were crushed in this time. The ore from this mine averages about $27 a ton.

IDAHO.

Shoshone County.

Argentine.—A. M. Elsler, of Helena, and A. J. Knott, of Portland, have bought the Argentine mine, in the dry ore belt near Wallace, Idaho, for $50,000. They have leased the Union concentrator, which has a daily capacity of 200 tons, and will work the mine.

Gem Mining Company.—Some interesting developments in this mine have lately been made. Some time ago a small seam of galena led off into the wall in the upper workings, which the management thought worth while to follow, and which resulted in widening out to several inches. This was so encouraging that a drift was started in the direction at the next level below, which after being run 35 ft. cut a 3-ft. vein of ore, entirely clean and fit to ship without concentrating. How valuable or extensive this may prove to be it is too early yet to tell, but the significance of it is great. From present appearances there is a possibility of its duplicating the known vein and developed portion of the mine. Another drift will be run from the lowest level to cut the recently discovered vein, and should it increase in width at that depth in the same proportion as between the upper levels, the value and productiveness of the mine will be doubled.

Tyler Mining Company.—The case of the Tyler Mining Company vs. Sweeney et al. has been reversed by a decision of the Circuit Court at San Francisco, and the case has been remanded to the lower court for trial. The case will now be tried at Moscow.

MICHIGAN.

Copper.

Wolverine Mining Company.—The long expected assessment of Wolverine Mining Company stocks is announced. It is 50 cents per share, payable February 6th, and makes $6 assessed to date. Appended to the notice is this statement: The work of increasing the amount of openings in the mine and of providing additional equipment for the purpose of handling an increased output, in accordance with the policy outlined in the directors' report made in July last, is progressing favorably, and it is intended that regular production shall be resumed by the opening of navigation in 1893. The balance of available assets June 30th, 1892, as shown by the directors' report, was only $13,657.65, and it has therefore become necessary to make the above call upon stockholders in order that the work named shall be promptly completed. The Wolverine mine yielded 187,962 lbs. of fine copper in 1892. This was done in three months.

Iron—Gogebic Range.

Ashland.—A large Worthington mine pump is being sent to this mine. The pump is guaranteed to lift 700 gallons of water to a height of 700 ft. per minute. It is to take the place of a Cornish lift introdnced some time since at a considerable expense.

Iron—Menominee Range.

Curry Iron Company.—At the Curry a crosscut to the north was begun some time ago at a point about 450 ft. west of No. 1 shaft, at the 4th level. This is intended to connect the north and south veins, and has been driven about 230 ft. or about half way. When it is done, the ore from the north formation will be hoisted through No. 1 shaft.

Hamilton.—Bailing was begun in No. 2 shaft on the 16th, and something more than half the water was bailed out. As it was necessary for the miners to do some work in the cageway and the bailing made the shaft very wet it was discontinued, except enough to keep the water below the point at which the work is being done. It is thought that no difficulty will be met in taking the water out as far down as the point where the station was partially cut out before the flooding of the shaft.

Penn Iron Company.—The crosscut north from the drift which runs west from the exploring shaft at Briar Hill has been driven about 200 ft. in jasper and will be continued through the jasper belt. The Penn Iron Company, which is doing the exploring, are confident of ultimately finding a paying body of ore.

MONTANA.

The dividends paid by the mining companies of Montana during the year 1892 were as follows: Bald Butte, $20,000; Banister, $6,000; Bi-Metallic, $200,000; Elkhorn, $362,500; Granite Mountain, $500,000; Hecla Con, $180,000; Helena & Frisco, $20,000; Iron Mountain, $135,000; Jay Hawk, $33,375; Moulton, $30,000; Pandora, $3,000; Parrot, $216,000; Rocky Fork Coal Company, $100,000; total $1,805,875.

Jefferson County.

Eureka.—This mine, about 20 miles from Boulder, is owned by C.P. Groves. The lead is said to be between 8 and 9 ft. in width, and the ore assays from $18 to $40 a ton. No cross-cutting has yet been done on the ledge, and the width and value of the ore body have not yet been established.

Missoula County.

Nine Mile Mining Company.—The property of this company is situated about 47 miles west of Missoula, near the old placer camp known as Martina, and was bonded about 18 months ago for $40,000 by John Woods, Peter Larsen, J. M. Keith and others, and consisted originally of the claims known as Golden Dawn, Golden Eagle, Protection and Hazel Grove, discovered by Patrick McElligot and David Lewis, two prospectors, and from whom the bond above referred to issued. The completion of the purchase was effected on the 7th of August last, and the work of erecting a mill and providing suitable machinery and tramways for mining and prospecting the ore from the mine to the mill, a distance of 2,000 ft., was commenced and pushed to completion, with the result the works were permanently started up about the first of the present year, and the gold brick just received is the result of the first regular run. Machinery has been ordered for another 10 stamps, and work on same will be pushed with vigor.

Silver Bow County.

Estella.- James A. Murray has brought suit against F. A. Heinze, claiming that the product of the Estella mine, which had been leased by the defendant had not been properly accounted for and that various stipulations in the lease had not been complied with. Mr. Murray leased the Estella mine to Heinze on what appeared to be very exacting terms, but this was on account of the great richness of the ore. It is stated that the terms of the lease were that Heinze was to expend $25,000 in permanent improvements, pay 50% royalty on the silver ore and was to pay 5 cents per pound for the copper, says the Butte "Intermountain." Mr. Heinze recently built a smelter to work the ore of the Estella mine, and other ores that he might purchase. Not long ago Mr. Murray had reason to believe that Mr. Heinze was not making true and correct returns to him. It is also stated that Mr. Heinze, when confronted with the charge, endeavored to make matters all right, but it is evident they failed to come to terms. The court is asked to enjoin Heinze from working the mine during the pendency of the suit. The complaint charges that Heinze has repeatedly violated the terms of the lease, to wit, that he repeatedly removed ores for treatment from the Estella mine, without first notifying the plaintiff or any agent of his or any one, and that he has not at any time notified the plaintiff of the removal of ores. That he placed only a 30-horse power boiler on the mine, and has not placed a boiler of 50 or more horse power as the lease requires; that he has failed to do all work in the mine in a good workmanlike manner; to wit, he has faled to mine the ores in miner-like fashion, and has mined so as to carelessly mix the ores with waste to the plaintiff's great damage. That during the months of October, November and December, 1892, he removed large quantities of ores from the mine, and that he has failed to pay or deliver to plaintiff the latter's share or anything whatever for said ores or minerals, or copper or silver therein contained. That he has failed to furnish a monthly statement; that is to say, he did furnish statements, or what purported to be statements, but the plaintiff charges they are incorrect and untrue. That defendant has failed to sink the shaft according to conditions of the lease, viz.: That he failed to make said shaft 9 ft. in the clear, and by reason of these failures he has forfeited his lease. On January 9th, 1893, the plaintiff entered upon the claim and declared the lease annulled. when Fred Lavoie, agent for Heinze, refused to deliver up possession of the premises, wherefore judgment for possession is asked. For a second cause of action the same facts are alleged; also that defendant is still in possession and extracting ore; that said premises are only valuable for the ores they contain, and plaintiff is charged with wasting and destroying the mine. Then an injunction is asked for. A copy of the lease is also attached to the complaint. The term of the lease is 15 months and Heinze is allowed one-half of all the ore extracted. Heinze was to sink the shaft from 200 to 400 ft. deep. For all copper extracted he was to pay 5 cents per pound, and for silver 90 per cent. of the market quotations. Provision is made that Mr. Murray or his agent shall be notified whenever any ore is extracted that he may sample the same. Provision is made for monthly statements, and finally Heinze agrees that he will work all ore extracted for $12 per ton.

NEVADA.

Esmeralda County.

(From our Special Correspondent.)

Mt. Diablo Mining Co., Candelaria.—A shipment of bullion containing 7,391 fine ounces has been received at San Francisco.

Lyon County.

The Virginia City "Enterprise" reports a strike of rich ore in the Red Jacket mine, in American Ravine, Devil's Gate and Chinatown mining district, near Silver City. The Red Jacket mine is near the Oest mine, which not long ago developed a vein which yielded well. Mr. Lothrop, of Dayton, and his partners have resumed work in an old tunnel on the Spring Valley mill site, in the same mining district as the Red Jacket. They have done very well in their tunnel. Messrs. H. M. Levy, H. Zadig and R. P. Keating and owners of the Isis mine, also in the neighborhood of the Red Jacket, will begin shortly the construction of a tunnel in American Ravine to open up their claim. They intend to run the tunnel in a distance of 2,100 ft. to tap their mine at a depth of 300 ft. They will drain the property through the tunnel and prospect for ledges.

Storey County—Comstock Lode.

Belcher Mining Company.—The latest weekly official letter says: "The west crosscut from south drift on the 350 level is now out 63 ft. in a mixture of clay, porphyry and streaks of low-grade quartz. The face of north drift on this level is in a mixture of porphyry and low-grade quartz. Have started a west crosscut north of winze on this level, with the face in porphyry and streaks of quartz. Have shipped to the mint during the past week three bars of bullion, valued at $14,048.70."

Challenge, Confidence and Consolidated Imperial Mining Companies.—General prospecting throughout the mines is still going on. They are hoisting and shipping to the Brunswick mill for reduction some ore found in small streaks and old fillings on the upper levels.

Consolidated New York Mining Company.—This company has received on this month's account $4,573.30 as the net proceeds of the sale of bullion valued at $6,283.55.

Crown Point Mining Company.—The latest weekly official letter says: "The west crosscut from the southwest drift, 150 ft. south of the shaft, on the 400 level, is now out a total distance of 199 ft., with the face in a mixture of clay and porphyry. The pay streak on the floors above presents no change of importance. Shipped to Mexican mill during the week 335 tons of ore, the average battery sample of which was $20.50."

Justice Mining Company.—The latest weekly official letter says: "The south drift from the north stope on the 822 level is now out 90 ft The pay streak is about 3 ft. wide and assays about $25 per ton. We are now stoping out between seven and eight tons of ore per day, the car samples of which average about $25 per ton."

Savage Mining Company.—The latest weekly official letter says: "We have hoisted 656 cars of ore from the 950, 1,100, 1,400 and 1,450 levels. Shipped to the Nevada mill 525 tons and milled 525 tons. Average car sample assay, $23.35; average battery assay, $23. Bullion yield for the week, $8,452.50. Shipped to the United States Mint at Carson January 12th, 348 lbs. of bullion. On the 1,100 level they are stoping ore from the eleventh floor up to the nineteenth floor. On the 1,400 level they are repairing the main south drift and the east drift connecting with the ore chute. On the 1,450 level are stoping ore upward from the end of the west crosscut started 100 ft. from the south bonndary. The joint north drift with the Gould & Curry Company on the Sutro tunnel level was advanced 24 ft.; face in hard porphyry. The face of this drift is now 28 ft. south of our north boundary."

Sierra Nevada Silver Mining Company.—The stockholders of this company have re-elected the following officers: Charles H. Fish, president; Charles Hirshfield, vice-president, and Herman Zadig, George W. Cope and A. K. P. Harmon, directors. E. L. Parker was re-elected secretary and A. J. McDonell superintendent. The secretary's report showed a credit of $9,603.17.

(From our Special Correspondent.)

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

Mines.	Tons Hoisted.	Car Sample Assay.	Tons Milled.	Average Battery Assay	Bullion Product for Week.	Bullion Shipped.
Belcher	.....	.....	....	....	.....	[1] 14,048.70
Con. Cal. & Va.	194	30.72	....	....	.....	[2] 6,283.55
Con. New York	[3] 70	42.33	165	44.55	.....	.....
Overman	.....	.....	.....	.....	.....	.....
Potosi	372	31 15	380	32.49	.....	.....
Savage	[3] 656	23.35	525	23 00	8,452.50	[4] 348 lbs.
Crown Point	.....	.....	335	20.50	....	.....

[1] Gross value, net return being $14,573.30.
[2] [3] Cars. [4] Crude bullion.

On Monday morning last pumping operations in the Gold Hill group of mines were suspended, and the sinking pumps in the Crown Point incline have been hauled up above the water line. It thus appears that the companies forming the Pumping Association have not benefited materially from the expenditure of half a million dollars. On the 12th inst. the "Territorial Enterprise" announced that a dispatch had been received from F. G. Newlands in New York, where he has been in consultation with J. W. Mackay and J. Flood, regarding the Comstock outlook, announcing the fact that the Bonanza people were in favor of carrying on the pumping operations unitedly. Dilating upon this dispatch as a piece of good news which, when carried out, would inaugurate a new era of prosperity on the Comstock, the "Enterprise" a few days later suspended publication. The bright things ahead were too much for it, and the paper that in days gone by served a useful purpose has now ceased to exist in accordance with the wishes of the "ring," who were its owners.

It has been decided, however, that a united attempt shall be made to drain the lower levels, and Mr. Mackay is reported as being perfectly willing to join in the scheme, not for any prospective personal profit that he may derive, but as a philanthropic effort by which the large body of miners may be kept at work. A meeting of the mine superintendents was held this week to consider the drainage proposition in all its bearings, and the following subcommittee was appointed to submit a plan of action to the directors of the various mining companies that will be benefited—if the scheme is successfully carried through: D. B. Lyman, representing the interest of J. W. Mackay and J. C. Flood; H. M. Yerrington, representing the railroad transportation of ore, wood and supplies; J. B. Overton, representing the water and electric light company: W. E. Sharon, representing the Union Mill and Mining Company, and the Comstock Mill and Mining Company, and S. L. Jones, representing the Gold Hill and Middle Mining companies, controlled by the Jones, Hayward and Mills factions.

It cannot be doubted for a moment that this bright array of Comstock talent will devise a scheme for carrying out the plan which their superiors have determined shall be carried out. The committee was instructed to report what arrangements can be made to secure a reduction in the transportation rates, and also on prices of lumber, water and the cost of mining ore.

In the Consolidated California & Virginia Mine the water now stands at the 1,950 level, C. & C. shaft, or nearly 300 ft. below the Sutro tunnel level. The members of the committee have given it as their opion that all mines can be drained down to the 3,000 level by starting the hydraulic pumps in the combination shaft and placing a hydraulic plant in the Union Consolidated, or other of the deep shafts in the third line of hoisting work. A first class pumping plant is at the Osbiston shaft, which has a depth of 2,800 ft. and this also could be utilized in draining the flooded levels to that depth.

In order that stockholders may be made enthusiastic and prepare themselves to pay the assessments, which are bound to be larger than heretofore (they can scarcely be levied with greater regularity), reports are being made through the press of the rich prospects and unmistakable indications of ore at a depth of 3,300 ft., which were disclosed when the lower levels were abandoned. The probability, indeed, of uncovering a considerable ore body between the 2,000 and 3,000 levels is said to be most encouraging, and so with all this golden glory in sight of the mind's eye the seedy habitues of Pine street, and the persistent "mud hens" will rake together assessment money on the chance of a booming stock market, albeit they know that any bullion that may be obtained will find final lodgment at the mills of the Comstock Mining and Milling Company and the Union Mining and Milling Company, the two principal claws of the Comstock octopus.

The Virginia "Chronicle" says: "On the 16th inst. pumping operations in the Gold Hill group of mines were suspended, The sinking pumps in the Crown Point are being hauled up above the water line, and the main pumps that will be left in position are to be painted to preserve them when the water reaches a point above where they are stationed. The project for consolidated pumping along the entire lode has not yet been consummated, and should a favorable understanding be arrived at it will take several months to arrange details. Hence the Gold Hill Association does not feel justified in continuing the work at a loss without deriving any material benefit. Twenty-five men were draughted at the Yellow Jacket on the 18th. There is still in the neighborhood of 50 retained in the mine, and prospecting work is still going on. Twelve men were added to the force in the Consolidated Virginia, making an addition of 30 since the 14th The men employed are still engaged in repairs. Superintendent Lyman expects to resume the extraction of ore from the 1 500 level stopes this week."

Consolidated California & Virginia Mining Company.—On the 1,600 level of the Consolidated California & Virginia mine there is a body of clean white quartz ore 160 ft. in width that will average $10 a ton, says the Virginia "Enterprise." It extends hundreds of feet in length and hundreds of feet on the slope, so far as other workings show. This body of ore will sooner or later be brought within the profitable line of reduction.

Comstock Tunnel Company.—"The Sutro tunnel is not a good prospecting tunnel," says the Virginia City "Enterprise." "It is a first-class transportation, drain and air-way. It crosscuts the foliation of the country and cuts clean through all ledges which it encounters in the shortest direction. A tunnel that follows either wall of a ledge like a lateral drift is by fnr more advantageous, as from such a working crosscuts may be run from many points to prospect the ledge. This principle is well illustrated in the case of the Brunswick lode. The Sutro tunnel cuts that lode transversely. If it ran laterally with the lode the probabilities are that 500 men would find employment along its course."

PENNSYLVANIA.

Coal.

Fire broke out in Evans & Co.'s colliery, at Beaver Meadow, on the 22d inst., but was on the following day under control. On the opposite hillside another fire is raging, which threatens destruction of the most valuable opening in the vicinity. It is the mine of W. T. Carter & Co., the culm banks of which have been burning for years and were drawn into the mine by a cave-in; 700 men were thus thrown out of employment.

The report of Mine Inspector Williams as to the fatalities in the Third Inspection District, for 1892, is nearly completed, and the remainder of the report as to the facts and figures of output, etc., will be ready about March 1st, or soon thereafter. The accidents for 1892 numbered in all 263, and 83 of them resulted in the death of one or more. The causes of accidents may be thus epitomized: By explosion of gas, 25; falls of roof and coal, 33; mine cars underground, 12; explosions, powder blasts, 4; miscellaneous, 3; on surface, 6. The average number of persons employed during 1892 was 19,411 and this makes about 1 in 74 either killed or injured.

SOUTH DAKOTA.

Lawrence County.

Comet.—The location of this mine is on the north slope of the hill dividing Fantail and Nevada gulches at Bald Mountain. It adjoins on the north the Alpha and Oxford lodes, on the east the Retriever, on the west the Victory, and on the south the mines of the Florence Mining Company. The property's location from the Double Standard and Tornado, which are on the south slope of the hill, is east, distant through the hill not over 1,500 ft. The property consists of four claims, which are the Comet, and Comet 1, 2 and 3. The workings consist of nearly 500 ft. of tunnels, stopes, drifts and crosscuts. In these workings four distinct faces of ore are exposed, averaging in size from 4 to 5 ft. square. Aside from this, large shoots of ore have been crosscut, from which several hundred tons of ore have been taken and shipped. The ore averages $27 per ton.

TENNESSEE.

The output of Tracy City Division of Tennessee Coal, Iron and Railroad Company for December was 32,943 tons coal, for the year 1892, 358,923 tons. Shipments for December were: Coal, 13,927 tons; coke, 9,618 tons; total, 23,545 tons. Shipments for the year 1892 were: Coal 136,101 tons; coke, 123,675 tons; total, 259,777 tons.

UTAH.

Secretary Noble transmitted on the 25th inst., in response to a resolution of the House, his report concerning the Executive order of November 19th, 1892, by which that part of Utah lying west of the 110th meridian was restored to the public domain, together with all the correspondence on the subject. This comprises the land on the San Juan River, in Utah, in which the alleged gold placer was said to have been discovered, and the documents show that this land was thrown open to settlement to allow the people of the United States an opportunity of exploring these placer fields in search of gold and valuable minerals. All the facts connected with the restoration were published generally threughout the West at the time the President's proclamation was issued. A telegram was received on the 25th inst. from Colonel Hunt, of the army, reporting that no prospectors had intruded on the Navajo Reservation.

Juab County.

Bullion-Beck Mining Company.—This mine at Eureka is practically closed down, the miners having refused to accept the terms of the company for a reduction of 50c. per day in their wages. It is stated that the miners offered to accept the reduction during the low price of silver if the company would assure the old rate when silver would reach a better figure, but that such assurance was not given. The prospect for a resumption of work is not believed to be very bright, unless some compromise is effected on that basis. Mr. A. E. Hyde, general manager of the Bullion Beck & Champion Company, stated that the company did not decide to reduce the wages of the men, but that they decided to shut down the mine and only operate it on one condition, and that was optional with the men; either to accept the reduction of 50c. per day in wages or else quit work. The company made a proposition to the men that if they would accept the reduction the wages would be restored to the old standard as soon as it was possible to do so and still make a reasonable profit.

Salt Lake County.

The Niagara Mining Company of Utah have made the following shipments of crude ores lately: January 17th, net weight, 63,878 lbs., assaying as follows, silver, 20.25 oz.; gold, 0.055; lead, 54.75%, an average of $27.75 per ton. January 19th, net weight, 3,045 lbs., silver, 106½ oz.; gold, .110; silver, 12.4%, an average of $68.50 per ton. This company is now the only one in its district that suspends operations on Sundays.

VIRGINIA.

The coal output of the Chesapeake & Ohio Railway for week ending January 7th, 1893, in tons of 2,000 lbs. was 59,011, as against 39,053 for the same period in 1892; from July 1st, 1892, to January 7th, 1893, it was 1,752,743 as against 1,339,809 in 1892. The coal shipments of this road in 1892 were 3,084,660 tons.

WASHINGTON.

Kittatass Co.

A vein of coal is said to have been discovered 40 miles west of Wenatchee. Having only located and staked out 320 acres, the locators have started development in the central vein which started with 3 ft. of slatey croppings, intermixed with pipe clay and intersecting seams of coal. As they progressed true coal was alternately increasing and lessening, till recent work revealed a vein of good coal 5 ft. wide and improving in quality as depth is gained. The hanging and foot wall sloping at an angle of 45 degrees is clearly defined in vein.

Stevens County.

Dead Medicine.—A concentrator was recently put in and operated a few days, merely to test the machinery, and then shut down. The mine itself has not been suspended; a full force of men is taking out ore.

Old Bonanza.—This mine was jumped recently. One of the owners gave the following information concerning this action: "We have been working this mine continuously for four years. About the 1st of January we filed an amended location and have applied for a patent. Recently two men, Taylor and Ranalian, jumped the claim and filed a location covering the ground. We have not been formally notified of the jumping, and there has been no injunction served upon us to the removal of ore. Nevertheless, we deemed it prudent to suspend operations and have accordingly shut down the mine and mill. We regard it a blackmailing scheme. The mine furnished employment for about 50 men, including the miners, concentrating men, woodchoppers and teamsters, and the suspension stops a payroll of $5,000 a month. Our attorneys assure us that we need feel no uneasiness, as our title is secure, while the jumpers have not even the shadow of a legitimate claim. We have now a real true contact vein, showing a large quantity of ore. The vein is from 3 to 9 ft. wide, and the average assays give 30% lead and 6 to 7 oz. silver—that is before concentrating, and the ore will concentrate about three into one. The concentrator cost between $25,000 and $30,000, and the company owns the town site at Millington, where it is situated. We have now 2,000 tons of ore on the dump ready to be concentrated."

WYOMING.

(From our Special Correspondent.)

The Mining Districts of South Pass, Atlantic and Miners' Delight.—These three mining districts have had a history noted for its brilliancy, if it was brief. Discovered in 1868, they produced from twelve to fourteen million dollars in gold within five years, from the various gulches, by means of sluice and rocker; then the light went out, the cream had been skimmed and the money had come so easy that no attention was paid to lode claims. About eight years ago Emil Granier appeared in the Atlantic district and went to work in earnest as well as on a large scale, locating a number of placer claims. He brought water from the head waters of the Popo Agie River across the Wind River divide, some thirty-five miles, through flume and ditch, utilizing the bed of Rock Creek several miles and thus obtained a bountiful supply of water with some 350 ft. fall. With this he hydraulicked his ground and got good pay. His first clean up in 1890 was about $30,000, in 1891 it was some $90,000, while his 1892 clean up has not been made public, although it is supposed to be fully equal to or in excess of 1891.

The amount of unworked placer and the amount of mill dirt, or rocker tailings, carrying free gold here, will warrant the investment of capital in mills when the ore is all in sight, and some new companies are spoken of prospectively to work some of these gulches.

One hill that seems to be the source of considerable gold deposits is Miners' Delight Hill, and it breaks away in eight gulches, all gold bearing, from $5 to $10 per ton, and plenty of water to be had for milling purposes in most of the gulches. The formation in the immediate vicinity of Miners' Delight and Atlantic is eruptive. There seems to be here an old crater, while to the north and east of us the measure is lower Silurian, Trenton period, Caradoc sandstone, Bala limestone, Llandilo group, while the glacial period has left its marks in grinding down the rocks in many shapes and deposits of breccia drift.

Gold has been discovered in heavy and extensive deposits of pebble conglomerate, and a company will start up a new mill in a few days on such a deposit that is very peculiar in that the clean washed pebbles carry gold and in paying quantities.

Another mill is going up some three miles away on a lode claim that atomizes the ore by steam into an impalpable powder and then catch the gold in settlers.

Within the eruptive ground some twelve miles

away strong dikes of trap and lava rocks break through the formation parallel, while between these dikes lie beds of schistose rocks and through these are thrown up veins of gold-bearing quartz. Some of these have turned out some very fine specimens of ore, but specimens do not make a mine and no one has had the grit and means combined to develop these veins and determine their extent. In one instance a miner has pounded in a mortar out of one rich vein several thousand dollars.

The state of Wyoming has done very little to develop her mineral resources, while the State Board of Mines has almost dropped out of existance.

FOREIGN MINING NEWS.

AUSTRIA-HUNGARY.

A dispatch from Vienna announces that an explosion of firedamp occurred on the 24th inst. in the Fortschritt mine, at Dux, in Bohemia. The explosion occurred in the morning when the shifts were changing, and it is claimed that 130 men lost their lives. The mine is being cleared of the wreckage as rapidly as possible, but the work is necessarily slow. Every effort will be made to recover the bodies of the dead. No explanation has yet been made as to how the explosion occurred. An immense quantity of afterdamp has accumulated. The ventilating apparatus cannot be worked, and it is absolutely impossible to enter the mine.

BRITISH COLUMBIA.

Kootenai.

Mr. D. P. Kane furnishes the following synopsis of some of the leading mines in this district:

Washington—Vein of galena ore, 3½ ft. wide; can be traced full length of claim, 1,500 ft.; assays, 150 to 180 oz. of silver and averages 73% lead; developed sufficiently to ship ore; owned by Tom Jefferson.

Slocan Boy—Galena ledge, 2 ft. wide; assays, 200 oz.; shipping ore.

Rico—Ledge found under 6 in. of rock on hillside. 6 ft. wide; solid galena; assays, 150 to 800 oz.; bonded to Patsy Clark for $75,000; shipping ore.

Dardanelles—Twelve inch vein of solid fine steel galena, assaying from 500 to 1,000 oz.; bonded to McLain & Co. and John Davenport for $150,000; shipping ore.

Freddy Lee—Ledge of galena 3 ft. wide, with streak of gray copper; assays from 150 to 1,500 oz.; has a tramway, and ore is being taken out rapidly; expect to take out 10,000 tons this winter; was one of the first mines opened, and bonded to a company headed by J. F. Wardner for $20,000. Jim Hill is interested in this mine.

Idaho—Extension of the former; same grade of ore; shipping ore.

Mountain Chief—Vein 12 in. of galena; just developing: S. S. Bailey, owner.

Grady's Claims—Group assays 150 to 800 oz.; vein 4 ft.; galena; developing.

Alamo—Vein 15 in. in width, galena: assays from 100 to 700 oz.; bonded to John M. Burke for $50,000.

Bluebird—Vein of galena 3 ft. wide; assays 150 to 200 oz; shipping ore, bonded to O. D. Garrison, J. M. Burke, D. C. Corbin and A. J. Taylor for $25,000.

Wellington—Vein 3 ft. wide, galena; assays average 400 oz.; has a diamond drill and is shipping ore: owned by A. J. Watts and a Montreal company.

Lucky Jim—Lowest grade mine in the camp; vein 3 ft. wide. galena; assays 100 to 150 oz.; owned by Dr Hilbourn, of Seattle; is developing.

Northern Belle—Has a 2-ft. vein, averaging $200 per ton; bonded to Dr. Hilbourn for $45.000.

Silver Glance—Vein 3 ft., gray copper; average assay, 1,500 oz. silver; bonded to Kootenai Lake Redemption Company for $45,000; under development.

Panama.—Same character as above; owned by Kane Bros.; to be opened this spring.

Revelstoke—Average 400 oz.; vein matter, antimony of silver, galena and gray copper, mixed; owned by Kane Bros.; to be opened next summer.

Tiger—Fifteen inch vein of galena, averaging 150 oz.; owned by Kane Bros.

Lucky Boy Group, on Jackson Creek—Bonded to C. E. Porter, of Spokane, for $20,000; developing.

Beaver Mine—Bonded to a Seattle firm for $75,000; developing.

Yosemite Group—Bonded to Garrison & Marks for $75,000.

BRITISH GUIANA.

The fortnightly shipment of gold from British Guiana on December 1st amounted to 5,320 oz., of the value of $95,271. On December 15th there were shipped by the "Dee" 5,881 oz., valued at $104,523. On December 29th there were shipped 8,669 oz.. valued at $154,033. The total export of gold for the year 1892 amounts to 130,027 oz., valued at $2,334,743.

CANADA.

Province of Nova Scotia.

It is reported from Boston, Mass., that the $7,500,000 of stock and bonds that have been underwritten by Kidder, Peabody & Co. for the new coal "combine" will be expended as follows: For the purchase of the mines, $4,000,000; building railway from Sydney to Louisburg, $1,000,000; terminal facilities at Montreal and Quebec, $500,000; piers and loading ground at Louisburg, $250,000; steamers and barges, $500,000; immediate improvements at the mines, $500,000. It is also proposed to expend a large sum in enlarged terminal facilities in Boston. The capital stock of the company will be from $20,000,000 to $22,000 000. A large proportion of this will be invested in steamers and barges especially built for carrying large quantities of coal: Mr. Whitney has taken an option on the Black Diamond Line of steamers, now engaged in the St. Lawrence coal trade, at $400,000. H. M. Whitney will be the president and F. H. Pearson the managing director of the enterprise.

A late press dispatch from Halifax says that the government bill which proposes to grant a lease for 99 years of the coal mines in Cape Breton to the syndicate of American capitalists was before the legislature on the 24th inst., and was assailed by the opposition as a measure that will inflict upon Canada the same coal monopoly that affects parts of the United States. Cahan, who leads the opposition, held that the proposed lease contains no restrictions which formerly guarded the people's rights. There was every indication, he said, that the Reading combine would control the new syndicate, and with the control there would pass away all competition in coal. Mines would be closed or worked just as it suited the "barons," who would then possess the greatest coal areas in Eastern America. The paltry penalty of an enforced royalty of $123,000 a year, should the mines not be worked, would be a mere bagatelle. Cahan expressed the belief that at no distant day the Reading people would show their hands in the syndicate and the scheme to place all the coal fields of half the continent under a vast combination would be known only too late.

MEXICO.

Seven months ago Mr. Algernon Grover obtained an option on the Tenontzintla mine on behalf of a New York syndicate, who commenced work here during October last. A large and well defined fissure vein in a lime formation has been struck. The vein averages nearly 2 ft. wide and contains rich sulphides of silver. Average assays, taken immediately, gave the very satisfactory result of 534 oz. per ton for first quality, 190 oz. for second quality and 99.77 oz. per ton for third quality.

Local tradition credits the millionaire Borda with having first worked this mine, some time during the last century. He drove here two tunnels 1,500 meters apart. These are known respectively as the "Santa Ursula" and the "La Esperanza." In driving these tunnels, the former of which is 140 and the latter 200 meters in length, six distinct veins have been cut.

San Luis Potosi.

GuadalcazarQuicksilver Mines Company.—A general meeting of the shareholders of this company was held in London on the 30th ult. The chairman, Colonel Gordon, said that the late chairman of the company, Mr. John Merrylees, and the late secretary, Mr. Percy Furber, left England for New York without notifying other members of the board, and on November 22d he received a telegram stating that the gentlemen named had gone to New York to see if they "could arrange this Guadalcazar business, which we seem to be unable to do in London." The telegram also announced they were about to resign from the board in order to be able to have a "free hand" in the contemplated negotiations. The chairman said it appeared to the board that the interests of the shareholders were abandoned for personal motives. Mr. Merrylees seemed to have parted with all his interest in the company, both in his own name and the names of others, and the "free hand" referred to appeared to arise from a desire to take advantage of the probable foreclosure on the part of the debenture holders to secure the property at a nominal price, without protecting the interests of the shareholders. The board had an examination of the books made by the auditors, and everything was found in order. They undoubtedly had a splendid property, which, if they stuck to it, would bring in very large returns for the money they put into it. The sum required for the purpose of carrying on the company was £10,000 as a minimum, which would be sufficient to enable the board to put the mine in such a position that they would have no difficulty in raising further capital for any larger development of the property. They were now producing more than enough to meet the working expenses.

SOUTH AFRICA.

The output of the South African gold mining district during December, 1892, amounted to 117,748 oz., as compared with 80,312 oz. during December, 1891. The total production for the year 1892 was 1,210,862 oz. as compared with 728,613 oz. in 1891, 494,756 oz. in 1890, 382,364 oz. in 1889, and 230,640 oz. in 1888.

WEST AUSTRALIA.

(From our Special Correspondent.)

Fred. H. Edwards, of Kimbola, passed through San Francisco en route for his home in Western Australia about 200 miles from Perth. He has just returned from England where he has arranged with capitalists in London to work the gold deposits in the interior. Mr. Edwards has obtained a grant of land many miles in extent, and he has satisfied himself that the country is rich in gold; while this has been generally known the lack of water has prohibited any active work. By experiment Mr. Edwards found, however, that water could be obtained by boring, and to carry on an extensive scheme by which water might be obtained to work the placers and also serve for irrigation purposes has been the object of Mr. Edwards' visit to England. Work will be commenced at once, and within three months from the time of its inauguration it is hoped and believed that half a dozen artesian wells at least will be spouting on the property and a gold field which, it is asserted, is not inferior to Ballarat or Bendigo will be opened up.

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 92 and 91.]

NEW YORK, Friday Evening, Jan. 27.

There is absolutely nothing of interest to report on the mining stock market this week. The public continues to exhibit the same unwillingnes to engage in speculation in mining shares—an unwillingness which seems to have become chronic. The brokers are still hopeful of better times to come, but unless sensible and concerted action is taken in the matter, it is not easy to see what is to bring these "better times." Plans must be formulated and carried out to induce a return of mining business to the Exchange. The public must be appealed to. Just now, while lamenting the dulluess which prevails at present, and for the past three years has prevailed in this market, the brokers take no steps to bring about a greater volume of business. Simply complaining that the old "boom days" are no more will not produce the active market which they desire.

The Comstocks are practically without change from last week. Consolidated California & Virginia shows sales of 230 shares at $2.55@$2.70. Crown Point was quiet, only 200 shares being sold at 70@75c. Of Ophir 375 shares changed hands at $1.90@$2. Other sales were as follows: 50 shares of Belcher at $1.25; 100 shares of Gould & Curry at 95c; 100 shares of Hale & Norcross at 95c.; 420 shares of Sierra Nevada at $1.30@$1.35; 600 shares of Yellow Jacket at 70@80c.; 200 shares of Alpha at 25c.; 200 shares of Andes at 45c.; 350 shares of Best & Belcher at $1.35@$1.40; 100 shares of Challar at 60c.; 3,000 shares of Comstock Tunnel stock at 9@16c.; 500 shares of Exchequer at 29@30c.; 300 shares of Julia at 12@13c.; 300 shares of Mexican at $1.45@$1.55, and 125 shares of Union Consolidated at $1.10@$1.15.

Of the California stocks Belmont shows sales of 2,100 shares at 20c. and Brunswick Consolidated, of 2,900 shares, at 10@11c. In our mining news columns will be found the latest letter from the superintendent of the Brunswick Colsolidated Gold Mining Company.

The Colorado stocks were quiet this week. Leadville, as usual, was the favorite; it was stationary at 21c., with total sales of 2,600 shares. Other sales were: 10 shares of Breece at 15c., and 1,000 shares of Chrysolite at 21c. In our mining news columns will be found an important telegram from our special Leadville correspondent, giving news of recent strikes at that place.

During the week there were sales of 1,200 shares of Horn Silver at $3.30@$3.36. It is a striking commentary of the esteem in which this stock is held by the public to learn that at an auction sale 800 shares of this stock sold at $3.36, or higher than the last quotation at the Exchange. This does not frequently happen to mining stocks.

Phœnix of Arizona shows sales of 1,200 shares at 50@57c. Late advices from the company's mine report that the mill is working steadily and satisfactorily and amalgamating finely.

Sales of Monte Cristo this week, according to the official lists of the Consolidated Stock and Petroleum Exchange, amounted to 7,300 shares at $2 40@$2.75. Of El Cristo there were sold 1,300 shares at 45@50c

Boston. Jan. 26.

(From our Special Correspondent.)

Transactions in copper stocks the past week have been unusually light, and with the exception of Calumet & Hecla have been without special feature. Buying of Calumet was started at the close last week on the rumor that dividends were likely to be increased the coming year to $30 per share, which advanced the price to $320. A good deal of stock was met at this price and a decline to $310 followed on the report that there was no foundation for the statement.

Tamarack was in good request at $155 and a few sales were made at $157. Osceola was firm and solid at one time up to $37½, an advance of $1¾; but in the later dealings it declined to $36¼.

Quincy sold down to $135 on small sales. There is a disposition on the part of holders to sell stock, owing to the reduced dividend.

The Montana stocks have ruled steady but dull, Boston & Montana sold at $34 and declined to $33½. Butte was slightly firmer and sold at $11¼@$11½ against $11@$10¾ last week.

Atlantic sold at $10¼, an advance of $¼, on small transactions.

Centennial was steady at $8 and Franklin at $13.

Kearsarge advanced from $11¾ to $12¾. with later sales of a small lot at $11½.

Wolverine was in little better request and sold at $1¾.

Santa Fe sold at 2c. and advanced later to 6c.

We note a sale of Pontiac at 30c., and we hear that there are orders to buy the low-priced non-productive stocks, which are now unquoted, and that a movement in them is likely during the present year. Napa Quicksilver sold at $5¾.

San Francisco. Jan. 20.

(From our Special Correspondent.)

The only feature of interest in the mining stock market during the current week has been the curious action of Potosi. Large blocks of stock have been thrown on the market, and the price forced down about 50%. The full line of Comstock shares have also shown a decline in values, but not to the same extent as the leading middle stock.

At the North End Consolidated California & Virginia that ruled a week ago at $2.70, sold to-day for $2.40; Ophir sold for $1.80, Mexican for $1.35, and Sierra Nevada for $1.20. To-day Mexican displayed the most strength, and the demand throughout the week has been remarkably steady considering that nothing can be expected from the mine.

During the past ten days it is estimated that not less than 25,000 shares of Potosi have been dumped on the market regardless of consequences. It looks as if a very open attempt was being made to depress the price, but the action of the manipulators is rather mysterious. To-day nearly 7,000 shares changed hands at prices ranging from $1.25 to $1.55, the stock closing steady at $1.40. Best & Belcher was in demand at $1.20; Chollar at 45 cents, and Gould & Curry at 80 cents. At a special meeting of the Hale & Norcross Mining Company, at which Superintendent Keating, of the Savage mine, was present, it was decided to permit the Savage Company to open up its 1,800 level through the Norcross shaft. In all probability the Savage will do most of its work through that shaft, and the two mines whose affairs have been the most tangled up will thus be enabled to complicate matters still further. Hale & Norcross stock ruled to-day at 85c., and Savage at 90c., the latter closing at $1.

The Gold Hill and South End Comstocks have been very quiet, the suspension of drainage operations apparently annihilating what little interest existed, save in the case of Belcher. The demand for that stock has not been very great this week, and to-day the ruling rate of $1.05 shows a decline of 35c. on the week's trading. Alpha sold for 20c., Bullion for 70c., Challenge for 45c., Crown Point for 65c., and Overman for 20c.

The sales of outside stocks have been very light. Bodie sold for 20 cents, Bulwer for 15 cents, and Mono for 15 cents.

Of the Tuscarcras Belle Isle, Del Monte and North Belle Isle were held for 15 cents; Grand Prize and Nevada Queen for 10 cents; and Navajo and North Commonwealth for 5 cents.

Of the Quijotoa stocks Silver King has been the only one in any demand, the ruling rate being 35 cents, the sales being in very small lots. Peer has sold for 10 cents; and Peerless, Central and Weldon for 5 cents.

SAN FRANCISCO, January 27th (*By telegraph*).—The opening quotations to-day are as follows: Best & Belcher, $1.20; Bodie, 20c.; Bulwer, 15c.; Chollar, 45c.; Consolidated California & Virginia, $2.40; Gould & Curry, 80c.; Hale & Norcross, 75c.; Mexican, $1.35; Mono, 15c.; Ophir, $1.70; Savage, $1.10; Sierra Nevada, $1.20; Union Consolidated, 90c.; Yellow Jacket, 55c.

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
Belle Isle, Nev.....	17	Jan. 9	Feb. 14	Mar. 8	.10
Best & Belcher, Nev.	53	Jan. 16	Feb. 21	Mar. 14	.25
Commonwealth, Nev.	10	Nov. 23	Dec. 28	Jan. 24	.10
	22	Dec. 24	Jan. 26	Feb. 15	.75
Confidence, Nev ...	..	Dec. 13	Jan. 21	Feb. 10	.50
Con. Cal. & Va., Nev	34	Nov. 22	Jan. 18	Feb. 8	.03
Con. Imperial, Nev.	59	Dec. 20	Jan. 24	Feb. 14	.25
Crown Point, Nev.	59	Dec. 20	Jan. 24	Feb. 14	.25
Evening Star, Nev.	7	.....	Jan. 12	Jan. 31	.01
Gold Mountain, Cal.	4	Dec. 21	Jan. 28	Feb. 15	2.00
Gray Eagle, Cal....	70	Dec. 15	Jan. 23	Feb. 16	.07
Hale & Norcross, Nev	103	Jan. 7	Feb. 10	Mar. 3	.50
Jack Rabbit, Cal...	2	Dec. 29	Feb. 6	Feb. 28	.05
Justice, Nev.....	53	Jan. 6	Feb. 9	Mar. 2	.10
Navajo, Nev	24	Jan. 9	Feb. 13	Mar. 7	.10
West Con C. & Va. Nev.....	1	Jan. 19	Feb. 23	Mar. 15	.25
Seg. Belcher & Mides, Nev.....	11	Jan. 8	Feb. 7	Feb. 27	.25
Siskiyou Con., Cal.	5	Dec. 16	Jan. 20	Feb. 10	.01
South Eureka, Cal..	2	Jan. 4	Feb. 10	Mar. 6	.02
Utah Con, Nev....	16	Dec. 13	Jan. 19	Feb. 9	.10
Overman, Nev.	66	Jan. 10	Feb. 14	Mar. 7	.25
Yellow Jacket, Nev.	53	.....	Jan. 6	Feb. 14	.30

DIVIDENDS.

Consolidation Coal Company, dividend of $2 per share, payable February 1st, at the office of the company, No. 71 Broadway, New York City.

Golden Reward Mining Company paid dividend No. 14 of two cents per share, $5,000, January 25th, at the office of the company in Deadwood, S. Dak.

Hope Mining Company, extra dividend of 25 cents per share, $25,000, payable February 1st, at the office of the company in St. Louis, Mo.

Mollie Gibson Consolidated Mining and Milling Company.—Dividend No. 31 of 15 cents per share, $50,000, payable February 15th, at the office of company in Colorado Springs, Colo. Transfer books close February 8th and reopen February 16th.

Tennessee Coal, Iron and Railroad Company. The coupons due February 1st, on the bonds of the De Bardeleben Coal and Iron Company will be paid on and after that date at the Hanover National Bank, New York City.

The coupons due February 1st on the South Pittsburg bonds of this company will be paid on and after that date at the Fourth National Bank, New York City.

METAL MARKET.

NEW YORK, Friday Evening, Jan. 20, 1893.

Prices of Silver per Ounce Troy.

Jan.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.	Jan.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.
21	4·87¼	38½	83¾	·639	25	4·87	38 7/16	83¾	·638
23	4·87¼	38½	84	·640	26	4·87	38½	83⅞	·639
24	4·87¼	38 5/16	83¾	·639	27	4·87	38 5/16	83⅞	·639

Silver has shown more firmness the past week, owing to the strength of the Eastern exchanges and the small percentage of allowance of bills by the India Council. Government completes to-day its quota of purchases for the month.

The United States Assay Office at New York reports the total receipts of silver for the week to be 147,000 ounces.

Government Silver Purchases.

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

January 23rd, 650,000 oz., at 84·5c.

January 25th, 773,000 oz., at 84·2c. to 84·25c.

Gold and Silver Exports and Imports at New York for Week Ending January 21st, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of
	Exports	Imports.	Exports.	Imports.	Exports.
Week....	$1,436,400	$5,538	$270,230	$19,105	$4,681,687
1893.....	6,499,895	45,710	1,695,424	39,770	8,099,819
1892.....	90,346	372,132	1,456,600	102,205	1,072,629

Most of the gold went to Havre, the silver all to England; the imports came from South America.

The exports and imports during the week ending January 28th, so far as ascertained, have been as follows: Exports, gold, $825,950; silver, $353,200. Imports, gold, $23,531; silver, $23,580. Of the gold, $775,000 went to Bremen. Of the silver, $206,050 was American bullion and $141,000 was Mexican coin, all of which went to England.

From the Sub-Treasury it is learned that $2,990,000 in gold coin has been taken out for to-day's shipment and that $360,000 more will probably be required.

Owing to the large shipments of last and this week the gold in the Treasury has fallen to $115,879,209.

NOTES OF THE WEEK.

The Bank of France is again allowing interest on gold in transit, which explains the large shipments of the past and present week. The bank lost during one week about $23,400,000 in gold and $1,800,000 in silver, owing to the fact that it had reached the legal limit of its note issue and was compelled to pay out gold. Now, however, the limit of note issue has been increased to 4,000,000,000 francs and the bank is again enabled to increase its gold reserve.

There is little, if anything, new regarding the repeal of the Sherman bill. During the week the House Committee on rules fixed February 9th and 10th for the consideration of the Andrews-Cate bill, but the action of the committee was made nugatory by its refusal to fix a time when a vote should be taken. This, of course, allows of filibustering and chances are that the bill will be killed by too much talk.

This bill is satisfactory, as proposed by Representative Andrews, but Mr. Cate's amendment proposing the immediate coinage of the silver bought under the Sherman Act is bad, for the country neither needs nor desires more silver coin than it already possesses. At least $370,000,000 in standard silver dollars are already locked up in the Treasury, and it is not probable that the country will ever use this amount.

In the table given last week of the exports and imports of the precious metals at New York during 1892 the sum of $34,335 was, through an error in copying the figures, unfortunately omitted from the column of foreign coin exports for the month of December. This item makes the total export of foreign gold coin $62,127,569 and raises the total export of gold to $70,629,904.

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.....	4.85	4.88
Twenty francs.....	3.85	3.88
Twenty marks.....	4 74	4.78
Spanish 25 pesetas.....	4.78	4.81

Copper.—Very little business has been done as while early in the week buyers seemed disposed to do something in Lake at 12c. the producers would not then entertain the price, and now the flattering reports received from abroad have made consumers very shy about buying. Casting copper is firmly held yet at 11⅝@½, but for Arizona pig copper somewhat lower prices have been accepted, business being transacted at about 10c. From the business centers comes the report that all the manufacturers are well booked ahead with orders, and their ability to keep out of the market now seems to be proof positive that they last month laid in quite considerable supplies. In Europe the failure of the various British building societies and the like, the disturbance due to the Panama Canal scandals, and the intensely cold weather, have all combined to bring about a decline, and the G. M. B. market, along with most others has suffered, prices receding from day to day. The closing figures are: £45 7s. 6d. for spot and £45 17s. 6d. for three months, and for English Tough, £48 10s.@£49; Best Selected, £49 15s.@£50 5s.; Strong Sheets, £58@£58 10s.; India Sheets, £53@£53 10s.; Yellow Metal, 5-8d.

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

To Liverpool—	Copper Matte.	Lbs.	
S. S. Mozart.....	1,868 bags	213,142	$9,000
" Nomadic..	2,152 "	209,428	9,600
" Gallia	297 "	28,000	1,150
To Liverpool—	Copper.		
S. S. Nomadic.....	35,040 ingots	480,000	54,000
To Hamburg—	Copper.		
S. S. Sandia.....	158 pigs.	56,776	7,000
S. S. Sorrento.....	90 bbls.	112,500	13,500

Tin.—The week opened with the market very firm afterward came a slight reaction and the price of spot metal receded to 20·05. However, the consumptive demand is good, and while shipments from the East during the second half of this month will undoubtedly be very heavy they are afterward expected to decrease in volume.

In London the market was fairly active, but the close at £90 5s. for spot and £92 15s. for three months shows a slight decline.

Messrs. W. T. Sargant & Sons, of London, give the following information in their annual review:

Tin.—During the first three months of the year the market remained very quiet, prices during that period fluctuating between £88 15s. and £90 17s. 6d., giving an average of about £89 10s. In the beginning of the second quarter more activity prevailed, which culminated in June by a rapid rise to £103 15s. The London stock, including parcels landing, which at the beginning of the year was 3,317 tons, had by that time declined to 1,583 tons. From that period the stocks began to augment, and at the end of December were 4,122 tons. Prices in the meantime fluctuated frequently, but had a declining tendency, closing the year at £91 5s., which was within a few shillings per ton of the opening price. The average of the year was £93 6s. 8d., against £91 3s. in 1891.

The chief factor in the changes of value that have taken place has been the requirements of the New York dealers. These have been on a very extensive scale, partly on account of a great increase in American consumption and partly by speculation called into action by the duty of 4c. per lb. ordered to be levied on and after July 1st, 1893, under the terms of the McKinley tariff. It is generally admitted that this tariff is to be modified, as a result of the November election, but when and on what articles, and to what extent, are all matters of uncertainty for some time to come, and although it is a common expectation that this duty on pig tin will eventually be repealed, no one actually knows what may happen, and consequently there is plenty of room for conjecture and speculation.

As already stated, the consumption in America has considerably increased, and so it has on the Continent, but in this country there is a diminution. A number of mills in South Wales have been closed, and although some have restarted, others have not. There has also been an export of black plate included in the official returns as tin plate, but the tinning has been done in America instead of in Wales. The aggregate shows an increase of about 1,800 tons consumed in 1892 more than in 1891.

The supply has been about as expected, a steady increase from the Straits, Banca and Billiton, other sources being about stationary. The chief part of the increased visible supplies is being held in New York, for causes explained; and it is expected in some well-informed quarters that as we draw nearer to July 1st a still larger supply will be acquired, in which case the London stock will dwindle down to a very small compass.

STOCKS OF FOREIGN TIN AND QUANTITIES AFLOAT FOR ENGLAND, HOLLAND AND AMERICA.

	1891. Dec. 31. Tons.	1892. Dec. 31. Tons.
Stock of foreign in London.....	2,155	2,776
Foreign landing "	1,162	1,346
Straits afloat for London, including wire advices.....	2,225	2,170
Australian afloat in London, including wire advices	802	957
Banca on warrants in Holland	511	868
Billiton in Holland.....	357	326
Do. afloat for Holland.....	1,912	1,240
	9,124	9,683
Estimated stock in America and quantity floating.....	3,228	5,492
	12,352	15,175
Trading Company's Reserves of unsold Banca Stock in Holland.....	3,140	3,480
Floating for Holland.....		139

PRODUCTION DURING THE PAST TWO YEARS.

	1891. Tons.	1892. Tons.
English production	9,000	9,000
Straits' shipments to Europe and America	31,457	34,648
Australian shipments to Europe and America	5,991	5,972
Banca sales in Holland	5,350	6,300
Billiton sales in Java and Holland	5,753	5,560
	57,551	61,480

Our Australian figures include shipments to California.

CONSUMPTION OF TIN.

	1891. Tons.	1892. Tons.
Deliveries from London after deducting all shipments to America	17,667	14,122
Deliveries from Holland after deducting exports to London and America	8,216	8,719
English, consumed at home	3,834	5,158
Exports of English, minus quantity shipped to America	4,990	5,648
American consumption of all sorts	15,457	18,750
Billiton sent to other ports than Holland	1,972	2,605
Straits direct to Continent, less re-exports to America and England	3,579	5,500
	55,745	58,502

PRICES OF FOREIGN TIN.

	1891.	1892.
Average	£91 3s.	£93 6s 8d.
Highest	£94 10s.	£103 15s.
Lowest	£88 15s.	£88 12s. 6d.

Tin Plates.—The results of 1892 may be summed up by diminished trade at low prices. Some makers have transferred their capital and energies to the United States; others are thinking of doing the same, while some hope that better times may return. With cheap materials and labor a fair trade may no doubt be done; but unfavorable conditions exist now, which may or may not clear up. The present price of steel with coke finish is about 12s. @ 12s. 6d. Liverpool for I. C.

EXPORTATIONS FROM THE UNITED KINGDOM.

	1891. Tons.	1892. Tons.
To United States	325,145	278,479
To other places	123,587	117,101
Total tons	448,732	395,580

Lead.—The market is very firm, with sellers holding back, asking 3·90 New York, after business has been done at 3·875. The market in London shows an improvement, Spanish lead being now quoted at £9 16s. 3d. @ £9 17s. 6d., and English lead at 2s. 6d. per ton more.

Chicago Lead Market.—The Post, Boynton, Strong Company telegraph us as follows: The market is firmer; sellers generally asking 3·70c. Sales are light, as the consumers are holding off.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: "Lead growing stronger and prices have advanced to 3·62½c. and some stray lots sold at 3·65c. Offerings appear to be light."

Spelter.—The market is quiet, and the quotation must be slightly reduced to 4·35@4·45 New York. No change is reported from abroad.

Antimony is dull, the price of Cookson's being 10½, that of L. X. at 10½ and of Hallett's about 10 2@10¼.

Nickel.—The market for this article continues irregular at prices ranging from 46@53c. per lb.

Quicksilver.—This market continues very quiet. Quotations remain as last reported: New York, $37.50; London, £6 5s.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 27th, 1893.

Pig Iron Production.—The following table gives the number of furnaces in blast and the estimated production of pig iron in the United States during the week ending January 21st, 1892, and for the corresponding week ending January 21st, 1893. Also the total estimated production from January 1st of each year to these dates. The figures are in gross tons:

Pig Iron Production During Weeks Ending January 21st, 1892, and January 21st, 1893, and During Both Years to These Dates.

Fuel used.	Week ending Jan. 21, 1892.		Week ending Jan. 21, 1893.		From Jan., 92.	From Jan., '93.
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	94	38,970	70	32,460	116,910	97,800
Coke	164	138,990	137	131,690	416,970	391,890
Charcoal	55	11,820	39	8,950	35,460	26,700
Totals	313	189,780	246	173,100	569,340	519,390

One of the most sanguine of the dealers said yesterday that a decline in the market would not surprise him. But no reason can be given for this opinion any more than for a more hopeful one.

It is not possible to write encouragingly, it is not prudent to write discouragingly, unless unmistakable signs point to a decline. The condition of the market has not changed here for several months, and is not likely to change for the next few.

Some who sniff misfortune in every passing breeze are now apprehensive of the effect of the Hatch or Anti-Option Bill on the iron trade. If dealing in cotton or grain for future delivery is to be abolished, what is to prevent the application of the same principle to pig iron?

If I sell 1,000 tons of iron for delivery in April or May, or through the year, as is frequently the case, in what does this differ from the sale of 1,000 bales of May cotton or 100,000 bushels of June wheat? If I have not a pound of iron when I make the sale, why am I in different circumstances from the broker who has not a pound of cotton or a bushel of wheat when he sells either of these articles?

If the bill is designed to prevent dealing in an article for future delivery when at the time of sale the vendor is not in actual possession of what he sells, it would seem that the metal brokers are in the same plight as the cotton and grain brokers.

It has been the custom for large producers of iron to make contracts covering one or two years when at the time the ore from which the iron was to be made had not been dug from the earth. In such cases there can be no doubt that they sold what they did not have and might never have. Perhaps an examination of the Hatch Bill would not be wholly unprofitable to the metal men.

Prices here are as last week: Southern, ex-steamer No. 1 F., $15.26; No. 2 F., $14.26; No. 3 F., $13.76; Gray Forge, $13 01. Northern, tide-water, No. 1 X, $15; No. 2 X, $14; No. 2 plain, $13.50; Gray Forge, $13. Southern irons are quoted, nominally, 26c. higher than Northern.

Spiegeleisen and Ferromanganese.—Ferro, $57 @$57.50. Spiegel, $26.50.

Steel Rails.—The market is dull at $29, and may decline somewhat within the next thirty days.

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@7¼c.; special grades, 13@18c.; crucible machinery steel, 4·75c.; crucible spring, 3·75c.; open hearth machinery, 2·25c.; open hearth spring, 2·30c.; tire steel, 2·25c.; toe calks, 2·25@2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

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

Buffalo. Jan. 26.

(Special Report by Rogers, Brown & Co.)

Inquiry for Lake Superior charcoal iron has been on a more liberal scale. Foundry irons for forward delivery continue in good demand. Shipments are lighter, however, and prices weak. The prevailing opinion among buyers is that prices will remain about as at present through the year. This impression, of course, to a certain extent curtails buying. We quote for cash 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 strong softener, No. 1, $15; Ohio strong softener, No. 2, $14; Jackson County silvery, No. 1, $17@$17.30; Jackson County silvery, No. 2, $16.30@$16 80; Lake Superior charcoal, $17.25; Tennessee charcoal, $18; Southern soft, No. 1, $14.15 @$14.40; Alabama car wheel, $19; Hanging Rock charcoal, $20.50.

Chicago. Jan. 26.

(From our Special Correspondent.)

Despite the tendency toward a lower range of values for iron, and while there is no marked improvement in any one particular branch, the buying of material of all kinds is slowly increasing, and the outlook more hopeful and promising. Still it must be confessed that business in all lines still lags, and this is more noticeable in finished iron and steel than it is in the crude article. The market as a whole may be called a "waiting one," as buyers with very few exceptions are taking material for known requirements—covering contracts in hand, with the market still in their favor. The sharp competition which intrudes itself on all business offering has induced producers to make lower prices than the conditions of the local coke pig iron market warrants, and several large contracts very recently placed by a heavy consumer resulted in as low prices as ever made here. Demand for manufactured iron is *in statu quo*. There is probably a little better inquiry from small consumers; jobbers are also sorting up stock, but the larger demand for bars is from the carbuilders. Plates, heavy and light sheets are quiet, but there is some inquiry for structurals. Old material of every description is dull.

Pig Iron.—There continues to be a fair market for coke iron, and prices on small amounts are fairly well maintained. On round lots, several of which have come up in the past week, the high standing of the buyers and the unusual favorable deliveries led to keen competition and brought about some concessions on the regular prices. It is not considered that these lower figures will have any serious or adverse effect on the general run of business, except as showing a greater desire on the part of some furnaces to secure first class orders, even if it is at lower rates. Still it is very evident that the trend is downward, as it is hard to make sales on a declining market, and there are a number of buyers, whose inquiries are open, who believe that they can gain a few points by waiting. Southern coke iron is quiet here as agents cannot meet current prices on those of local make. Lake Superior charcoal is in somewhat better demand and sales are made at our quotations. The tonnage of pig iron so far as placed is not up to expectations.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.07@$17.25; Lake Superior coke, No. 1, $13.75@$14.25; No. 2, $13.25@$13.75; No. 3, $13.25@$13; Lake Superior Bessemer, $14.50; Lake Superior Scotch, $14.25@$14 75; American Scotch, $16.50@$17; Southern coke, foundry, No. 1, $14.50; No. 2, $13.35; No. 3, $13.10; Southern coke, soft, No. 1, $13.35; No. 2, $13.10; Ohio silveries, No. 1, $17; No. 2, $16.50; Ohio strong softeners, No. 1, $17; No. 2, $16.50; Tennessee charcoal, No. 1, $17; No. 2, $16.50; Southern standard car wheel, $20@$21.

Steel Billets and Rods.—Nominal quotations are $23.75 for billets and $32.75 for rods.

Structural Iron and Steel.—Inquiry is fair but contractors are slow to close business. Prospective work is of large proportions. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, $2@$2.20; tees, $2.35@$2.45; universal plates, $1.95@$2; sheared plates, $1.95@$2; beams and channels, $2.15@2.35.

Plates.—There is no activity in the market for either present or future delivery. Desirable orders would be shaded and it is still difficult to obtain full supplies from eastern mills. Tubes are weak. Steel sheets, 10 to 14, $2.30@$2.40; iron sheets, 10 to 14, $2.20@$2.30; tank iron or steel, $2.05@$2.15; 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.—All large manufacturers are crowded with orders for prompt delivery and consumers who purchase for immediate wants have difficulty in securing early shipments. 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.—Mill and warehouse business are both quiet. 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.—Very little doing in mill lots outside of sorting up orders and special shapes for the agricultural implement trade. Quotations on iron sheets are 2·85c. for No. 27, common; steel sheets are 3c. Jobbers quote 3@3·10c. for iron and 3·10@3·15c. for steel, same gauge.

Bar Iron.—The general volume of small orders has increased; inquiry from car builders is fair, but the outlook for the very near future is not very encouraging to manufacturers. Mill business is quoted at 1·57½@1·60, with half extras, but the inside figures are shaded on a fancy specification carrying good extras. Jobbers quote 1·70@1·75, according to quantity.

Steel Rails.—A decided improvement is noted in the inquiry for heavy steel rails, and the tonnage booked during the past two weeks gives evidence that railroads are inclined to be more liberal in their patronage and in the belief that present quotations of $30 will be maintained. Railroad fastenings are quiet at 1·65@1·70c. for iron and steel splice bars; track bolts, square nuts, 2·55c.; hexagon, 2·65c.; spikes, 2·05@2·10c. according to style.

Nails.—Steel cut and wire nails are weaker, evidently following the downward trend of raw material. Mill orders are light, and cut are quoted at $1.57½@$1.60, and $1.65@$1.70 from stock. Wire are $1.50, base Chicago, and $1.65 from jobbers, in less than carloads.

Scrap.—Dealers report a very light demand from consumers and quotations nominal. No. 1 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 boring, $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.—Iron rails are in poor demand, offerings light, and, in the absence of any bids, quotations would be mere guess work. Consumers think $18 too high and holders want more. Old steel rails are inactive and lower for short, irregular pieces at $11.50, and selected long lengths $14.50. Car wheels are dull and easy at $14.25@$14.50.

Louisville. Jan. 21.

(Special Report by Hall Bros. & Co.)

The same general order of things prevails in iron circles. There has been no business worthy of mention and prices remain about the same. Money is apparently plentiful and large amounts of the year's earnings and dividends are being placed in substantial investment securities. Stocks in coke irons for the last month have increased a few thousand tons.

Hot Blast Foundry Irons.—Southern coke No. 1, $13.50@$13.75; Southern coke No. 2, $12.50@$12.75; Southern coke No. 3, $12@$12.25; Southern charcoal No. 1, $16@$17; Southern charcoal No. 2, $15.50@$16.

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

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

Philadelphia. Jan. 26.

(From our Special Correspondent.)

Pig Iron.—No decided change has occurred in the iron trade. Business is of restricted proportions. The finer grades of foundry are rather scarce. Forge irons are liberally offered but mill men are very slow to take hold. The heavy output is perhaps the reason. No one looks for a general advance of prices. The average quotations are $15 for No. 1, $14.50 for No. 2, and $13 for forge. Bessemer is almost unsalable even at $15@$16.

Steel Billets.—Selling prices, $24@$25. Business light. There is talk of higher prices and a more active demand, but the conditions are not favorable.

Muck Bars.—The depression continues. Mills are very short of work. Makers are soliciting business all around, and some orders have been taken at $23.75.

Merchant Bars.—Nothing but discouragement is reported. Manufacturers are working hard for business, but are not getting it. The lowest reported price was $1.50. The outlook is not encouraging.

Sheet Iron.—All mills are doing well, and inquiries are abundant. The larger buyers are closing, and the outlook is quite satisfactory. Light sheets are especially active.

Skelp.—Several small orders have come in this week.

Pipe.—The pipe makers count on heavy orders in February.

Structural Material.—The Phœnix Iron Company secured a large order from the Cramp people for structural material, amounting to nearly 3,000 tons. Several other orders are in sight. The rumor is abroad that prices will improve.

Plate and Tank.—The Cramps placed a large order for war ship material with western Pennsylvania iron and steel makers. Additional large orders will be placed very soon.

Steel Rails.—Quotations. $29. There are rumors that lower figures may be named. Business light.

Old Rails.—Iron, $18; steel, $15. A general improvement set in early in the week.

Scrap.—Quite an active demand has set in for all kinds of scrap.

Pittsburg. Jan. 26.

(From our Special Correspondent.)

Raw Iron and Steel.—The market, to use a common expression, was very much demoralized, prices for many descriptions very unsatisfactory. The improvement so long expected has not yet put in an appearance; there is a feeling among leading dealers that things are liable to make a sudden movement in the direction of activity. All the indications are favorable, but of course it will take time and a great deal of business before there is any appreciable advance in prices; nevertheless the business is certainly in sight, and it is only a question of time when it will assume definite shape and character. In all departments there is the same complaint which beyond doubt is well founded. There is no basis for predicting anything better in this respect until the volume of business is larger. The very first step must be more business. Obviously it is the sharp competition that keeps down prices and it will keep them down until the cause (scarcity of business) is removed. Very few consumers carry more stock than a few weeks' supply, purchasing material as they want it and depending upon the furnaces to make prompt deliveries. The delays in the delivery of iron, due to the recent severe weather, forcibly shows the extent to which consumers have been keeping their supplies of raw material down to the lowest possible condition for the improvement which furnacemen have confidently looked forward to as one of the probabilities of the early months of the present year. Even with the hand-to-mouth character of the demand during the past two or three months the consumption absorbed the increased output and in addition reduced stocks of unsold pig iron since October 1st by over 100,000 tons. The rolling mills generally are doing a fair amount of business in small lots, but the competition is close and prices in consequence are weak and unsettled. A late dispatch from the East says: "The level of iron values seems to have reached cost at last, for manufacturers are standing firm at present quotations and have refused orders at slightly lower prices.

"The volume of business still continues moderate and many of the mills are short of orders, but although there has been a good deal of hammering at the price list there has been no new weakness in pig iron. The demand continues to be for small lots, but few large orders being placed. The tone of the market is firmer, however, and the determination of sellers to refuse to make concessions has undoubtedly had a strengthening effect."

A general rosy outlook.—A well informed dealer has this to say: "The amount of business in hand or within close reach is from 25 to 40% greater than last year at this time." These are not matters of absolute secrecy, and by taking such as are public property it will easily be seen that this statement is warranted by the facts. Take shipbuilding—the yards all over the country, and especially at the Lakes—the yards were never so full of work. Take structural work, and the most superficial observer would see more buildings being put up and under contract than ever before.

Coke Smelted Lake and Native Ore.

3,500 Tons Bessemer, Feb., March	$13.25 cash.
3,000 Tons Bessemer, Feb	13.35 cash.
2,000 Tons Bessemer, Feb., March	13.20 cash.
1,000 Tons Bessemer	13.50 cash.
1,000 Tons Grey Forge	12 25 cash.
1,000 Tons Bessemer, Feb., March	13.40 cash.
1,000 Tons Grey Forge	12.25 cash.
1,000 Tons Bessemer, Feb., March	13 40 cash.
1,000 Tons Bessemer, Feb., March, April	13.25 cash.
650 Tons Grey Forge, Feb	12.25 cash.
500 Tons Mill Iron	12.25 cash.
500 Tons Bessemer, March, April	13.25 cash.
500 Tons Grey Forge	12.25 cash.
300 Tons Grey Forge	12.25 cash.
200 Tons No. 3 Foundry	13.00 cash.
100 Tons No. 1 Silvery	16.25 cash.
100 Tons No. 2 Silvery	15.40 cash.
100 Tons No. 1 Foundry	14.25 cash.
100 Tons No. 2 Foundry	13.25 cash.

Charcoal.

100 Tons Warm Blast	18.00 cash.
100 Tons Cold Blast	26.50 cash.
50 Tons No. 3 Foundry	19.00 cash.
50 Tons No. 2 Foundry	19.00 cash.

Steel Blooms, Billets and Slabs.

2,000 Tons Billets, Feb. and March, at mill	21.50 cash.
2,000 Tons Billets and Slabs, at mill	21.70 cash.
2,000 Tons Billets, next 3 mos., at mill	21.50 cash.
1,800 Tons Billets and Slabs, March, at mill	21.60 cash.
1,000 Tons Billets, at mill	21.75 cash.
500 Tons Slabs, March and April, at mill	21.50 cash.

Muck Bar.

500 Tons Neutral, Feb	24.35 cash.
400 Tons Neutral, Feb	24.25 cash.
350 Tons Neutral	24.30 cash.

Ferro-Manganese.

200 Tons 80%, delivered	59.60 cash.
180 Tons 80%, delivered	60.00 cash.

Iron Skelp.

800 Tons Wide Grooved	1 50	4 m.
400 Tons Narrow Grooved	1.50	4 m.
350 Tons Sheared Iron	1.75	4 m.

Steel Skelp.

350 Tons Wide Grooved	1.42½	4 m.

Steel Wire Rods 5 Gauge American.

850 Tons 5 Gauge American at mill	30.00 cash.

Sheet Bars.

350 Tons Sheet Bars at Mill	30.00 cash.

Blooms, Billets and Rail Ends.

350 Tons Bloom and Billet Ends	15.50 cash
800 Tons Billet Ends	15.35 cash.

Scrap Material.

800 Tons Light Steel Scrap, Net	13.25 cash.
350 Tons No. 1 R. R. W. Scrap	16.25 cash.
200 Tons Cut Pipe and Tank, Net	13.00 cash.
200 Tons Cast Borings, Gross	8.00 cash.
200 Tons Cast Scrap, Gross	12.00 cash.
100 Tons Steel Axles, Net	21.00 cash.
100 Tons Hammered Iron Axles, Net	24 00 cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 27th.

PRODUCTION OF BITUMINOUS COAL for week ending January 21st, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.	1,912	7,591	3,048
Cumberland, Md	52,784	155,998	78,142
Barclay, Pa	1,187	3,497	13,242
Broad Top, Pa	13,783	43,890	21,132
Clearfield, Pa	76,181	209,930	176,512
Allegheny, Pa	16,821	50,118	48,627
Beach Creek, Pa	30,786	97,770	96,858
Pocahontas Flat Top	38,965	116,179	102,754
Kanawha, W. Va	60,767	188,703	34,869
Total	292,286	883,976	575,184

WESTERN SHIPMENTS.

	1893. Week.	1893. Year.	1892 Year.
Pittsburg, Pa	26,271	72,362	62,101
Westmoreland, Pa	26,808	94,752	80,459
Monongahela, Pa	13,983	39,763	20,135
Totals	67,062	206,877	162,695
Grand totals	359,348	1,090,853	737,879

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending January 21st, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 89,085 tons; year 292 059 tons; to corresponding date in 1892, 371,175 tons.

Anthracite.

It is reported that the Finance Company of Pennsylvania, now a close ally of the combine, has made arrangements with the Pennsylvania Warehousing Company, by which the handling of Reading coal will be transferred to this company. To meet the demands for storage the Warehousing Company is to take the Reading yards at Port Richmond, Perth Amboy, South Plainfield and Schuylkill Haven, which will accommodate nearly 2,000,000 tons. Other storage yards may be secured as the demand for more space may require.

It seems that the plan will enable the Reading to secure advances from the Finance Company through receipts to be issued by the Warehousing Company against the coal in the yards. This system will thus be, to some extent, modeled on that of the American Pig Iron Storage Warrant Company and will be a good thing for the Reading.

It may not be quite so good for the general public if the Warehousing Company is to be used as another prop to sustain the combine satellite, revolving in its own ring about the main combine. The various, and, at times conflicting interests, that are bound up in this combine to enhance, artificially, the cost of fuel, will some day be compelled to submit to the public welfare. At present the combine is just as well combined as ever it was, and the meeting of the sales agents this month will not result in any material change in prices. The September circular will rule, the usual formalities of Pulsey & Co. will be observed, and an adjournment will be ordered after the meeting has decided that "nobody aint a doin' nothin'."

The stock of 657,868 tons at tide-water, with which we began the year, has been largely drawn upon during the exceptionally severe weather of the past three weeks. During the month of December there was a reduction of stocks of 76,585 tons, and this may be taken as indicating a reduction of even a greater amount during the present month. The severe weather, of course, reacted on the collieries and on the transportation lines, but during the past week it is possible that the depletion of stocks was made good.

The Reading Coal and Iron Company had 32 mines running last Saturday, and the indications now are that since that time a great deal of coal has been raised and prepared for market. The stock at tide-water points at the close of January 1890 was 1,139,927 tons, and in 1891 637,668 tons, and it is likely that at the close of this month the stock held will be smaller than for several years past.

The outlook for the trade during the next six months is very bright, but for the consumers it seems to be framed in black. The advance in price will probably remain steady for a while, and then fluctuate within narrow limits.

Bituminous.

There has been some improvement in transportation facilities, cars now coming back that should have been returned a month ago. Coastwise shipments are much hampered by ice and foul weather. Charter rates are not quoted, as the only available port, up to yesterday, was Port Reading. From Baltimore to Boston skippers are asking $2, and to Sound Ports $1.50, and tugs at Baltimore demand $40 for docking. From New York to Boston $1 to $1.25 is asked.

One of the large companies has bought Clearfield coal for $3.50 alongside, New York, and retailers have paid as much as $5 for Pocahontas. A demand for 1,000 tons of good soft coal met no response from sellers, as they did not have it and could not get it. The trade is not disturbed over the recent Nova Scotia "deal," as the total production of these mines last year was only 1,763,000, as against 1,849,000 in 1891.

When the new company takes hold it may introduce modern machinery and modern methods in the Nova Scotia mines, and may reduce the cost of mining below the present figure of $1.12@$1.25. The uncertain feature of the venture is the rigorous climate, which will forbid active operations for at least four months in the year.

Putting the cost of the coal on board at $1.25, which is probably too low, adding 75 cents freight and 75 cents duty—the cost of Nova Scotia coal alongside, Boston, will be $2.75. At this cost it can not interfere seriously with our coal, as Clearfield coal, or Cumberland, can be laid down at Port Reading or Philadelphia for $2.50. In spite of the magnitude of the enterprise said to be on foot with a view to opening the Cape Breton mines on a large scale, we can see no serious danger to our own mines.

NOTES OF THE WEEK.

A dispatch from Williamsport, Pa., says the first judicial decision in the Philadelphia & Reading consolidation case was rendered here late this afternoon by Presiding Judge Metzger of the Lycoming County courts. The opinion of the court is a voluminous document, covering all the great mass of testimony, and deciding every point in favor of the defendant companies.

It will be remembered that Mathias Arnot, of Elmira, brought suit to test the legality of the combine, his case being entered in the courts here about a year ago. The Hon. W. W. Hart was appointed Master, and he took a great deal of testimony. The case was decided by him in favor of the defendants, and the exceptions thereto were argued before Judge Metzger on December 30th. The decision rendered to-day will be followed by an appeal to the Supreme Court.

President McLeod, in speaking of the decision, said: "This is distinctly a triumph for the city of Philadelphia, as well as for the Philadelphia & Reading Railroad Company. It means millions of dollars annually to the commerce of this port, far greater expansion of the city's vast manufacturing industries, further development of her general business intercourse, and higher prestige as a metropolis. With the geographical conditions and the natural interests that surround them, the Lehigh Valley and Reading systems properly belong together, and the union of their interests gives to the Reading in many ways what is most required, and at the same time obtains for the Lehigh Valley that which it lacked before the consolidation, affording the vast interests along the line of the Reading a direct outlet to the West and Northwest through the great lakes, bringing the commerce of Buffalo at our doors here and establishing an intercourse of trade that cannot fail to expand rapidly the commercial and manufacturing interests of Philadelphia."

A dispatch from Halifax, N. S., says: The House of Assembly passed the Coal Syndicate bill at midnight. The discussion had been carried on without cessation since Tuesday.

The vote was on strict party lines, and stood 24 for the bill to 9 against. Five members are absent from the Province.

The argument used by the opposition throughout

was the danger of American monopoly, while the Government urged the advantage of the introduction of American capital and appliances.

Boston. Jan. 26.

(From our Special Correspondent.)

The coal market here is still very firm, but the excitement is less intense, as the weather the past few days has been quite mild and it looks as though a thaw were to start in. Anthracite coal, however, has sold higher since my last report, a cargo selling on the basis of $6 25 for stove. As to what price anthracite coal will bring in the next few days a statement would be merely speculative, as it all depends on the weather. The trade here is figuring on 10 days more stringency at least, as it will probably be fully that time before much anthracite coal will arrive here. Three or four days is allowed for the ice to break up sufficiently to allow vessels and steamers to pass, and then it will take quite a while for the vessels to get here. Vineyard Sound, which was so badly frozen, is in much better shape for the passage of vessels than it was. In the past few days several vessels that have been held in the ice were towed into Boston. They had anthracite aboard and the stock was eagerly sought for.

Retailers' stocks are undoubtedly low, and how much longer they can hold out depends solely on the receipts here. They are not receiving orders near as freely as they were, yet they continue large and they are considerably behind time on deliveries. They continue to extort from the public the prices we quoted last week, which are 75c. per ton too much. They will continue to ask these prices until the present stringency in coal is over. Some of the retail dealers here are out of stock, while others are nearing that point. The supply of coal in retailers' hands here is not near as ample as some would have you to believe. Their policy, however is well planned, as it is calculated to deceive the middlemen and speculators in coal, who are only too willing to play the game of extortion on them that they (the retailers) are now playing on the public. The coal combination's prices are nominally the same as last reported.

Quotations here are, f. o. b. prices at 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, $4.45; stove, $6; chestnut, $5.

The price of soft coal here has taken quite a jump during the week. Last week I stated spot bituminous coal would bring $5 per ton by the cargo. This week it has actually brought $6 per ton by the cargo and $6.50 in small lots. George's Creek coal is worth fully $6 50 on cars and some has sold for $6 75. Clearfield on cars is worth $6 per ton strong. In my last report I noted that several mill corporations in Lowell, Lawrence, and Waltham were practically out of coal, and would soon be obliged to shut down. Such seemed to be the case then. That they were short of coal there was no doubt, but they have managed to scrape up enough to keep them going. The Boston Manufacturing Company, of Waltham, has secured so much coal by their hustling that they now have several weeks' supply on hand. The Pacific Mills are undoubtedly very short of coal. The Tremont & Suffolk Mills, of Lowell, and the Pacific Mills, of Lawrence, are still short of coal. Among others with small supplies this week were the Washington Mills, of Lawrence, and the Russell Paper Company, of Lawrence. The manufacturing companies depending on Sound points for coal have had to come to Boston for their coal in the past week. The Dwight Manufacturing Company, of Chicopee, which usually draws its supplies from New Haven, had to come to Boston.

About the only arrivals of soft coal here this week were the steamer "Saturn" with 3,000 tons and the "Davenport" with 2,500 tons. The Boston & Maine R. R. Co. has had two barges arrive with from 1,300 to 1,400 tons of coal. Both the Old Colony and the N. Y. & N. E. River companies are short of coal and the same may be said of the Boston & Albany R. R. Co., at this end of the line.

Freight rates are firm and in a number of cases higher. From Philadelphia and Baltimore they are merely nominal. From the former port there is nothing coming, as the river is solidly frozen. It seems as though it would be a very foolish thing to charter vessels at the prices asked to-day, as a thaw is most apt to come very soon and rates would fall in consequence. It may be wise to charter at present prices if the coal is absolutely needed and the vessel is at the shipping port and the coal ready to be loaded at the time the contract is made, but this seems to be the only condition under which it would be.

The freight rates quoted here to-day are: From New York to Boston, $1.25@$1.50, the latter being asked while the former was the highest price actually paid; from Philadelphia, $2@$2.50 nominally; to Bath, $2@$2.50 nominally; to Providence, $2 nominally; from Baltimore, $2; from Newport News, $1.10; Sound Points, $1.

Retail prices are: Stove, $7; nut, $7; egg, $6.75; furnace, $6.50; Franklin, $8.25; Lehigh egg, $7; Lehigh furnace, $6.75; soft coal, $4.25@$5. Wharf prices, 50c. less than the foregoing.

The receipts of coal at the port of Boston for the week ending January 21st, were: 8,917 tons of anthracite, and 8,568 tons of bituminous, against 50,331 tons of anthracite and 11,830 tons of bituminous for the corresponding week last year. Since January 1st the receipts were 50,266 tons of anthracite and 36,065 tons of bituminous, against 81,753 tons of anthracite, and 27,405 tons of bituminous for the corresponding week last year.

Buffalo. Jan. 26.

(From our Special Correspondent.)

Continued cold weather causes a large trade in anthracite and bituminous coal locally, and dealers at all near-by points are sending in orders for immediate delivery of fuel. Anthracite is unchanged in price and bituminous is a shade higher and firm. The supply of the former is ample and of the latter enough to keep manufacturers going.

The bituminous coal producers, at their meeting in Buffalo a few days since, have thus far failed to connect with the railroads in their plans to advance the rates of transportation and the price of coal. Without the cooperation of the bituminous coal roads the producers are powerless to form a combination of interest that will be effective. If the price of coal is put up the producer who makes the transportation will do all the business. A difference in carrying rates of ten cents a ton would be sufficient to throw the business one way or the other, so that it will be seen that the railroads are a most essential factor in the matter. The factor that a few producers control their railroads also adds to the uncertainty of the situation.

The Bell, Lewis & Yates Coal Mining Company of this city, have purchased the property of the Hamilton Coal Company of Warren, Pa., owning 700 acres of land in fee simple, and 600 acres of leased lands in Jefferson County, Pa., at a cost of $138,000.

The Grand Trunk Railway of Canada have asked for bids to be sent in by February 8th, for soft coal required from April 1st, 1893, to March 31st, 1894, to Montreal, as follows: 360,000 tons to be delivered at either Suspension or International bridges; 30,000 tons, in company's yards at Detroit; 40,000 tons at Chandure Junction; 30 000 tons at Portland, Me.; 80,000 tons at Montreal; 50,000 tons at Brockville, and 45,000 tons at Point Edward; total, 635,000 tons.

It is reported that an immense coal storage house is to be erected in Chicago, where, if necessary, 1,500,000 tons of coal can be cared for, as all the large dealers of anthracite are making arrangements to carry large stocks in future

Rumors of trouble with the natural gas supply coming to our city from Canada, and the likelihood that before long this fuel would cease, has been very emphatically contradicted. The Provincial Natural Gas Company say that they have about 20 first-class wells in reserve should the present ones give out.

The officers of the Lockport, N. Y, Coal Exchange are not well pleased with the decision of the General Term confirming their conviction for conspiracy. It is understood that trouble is being experienced in Rochester between the wholesale and retail dealers.

Mr. A. R. Atkins, of this city, has been appointed general Western agent, with office at Buffalo, N. Y., in charge of the sale and distribution of the Philadelphia & Reading Coal and Iron Company's coal in the Western States, in Canada, and in New York State north of canal and the New York Central & Hudson River Railroad and west of Albany, and in Northern Pennsylvania and New York State west of Buffalo.

Col. Joseph H. Horton has been appointed sales agent of the Philadelphia & Reading Coal and Iron Company, with office at Rochester, N. Y., in charge of the sales of the company's coal in the following territory: Along the line of the New York Central & Hudson River Railroad and canal from Weedsport to Buffalo and south thereof, including the Fall Brook Railway, the New York, Lake Erie & Western Railroad, the Buffalo, Rochester & Pittsburg Railway, and other Lehigh Valley lines in Western New York and Pennsylvania north of Coxton.

Chicago. Jan. 26.

(From our Special Correspondent.)

From present appearances it is evident to the coal trade that stocks to be carried over will be of meager proportions, even those of the larger companies and several of the smaller state in so many words that they expect to be cleared out slick and clean inside of thirty to forty days. In this case they will be compelled to rely entirely upon all-rail shipments for further supplies. The heavy fall of snow in the west (six inches) January 24th, followed by colder weather, will again stimulate the already large buying movement of anthracite as well as bituminous coal. Receipts of all-rail coal are light, and every shipper is complaining, and they have just reason. The writer is credibly informed that coal loaded on cars at Buffalo two weeks ago has not yet been moved and is occasioning great inconvenience to shippers here. The fact of the matter is most of the railroads east as well as west were wholly unprepared for the severe weather and snowstorms of late, and as a consequence blockades of freight were unusually heavy. Another factor which must be taken into consideration is that locomotives during very cold weather can haul only about 60% of their ordinary capacity. Anthracite trade is active and the larger companies are shipping all the coal they can get cars for from dock. Those dependent on all-rail for supplies are very short, and the agent of one individual company had not a single car on track to-day. The tonnage being handled daily is a surprise to all. Retail trade is also active, and some of the more favorably situated yards are delivering to dealers 400 to 500 tons a day. Circular is steadily maintained.

Bituminous coal is in better demand than supply, the latter still being in very poor shape. Not a few of the heavier dealers and mine agents consider the situation even more critical than at any time, for the following reasons: While railroad companies, to a very great extent, have cleared up all the blockades of coal-delayed cars for this market for the past six weeks, and as the reports from Ohio, Indiana and Illinois indicate that very little coal has been mined during the past ten days in proportion to the normal tonnage, the result is that to-day not a shipper in the city of Chicago has more than a day's supply in sight and is practically dependent on the coal the railroads are bringing from the side tracks. In the event of the colder weather continuing, the only possible relief to manufacturers, railroads and heavy consumers during the existence of the cold snap must come from the stocks of anthracite now in Chicago. One of the most serious annoyances to the trade is the confiscation of coal, which is done either by the initial line or the western connection in transit to its destination. To illustrate, one shipper has had five different lots of coal intended for a Minnesota road "gobbled" by the eastern line, and the sixth consignment to the same party was seized by the western connecting line, to the great embarrassment and loss of the shipper, all within a couple of weeks. The delay in collections on these confiscations, to say nothing of the disappointment to the consignee, is too great to be computed by dollars and cents, as it is impossible to make the consignee believe what are *absolute facts* in these matters.

With regard to prices, it is less a question of that than it is ability to furnish coal. Hocking for spot delivery sells at $3.30@$3.45 and hard to get at any figure. Indiana block and Illinois lump is also sold away above circular.

Coke shipments continue light on account of the inability of railroads to furnish box cars. There is some scarcity in the market as foundries are taking in more work. Crushed coke continues in active demand by contractors and builders.

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. Jan. 26.

(From our Special Correspondent.)

Coal.—The outlook for the coal, at least the river portion, is a very dark one. All the rivers from the head waters of the Allegheny, Monongahela and Ohio are frozen to Cairo, all parts of the country are covered with snow, and should the coming break-up be accompanied with a big or steady rain it would certainly prove one of the most destructive ever known. Between the points named there are thousands of boats and barges loaded and empty that nothing could save. At Pittsburg and in the pools steam boats have been engaged breaking the ice; coal men don't anticipate large damage on that account. Coal mines along the river are out not from choice but from necessity, as boats at the mouth of the pit could not be moved on account of the ice. The general opinion is that the mines in the pools will resume work as circumstances will permit. The prices of coal at Cincinnati, Louisville and other points along the rivers are very steep and still going up; impossible to furnish anything like correct figures.

Connellsville Coke.—Production held up very well, but shipments fell away off. The drifting snow has crippled railroads to such an extent that it is impossible for them to deliver empties in time. In consequence of this shipments decreased fully 1,200 cars last week, the principal decrease being in Eastern shipments, which reached 800 cars. With the improved car supply the operators increased their production, supposing the supply would hold out, but they have been left with a big lot of coke stocked in their yards. Just at this time the furnace men want all the coke they can get and several have increased their orders. Prices have stiffened up.

Furnace coke is still quoted at $1.90 per ton, but there is little being sold at that figure: it is freely offered at $1.75, though the operators are shy about making long contracts ahead. Foundry and crushed coke continue to sell up to quotations; wages continue to be paid on the basis of $1.90 per ton. Shipment for the week aggregated 5,901 cars as follows: To Pittsburg and river tipples, 1,650 cars; points west of Pittsburg, 3,199 cars; points east of Connellsville, 1,129 cars, being a decrease of 1,166 cars compared with the previous week. Pittsburg shipments fell off 172 cars, and Western 435 cars. In the Eastern shipments there was a drop of 706 cars.

CHEMICALS AND MINERALS

NEW YORK, Friday Evening, Jan. 27.

Heavy Chemicals.—Generally speaking, the heavy chemical market has undergone no change of importance during the week under review. There has been a better inquiry for some of the chemicals and sales have been made more freely, both for immediate and for future delivery. With the advent of milder weather the difficulty which storm-bound

vessels experienced in unloading last week and the week before has been overcome. Prices are steady. 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@1·90c.; 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@1·05c.; American, ·90@·95c.; bleaching powder, 2·50c.

Acids.—There is nothing new to report in the acid market. The demand both for prompt and for future delivery continues good. Prices continue unchanged. We quote: Acid, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, $1.60@$2, according to quality; muriatic, 18°, 90c.@$1.10; 20°, $1@$1.25; 22°, $1.25@$1.50; nitric, 40°, $4; 42°, $4.50@$4.75; sulphuric, 90c.@$1.10; mixed acids, according to mixture; oxalic, $6.50@$7.25. Blue vitriol is quoted all the way from $3.25 to $3.75; glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—This market continues devoid of features of interest. There has been some business in spot goods, but futures are exceedingly quiet. Quotations show little change from last week. We quote: Best unmixed seconds, on the spot, $22; to arrive, February-March shipments, $20. Thirds are 75c.@$1 less.

Fertilizing Chemicals.—A fair volume of business has been done in this market during the past week. The demand continues good, especially from the South. The ammoniates, owing to their continued scarcity, remain high priced. The potash salts are in request, and contracts are being signed for 1893. Prices are firm. We quote this week: Sulphate of ammonia, $2.95@$2.97½ for bone goods and $3@$3.05 for gas liquor. Dried blood, $2.85@$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, $2.70@$2.85. Tankage, high grade, $29@$31; low grade, $24@$25. Bone tankage, $23.50@$24; bone meal, $23@$25. The price of double manure salts for 1893, for orders placed prior to January 31st, has been fixed by the syndicate as follows: New York and Boston, $1.10; Philadelphia, $1.12½; Charleston and Savannah, $1.15 cwt. basis, 48@50% in 50 ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis 90%: New York and Boston, $2.05; Philadelphia, $2.07½; Charleston and Savannah, $2.10. Sulphate of potash, 96-99%, basis 90%, is 4% higher.

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

Muriate of Potash.—During the week the arrivals amounted to 100 tons, all of which went into consumption. There is a better demand, but it is in a jobbing way only. Contracts are coming in slowly, but it is expected that the next three days will see more activity, owing to the closing of the contracting season on January 31st. Prices for 1893 on orders placed prior to January 31st are as follows: New York or Boston, $1.75; Philadelphia, $1.77½; Southern ports, $1.80. Prices on orders placed after January 31st will be 3c. higher per 100 lbs.

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.—The nitrate market continues firm, and prices are about the same as at the time of our last report. We quote: $2.22½@$2.25 for spot, and $1.72½@$1.75 for future shipments.

CURRENT PRICES.

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

Acid—Acetic, chem. pure.....16@.17
Commercial, in bbls. and cbys...015@.017
Carbonic, liquefied, ℔ lb..... ....18@.25
Chromic, chem pure, ℔ lb 1.60
for batteries..... .40
Hydrobromic, dilute, U. S. P..... .25
Hydrocyanic, U. S. P..... .45
Hydrofluoric..... .20
Alcohol—95%, ℔ gall.....$2.30@$2.40
Absolute.....$3.80
Ammoniated.....$2.80
Alum—Lump, ℔ cwt..... $1.75@$1.80
Ground, ℔ cwt..... .....$1.85@$1.90
Powdered, ℔ lb..... .....04½@.05
Lump ℔ ton, Liverpool..... ..... £5
Aluminum Chloride—Pure, ℔ lb..$1.25
Amalgamating solution, ℔ lb..... .60
Sulphate, ℔ cwt ..... $1.90@$2.50
Ammonia—Sul. in bbl. lots, ℔ lb..02½@.03
Carbonate, ℔ lb., English and German, .07½@.07¾
Muriate, white, in bbls., ℔ lb..... .08½
Aqua Ammonia—(in cbys) 18°℔ lb..03@.04
20°, ℔ lb.....04@.05
26°, ℔ lb..... 05@ 05½
Antimony—Oxymur, ℔ lb..... .04@.06
Regulus, ℔ lb..... .10@.11½
Argols—Red, powdered, ℔ lb..... .15
Arsenic—White, powdered ℔ lb..03@.03½
Red ℔ lb..... .05½@.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@.06½
Asphaltum—
Prime Cuban, ℔ lb..... .....04@.05
Hard Cuban, ℔ ton..... ....$28.00@$30.00
Trinidad, refined, ℔ ton...$30.00@$35.00
Egyptian and Syrian, ℔ lb.....05@.07½
Californian, at mine, ℔ ton $12.00@$26.00
at San Francisco, ℔ ton. $15.00@$29.00
Barium—Carbonate, pure, ℔ lb..... .45
Carbonate, commercial, ℔ lb..... .05@.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.... £9
Bromine—℔ lb.... ..... .15@0.2
Cadmium Minion—℔ lb..... $2.00
Cadmium Iodide—℔ lb..... $5.50
Chalk—℔ ton .... $1.40@$1.75
Precipitated, ℔ lb..... .05@.06
China Clay—English, ℔ ton..$13@$18.00
Domestic, ℔ ton..... .....$9@$11
Chlorine Water—℔ lb..... .10
Chrome Yellow—℔ lb..... .10@.25
Chrome Iron Ore—℔ ton, San Francisco..... .....$10.00
Chromalum—Pure, ℔ lb..... .40
Commercial, ℔ lb..... .12
Cobalt—Oxide, ℔ lb..... $1.00@$2.00
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ℔ lb. 03¼@.0 ½
" " extra..... .04½
Nitrate, ℔ lb..... .40
Copperas—Common, ℔ 100 lbs. .90@$1.00
Best, ℔ 100 lbs..... ....$1.35@$1.50
Liverpool, ℔ ton, in casks....£2@£2 10s.
Corundum—Powdered, ℔ lb.. .04½@.09
Flour, ℔ lb..... .03
Cryolite—Powdered, ℔ lb., bbl. lots. .07
Emery—Grain, ℔ lb. (℔ kg.)..... .04½@.05
Flour ℔ lb..... .02½@ 10
Epsom Salt—℔ lb..... 01@.01½
Feldspar—Ground, ℔ ton..$6.00@$10.00
Crude..... $2.00@$3 00
Fluorspar—Powdrd, No. 1, ℔ ton. $20@$30
Lump, at mine..... .....$6@$8
French Chalk—
Fuller's Earth—Lump, ℔ ton. $16@$20
Glauber's Salt—in bbls., ℔ lb...01@.01¼
Glass—Ground, ℔ lb..... ..... .10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g.
s. v., ℔ doz..... $5.50
Chloride and sodium, ℔ oz $6.00
15 gr., c. v., ℔ doz. $2.88
Oxide, ℔ oz..... .... $27.25
Gypsum—Calcined, ℔ bbl... $1.25@$1.50
Land Plaster..... .....
Iodine—Resublimed.....$3.30@$3 35
Iridium—Oxide ℔ lb..... $90
Iron—Nitrate, 40°, ℔ lb..... ..01@.01½
47°, ℔ lb..... .02@.02½
Kaolin—*See China Clay.*
Kieserite—℔ ton..... $9@$10
Lead—Red, American, ℔ lb ...06¾@.07½
White, American, in oil, ℔ lb. .06½@.07½
White, English, ℔ lb., in oil...08½@.08¾
Acetate, or sugar of, white..... .06@.06½
Granulated.....
Nitrate..... ... .09@.10
Lime Acetate—Am. Brown.....90@.95
" Gray. $1.75@$1.87½
Litharge—Powdered, ℔ lb.. .06¾@.07½
English flake, ℔ lb..... .09@.09½
Magnesite—Crude, ℔ ton of 1,015 kilos.....$14 75
Calcined, ℔ ton of 2,240 lbs.....$22.00
Brick, ℔ ton of 2,240 lbs.....$17.50
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@$2
Mineral Wool—Ordinary slag.. .01½
Ordinary rock..... .02½
Ground, ℔ ton.....
Mica—In sheets according to size, 1st quality, ℔ lb..... .25@$6.00
Naphtha—Black.....
Nitre Cake—℔ ton..... $10.00
Ochre—Rochelle, ℔ lb..... $1.10@$1.50
Washed Nat Oxf'rd, Lump, ℔ lb..06½@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb.07@.07½
Golden, ℔ lb..... .03@.05
Domestic, ℔ ton.. ..... $12@$20
Oils, Mineral—
Cylinder, light filtered, ℔ gal... .14@.16
Dark filtered, ℔ gal.... .10@.13
Extra cold test, ℔ gal. .2@.24
Dark steam refined, ℔ gal. 09@.12
Phosphorus—℔ lb..... .5@.55
Precip., red, ℔ lb..... 82@.85
white, ℔ lb..... 85@.90
Platinic Chloride—℔ oz..... $7
Plumbago—Ceylon, ℔ lb..... .04@.06
American, ℔ lb..... .05@.07
Potassium—Cyanide, ℔ lb., C. P. 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@.0
Bichromate, ℔ lb..... .10@.11½
Yellow Prussiate, ℔ lb..... .23
Red Prussiate, ℔ lb..... .42@.45
Pumice Stone—Select lumps, ℔ lb03½@.15
Original cks., ℔ lb.... ..... .01½@.02
Powdered, pure, ℔ lb..... .01½@.01¾
Pyrites—Non-cupreous, p. units. .12@.1
Quartz—Ground, ℔ ton.... .$6.00@$10.00
Rotten Stone, Powdered, ℔ lb..03¼@.03½
Lump, ℔ lb..... .....06@.07
Original cks, ℔ lb..... .04½@.05½
Rubbing stone, ℔ lb.. .....03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb.80½
Salt—Liverpool, ground, ℔ sack... .70
Domestic, fine, ℔ ton.....$7@$7.50
Common, fine, ℔ ton.....$4.50@$5
Turk's Island, ℔ bush..... .26@.2
Salt Cake ℔ ton..... $10.0 @$15.00
Saltpeter—Crude, ℔ lb..... .03 @.04
Soapstone—Ground, ℔ ton..... $8@$
Block and slab according to size
Sodium—Prussiate, ℔ lb.. ..... 22@ 24
Phosphate, ℔ lb..... .....04@.05
Stannate, ℔ lb... ..... .06@.12
Tungstate, ℔ lb..... .....
Hyposulphite, ℔ lb., in casks. .0235@.024
Strontium—Nitrate, ℔ lb.. .....@.04
Sulphur—Roll, ℔ lb..... .02½
Flour, ℔ lb..... .02⅝
Sylvinit, 27@35%, S.O.P., per unit.....40
Talc—Ground French, ℔ lb....01¼@.01¾
American No. 1, ℔ lb..... .01¼@.01¾
American No. 2..... 006
Terra Alba—French, ℔ lb..... .65@.80
English, ℔ lb.. ..... .6 @.80
American, No. 1, ℔ lb..... .60@.70
American, No. 2, ℔ lb..... .45@.50
Tin—Crystals, in kegs or bbls.... .14@.16
feathered or flossed. .2
Muriate, single..... .07@.0
Double or strong, 54° B.. ..... .16@.1
Oxymur, or nitro..... 1
Vermilion—Imp. English, ℔ lb. .85@.90
Am. quicksilver, bulk.....57 @.6
Am. quicksilver, bags.....58 @ .6
Chinese..... ....85 @$1.00
Trieste.....90 @ .9
American..... .....11½@ .12
Zinc White—Am., Dry, ℔ lb .04½@.05
Antwerp, Red Seal, ℔ lb.....06¾@.07
Paris, Red Seal, ℔ lb..... .07¾@.08
Muriate solution..... .06
Sulphate crystals, in bbls., ℔ lb. .03¾

THE RARER METALS.

Aluminum—℔ lb.....50@.6
Arsenic—(Metallic), per lb..... .4
Barium—(Metallic), per gram.... $4.0
Bismuth—(Metallic), per lb..... $2.25
Cadmium—(Metallic), per lb..... $1.0
Calcium—(Metallic), per gram....$10.0
Cerium—(Metallic), per gram. $7.5
Chromium—(Metallic), per gram. $1.0
Cobalt—(Metallic), per lb..... $6.0
Didymium—(Metallic), per gram. $9.0
Erbium—(Metallic), per gram..... $7.5
Gallium—(Metallic), per gram...$140.0
Glucinum—(Metallic), per gram..$12.0
Indium—(Metallic), per gram..... $9.0
Iridium—(Fused), per oz..... $12.0
Lanthanum—(Metallic), per gr..$10.0
Lithium—(Metallic), per gram....$10.0
Magnesium—(Powdered), per lb. $4.0
Manganese—(Metallic), per lb..... $1.1
Chem. pure, per oz. $10.0
Molybdenum—(Metallic), per gm .5
Niobium—(Metallic), ger gram... $5.0
Osmium—(Metallic), per oz..... $65.0
Palladium—(Metallic), per oz....$35.0
Platinum—(Plate), per oz..... $11.00
Potassium—(Metallic), per lb.....$28.0
Rhodium—(Metallic), per gram.. $5.0
Ruthenium—(Metallic), per gm.. $5.5
Rubidium—(Metallic), per gram. $2.0
Selenium—(Metallic), per oz..... $1.8
Sodium—(Metallic), per lb..... 50@.75
Strontium—(Metallic), per gm..... .6
Tantalum—(Metallic), per gram. $9.0
Telurium—(Metallic), per lb..... $5.0
Thallium—(Metallic), per gram.. .2
Titanium—(Metallic), per gram.. $2.2
Thorium—(Metallic), per gram...$17.0
Tungsten—(Metallic), per lb..... .8
Uranium—(Oxide), per lb.. ..... $5.0
Metallic, per gm..... .2
Vanadium—(Metallic), per gm...$22.0
Yttrium—(Metallic), per gram..... $9.0
Zirconium—(Metallic), per gr. .$2.5

STOCK MARKET QUOTATIONS.

Pittsburg, Pa. Jan. 19.

COMPANY.	B	A.
Bridgewater Gas Co.....	27.00	40.00
Bartlers Val. Gas	10.00	11.00
Enterprise Mining Co.....	2.50	3.00
Hidalgo Mining Co.....	5.50	6.50
Juster Mining Co.....	9.50	9.63
N. Y. & Clev. G. D....	50.00	51 50
Pennsylvania Gas	9.75	10.13
People's N. G. & P. Co.	15.13	15 25
Philadelphia Co	20.38	20.50
Wheeling Gas Co.....		18 00
W'house Air Brake Co.....126.50		127.50

Deadwood. Jan. 21.

	Bid.	Asked
Deadwood Terra.....	$1 30	$1.75
Double Standard.....	.22	.25
Golden Reward..... .	1.38	1.50
Hawkeye.....	.62	.65
Iron Hill	.15	.20
Isadora.....	.25	.30
Mutual.....	.01¼	.01¾
Ruby Bell.....	.20	.35
Seg. Iron Hill.....	.01	.01½
Tornado.....	.25	.30

St. Louis. Jan. 25.
The closing quotations were as follows:

	Bid.	Asked.
Adams.....	.60	.....
American & Nettie, Colo..	.20	.....
Bi-Metallic, Mont.....	....	9.00
Elizabeth, Mont.....	.41¼	.45
Granite Mountain, Mont...	4.50	5.00
Hope	4.00	.....
Pat Murphy, Colo.....	.05	.06
Leo.....	....	.01
Montrose Pl.....	.05	.10

Aspen, Colo. Jan. 23

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	.11
Bushwacker.....	.20	.23
Delia S.....	1.90	2.00
Empire Champion.....	....	.20
Gold Valley Placer....	..	.15
Little Annie.....	.10	.11
Mollie Gibson.....	7.25	7.50
Pontiac	.11	.14
Smuggler	16.50	17.00
St. Joe & Mineral Farm ..	.14	.15
U. S. Paymaster...	....	.20

Colorado Springs, Colo. Jan. 23.

	Bid.	Asked.
Anaconda Gold.....	.26½	.30
Buena Vista.....	..	.12½
Calumet.....	.06½	.07
Cleopatra.....	..	.20
Fanny Rawlins.....	.08	.08½
Gold & Globe.....	..	.07½
Isabella	.16½	
Jack Pot.....	.02½	03
Jeff Davis.....	.04	.05
Lembi	...	1.35
Manitou Park	...	.10
Matoa.....	..	.12
Ophir	....	.07
Orphan Bell.....	.04	.05½
Pearce-Jensen Reduct'n Co.	..	.05
Pharmacist.....	.24	.26
Work.....	.06	.07

Duluth. Jan. 20.

LISTED STOCK.

	Par.	Bid.	Asked
Biwabik M. Iron Co.....	100	38.00	40.00
Cincinnati Iron Co.....	25	2.05	2.10
Clark Iron Co.....	100	.10	.....
Great Northern Min. Co..	100	10.00	....
Kanawha Iron Co.....	100	....	....
Lake Superior Iron Co....	25	2.50	3.00
Little Mesaba Iron Co....	100		5.00
Mountain Iron Co	100	99.00	100.00
Minnesota Iron Co.....	100	....	....
Mesaba Moun. Iron Co....	100	22.50	23.50
Shaw Iron Co...	100	6.05	6.75
Security Land & Exp. Co.	10	....	....
Washington Iron Co.....	100	....	4.00

UNLISTED STOCKS.

Allegheny Iron Co.....	10	.60	2.00
Aurora Iron Co.....	..	....	1.00
Athens Iron Co....	100	...	10.00
Buckeye Iron Co.....	100	....	10.00
Chandler Iron Co.....	25	....	41.00
Chicago Iron Co.....	100	1.50	2.00
Charlestoa Iron Co.....	100	1.40	1.75
Champion Iron Co.....	100	.25	.80
Comstock Iron Co.....	100	.10	.80
Columbia Iron Co.....	100	....	10.00
Detroit Iron Co.....	25	....	.25
Dayton Iron Co	100	....	.35
Great Western Mining Co.	100	3.10	4.00
Horton Mining Co.....	10	.02	.10
Homestead Iron Co.....	25	.05	....
Kentucky Iron Co.....	100	.20	.40
Kakina Iron Co	25	....	2.50
Lackawanna Iron Co. ...100		.50	.65
McKinley Iron Co	100	28.50	.
Mesaba Chief Iron Co....	100	5.10	5.25
McCaskill Mining Co.....	10	.05	.15
Myrna Iron Co.....	10	....	.25
Manhattan Iron Co	100	....	.60
Northern Light Iron Co ..	100	.05	.10
New York Iron Co	25	....	.40
New England Iron Co...	100	....	2.25
Ohio Mining Co.....	100	8.50	9.00
Oneota Iron Co	100		11.00
Pennsylvania I. & S. Co..	100	....	.50
Bouchleau Iron Co	100	.25	1.00
Republic Iron Co.....	25	.70	1.25
Red Hematite Iron Co....	100	....	.20
Standard Ore Co	25	2.00	3.75
Towanda Iron Co.....	100	1.00	2.00
Zenith Iron Co....	25	....	2.90

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 21 H.	Jan. 21 L.	Jan. 23 H.	Jan. 23 L.	Jan. 24. H.	Jan. 24. L.	Jan. 25. H.	Jan. 25. L.	Jan. 26. H.	Jan. 26. L.	Jan. 27. H.	Jan. 27. L.	SALES.
Adams, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Alice, Mont.	...	...	...	...	...	...	...	...	...	...	...	...	...
Amador, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Atlantic, Mich.	...	...	...	...	...	...	...	...	...	...	...	...	...
Belcher, Nev.	...	...	...	...	...	...	...	...	1 25	...	...	...	50
Belle Isle, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Bodie Cons., Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Bos. & Mont., Mont	...	...	...	...	...	...	...	...	...	...	...	...	...
Breece, Colo.	...	...	...	...	...	...	.15	...	...	...	...	...	10
Bulwer, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Caledonia, S. Dak.	...	...	...	...	...	...	...	...	...	...	...	...	...
Catalpa, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Chrysolite, Colo.	...	...	...	...	...	...	.21	...	...	...	...	...	1,000
Colorado Central, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Commonwealth, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Comstock T. bonds, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
" scrip., Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Cons. Cal. & Va., Nev.	2.70	2.65	...	...	2.55	...	...	...	...	...	...	...	230
Crown Point, Nev.	.75	.70	...	...	...	...	...	...	...	...	...	...	200
Deadwood, Dak.	...	...	...	...	...	...	...	...	...	...	...	...	...
Enterprise.	...	...	...	...	...	...	...	...	...	...	...	...	...
Eureka, Cons., Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Father de Smet, Dak.	...	...	...	...	...	...	...	...	...	...	...	...	...
Freeland, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Gould & Curry, Nev.	...	...	.95	...	...	...	...	...	...	...	...	...	100
Grand Prize, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Hale & Norcross, Nev.	...	...	.95	...	...	...	...	...	...	...	...	...	100
Homestake, Dak.	...	...	...	...	...	...	...	...	...	...	...	...	...
Horn-Silver, Utah.	...	...	...	...	3.35	3.30	3.36	...	...	...	...	...	1,200
Independence, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Iron Hill, Dak.	...	...	...	...	...	...	...	...	...	...	...	...	...
Iron Silver, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Leadville Cons., Colo.	.21	...	.21	...	.21	...	...	...	...	...	...	...	2,600
Little Chief, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Martin White, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Mono.	...	...	...	...	...	...	...	...	...	...	...	...	...
Mt. Diablo, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Navajo, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
N. Belle Isle, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Ontario, Utah.	...	...	...	...	...	...	...	...	...	...	...	...	...
Ophir, Nev.	2.00	1.90	2.00	...	1.95	...	...	...	1.90	...	...	...	375
Overman, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Plymouth, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Quicksilver, Pref., Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
" Com., Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Quincy, Mich.	...	...	...	...	...	...	...	...	...	...	...	...	...
Robinson Cons., Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Savage, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Sierra Nevada, Nev.	1 30	...	1 30	...	1.35	...	...	...	...	...	...	...	420
Silver Cord, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver King, Ariz.	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Min. of L. Valley.	...	...	...	...	...	...	...	...	...	...	...	...	...
Small Hopes, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Standard Cons., Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Yellow Jacket, Nev.	70	...	80	75	75	...	...	...	...	...	...	...	600

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 21 H.	Jan. 21 L.	Jan. 23 H.	Jan. 23 L.	Jan. 24. H.	Jan. 24. L.	Jan. 25 H.	Jan. 25 L.	Jan. 26. H.	Jan. 26. L.	Jan. 27. H.	Jan. 27. L.	SALES
Alpha., Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Alta, Nev.	.25	...	...	...	...	...	...	...	...	...	...	...	200
American Flag, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Andes, Cal.	.15	...	...	...	...	...	...	...	...	...	...	...	200
Astoria, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Augusta, Ga.	...	...	...	...	...	...	...	...	...	...	...	...	...
" bonds.	...	...	...	...	...	...	...	...	...	...	...	...	...
Barcelona, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Belmont, Cal.	...	...	...	...	.20	...	...	...	.20	...	...	...	...
Best & Belcher, Nev.	1.40	1.35	1.40	...	...	...	...	...	1.40	...	...	...	5,100
Bonanza King, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	300
Brunswick, Cal.	...	...	.10	...	.11	.10	.11	.10	...	...	...	...	...
Bullion, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	2,900
Butte & Bost., Mont.	...	...	...	...	...	...	...	...	...	...	...	...	...
Castle Creek, Idaho.	...	...	...	...	...	...	...	...	...	...	...	...	...
Challar.	...	...	...	...	.60	...	...	...	...	...	...	...	...
Comstock T., Nev.	...	...	...	...	.09	...	.09	...	.10	...	.10	...	100
Con. Imperial, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	3,000
Con. Pacific, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Crescent, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Del Monte, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
El Cristo, Rep. of Col.	.50	...	...	...	.45	...	.50	...	.50	...	.50	...	1,300
Emmett, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Exchequer, Nev.	.30	.29	...	...	...	...	...	...	...	...	...	...	500
Independence, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Jnia, Nev.	.13	.12	...	...	...	...	...	...	...	...	...	...	...
Justice, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	200
Kentuck, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Lacrosse, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Lee Basin, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Mexican, Nev.	1.50	...	1.55	...	...	...	...	...	1.45	...	...	...	...
Middle Bar, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	300
Monitor, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Monte Cristo, N. S. of C.	2.40	...	2.40	...	2.55	2.40	2.60	2.50	2.60	2.55	2.75	2.65	7,530
Nevada Queen, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
N. Standard, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
N. Commonwealth, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Occidental, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Oriental & Miller, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Phœnix Lead, Colo.	...	...	...	...	...	...	...	...	...	...	...	...	...
Phœnix of Ariz.	.57	...	...	...	...	...	.51	...	.50	...	...	...	1,300
Potosi, Nev.	1.55	...	...	...	...	...	...	...	...	...	...	...	100
Rappahannock, Va.	...	...	...	...	...	...	...	...	...	...	...	...	...
S. Sebastian, S. Sal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Santa Fe, N. M.	...	...	...	...	...	...	...	...	...	...	...	...	...
Scorpion, Nev.	.20	...	...	...	...	...	...	...	...	...	...	...	...
Seg. Belcher, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	300
Shoshone, Idaho.	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Hill, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Sullivan Con., Dak.	...	...	...	...	...	...	...	...	...	...	...	...	...
Sutro Tunnel, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	...
Syndicate, Cal.	...	...	...	...	...	...	...	...	...	...	...	...	...
Tornado Con., Nev.	.08	...	...	...	...	...	...	...	...	...	...	...	...
Union Cons., Nev.	1 15	...	1.19	...	...	...	...	...	...	...	...	...	500
Utah, Nev.	...	...	...	...	...	...	...	...	...	...	...	...	125

*Ex-dividend. †Dealt in in New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 6,885. Non-dividend shares sold, 20,775
Total shares sold, 27,660.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan 20.	Jan. 21.	Jan. 23.	Jan. 24.	Jan. 25.	Jan. 26.	SALES.
Atlantic, Mich.	...	...	10.25	...	...	...	50
Bodie, Cal.	...	...	...	...	...	...	...
Bonanza Development.	...	...	...	...	...	...	...
Bost. & Mont., Mont.	...	...	34.00	33.75 34.00 33.88	34.00 33.50	33 50	1,201
Breece, Colo.	...	...	...	...	...	...	...
Calumet & Hecla, Mich.	...	320	310	315 312	312 ... 312	312 310	228
Catalpa, Colo.	...	...	...	...	...	...	...
Central, Mich.	...	...	...	...	...	...	...
Cœur d'Alene, Id.	...	...	...	...	...	...	...
Con. Cal. & Va., Nev.	...	...	...	...	...	...	...
Dunkin, Colo.	...	...	...	...	...	...	...
Eureka, Nev.	...	...	...	...	...	...	...
Franklin, Mich.	...	...	...	13 00	...	...	200
Honorine, Utah.	...	...	...	...	...	...	...
Horn Silver, Utah.	...	...	...	...	...	...	...
Kearsarge, Mich.	...	...	...	12 75 12.00	...	11 50	255
Lake Superior, Iron.	...	...	...	...	25 00	...	100
Little Pittsburg, Colo.	...	...	...	...	...	...	...
Minnesota Iron, Minn.	...	...	...	...	...	...	...
Napa, Cal.	...	...	...	5.75	...	...	150
Ontario, Utah.	...	...	...	...	...	...	...
Osceola, Mich.	...	...	37.00	35.63 37 50 37.00	36.50 ...	36 25	611
Quincy, Mich.	...	...	...	187 ...	136 135	...	33
Ridge, Mich.	...	...	...	...	...	...	...
Sierra Nevada, Nev.	...	...	...	...	...	...	...
Silver King, Ariz.	...	...	...	...	...	...	...
Stormont, Utah.	...	...	...	...	...	...	...
Tamarack, Mich.	...	...	155	...	...	...	130
Tecumseh, Mich.	...	...	...	...	...	...	...

NAME OF COMPANY.	Jan 20.	Jan. 21.	Jan. 23.	Jan. 24.	Jan. 25.	Jan. 26.	SALES.
Allouez, Mich.	...	...	...	...	...	...	...
Arnold, Mich.	...	...	...	...	...	...	...
Aztec, Mich.	...	...	...	...	...	...	...
Brunswick, Cal.	...	...	...	...	...	...	...
Butte & Boston, Mont.	...	...	11.25	11.25	11 50	11.25	...
Centennial, Mich.	...	...	...	...	8.00	8.00	300
Colchis, N. Mex.	...	...	...	...	...	...	350
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.	...	...	...	...	...	...	...
Oriental & M., Nev.	...	...	...	...	...	...	...
Phœnix, Ariz.	...	...	...	...	...	...	...
Pontiac, Mich.	...	...	...	...	...	...	...
Rappahannock, Va.	...	...	...	...	...	.30	200
Santa Fe, N. Mex.	...	...	.02	...	...	.05	1,000
Shoshone, Idaho.	...	...	...	...	...	...	...
South Side, Mich.	...	...	...	...	...	...	...
Tamarack, Jr, Mich.	...	...	...	...	...	...	...
Washington, Mich.	...	...	...	...	...	...	...
Wolverine, Mich.	...	...	...	...	1.75	1.50 1.75	... 840

Dividend shares sold, 2,978. Non-dividend shares sold, 3,290 Total shares sold, 6,268

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.	$1,000,000	$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	25	*	...	975,000	Nov. 1891 .06¼
4	Alma & Nel Wood., G	Idaho	30,000	10	*	...	60,000	Jan. 1889 .50
5	Amador, G.	Cal.	1,250,000	5	*	...	31,250	Aug. 1890 .12½
6	American, G	Colo.	3,000,000	10	*	...	225,000	Mar. 1892 .05
7	American Belle, s. G. C	Colo.	2,000,000	5	*	...	50,000	April 1891 .12½
8	Americ'n & Nettie, G. S	Colo.	...	300,000	...	...	175,000	Mar. 1892 .05
9	Atlantic, C.	Mich.	1,000,000	40,000	25	280,000 April 1875	$1.00	700,000 Feb. 1891 1.00
10	Argenta, S.	Nev.	10,000,000	100,000	100	335,000 July. 1889	.10	40,000 Feb. 1880 .20
11	Argyle, G.	Colo.	1,000,000	1,000,000	1	*	...	20,000 Mar. 1892 .01
12	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10	*	...	760,000 Sept. 1892 .10
13	Aurora, I.	Mich.	2,500,000	100,000	25	...	...	455,000 June 1892 1.00
14	Badger, S.	Ont.	250,000	50,000	5	...	...	37,500 Mar. 1890 .25
15	Bald Butte	Mont	250,000	250,000	1	...	...	72,500 Mar. 1892 .03
16	Bates Hunter, S. & G.	Colo.	1,000,000	1,000,000	1	...	...	... Dec. 1891 .00¾
17	Belle Isle, S.	Nev.	10,000,000	100,000	100	220 00 Aug. 1892	.10	300,000 Dec. 1879 .25
18	Belcher, S. G.	Nev.	10,400,000	104,000	100	3,16 000 May 1892	.25	15,297,000 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	30,000 Aug. 1889	.25	190,000 Oct. 1892 .05
27	Bunker Hill & S. S. L.	Idaho	3,000,000	300,000	10	*	...	150,000 Oct. 1888 .06⅔
28	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000 May. 1885	.15	192,000 Oct. 1890 .08
29	Calliope, S.	Colo.	1,000,000	1,000,000	...	...	...	140,000 Jan. 1891 .00¾
30	Calumet & Hecla C	Mich.	2,500,000	100,000	25	1,200,000	...	38,850,000 Dec. 1892 5 00
31	Centen'l-Eureka, S. 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	1,971,300 Feb. 1891 1.00
33	Champion, G	C	...	34,000	10	...	...	114,900 Dec 1892 .10
34	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*	...	1,650,000 Dec. 1884 .25
35	Clay County, G.	Colo.	200,000	200,000	1	*	...	56,000 Nov. 1891 .02
36	Clinton Con, G.	Cal.	5,000,000	100,000	5	...	...	80,000 Nov. 1891 .10
37	Coeur 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	Cortes, S.	Nev.	1,500,000	300,000	05	*	...	687,000 Mar. 1892 .50
47	Crescent, S. L. G.	Utah.	15,000,000	600,000	25	60,000 Oct. 1892	.10	238,000 Oct. 1888 .03
48	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,700,000 Sept. 1892	.2	1,898,000 Jan. 1875 2.00
49	Cumberland, L. S.	Mont.	5,000,000	500,000	10	*	...	15,000 Nov. 1890 .03
50	Daly, S. L.	Utah	3,000,000	150,000	20	...	...	2,655,000 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	...	...	550,000 Oct. 1892 .25
54	Derbec B. Grav., G.	Cal.	10,000,000	100,000	100	100,000 Sept. 1892	.10	60,000 Aug. 1891 .10

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amt. of last
1	Alliance, S. G.	Utah.	$100,000	$1	$125,000	Feb. 1891 .25
2	Allouez, C.	Mich.	2,000,000	25	737,000	Jan. 1890 .75
3	Alpha Con., G. S.	Nev.	3,000,000	100	209,000	Sept. 1892 .10
4	Alta, S.	Nev.	10,080,000	100	3,369,880	Jan. 1892 .10
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.	3,375,000	169,000	2	...
12	Astoria, G.	Cal.	200,000	100,000	5	...
13	Atlanta, G. S.	Idaho	3,250,000	650,000	25	...
14	Barcelona, G.	Nev.	5,000,000	300,000	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	2,800,000 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, S.	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	Carlsa, G.	Wy.	500,000	100,000	2	*
34	Carnpano, G. S. L. C.	Ven.	200,000	100,000	2	*
35	Cashier, G. S.	Colo.	500,000	250,000	100	*
36	Challenge Con., G. S.	Nev.	5,000,000	50,000	10	...
37	Cherokee, G.	Cal.	1,500,000	150,000	100	...
38	Chollar, S. G.	Nev.	11,200,000	112,000	2	1,820,000 May. 1892 .50
39	Cleveland, T.	Dak.	1,000,000	500,000	10	*
40	Colchis, S. G.	N. M.	500,000	150,000	5	...
41	Colorado, S.	Colo.	1,625,000	325,000	1	...
42	Comstock, S.	Utah.	1,250,000	250,000	100	...
43	Comstock Tun.	Nev.	10,000,000	100,000	100	...
44	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	35,000 Mar. 1887 .15
45	Con. New York, S. G.	Nev.	5,000,000	100,000	50	2,062,500 Jan. 1892 .25
46	Con. Pacific, G.	Cal.	6,000,000	60,000	100	110,000 Mar. 1892 .10
47	Con. Silver, S.	Mo.	2,500,000	250,000	10	198,000 June 1890 .10
48	Cordova Union, G.	Cal.	1,000,000	200,000	5	...
49	Crescent, S. L.	Colo.	3,000,000	300,000	10	*
50	Crocker, S.	Ariz.	10,000,000	100,000	100	...
51	Crowell, G.	N. C.	500,000	500,000	1	165,000 Aug. 1892 .05
52	Dahlonega, G.	Ga.	250,000	250,000	1	...
53	Dandy, S.	Colo.	5,000,000	500,000	10	*
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.		
56	Dexter, g. s	Nev..	1,000,000	100,000	10	....				80,000	Aug..	1892	.25
57	Dunkin, s. l.	Colo..	5,000,000	200,000	25	*				390,000	Oct..	1889	.05
58	Elkhorn, s. l.	Mont.	1,000,000	200,000	5	*				885,545	Dec.	1892	.50
59	Enterprise, s.	Colo..	100,000	10,000	10	*				700,000	Dec.	1892	.10
60	Eureka Con., s. l.. g.	Nev...	1,000,000	50,000	100	550,000	June	1889	.50	5,017,500	Jan	1892	.25
61	Evening Star, s. l.	Colo..	500,000	50,000	10	*				1,450,000	Dec.	1889	.2
62	Father de Smet, g.	Dak..	10,000,000	100,000	100	200,000	Nov..	1878	1.00	1,125,000	Dec..	1885	.20
63	Franklin, c.	Mich..	1,000,000	40,000	25	220,000	June	1871	......	1,106,000	July	1892	2.00
64	Freeland, s. g.	Colo..	5,000,000	200,000	25	*				190,000	July.	1886	.10
65	Garfield Lt., g. s.	Nev..	500,000	100,000	5	....				90,000	April	1888	.12½
66	Glengarry	Mont.	1,000,000	100,000	10	....				10,000	June	1891	.10
67	Gold Rock	Colo..	500,000	500,000	1	....				....	Dec..	1891	.01
68	Golden Reward	S.Dak	1,250,000	250,000	5	....				65,000	Dec.	1892	.02
69	Gould & Curry, s. g..	Nev...	10,800,000	108,000	100	4,591,200	June	1892	.25	3,826,800	Oct..	1870	10.00
70	Grand Prize, s.	Nev...	10,000,000	100,000	100	785,000	Jan..	1890	.30	495,000	Mar.	1884	.25
71	Granite, s. l.	Idaho	500,000	500,000	1	*				83,400	Nov..	1890	.02
72	Granite Mountain, s.	Mont.	10,000,000	400,000	25	....				12,120,000	July.	1892	.20
73	Great Western, l. q..	Cal...	5,000,000	50,000	100	....				394,861	Dec.	1892	.25
74	Green Mountain, g..	Cal...	1,250,000	125,000	10	*				212,000	Nov..	1881	.07½
75	Hale & Norcross, g. s.	Nev...	11,200,000	112,000	100	5,534,800	Aug.	1892	.50	1,822,000	Aug.	1888	.50
76	Hecla Con., s. g. l. c.	Mont.	1,500,000	30,000	50	....				1,920,000	Dec.	1892	.50
77	Hel'a Mg.& Red.,s.l.g.	Mont.	3,315,000	663,000	5	*				197,970	July.	1886	.06
78	Helena & Frisco, s.l.	Idaho	2,500,000	500,000	5	....				170,000	July..	891	.02
79	Helena & Victor	Mont.	1,000,000	200,000	5	....				80,000	May..	1891	.05
80	***Holmes, s.	Nev...	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886	.25
81	Homestake, g.	Dak..	12,500,000	125,000	100	200,000	July.	1878	1.00	4,911,250	Jan..	1893	.25
82	Honorine, s. l.	Utah.	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887	.05
83	Hope, s.	Mont.	1,000,000	100,000	10	*				358,252	Jan.	1893	.25
84	Horn-Silver, s. l.	Utah.	10,000,000	400,000	25	*				4,650,000	Dec.	1892	.12½
85	Hubert, g.	Colo..	1,000,000	1,000,000	1	*				247,000	Dec..	1889	.00½
86	Idaho, g.	Cal...	310,000	3,100	100	....				5,419,250	Dec.	1892	2.50
87	Illinois, s.	N. M..	100,000	100,000	.1	*				45,000	April	1889	.20
88	Iron Hill, s.	Dak..	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov..	1887	.07½
89	Iron Mountain, s.	Mont.	5,000,000	500,000	10	*				215,000	Aug..	1892	.03
90	Iron-Silver, s. l.	Colo..	10,000,000	500,000	20	*				2,500,000	April	1889	.20
91	Jack Rabbit, g	Cal.	10,000,000	100,000	100	100,000	Sept.	1892	.10	260,000	Aug.	1891	.10
92	Jackson, g. s	Nev..	5,000,000	50,000	100	237,500	Nov..	1880	.20	60,000	Jan.	1891	.10
93	Kearsarge, c.	Mich..	1,000,000	40,000	25	190,000	Oct..	1887	1.00	80,000	Jan.	1890	2.00
94	Kennedy	Cal...	10,000,000	100,000	100	....				387,000	May..	1892	.15
95	Kentuck, s. g	Nev..	3,000,000	30,000	100	454,180	Oct..	1891	.15	1,350,000	Dec.	1886	.10
96	La Plata, s. l.	Colo..	2,000,000	200,000	10	*				610,000	Sept.	1882	.30
97	Leadville Con., s. l.	Colo..	4,000,000	400,000	10	*				304,000	May..	1892	.03
98	Lexington, g. s.	Mont.	4,000,000	40,000	100	*				609,000	Jan..	1890	2.00
99	Little Chief, s. l.	Colo..	10,000,000	200,000	50	*				820,000	Dec..	1890	.05
100	Little Rule, s.	Colo..	500,000	500,000	1	....				220,000	Dec..	1891	.02
101	Maid of Erin	Colo..	3,000,000	600,000	5	....				557,757	April	1892	.25
102	Mammoth, s. l. c.	Utah	10,000,000	400,000	250	110,000	......	1882	.25	1,040,000	Dec...	1891	.10
103	Martin White, s.	Nev..	10,000,000	100,000	100	1,275,000	Jan..	1892	.25	140,000	Dec..	1886	.25
104	Mary Murphy, s. g.	Colo..	350,000	3,500	101	*				175,000	May..	1888	5.00
105	Matchless, s. l	Colo..	500,000	500,000	1	*				15,000	Feb...	1890	.00½
106	Maxfield	Utah.	3,000,000	300,000	10	....				117,000	April	1892	.03
107	Mayflower, d. gravel	Cal	1,000,000	100,000	10	....				100,000	Dec..	1892	.25
108	May Mazeppa, s. l.	Colo..	1,000,000	100,000	1	....				205,000	Oct..	1891	.03¾
109	Minas Prietas, g. s.	Mex..	1,000,000	100,000	10	*				350,000	Dec...	1890	.50
110	Minnesota, c.	Mich..	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876	......
111	Mollie Gibson, s.	Colo..	5,000,000	1,000,000	5	....				2,850,000	Jan	1893	15
112	Monitor, g.	S.Dak	2,500,000	250,000	10	....				45,000	Oct..	1890	.03
113	Mono, g.	Cal...	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar	1886	.25
114	Montana, Lt., g. s.	Mont.	3,300,000	660,000	5	*				2,619,075	June.	1891	12½
115	Morning Star, s. l.	Colo..	1,000,000	100,000	10	....				925,000	April	1891	.25
116	Morning Star Drift, g	Cal..	240,000	2,400	100	....				111,800	Dec...	1892	3.00
117	Moulton, s. g.	Mont.	2,000,000	400,000	5	*				410,000	Nov.	1892	.07½
118	Mt. Diablo, s.	Nev..	5,000,000	50,000	100	137,500	June	1880	2.00	210,000	July.	1891	.20
119	Napa, q.	Cal...	700,000	100,000	7	....				520,000	Jan..	1893	.20
120	Navajo, g. s.	Nev..	10,000,000	100,000	100	520,000	May.	1891	20	229,950	April	1889	.10
121	Newton	Cal...	10,000,000	100,000	100	....				10,000	May..	1891	.05
122	New California, g.	Colo..	800,000	160,000	5	*				48,800	May..	1890	.12½
123	New Guston, s.	Colo..	550,000	110,000	5	....				1,877,500	April	1892	.75
124	North Banner Con..	Cal...	1,000,000	100,000	10	....				20,000	July..	1891	.05
125	North Commonw'th	Nev..	10,000,000	100,000	10	....				25,000	June.	1891	.25
126	N. Hoover Hill, g. s..	N. C.	300,000	120,000	2½	*				30,000	Dec..	1885	.06½
127	North Belle Isle, s.	Nev..	10,000,000	100,000	100	474,689	Nov.	1892	.10	230,000	May.	1888	.50
128	North Star, g.	Cal..	1,000,000	100,000	10	....				350,000	Dec..	1892	.50
129	Omaha Cons., g.	Cal...	2,400,000	24,000	100	....				30,000	May..	1892	.15
130	Ontario, s. l.	Utah	15,000,000	150,000	100	....				13,175,000	Oct..	1892	.50
131	Ophir, g. s.	Nev..	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	Jan..	1880	1.00
132	Original, s. c.	Mont.	1,500,000	60,000	25	*				138,000	Jan..	1889	.05
133	Oro, s. l. g.	Colo..	500,000	100,000	5	....				95,000	July,	1890	.20
134	Osceola, c.	Mich..	1,250,000	50,000	25	480,000	April	1876	1.60	1,697,500	Dec.	1892	1.00
135	Pacific Coast, b.	Cal...	1,500,000	15,000	100	....				360,000	Dec.	1892	1.00
136	Parrot, c.	Mont.	1,800,000	180,000	10	....				1,405,385	Dec.	1892	.10
137	Petro	Utah.	10,000,000	10,000	100	....				17,500	July.	1891	.75
138	Plumas Eureka, g.	Cal..	1,406,250	140,625	10	....				2,643,559	April	1892	.18
139	Plymouth Con, g.	Cal...	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
140	Poorman, g. s	Idaho	375,000	300,000	125	*				68,260	Sept	1892	...
141	Quicksilver, pref., q.	Cal..	4,300,000	43,000	100	....				1,825,911	June	1891	1.25
142	" com., q	Cal...	5,700,000	57,000	100	....				645,867	July.	1882	.40
143	Quincy, c.	Mich..	1,250,000	50,000	25	200,000	Dec..	1862		6,470,000	Feb.	1893	3.00
144	Red Cloud	Idaho	1,000,000	200,000	5	....				153,000	Dec.	1892	.10
145	Reed National, s. g..	Colo..	500,000	500,000	1	*				50,000	Dec..	1890	.01
146	Retriever, l.	S.Dak	1,250,000	250,000	5	....				20,000	Aug..	1891	.03
147	Rialto, g.	Colo..	300,000	300,000	1	*				50,250	April	1892	.01½
148	Richmond, s. l.	Nev..	1,350,000	54,000	25	*				4,346,325	Aug..	1891	.25
149	Ridge, c.	Mich..	500,000	20,000	25	219,939	Mar.	1886	50	99,785	Feb..	1880	.50
150	Robinson Con., s. l..	Colo..	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
151	Running Lode, g.	Colo..	1,000,000	1,000,000	1	*				36,000	May.	1892	.00 1-10
152	Savage, s.	Nev..	11,200,000	112,000	100	6,772,000	Feb..	1892	.50	4,460,000	June	1869	3.00
153	Sheridan, s. g.	Colo..	300,000	3,000	100	*				300,000	Oct..	1891	2.50
154	Shoshone, g.	Idaho	150,000	150,000	1	....				7,500	April	1883	.01
155	Sierra Buttes, g.	Cal..	2,225,000	122,500	10	....				1,529,307	Oct.	1892	.18
156	Sierra Nevada, s. g..	Nev..	10,000,000	100,000	100	6,411,910	June	1892	.25	102,000	Jan..	1871	1.00
157	Sierra Nevada, s. l..	Idaho	1,000,000	1,000,000	1	*				40,000	May..	1889	.02
158	Silent Friend	Colo..	500,000	500,000	1	....				60,000	Aug..	1891	.02½
159	Silver Cord, s. l. g.	Colo..	4,500,000	450,000	10	....				265,000	April	1889	.10
160	Silver King, s.	Ariz..	10,000,000	100,000	100	130,000	Nov.	1890	.30	1,950,000	July	1887	.25
161	Silver Mg. of L.V., s.l.	N. M..	500,009	500,000	1	....				300,000	Dec..	1891	4.05
162	Silde	Colo..	500,000	5,000	100	....				20,000	Nov..	1891	4.00
163	Small Hopes Con., s.	Colo..	5,000,000	250,000	20	*				32,00,000	Nov..	1892	.15
164	Spring Valley, g.	Cal...	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan..	1881	.25
165	Standard, g. s.	Cal...	10,000,000	100,000	100	100,000	June	89	.50	3,645,000	Dec...	1892	.10
166	Stormont, s.	Utah.	500,000	500,000	1	*				155,000	Nov.	1881	.05
167	St. Joseph, l.	Mo..	1,500,000	150,000	10	*				1,974,000	Dec..	1890	.02
168	Swansea, g. s.	Colo..	600,000	60,000	10	....				27,000	Mar.	1892	.10
169	Tamarack, c.	Mich..	1,250,000	50,000	25	520,000	Aug.	85	3.00	3,160,000	Oct..	1892	.00
170	Teal & Poe	N. M..	150,000	150,000	1	....				9,000	Nov.	1891	.01½
171	Tombstone, g. s. l.	Ariz..	12,500,000	500,000	25	*				1,250,000	April	1882	.10
172	United Verde, c.	Ariz..	3,000,000	300,000	10	*				207,500	Jan..	1892	.10
173	Viola Lt., s. l.	Idaho	750,000	150,000	5	....				337,500	Nov.	1888	.37½
174	Ward Con., s.	Colo.	2,000,000	200,000	10	....				20,000	Dec.	1889	.05
175	Woodside, s. l.	Utah	100,000	100,000	10	....				25,000	Oct..	1889	.25
176	W. Y. O. D.	Cal..	30,000	15,000	2	22,500	May.	1891	.10	42,000	Dec.	1892	.10
177	Yankee Girl, s.	Colo.	1,300,000	260,000	5	....				1,405,000	April	1891	1.50
178	Yellow Jacket, g. s.	Nev	12,000,000	120,000	100	5,808,000	Sept.	1892	.25	2,184,000	Aug.	1871	1.50
179	Yosemite No. 2	Utah.	1,000,000	100,000	10	....				25,000	Oct..	1891	.05
180	Young America, g.	Cal..	....	....	...	....				175,000	Jan..	1888	1.00

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
55	Denver City, s.	Colo.	5,000,000	500,000	11	*			
56	Denver Gold, g.	Colo.	300,000	60,000	5	....			
57	Dickens-Custer, s.	Idaho	2,100,000	420,000	5	....			
58	Durango, g.	Colo..	500,000	500,000	1	*			
59	Eastern Dev. Co., Lt	N. S..	1,500,000	150,000	10	990,000	Mar.	1886	1.00
60	El Dorado, g.	Cal..	1,000,000	250,000	4	*			
61	El Talento, g.	U.S.C.	1,000,000	500,000	2	....			
62	Emma, s	Utah.	625,000	500,000	125	....			
63	Emmons, s. l.	Colo..	2,000,000	2,000,000	1	....			
64	Empire, s.	Utah.	10,000,000	100,000	100	....			
65	Eureka Tunnel, s. l.	Nev...	10,000,000	100,000	100	*			
66	Exchequer, s. g.	Nev...	10,000,000	100,000	100	940,000	Jan..	1892	.25
67	Found Treasure, g. s.	Nev...	10,000,000	100,000	100	130,500	Jan..	1892	.50
68	Gogebic I. Syn., i.	Wis..	5,600,000	200,000	25	....			
69	Gold Bank, g. s.	Colo.	250,000	250,000	1	*			
70	Gold Cup, s.	Colo.	500,000	500,000	1	*			
71	Golden Era, s.	Mont.	2,000,000	200,000	10	*			
72	Gold Flat, g.	Cal...	1,000,000	100,000	10	5,000	Mar.,	1892	.05
73	Gold King, g	Colo..	1,650,000	350,000	5	....			
74	Gold Rock, g.	Cal...	1,000,000	500,000	2	....			
75	Golden Feather Co., g	Cal...	900,000	180,000	5	....			
76	Goodshaw, g.	Cal...	10,000,000	100,000	100	*			
77	Goodyear g. s. l	Mont.	1,000,000	200,000	5	13,000	Feb..	1892	.01
78	Grand Belt, c	Tex.	12,000,000	120,000	100	....			
79	Grand Canyon, s.	Ariz..	375,000	75,000	5	....			
80	Grand Duke, s.	Colo..	800,000	80,000	10	....			
81	Gregory Con., g.	Mont.	3,000,000	300,000	10	....			
82	Harlem M. & M. Co., g.	Cal...	1,000,000	200,000	5	....			
83	Hartery Con., g.	Cal...	1,000,000	100,000	10	22,000	Oct..	1890	.05
84	Hartshorn, g s. l.	S.Dak	1,250,000	250,000	5	8,750	Sept.	1891	.00½
85	Head Cent. & Tr., s. g	Ariz..	10,000,000	100,000	100	16,981	Mar..	1892	.03
86	Hector, g.	Cal...	1,500,000	300,000	5	45,000	Jan..	1889	.15
87	Highland, c.	Mich..	500,000	25,000	20	....			
88	Himalaya, g. s l.	Utah.	1,800,000	180,000	10	12,800	Oct..	1892	.00½
89	Holywood	Cal...	200,000	100,000	2	....			
90	Hortense, s.	Colo..	2,000,000	200,000	10	....			
91	Huron, c.	Mich..	1,000,000	40,000	25	280,000	May.	1887	3.00
92	Idaho, g. s	Idaho	1,250,000	250,000	5	....			
93	Inez, s. l	Idaho	1,000,000	1,000,000	1	....			
94	Ingalls, g	Colo..	100,000	20,000	5	....			
95	Ironton, i.	Wis.	1,000,000	40,000	25	....			
96	Iroquois, c.	Mich..	1,250,000	50,000	25	....			
97	Kentuck Con	Nev..	10,500,000	105,000	00	57,750	July.	1892	.10
98	J. D. Reymert, s.	Ariz..	10,000,000	100,000	100	....			
99	Julia Con., g. s.	Nev...	11,000,000	110,000	100	1,463,000	Jan..	1889	.10
100	Justice, g. s. c	Colo.	500,000	500,000	1	*			
101	Lacrosse, g.	Colo..	1,000,000	100,000	10	*			
102	La Cumbre, g. s.	Mex..	150,000	3,000	50	*			
103	Lee Basin, s.	Colo..	5,000,000	500,000	10	*			
104	Little Josephine, s..	Colo..	250,000	50,000	5	....			
105	Lone Star Cons., g..	Cal...	500,000	500,000	1	10,000	April	1892	.00½
106	Lynx Creek, g.	Ariz..	237,500	147,500	5	....			
107	Madeleine, g. s. l.	Colo..	750,000	50,000	1	4,500	Feb.	1892	.00½
108	Mammoth Gold, g.	Ariz..	245,000	49,000	5	*			
109	Mayflower Gravel, g.	Cal...	1,000,000	100,000	10	*			
110	Medora, g.	Dak..	250,000	250,000	1	585,000	Mar.	1890	.56
111	Merrimac Con., g. s.	Colo..	5,000,000	500,000	10	....			
112	Mexican, g. s.	Nev..	10,000,000	100,000	100	2,917,560	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, l s. g.	Idaho	1,000,000	200,000	5	5,000	Jan..	1892	.00½
119	Monitor, g.	Colo..	100,000	100,000	1	12,500	May.	1891	.01
120	Montreal, g. s. l.	Utah.	750,000	150,000	5	4,500	Feb..	1892	.00½
121	Mountain Ledge, g	Cal...	500,000	100,000	5	....			
122	Mount McClellan	Colo.	1,500,000	300,000	5	....			
123	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*			
124	Native, c.	Mich..	1,000,000	40,000	25	....			
125	Neath, g.	Colo..	1,000,000	100,000	10	....			
126	Nelson	Cal...	50,000	10,000	5	....			
127	Nevada Queen, s.	Nev...	10,000,000	100,000	100	200,000	Oct..	1889	.25
128	New Germany, g.	N. S..	100,000	100,000	1	*			
129	New Gold Hill	N. C..	1,750,000	350,000	5	....			
130	New Pittsburg, s. l..	Colo..	2,000,000	200,000	10	*			
131	New Queen Gold, s..	Colo..	800,000	160,000	5	....			
132	North Standard, g.	Cal...	10,000,000	100,000	100	20,000	Nov.		
133	Occidental Con., g.s	......	10,000,000	100,000	100	245,000	April	1892	.25
134	Oneida Chief, g.	Cal...	500,000	125,000	100	*			
135	Oriental & Miller, s..	Nev...	10,000,000	400,000	100	....			
136	Original Keystone, s.	Nev..	10,000,000	100,000	100	250,000	Mar..	1892	.10
137	Osceola, g.	Nev...	5,000,000	500,000	10	*			
138	Overman, g. s.	Nev...	11,520,000	115,200	100	4,001,840	May.	1892	.10
139	Park, s.	Utah.	2,000,000	200,000	10	....			
140	Parker, g.	N.C..	750,000	180,000	...	....			
141	Pay Rock, s.	Colo..	1,000,000	200,000	5	....			
142	Peer, s.	Ariz..	10,000,000	100,000	100	190,000	Feb..	1892	.10
143	Peerless, s.	Ariz..	10,000,000	100,000	100	405,000	Oct...	1890	.15
144	Pennsylva'a Cons., g	Cal...	5,150,000	515,000	10	36,050	Feb..	1892	.10
145	Phœnix, g	Ariz..	500,000	500,000	1	*			
146	Phœnix Lead, s. l.	Colo..	100,000	100,000	1	*			
147	Pilgrim, g	Cal...	600,000	300,000	2	*			
148	**Pioche M.&R., s.g.l.	Utah.	20,000,000	2,000,000	10	....			
149	Poorman, Ltd., s. l.	Idaho	250,000	50,000	5	....			
150	Potosi, s.	Nev...	11,200,000	112,000	100	1,573,000	Mar..	1890	.50
151	Proustite, s.	Idaho	250,000	250,000	1	*			
152	Puritan, s. g.	Colo..	1,500,000	150,000	10	*			
153	Quincy, c.	Colo..	3,000,000	300,000	10	....			
154	Ralubow, g.	S.Dak	1,250,000	250,000	5	4,250	July.	1892	.00½
155	Rappahannock, g. s.	[illegible]	250,000	250,000	1	*			
156	Red Elephant, s.	Colo..	500,000	500,000	1	*			
157	Red Mountain, s.	Colo..	300,000	60,000	5	....			
158	Ropes, g. s.	Mich..	2,000,000	80,000	25	167,200	Feb.	1891	.50
159	Ruby & Dun., s. l. g.	Nev..	25,300	506	50	....			
160	Russell, g.	N. C..	1,500,000	300,000	5	....			
161	Sampson, g. s. l.	Utah.	10,000,000	100,000	100	288,15[illegible]	July.	1888	1.08
162	Seal of Nevada, g.s..	Nev..	5,000,000	100,000	50	....			
163	Silver Age, s. l. g.	Colo..	2,000,000	200,000	10	*			
164	Silver Bell, s.	Ariz..	850,000	170,000	5	....			
165	Silver King, s.	Cal.	2,000,000	400,000	5	....			
166	Silver Queen, c.	Ariz..	5,000,000	200,000	25	*			
167	Silverton, s.	Colo..	300,000	60,000	5	....			
169	Siskiyou Con., l.	Cal...	2,000,000	200,000	10	13,000	May..	1892	.01½
170	South Bulwer, g	Cal..	10,000,000	100,000	100	100,000	May.	1881	.25
171	South Hite, g.	Cal..	10,000,000	100,000	100	195,000	Jan..	1883	.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..	[illegible],000,000	500,000	10	*			
176	St. Louis & St. Elmo.	Colo..	[illegible]	200,000	10	....			
177	St. L. & St. Felipe, g.s.	Mex..	[illegible],000	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	10	295,000	May.	1888	.25
188	Tornado Con., g. s.	Nev...	100,000	100,000	1	*			
189	Tuscarora, s.	Nev...	10,000,000	500,000	20	385,000	Jan..	1892	.25
190	Union Con., g. s.	Nev...	10,000,000	100,000	100	370,000	June	1892	.25
191	Utah, s.	Nev..	10,000,000	100,000	100	245,000	Aug..	1890	.25
192	Ute & Ulay, s. l.	Colo..	1,000,000	500,000	2	1,500	Mar.	1892	.0018
193	Valley, g	Cal..	575,000	460,000	125	....			
194	Wall Street, g. s. l.	Colo.	500,000	500,000	1	....			
195	Washington, c.	Mich..	1,000,000	40,000	5	....			
196	West Argentine, s.	Colo..	750,000	150,000	5	....			
197	West Granite Mt., s..	Mont.	500,000	100,000	5	*			
198	Whale, s.	Mont.	5,000,000	500,000	10	*			
199	Wood River, g.	Idaho	2,000,000	200,000	10	3,000	Aug.	1891	.00½
200	Yuma, c. s. g.	Ariz..	10,000,000	400,000	2	....			
201	Zelaya, g. s.	C. A.	600,000	....	...	....			

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends and the Terra $75,000. Previous to the consolidation in August, 1884, the California had paid $31,320,000 in dividends, and the Cons. Virginia $42,[illegible]0,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid $1.350.000 in dividends. ¶ This company paid $190,000 before the reorganization in 1880. ** This company acquired the property of the Raymond & Ely Company which had paid $3.075.000 in dividends. *** Previous to this company's acquiring Northern Belle, that mine declared $2.400.000 in dividends against $425,000 in assessments.

COAL, RAILWAY AND OTHER STOCKS.

Names of Stocks.	Jan. 21. H.	Jan. 21. L.	Jan. 23. H.	Jan. 23. L.	Jan. 24. H.	Jan. 24. L.	Jan. 25. H.	Jan. 25. L.	Jan. 26. H.	Jan. 26. L.	Jan. 27. H.	Jan. 27. L.	Sales
Adams Express	.....	.....	157	156	155	.....	.....	.....	158½	.....	159	158	110
Albany & Susq.	.....	.....	161½	.....	.....	.....	.....	.....	162	.....	.....	.....	50
Am. B'k Note	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am. Coal	.....	.....	.....	.....	93	.....	.....	.....	.....	.....	.....	.....	645
Am. Cotton Oil.	47⅜	46½	46½	45⅞	46¾	46¼	46¾	45¾	46	45	46	45¾	13,563
do. pref.	83	83	83¾	83	83	.....	83	82¾	82½	.....	82½	.....	1,329
Am. Express	118	.....	119	.....	.....	.....	.....	.....	.....	.....	.....	.....	295
Am. Dist. Tel.	.....	.....	.....	.....	.....	.....	.....	.....	56	.....	.....	.....	100
Am. Sugar Ref.	126	124⅞	125½	125⅞	125⅝	124¼	125½	122⅝	125⅛	121	125⅝	126	475,892
do. pref.	104½	104⅛	104½	103½	103⅞	103¾	103¾	102¾	103	102¾	104⅜	104⅝	6,949
Am. T. & C. Co.	.....	.....	93½	.....	.....	.....	.....	.....	91	90½	.....	.....	340
Am. Tobacco.	.....	.....	117	116½	116½	115	115¾	115⅛	115¾	113	115⅞	114¾	61,506
do. pref	.....	.....	.....	.....	108	107¾	108½	108	108	.....	108½	.....	225
Atch., T. & S. F.	36½	36⅛	36⅛	35⅞	36⅛	35¾	35⅝	35⅛	35½	35	35½	35⅛	29,112
Atlantic & Pac.	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	300
Balt. & Ohio	97½	96¼	97⅝	97¼	97⅞	97¼	97½	.....	97⅞	97½	.....	.....	7,360
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Balt. & O., S.W.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pfd.	6¾	6½	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	210
B., C., R. & N.	.....	.....	.....	.....	.....	.....	.....	.....	60½	.....	.....	.....	100
Bos. A. L. pfd.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buff. R. P.	.....	.....	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canad'n Pacific	.....	.....	.....	.....	87	.....	.....	.....	87	.....	87⅜	.....	300
Canada South.	58½	58¼	58½	57⅞	58¼	57¾	58½	57⅞	57¾	57½	57¾	.....	4,478
Cen. Iowa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Central Pacific	29⅛	.....	29⅛	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Char., C. I. & A.	.....	.....	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	169
Ches. & Ohio	24½	24	24¼	23¾	23¾	.....	23⅞	22½	23⅜	23¼	.....	.....	4,577
do. 1st pref.	.....	.....	53¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
do. 2d pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic. & Alton	144	.....	144½	.....	144½	141	144	141	144⅛	144	114	.....	867
do. pfd.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic., Burl. & Q.	103⅞	102½	103⅝	102¾	103	102⅞	102¾	101½	102⅞	101½	103¾	102⅝	47,973
Chic. & East Ill.	71⅛	.....	72	71⅞	72⅛	72	72¼	71½	71¼	.....	.....	.....	6,250
do. pref.	101⅛	101⅞	105	103	104	.....	105	104	101½	.....	104½	104	5,133
Chic. Gas Trust.	93½	92⅞	94¼	92⅛	94	93⅛	93½	91⅛	92¼	90¼	92⅛	91½	76,379
Chic., Mil. & S.P.	83⅛	82⅜	83½	82¼	82⅞	82¼	82⅞	81⅛	82	81⅛	82¼	81⅛	172,018
do. pref.	125	.....	125	125	124⅛	.....	125	124¾	125	.....	125	.....	3,631
Chic. & N'west.	115¼	114¾	115¼	114⅞	115	114⅛	115	114¾	114⅞	114⅛	.....	.....	7,321
do. pref.	146	.....	.....	.....	146	.....	115⅛	.....	.....	.....	.....	.....	116
Chic., R.I. & Pac.	89	88⅝	89⅛	88⅝	88½	87¾	88⅛	87¼	88	87¼	.....	.....	27,170
Chi., S.P., M. & O.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chi. Stock Yds.	107	106	105	.....	.....	.....	.....	.....	106	.....	.....	.....	910
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cit. Gas, Bklyn.	.....	.....	.....	.....	.....	.....	108⅛	108	.....	.....	.....	.....	8
C., C., C. & St. L.	60	59¼	60⅛	58¾	59	58¾	58⅛	.....	58½	.....	.....	.....	3,955
do. pref.	98¾	.....	97¾	97½	.....	.....	98½	.....	.....	.....	.....	.....	820
Clev. & Pitts.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. C. & I.	24⅛	23⅞	24⅛	24	24⅛	23¾	24	23¼	24⅛	23⅝	.....	.....	3,328
Col. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Fuel.	64¼	64	64	.....	64¼	64	64	63	64	.....	64½	61¼	2,540
do. pref.	.....	.....	109	.....	109	107	.....	.....	.....	.....	.....	.....	57
Col., H. V. & Tol.	32⅜	32	32	31½	31⅞	31⅛	31¾	31⅝	31⅝	30⅝	31½	.....	5,110
do. pfd.	.....	.....	.....	.....	72½	.....	.....	.....	.....	.....	.....	.....	100
Col. & H. Coal.	23⅛	22¾	22½	18	22	21¼	21½	20⅝	22½	21	23¼	22	13,060
do. pfd.	.....	.....	.....	.....	52½	.....	.....	.....	.....	.....	.....	.....	200
Commer. Cable.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Coal.	.....	.....	.....	.....	31	.....	.....	.....	.....	.....	.....	.....	100
Cons. Gas.	144	141½	141½	138	139	135	135¾	134	134¼	132¼	134¾	133½	23,297
Del. & Hud. C.	135¼	134¾	135⅜	134½	136½	135	137¾	135	138½	136¼	139	137⅝	23,810
Del., L. & West.	154⅞	153	154¼	153	154½	153⅝	155⅛	153¾	154⅛	154	155⅛	154½	36,854
Des. M. & Ft. D.	9¼	.....	9¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denv. & Rio G.	18⅛	18¼	18¼	18⅛	.....	.....	18	17⅝	.....	.....	18	.....	1,800
do. pref.	57⅛	56¾	57¼	56½	57	56⅛	56¼	55⅝	56	55⅝	56¼	56	4,099
Dis. & C.F. Tr'st	59	55¾	55½	50¾	52½	49¼	51½	48	49⅝	46	49⅝	46½	560,951
do. ex-div.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dul., S. S. & A.	14¼	13⅝	.....	.....	.....	.....	13¾	13	.....	.....	13⅝	13	2,300
do. pref.	32	31½	31½	.....	.....	.....	35	.....	.....	.....	.....	.....	400
E. T., Va. & Ga.	4½	.....	4¾	.....	.....	.....	.....	.....	.....	.....	5	.....	300
do. 1st pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. 2d pref.	.....	.....	10¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Edison Ill. Co. of N. Y.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Edison E. L. Co.	124¾	.....	125	124	.....	.....	124½	.....	124¼	.....	124⅝	124½	1,069
Edison Gen. El.	113¾	112¾	113	112¾	112½	111¼	112½	111	111½	111	111⅝	110⅝	19,200
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erie & West.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Evans. & T. H.	.....	.....	.....	.....	146½	145	.....	.....	.....	.....	.....	.....	400
Flint & P. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gt. Nor. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Green B. & W.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. t. r.	14	.....	14	13½	13⅞	13½	13¾	13½	13¾	.....	.....	.....	1,760
G. B. & W., pref.	.....	.....	.....	.....	.....	.....	20⅛	.....	.....	.....	.....	.....	50
do. t. r.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Houston & Tex.	.....	.....	6¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Hunt. & B. Top.	36	.....	38	.....	.....	.....	.....	.....	39	.....	.....	.....	810
do. pref.	.....	.....	54¼	.....	.....	.....	.....	.....	55	.....	.....	.....	218
Ill. Cent.	103½	103¼	103⅝	103½	103⅝	103	104	103	103⅛	103	103¾	.....	9,437
Int. Cond. & Ins.	.....	.....	67	66	.....	.....	67½	.....	.....	.....	.....	.....	300
Iowa Central.	10½	10½	10⅜	.....	.....	.....	11	10⅞	10½	10¼	10¼	10	1,467
do. pref.	35½	.....	.....	.....	35¾	.....	35½	.....	.....	.....	.....	.....	250
Kan'wha & Mich.	.....	.....	.....	.....	.....	.....	14½	.....	.....	.....	.....	.....	5
Keokuk, D. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laclede Gas.	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	24¾	24¼	100
do. pref.	72¾	.....	.....	.....	73¾	73	73	.....	74	3	71	.....	1,300
Lake Erie & Wes.	.....	.....	.....	.....	24	.....	.....	.....	24¼	.....	21	.....	638
do. pref.	80½	.....	81	80¾	81	80¾	81⅛	80½	80¾	80¼	80⅞	.....	2,729
Lake Shore	131½	131	131½	131	131¼	.....	130⅝	130	.....	.....	130¾	.....	2,462
Lehigh C. & N.	.....	.....	53¾	.....	.....	.....	54	53⅞	54¼	54	.....	.....	1,187
Lehigh Valley	59	58¾	60	59⅜	.....	.....	61¼	59⅞	61¼	60⅛	.....	.....	11,492
Long Island	118½	117½	117¾	.....	.....	.....	.....	.....	114⅞	114	.....	.....	2,255
do. ex-div.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
L. Erie & St. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisv'le & N'sh	77⅛	76¾	75⅞	74½	76	74¾	76⅛	74¾	75½	74¾	76	75½	39,225
Louis., E. & St. L.	.....	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
do. pref.	.....	.....	77	.....	.....	.....	.....	.....	.....	.....	.....	.....	40
L., N. A. & C.	26	25¾	26⅛	25½	25¾	25½	26	25¼	25½	25¼	.....	.....	2,620
L., St. L. & T.	25	25⅛	25⅞	25⅝	25½	24⅞	25⅝	25	25⅞	25½	25¾	.....	2,061
Mahoning Coal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manhattan Con.	170½	169½	170	165½	168¼	165½	166	161	160	158	163½	161½	33,573
Maryland Coal.	27	.....	27¾	.....	27¾	.....	26¾	.....	27	.....	.....	.....	500
Memphis & Char.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican Cent.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michigan Cent.	106½	.....	106¾	106½	106¼	.....	106	.....	.....	.....	.....	.....	800
Minnesota Iron.	.....	.....	69	.....	.....	.....	68	.....	.....	.....	.....	.....	370
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Minn. & St. L.	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
do. pref.	48⅞	.....	.....	.....	.....	.....	48⅞	.....	48½	48	.....	.....	1,650
M., L., S., & W.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
M., Kan. & Tex.	15⅝	15¼	15⅝	15¼	15⅜	.....	16	15¼	15½	15¼	.....	.....	8,830
do. pref.	.....	.....	27¼	.....	.....	.....	.....	.....	26⅝	26¾	27	.....	500
Missouri Pac.	60	59¾	59⅞	58⅝	59⅜	58¼	58¾	58	58½	58	58½	58¼	21,476
Mobile & Ohio.	.....	.....	.....	.....	.....	.....	35½	.....	.....	.....	.....	.....	20
Morris & Essex.	.....	.....	.....	.....	.....	.....	.....	.....	155	.....	.....	.....	.....
Nat. Cord. Co.	142⅝	141¼	141½	140¾	141	140¼	143¾	140½	142½	140½	143	141½	23,978
do. pref.	118½	116	118¼	116	116	115	118	115¾	116⅞	116	116½	116¾	7,368
Nat. Lead Co.	52⅛	51¼	5 ⅞	49¼	51⅛	50	50¾	49⅜	50½	49	50⅛	50	55,749
do. pref.	9 ⅝	95⅝	95⅝	95½	95¼	94¾	95	.....	95¼	94¾	.....	.....	2,951
Nat. Linseed Oil	38¼	.....	39	.....	38¾	.....	39¼	39	39¼	39	39	.....	1,115
Nat. Starch.	30⅛	28½	30	28⅛	.....	.....	29	.....	28⅛	.....	29	28½	3,392
do. 1st pref.	.....	.....	202	.....	.....	.....	.....	.....	.....	.....	102	.....	225
do. 2d pref.	99	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	110
New Cent. Coal.	.....	.....	11⅝	.....	.....	.....	11½	.....	.....	.....	.....	.....	430
N. C. & St. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. Central	132¾	132	131½	130¼	131	130⅛	131¾	131	130	.....	131½	130½	3,310
N. Y. Central	110¾	110⅛	111⅛	110¾	110⅞	110½	111½	110¾	111	110¼	111⅛	.....	5,576

COAL, RAILWAY AND OTHER STOCKS.

Name of Stocks.	Jan. 21. H.	Jan. 21. L.	Jan. 23. H.	Jan. 23. L.	Jan. 24. H.	Jan. 24. L.	Jan. 25. H.	Jan. 25. L.	Jan. 26. H.	Jan. 26. L.	Jan. 27. H.	Jan. 27. L.	Sales.
N.Y., Chi. & St.L.	.....	.....	19½	19	.....	.....	19	.....	19½	19	.....	.....	1,650
do. 1st pref.	.....	.....	78	.....	.....	.....	77	.....	77	.....	.....	.....	350
do. 2d pref.	.....	.....	38¾	38	.....	.....	38	.....	37½	.....	.....	.....	550
N. Y., L. & W.	.....	.....	.....	.....	.....	.....	.....	.....	114	.....	.....	.....	100
N. Y., L. E. & W.	25⅛	25⅝	26⅛	25⅝	26½	26¼	26⅝	26	26¼	25⅞	26⅜	26⅛	36,445
do. pref.	57¼	57	57¾	.....	58	57¼	57	.....	57	.....	59¼	.....	1,150
N.Y., N.H. & H'rt	.....	.....	.....	.....	261	.....	260	259	.....	.....	.....	.....	350
N. Y. & N. Eng.	49	48½	48⅞	47⅜	49¼	46¾	49⅛	48⅞	48	46⅞	48	47⅞	47,675
N.Y., Susq. & W.	20¼	19½	21⅜	20	2[illegible]⅜	19¾	20	19¼	19½	.....	.....	.....	26,745
do. pref.	73	72½	73⅜	72	72	70	70	69¾	71	.....	.....	.....	5,420
N.Y. & North.	15	.....	.....	.....	15½	.....	15¾	.....	19	16	.....	.....	1,015
do. pref.	31¾	31½	35¼	33¼	38	35⅛	36	33½	35¾	33⅝	35	31	27,158
Norfolk South.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. & West.	9½	.....	9½	.....	10	.....	.....	.....	.....	.....	.....	.....	540
do. pref.	.....	.....	39½	39¼	38¾	.....	39	38¾	.....	.....	39¼	.....	500
Nor. Amer. Co.	11¾	11¼	11¾	11⅝	11½	.....	11⅜	11¼	11½	11¼	.....	.....	2,310
North Pacific.	18⅛	18	18	17¾	17¾	.....	17⅞	17¾	18⅛	18¼	.....	.....	3,076
do. pref.	50	49	50	49¼	49½	48⅝	49½	48⅝	49⅛	45⅝	49⅝	48½	42,686
Ohio & Miss.	.....	.....	.....	.....	21½	21	24	23¼	24¼	24¼	24¾	.....	2,200
Ohio Southern.	45½	44¾	47	.....	48⅛	46	49	47¾	.....	.....	.....	.....	2,280
Ontario & West.	19⅝	19½	19⅝	19⅛	19¼	18⅞	19⅜	18⅞	19	18⅞	19⅛	19	6,450
Oregon Imp.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ore. R. & N.	.....	.....	84½	84	82	.....	.....	.....	83	.....	.....	.....	328
Ore., St. L. & U. N.	.....	.....	.....	.....	22⅞	.....	.....	.....	23	.....	.....	.....	200
Pacific Mail.	27	.....	27	.....	27¼	27	27⅛	27	27	.....	.....	.....	2,450
Penn. R. R.	55⅛	54⅞	55¼	55	.....	.....	55⅛	55	55⅛	55	.....	.....	10,672
Peoria, Dec. & Ev. R.	18½	17¾	18¼	18	18¼	18	18	.....	17¼	.....	.....	.....	2,200
Phil. & Reading.	53¼	52⅞	53¼	52½	53⅝	52½	53¾	51⅞	53	51¾	53⅛	52	333,420
Pitts., F.W. & C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pitts. & W., prf.	.....	.....	37	.....	37	.....	.....	.....	.....	.....	.....	.....	500
P., C., C. & St. L.	.....	.....	.....	.....	21½	.....	21	.....	20	.....	.....	.....	512
do. pref.	.....	.....	.....	.....	62	.....	.....	.....	.....	.....	.....	.....	317
Pullman P. C. Co.	199	.....	.....	.....	199	.....	198	.....	.....	.....	.....	.....	579
Rens. & Sara.	175	.....	176	.....	.....	.....	.....	.....	.....	.....	.....	.....	68
Rich. & W. P.	10	.....	9⅝	9¼	9½	9¼	9⅝	9¼	9⅜	9	10⅝	9⅜	61,310
do. pref.	.....	.....	36¼	.....	36	35	35½	.....	.....	.....	38¾	35	450
Rio Grande & W	.....	.....	.....	.....	.....	.....	22	.....	.....	.....	.....	.....	25
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rome, W. & O.	.....	.....	.....	.....	.....	.....	.....	.....	112½	112½	.....	.....	.....
So. Cotton Oil.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
So. Pacific.	33¾	33⅝	33¾	33⅝	33⅞	33¾	33⅝	33½	.....	.....	33⅞	33¾	1,860
St. L. & San. Fe.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. L. & Southw.	7⅝	.....	7¾	.....	7⅜	7¼	.....	.....	.....	.....	.....	.....	435
do. pref.	.....	.....	.....	.....	14⅜	14¼	.....	.....	.....	.....	.....	.....	600
St. P. & Duluth.	46½	.....	47½	46½	46⅝	46	47	.....	.....	.....	.....	.....	820
do. pref.	.....	.....	.....	.....	106½	.....	.....	.....	.....	.....	.....	.....	59
St. Paul, M. & M.	.....	.....	.....	.....	.....	.....	113¾	.....	112	.....	.....	.....	340
St. Paul & Omaha	52	50⅝	52	51⅝	51½	51	51⅝	51⅛	51¾	50⅞	.....	.....	9,957
do. pref.	119¾	.....	119⅝	119¾	.....	.....	118⅝	.....	118⅝	.....	.....	.....	616
Tenn. C. & I.	37¼	36½	36½	35	35⅝	3[illegible]¼	35¾	34⅝	35	34½	35¼	34½	12,230
do. pref.	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	30
Tol. & O. Cent.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas Pacific.	11	.....	11	10¾	10¾	.....	10⅝	10⅝	10½	.....	10⅝	.....	1,446
do. Land Tr.	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25
Tol., A.A. & N.M.	.....	.....	38¾	38	39	37⅞	38¾	.....	38¼	38	.....	.....	2,260
Tol., St.L. & K.C.	.....	.....	14⅛	.....	.....	.....	15	.....	29⅛	.....	.....	.....	200
do. pref.	30	.....	29⅞	.....	29⅞	29	28	.....	.....	.....	.....	.....	1,560
Union Pacific	41⅝	41¾	41⅝	40⅞	41¾	41	42⅛	41¾	42¼	41¼	42⅝	41⅞	75,170
do. Den. & G.	17⅜	17¼	17⅛	17	17½	.....	17½	17¼	17⅛	17	17⅞	17¼	2,100
U. S. Express.	.....	.....	63	.....	65¼	61	66	65	.....	.....	68	65	892
U. S. Rubber.	43½	.....	43¾	.....	44	43½	.....	.....	43¼	43	45⅝	43½	3,100
do. pref.	95⅝	.....	96¼	.....	95¼	94	95	.....	.....	.....	.....	.....	388
Wab., St.L. & P.	12	.....	12	.....	.....	.....	11¾	10½	11½	.....	.....	.....	1,750
do. pref.	25¾	25⅝	26⅛	25¾	25¾	25⅛	25⅝	25¼	25⅝	25⅛	25½	25⅜	4,425
Wells, Fargo Ex.	.....	.....	147½	146½	.....	.....	146	.....	148½	.....	.....	.....	105
Western Union.	100¾	100	100½	99¾	100	99⅝	99⅞	98¾	99	98½	99¼	98⅞	49,508
do. ex-div.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheel. & L. E.	23	22½	23	22	22⅝	22⅛	.....	.....	22⅝	21¼	66	65¼	1,910
do. pref.	66½	66	65½	.....	66	.....	66	.....	68	65⅝	.....	.....	1,381
Wisconsin Cent.	15	.....	15¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	220

Total shares sold, 2,749,504.

San Francisco, Cal.

Names of Stocks.	Closing Quotations. Jan. 20.	Jan. 21.	Jan. 23.	Jan. 24.	Jan. 25.	Jan. 26.
Alpha	.....	.....	.....	.....	.....	.....
Alta	.....	.15	.15	.15	.10	.10
Belcher	.....	1.00	.95	.85	.80	.85
Belle Isle	.....	.....	.....	.....	.....	.....
B. & Belch	.....	1.20	1.25	1.20	1.25	1.25
Bodie	.....	.20	.20	.20	.20	.20
Bulwer	.....	.15	.15	.15	.15	.15
Chollar	.....	.50	.50	.50	.45	.15
Com'w'th	.....	.....	.....	.....	.....	.....
Con. C. & V.	.....	2.15	2.10	2.30	2.35	2.40
Con. Pac.	.....	.....	.....	.....	.....	.....
Crown Pt.	.....	.65	.60	.60	.55	.60
Del Monte	.....	.....	.....	.....	.....	.....
E'reka Con	.....	.....	.....	.....	.....	.....
G'ld & C'y	.....	.85	.80	.75	.80	.80
Hale & N.	.....	.85	.80	.75	.75	.80
M. White	.....	.....	.....	.....	.....	.....
Mexican	.....	1.40	1.35	1.30	1.35	1.35
Mono	.....	.15	.15	.15	.15	.15
Mt. Diablo	.....	.....	.....	.....	.....	.....
Navajo	.....	.....	.....	.15	.....	.....
Nev. Qu'n.	.....	.05	.05	.....	.....	.05
N. B'lle Isle	.....	.10	.....	.....	.....	.....
N. Co'w'th	.....	.....	.....	.....	.....	.....
Ophir	.....	1.80	1.75	1.70	1.65	1.70
Potosi	.....	1.50	1.50	1.45	1.30	1.30
Savage	.....	1.00	1.05	1.05	1.10	1.10
Sierra Nev	.....	1.25	1.25	1.15	1.20	1.20
Uni'n Con	.....	.95	1.00	.91	.90	.90
Utah	.....	.15	.15	.15	.15	15
Yel. Jack	.....	.60	.65	.60	.55	.60

Baltimore, Md. Jan. 19.

Company.	Bid.	Asked.
Balt. & M. Car	....	.10
Conrad Hill	....	.10
Cons. Coal	.27	.31@.31¼
George's Creek Coal.	1.03	1.05
Lake Chrome	....	.05
Silver Valley	....	.70@.80

Denver.

Prices and sales for the week ending January 21st, 1893:

	High.	Low.	Sales.
Anaconda	$ .33	$ .20	15,400
Bangkok-Cora Belle	.02½	.02¼	2,300
Brownlow	.03½	.03	1,400
Claudia J.	.00¾	.00¾	1,800
Diamond B.	.01¾	.01¼	11,800
Puzzler	.07½	.07	3,100
Pharmacist	.24	.23	200
Total sales			37,000

Foreign Quotations.

London. Jan. 14.

	Highest.	Lowest.
Alaska Treadwell	....	....
Amador, Cal	1s. 3d	9d.
American Belle, Colo.	2s.	1s. 6d.
Can. Phosphate, Can.	£⅛	£¼
Colorado, Colo	£⅛	....
De Lamar, Idaho	£1⅛	£1⅜
Dickens Custer, Idaho.	6d.	...
Eagle Hawk	....	....
Eberhardt, Nev	£⅛	....
Elkhorn, Mont	£1⅛	£1⅜
Emma, Utah	1s. 3d.	9d.
Esmeralda, Nev	6d.	3d.
Flagstaff, Utah	10½d.	7½d.
Golden Leaf, Mont	....	....
Jay Hawk, Mont	9s 6d.	8s. 6d.
La Luz, Mex	1s. 9d.	1s. 3d.
La Plata, Colo	1s.	6d.
Maid of Erin, Colo	....	....
Mammoth Gold, Ariz.	....	....
Mount McClellan	....	....
Montana, Mont.	3s. 3d.	2s. 9d.
New Consolidated	....	....
New Guston, Colo	12s. 6d.	10s.
New Hoover Hill, N.C.	2s. 6d.	2s.
New Russell, N. C.	....	....
New Viola, Idaho	£3-16	£1-16
Old Lout, Colo	....	....
Parker Gold, N. C.	....	....
Pittsburg Cons., Nev.	2s. 6d.	1s. 6d.
Poorman, Idaho	....	....
Plumas Eureka, Cal.	....	....
Richmond Con., Nev.	15s.	10s.
Ruby, Nev	6d.	3d.
Sierra Buttes, Cal	£5-16	£3-16
" Plumas Eur., Cal.	£9-16	£7-16
Silver King	....	....
United Mexican, Mex.	1s-	6d.
Yankee Girl, Colo	£5-16	£3-16

Paris. Jan. 12.

	Francs.
Belmez, Spain	620.00
East Oregon, Ore	....
Golden River, Cal	130.00
" " parts	30.00
Laurium, Greece	625.00
Lexington, Mont	91.25
" parts	2.40
Nickel, New Caledonia	780.00
Rio Tinto, Spain	391.00
" " oblig.	517.00
" " " 2d	512.50
Tharsis, Spain	115.50
Vieille-Montagne, Belgium	510.00