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COAL

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RICHARD P. ROTHWELL, C.E, M.E., Editor.

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CONTENTS.

DURING the week we have received reports of the production of copper by several of the great foreign producers, and we shall next week publish these, as well as the detailed returns of many of our domestic smelters of lead and copper. We shall then be able to correct a few typographical and other comparatively unimportant errors which have been found in some of the tables that appeared in our statistical number of January 3d.

THE annual statistical number of the ENGINEERING AND MINING JOURNAL, issued January 3d, and which contains full reports and statistical information concerning nearly all the useful minerals and metals, has been received with great favor, and is worthy of a permanent place in every office and library. The statistics of production, stocks and consumption of copper, lead and spelter for the year 1890, are of great value. The reports of the ENGINEERING AND MINING JOURNAL were the only ones published in 1890 giving the statistics of production, or stocks, or consumption of these metals in the year 1889.

THE financial question in Congress is developing more and more on the lines of free silver coinage.

Mr. WM. P. ST. JOHN has come out as an advocate of free coinage and says that India in preference to this country would be the market for silver; but he forgets to say that it is proposed that silver and gold shall circulate here on the basis of 16 to 1, and that one can get gold for silver on that basis, which is not the case in India. The foreign silver would come here just as long as gold could be obtained for it at coining ratios, and the objection to free coinage undertaken by us without international agreement, is that our gold would disappear and we would be reduced to precisely the same condition as India; and every one knows that India has to pay tribute to London whenever it wants gold. We do not wish to see this country reduced to a depreciated currency even if it should thereby cause an inflation in nominal values.

So long as we can keep gold and silver circulating together there will be no material increase in values and the inflation purchased by the depreciation of our currency can be of no benefit, but on the contrary would prove ultimately highly injurious to the country.

Senator STEWART moved an amendment to the Financial Bill to the following effect:

> That any owner of silver bullion, not too base for the operations of the mint, may deposit the same in amounts of the value of not less than $100 at any mint of the United States to be formed into standard dollars or bars for his benefit and without charge; and that, at the said owner's option, he may receive therefor an equivalent of such standard dollars in Treasury notes of the same form and description and having the same legal qualities as the notes provided for by the act approved July 14, 1890, entitled "An act directing the purchase of silver bullion and the issue of Treasury notes thereon, and for other purposes,' and all such Treasury notes issued under the provisions of this act shall be a legal tender for their nominal amount in payment of all debts, public and private, and shall be receivable for customs, taxes and all public dues, and when so received may be reissued in the same manner and to the same extent as other Treasury notes.

As stated above, we believe the effect of such a law would be to drive gold out of circulation, and silver would then be simply a commodity whenever we had to pay any foreign debt. We would be in the same condition as the South American silver standard countries.

THE NORTH AMERICAN SALT COMPANY.

Another chapter in the history of this combination has just been made public. The capital stock has been decreased from eleven million to four million dollars. It will be remembered by the readers of the ENGINEERING AND MINING JOURNAL that from its very inception we have warned the public from becoming interested in this undertaking, which grew out of the wonderful success met with by the English "Salt Union" in floating its £4,000,000 of securities. Our "combine" has been a disappointment to its promoters from the start. The subscriptions, which were at first reported to have come in liberally, turned out far from satisfactory. As was reported in this journal (July 20th, 1889), the known salt deposits in this country, in Louisiana, Kansas, Michigan, New York, Ohio, West Virginia and other places, cannot possibly be controlled, and we only hope that our timely warning has been the means of preventing investors from loosing their money in this enterprise.

THE ALUMINUM AIR SHIP.

The PENNINGTON air ship, a description of which has been going the rounds of the daily press for some months past, did not make its first trip from Mount Carmel, Ill., to St. Louis, Chicago and New York, on the 1st of January, as its projectors promised. At the last meeting of the board of directors, held in Chicago, it is stated, however, that the condition of affairs of the company was so satisfactory that it was decided to add $5,000,000 of the $20,000,000 paid up capital to the further extension of the plant. The stockholders are fully satisfied that the ship will make at least 200 miles per hour. The dimensions of the first of the ships to be constructed are given as follows: The buoyancy chamber will be 170 feet in length and 28 feet in diameter, with a lifting power of 5,500 pounds. The gas engine will weigh but 250 pounds and will develop 100 horse power. The total weight of the ship will be 1,350 pounds. It will accommodate 50 passengers and the cost of the ship will be $3,500. This slight cost is made possible by the fact that the company has its own process of making aluminum, of which the ships will be almost entirely constructed.

The daily press has allowed these figures to pass without question, as it is not apt to trouble itself with arithmetical computations, but as engineers we are sufficiently interested in the projected ship to study the figures a little, and derive some further information from them.

The buoyancy chamber, 170 feet long and 28 feet in diameter, would have a superficial area of not less than 12,000 square feet. If we assume that the total weight of the ship, 1,350 pounds, is only that of the outside sheathing, allowing nothing for framework, machinery, or other inside structures or contents, then the weight of the sheathing is only about 0·11 pounds per square foot. As aluminum weighs about 13¼ pounds per square foot 1 inch thick, this would make the thickness of the sheathing only about 0.008 inch, or say No. 33 Birmingham gauge.

The cubic contents of the buoyancy chamber would be about 90,000 cubic feet. It is probably to be filled with hydrogen gas, and the amount of the buoyancy can be easily calculated by assuming that the chamber is buoyed up by a force equal to the difference between the weight of 90,000 cubic feet of air and that of the same bulk of hydrogen. But possibly it is intended to use a vacuum, in which case the buoyancy would be due to the weight of 90,000 cubic feet of air, or say 7,000 pounds. Deducting

the weight of the sheathing, we have 5,650 pounds as the net buoyancy of the chamber, or very nearly the same as the lifting force, 5,500 pounds, mentioned in the description. But this makes no allowance for weight of the framework necessary to hold the sheathing in place, for the engines or other machinery, for the seats necessary to accommodate the 50 passengers and for other such trifles.

The problem of building a framework 170 feet long and 20 feet diameter stiff enough to prevent the collapse of the sheathing and to sustain the weight of itself and of the passengers, machinery, etc., and yet not weighing over 5,500 pounds, would be pronounced impossible of solution by engineers accustomed to work on steel; but, of course, there are no structural impossibilities in the creed of the Mount Carmel directors.

The cost of the ship, $3,500, is put, we think, rather low, for we doubt if any rolling mill in the world would contract to roll the sheathing of this ship, 12,000 feet of aluminum and only ·008 inch thick, for much less than the whole figure named, even if it obtained the ingot aluminum for nothing. But it is likely that the Mount Carmel Company has some new rolling process, as well as its own secret process of making aluminum. They have surely also something new in gas engines, for the stated weight, only two fifths of a pound per horse power, is far less than that of the lightest engines heretofore known—those for driving automobile torpedoes. They must also have some plan of hardening and strengthening the aluminum, for if only ·008 inch thick and of ordinary aluminum, it would be apt to be perforated by woodpeckers or other birds lighting upon it, besides being torn if it accidentally rubbed against a tree on one of its trips.

These difficulties or objections to the air ship are, however, only those which would be raised by engineers of the old school, who know nothing of aluminum constructions. They vanish into thin air when viewed, not from an engineer's standpoint, but from that of a Mount Carmel projector. The air ship, as above described, is shown by arithmetic and by engineering calculations to be an impossibility; but this only shows that the problem is beyond the criticism of engineers, and lies just as much outside of their field as do metaphysics, biology or the Keely motor, which latter, as is now well understood, is not an engineering device at all, but a problem in psychology.

We engineers, however, cannot help being skeptical concerning such projects as the air ship, and in this case our skepticism extends so far as to lead us to doubt even if there is really such a project as the Mount Carmel Aerial Navigation Company, and whether or not it is not merely the offspring of some lively newspaper writer's imagination. Mount Carmel is a rather obscure town in the southern part of Illinois, but just such a town as is likely to bring forth some newspaper genius who would delight in hoaxing the associated press and the reading public of the country generally.

ELECTRICITY IN MINING.

With the development of the electrical system for the transmission of energy, the assistance which is offered in providing cheaper power in mining work was quickly realized by engineers, and within the past two years so many electric power plants have been installed at the mines, not only in the United States but also in England and on the Continent, that they have already ceased to be a novelty, as the pages of the ENGINEERING AND MINING JOURNAL testify. So successful have these plants been that their early promise of effecting a "revolution" in the mining industry in many places seems not unlikely to be fulfilled.

Already, it is stated, in the collieries where electric tramways and the very efficient electric coal cutters have been introduced, the cost of mining has been very materially reduced, while in many metal mines electrically driven hoisting engines, located far underground, have made perfectly easy much work hitherto attended with difficulty and great expense.

Aside from those in the coal mines, the mining plants so far set up have been in a measure incomplete, for many difficulties peculiar to mine work could be studied and overcome only in actual practice. The driving of pumps underground was one of the early applications of electric motors, but the invention of a practical electrically driven percussion drill was long an unsolved problem.

In the electrical system of power transmission the advantages which make it peculiarly valuable in mining operations, and which are afforded by no other system, are found in its practically unlimited flexibility and the facility with which it may be divided; while a utilization of as much as 70 to 80 per cent. of the motive power has been attained, and in some cases this is greater than that of any other method of transmission. In such cases as shops, where there are many machines doing intermittent work, the fact has been well established that it is more economical to use a separate electric motor for each machine, and have all these take their power from a central dynamo driven by a steam engine, than to drive lines of shafting direct from the steam engine, as has heretofore been the universal custom.

For comparatively short distances in direct lines the wire rope transmission is undoubtedly the more economical, but it is only under favorable conditions that it is applicable. As an agent for the transmission of power underground electricity is unrivaled. We have been practically confined, hitherto, for this purpose to steam and compressed air, which are necessarily expensive, and the use of steam is obviously objectionable underground.

It is for two purposes, chiefly, that electricity has most efficiently aided the mining engineer, viz.: the long-distance transmission of power above ground, rendering possible the utilization of cheap sources, such as waterfalls or the waste heat from coke ovens, and the short-distance transmission of power underground, superseding steam and even compressed air.

The possibility of bringing all the necessary power direct to the mine from one source, perhaps a waterfall several miles away, over a rugged or mountainous country, regardless of weather, by means of copper wires, and using electric motors for operating winding engine, rock breaker, jigs, fan, etc., on the surface and for pumps, diamond or percussion drills, winze hoists, underground haulage, etc., while at the same time illuminating levels and stopes, is certainly an alluring prospect to the miner and one which it seems probable many will realize before long.

At the present time there are in use electric hoisting engines, rotary and plunger pumps, ventilating fans, locomotives for haulage, coal cutters, coal borers and diamond drills. All of these machines are of well known and commonly used types, simply adapted for combination with the electric motor, which replaces the steam engine.

Among recent inventions are the percussion drills and pumps of the electro-magnetic reciprocating type, in which the energy is given to a plunger by means of the attraction and repulsion caused by a current flowing alternately through one of a pair of solenoids. These machines have not, as yet, come into general use, nor have they had a thorough trial in practice.

Besides the efficiency and flexibility of the system of electric-power transmission, its safety and reliability are important considerations. There are three dangers to be apprehended from the use of large electrical currents in mines: the danger of fire from short circuits, overheating of wires and sparking machines, the danger of shocks received by men at work in the mine, and the danger of failure of apparatus to work properly at critical times. With proper safeguards and careful construction, these dangers may be entirely eliminated; but the history of electric lighting in all its details of cheap and incapable machinery, unscientific and criminally reckless line work, must not be repeated in mining installations, where a failure of any part of the system means so much greater liability of serious accident.

All wires in mines should be insulated in the best possible manner, and should be so arranged as to be readily accessible to inspection and repair. This is even more important in underground workings than upon the surface, as in the former wires are almost certain to be in damp places, and frequently subjected to acid waters. It is a temptation, which has been yielded to in some cases, to use old wire ropes as the return cable; but wherever such an uninsulated line is used, the danger of short circuits is considerably increased. All wires should be of ample size and everywhere protected by proper cut-outs, while motors should always be of such size as never to be called upon to perform an excessive amount of work, under which conditions, if properly cared for, sparking is not to be apprehended.

Large amounts of power from remote sources will, necessarily, be transmitted at high voltage, but underground no current at greater pressure than 500 volts should at present be permitted, and we notice in many installations a tendency to use no more than 250 volts. With currents of no greater potential than these, experts are agreed that there is no danger whatever to human life.

The reliability of electric apparatus has been sufficiently demonstrated. The fact that street railway motors, than which none are subjected to more severe usage, make a daily mileage as great as the railway locomotive, with much less care and attention and so small an expense for repairs, as figures have shown, may be accepted as proof of it.

Neither the electric generator nor the motor are complicated pieces of machinery: and no class of apparatus responds more quickly to sudden demands upon it, or gives quicker indication of being out of order, or is quicker repaired in the event of temporary derangement.

With the present year we look for a great increase in the number of electric mining plants in the coal and metal mines, especially where now wasted waterfalls can be used for motive power.

BOOKS RECEIVED.

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

Bulletin of the New York State Museum. Building Stone in New York. By John C. Smock, Albany, University of the State of New York. 1890.

Souvenir of the Comstock. Embracing the Principal Views of Virginia City, Gold Hill, Silver City and Sutro. By Jas. H. Crockwell and Dan. De Quille, Virginia City, Nev. $2.50.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Are Brueckner Cylinders Used for Chloridizing Copper Ores?

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I beg you will have the kindness to put this question to your readers:

"Are the Brueckner & Howell rotary furnaces in use for chloridizing *copper* ores, and how do they work?"

B. VON STRYREN,
Director of the Copper Works at Falun in Sweden.

Remedies for the Smoke and Sulphur Fume Nuisance.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: If Mr. Roberts, Health Officer of Butte, will write to the New Jersey Furnace and Smelting Company, 172 Halsey Street, Newark, N. J., for a prospectus of its dust and fume condenser, he will get just what he wants. I have seen this condenser in use at Gloriaux & Wolsey Smelting Works, Newark, and cheerfully state that it gathers every bit of the dust, or all condensable gases, sulphur, sulphureted hydrogen, sulphurous acid, or sulphuric acid, as well as all volatilized metals and chlorides. The expense of the erecting of this condenser is small, its action self-cleaning and automatic, and the cost of maintenance nil; that of operation reduced to the cost of operating a suction fan or ejector. This entirely new apparatus has been in operation nearly a year, and has given perfect satisfaction. For economic reasons this condenser should be attached to all furnaces whatever, smelting lead, silver, copper, or gold ores, or for satisfactory reasons to all such furnaces as are run in towns or cities.

E. N. RIOTTE.

The Heerdegen Water Finder

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your issue of December 13th, under the above heading, you remark, in the course of your article, "We learn of many other cases of success, and have not yet heard of any failures." In this connection I wish to record the experience of the Yuma Copper and Silver Mining Company. In July last, our company paid Mr. Heerdegen $1,000 to locate water near its smelting works at this place, with the understanding that for each successful well he should receive $600 additional. Mr. Heerdegen located three wells. In his report he stated that well No. 1, located near the smelting works, would flow 20,000 gallons daily at a depth of 75 feet; well No. 2, 30,000 gallons at a depth of 31 feet; well No. 3, 20,000 gallons at a depth of 400 feet. Well No. 2 was located near the summit of the Harcuvar Mountains, while well No. 3 was located down in the flat.

Work was begun on well No. 1 July 25th, and was prosecuted with vigor. A shaft 4 feet × 6 feet was sunk to the depth of 83 feet without a drop of water being found. Mr. Heerdegen, upon being wired to this effect, replied that we must sink to 134 feet, as he had made an error in his calculations. At 134 feet, not having encountered any water, we again wired Mr. Heerdegen for explanations. He replied that we must continue sinking; that the water was surely there in sufficient quantity to enable us to operate our 50-ton water jacket smelter. At 295 feet we struck a little water—about 1,000 gallons daily—but lost it at the depth of 325 feet. At 425 feet we again encountered water, which, upon accurate measurement, proved to be 4,000 gallons dally. The well is now down 545 feet with no increase of water. At this depth we shall abandon it.

Well No. 2 was sunk to the depth of 31 feet, 4 feet × 6 feet in section. At 18 feet we encountered a flow of 2,000 gallons daily, which remained unchanged afterward. We have also abandoned this well.

Having expended $10,000 on the strength of Mr. Heerdegen's report, without results of any value to us, we have decided not to further endanger his reputation by sinking well No. 3. Hence, as to whether he guessed right once in three times will remain forever a profound secret. Mr. Heerdegen has been requested by our people to come out and repair his already shattered reputation, but steadily refuses to come unless the Yuma company will pay his expenses.

In conclusion, I would say that Mr. Heerdegen's glittering testimonials and our great anxiety to secure an ample supply of water as quickly and as cheaply as possible, seduced us into pinning our faith to a "water witch." In Arizona, at least, Mr. Heerdegen is considered a huge "fake" and the Yuma Copper Company a set of "chumps." Fuller detailed information of the whole transaction can be obtained at the company's office, Room G, Turner Building, St. Louis, Mo.

FRANK NICHOLSON, Gen. Manager, Yuma C. & S. Mg. Co.
HARCUVAR, Ariz., Dec. 20, 1890.

The Cyanide Process for Extracting Gold and Silver.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: As the chemist of The Gold and Silver Extraction Mining and Milling Company, which owns the exclusive rights to the McArthur-Forrest process for the United States, I reply to the letter of Louis Janin, Jr., contained in your journal, 24 L., of Dec. 13, 1890.

I claim that a comparison of his labors and experiments to those carried on under the McArthur-Forrest process, is unjust for the reason that the first requirement, according to same, is the use of dilute cyanide of potassium solutions, by which I mean a 1% (made by dissolving 10 pounds of cyanide in 1,000 pounds of water or 10 pounds to the ton of ore) while Mr. Janin has, according to his letter, been using 20 pounds for the same amount of ore, which accounts for the solubility of other metals, which he claims are so detrimental to our process. It may appear to him a small matter whether strong or weak solutions are used, but we claim that just with these very dilute solutions, a good success is obtained. My own experience, not only on several hundred laboratory tests, but also on a run of 10 tons, is, that solutions of ½% or only five pounds cyanide of potassium to every 1,000 pounds of water used for 2,000 pounds of ore, have given the most satisfactory results. The consumption of cyanide, after agitating the ore with the above very dilute solution, was exceedingly small, so much so, that it could be used for several more extractions before any additional cyanide was necessary. For the information of your readers, I would say that our standard solution is a 1%. Never do we use any more concentrated solutions than that, in order to obviate the trouble that Mr. Janin experienced—that of a large solution of other metals. It is well known that a concentrated solution of cyanide of potassium will attack metals: the fact, however, that very dilute solutions—say 1% and very much less—will attack energetically only gold and silver, allowing that action on others to be only nominal (probably only with exception of copper), is what we claim for our process.

We claim positively that the assertion under head of No. 1, in Mr. Janin's letter, viz: that of consumption of large quantities of cyanide, on account of the solubility in the solution of other minerals by our process, is incorrect, as we use only dilute solution.

In reply to No. 2 of Mr. Janin's letter, I admit a possibility of the decomposition of the cyanide, but may it not be kept in closed vessels, and is it necessary to have on hand immense quantities of cyanide solutions? We buy high percentages of cyanide, and make of it our solutions as we need them, in small quantities, and use them over and over again for new extractions. The consumption incurred is included in the expense we meet with in treating the ore, which is represented by the expense of $2.50 to $5 per ton. I am pleased to notice the good results met with by Mr. Janin in his laboratory tests. That he should, however, infer from them that large quantities of ore would not give the same results counts for nothing.

In referring to my experience with large quantities, I desire to say that the assertion that "using moderate quantities of cyanide—say 5 to 8 pounds to the ton, or lower, the extraction is low," is entirely incorrect; still more incorrect is the assertion that 20 pounds of cyanide per ton are necessary to obtain a good extraction.

No. 3, of Mr. Janin's letter, contains his honest admission of a failure to precipitate through any means the gold and silver held in solution. The means employed by him for precipitation are so inadequate, and the experience and results he quotes as having had with the different strengths of solutions and excess of cyanide, are so materially in contradiction to my daily experience and that of our able staff of chemists, that I append our plan of operation to recover the gold and silver from cyanide solution. Having a certain amount of gold and silver in the cyanide solution, which amount varies with different ores, we proceed as follows: We have a series of three glazed, earthenware pots, say for a 10-ton plant, of a dimension of 12 inches high and 10 inches diameter. In each of these we place about 2 pounds of zinc shavings. These latter are prepared with a scraping tool and present a very large surface, 1 pound occupying about the space of a gallon. The gold solution drawn off the filtering tank, by means of a vacuum, is allowed to trickle over and through these zinc shavings. The gold and silver precipitate *easily* and *completely, whether solutions contain an excess of cyanide or not.* So perfect is the precipitation, that at least 75% can be shaken off of the zinc shavings; the balance adhering to the zinc is recovered later, after a new solution has been run over, by again shaking the zinc, or in the event of a clean up, by dissolving the zinc shavings in nitric acid.

The discovery of the "curious fact" Mr. Janin quotes, relative to the solubility of metals in cyanide solution, shall be his own, but he should not apply it to the McArthur-Forrest process, as I positively deny the correctness of his statement, "that an excess of cyanide in the solution, makes the precipitation incomplete, and unless there is an excess the extraction is low." I deny this from actual experience.

CHARLES F. CUNO.

The Russell Process vs. Amalgamation and the Old Leaching Process.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In the ENGINEERING AND MINING JOURNAL of November 8th appeared an article against the Russell process, signed "Muscular Amalgamator," and headed "Russell Lixiviation versus Amalgamation."

The article being anonymous, the Russell Process Company made no reply. But the reply to "Muscular Amalgamator" in the ENGINEERING AND MINING JOURNAL of December 20th, by Mr. Wilson, referring only to the Russell process at the Marsac mill, forces us to continue the subject or leaves it to be inferred that the Marsac is the only mill at which the process is a success.

Besides the Daly Mining Company (Marsac mill), "Muscular Amalgamator" mentions only two other companies, the Ontario and Yedras (Anglo-Mexican). With regard to the Ontario he says: "Please also note that the Ontario, owned by the same people as the Daly, does not and never did use the Russell process, a fact never clearly accentuated in Russell literature." The facts as to the Russell process at the Ontario are as follows: By referring to the statistics on the comparative runs between amalgamation and the Russell process, contained in Stetefeldt's book, Daggett's pamphlet and other publications on the Russell process, it will be seen that the extraction by the Russell process, in the experimental plant at the Ontario, has always exceeded that by amalgamation in the Ontario mill. But these runs in the experimental plant being of only one to three tons per day were on too small a scale to satisfy the Ontario Company. No opportunity has occurred of making the comparison on a large scale until the shutting down of the Marsac mill last summer to put in the Taylor gas producer. During this shut down the Marsac leaching department was kept running on old tailings which had been produced by amalgamation at the Ontario mill prior to 1885. Between 300 and 400 tons of these tailings were treated at the rate of 40 tons per day. They had no drying or crushing, or other preliminary treatment, but were leached in the same condition as when taken from the tailing pits. The accompanying tables give the results in detail.

As here shown the Russell process extracted from these tailings between $5 and $6 per ton. Although the tailings had to be hauled a considerable distance from the Ontario to the Marsac mill, and the expenses of making the experimental run were larger than would be the case when running at 200 tons per day, yet after deducting the total expenses from the value of the product the actual net profit to the Ontario Company was over $3.50 per ton. At the rate of 200 tons per day the actual net profits made by the use of the Russell process on these tailings would

TABLE NO. 1.

RUSSELL PROCESS—LIXIVIATION MILL RUNS ON ONTARIO TAILINGS.

Number of mill run.	Where made.	Date of run.	Kind of tailings.	Net tons treated.	Average net weight of vat charges.	Time of treatment except charging.
No.		Date.		Tons.	Tons.	Hours.
1.....	Ontario	July, 1888.	Sands	22·0	2·5-7·5	20
2.....	Marsac	July, 1890.	Slimes	314·0	[63	81

Chemicals and Mill Supplies.

No. of mill run.	Hypo used per ton.	Blue stone per ton.	Caustic soda per ton.	Sulphur per ton.	Sodium carbonate per ton.	Acid per ton.	Total chemicals per ton.	Volume of water per ton.	Volume of solution per ton.
No.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Cu. ft.	Cu. ft.
1.....	1·65	1·16	3·00	2·00	1·40	0·54	9·75	9·0	42·5
2.....	3·50	4·00	3·70	2·50	1·80	0·14	15·64	9·0	31·0
Average	2·08	2·58	3·25	2·25	1·60	0·31	12·25	9·0	36·8

TABLE NO. 2.

One Ounce Silver = $1.13. *One Ounce Gold* = $20.67.

No. of mill run.	Silver value per ton.	Gold value per ton.	Total value per ton.	Per cent. silver saved	Per cent. gold saved.	Per cent. of total value saved.	Silver saved per ton.	Gold saved per ton.	Silver and gold saved per ton.
	Ozs.								
No. 1.....	11·9	$1.24	$14.64	38·8	75·8	41·9	$5.21	$0.94	$6.15
No. 2.....	12·7	1.14	15.49	31·7	52·7	33·2	4.54	0.60	5.14
Average	12·3	$1.19	$15.06	35·2	64·2	37.5	$4.82	$0.72	$5.64

Mill Expenses.

Chemicals per ton	$0.55
Mill extraction in gold and silver per ton	5.64

have been $896 per day. The plans for a leaching mill of 200 tons daily capacity for the treatment of these tailings are now being prepared. The estimated total cost of grading and plant is $30,000. This small cost is due to the fact that, as at Yedras, the tailings are leached in the same condition as when taken from the tailing pits, consequently only a leaching plant is required. A 200-ton leaching mill for tailings is the same in all respects as a plant for the treatment of 125 tons of roasted ore.

Now as to the Russell process at Yedras, the statements of "Muscular Amalgamator" are as follows: "The Yedras mill, one of the two in which the Russell process is being used, has not been heard of publicly but privately. I have it from two trustworthy parties that the Russell 'improvement' is not successful financially nor metallurgically, and that the improvement noted at the time of the introduction was not due to the Russell process." "Muscular Amalgamator" also says: "Meanwhile the eighth total financial as well as metallurgical failure of the 'improvement' of a really good and simple process, the original Patera, is awaited by metallurgists in general, and in particular by 'A Muscular Amalgamator.'"

The facts about Yedras are as follows:

1. The Russell process was introduced at Yedras in November, 1887, and, with the exception of one month, when the mill was shut down, has been continuously in use ever since, under two different managers and three different mill superintendents.

2. For the first three months it was run side by side with the "old" or "really good and simple process," which had been in use there for about three years. This comparative run was made (to quote the words of M. A.) on "exactly the same ore, same vein, same value." As shown by the report of the superintendent of the mill, the actual net saving to the Yedras Company effected by the Russell process over the "really good and simple process" was at the rate of $98,000 per year.

3. For each month during three years the Yedras Company has paid and is now paying to the Russell Process Company, as royalty for the use of its process, 3% of its total gross product, which amounts to about $1.25 for each ton of ore treated.

4. For almost a year and a half the Yedras Company, in addition to about 40 tons of ore, has also been treating 30 to 60 tons of tailings per day. The tailings are the "residues" or tailings which have been left by the "really good and simple process" before the Russell process had been introduced. The royalty paid to the Russell Process Company includes 3% of the gross product of these tailings as well as the gross product of the ore. In regard to the net profits to the Yedras Company, effected by the use of the Russell process on these tailings alone, the superintendent of the mill states that the net profit per month is greater than the whole royalty paid by the Yedras Company to the Russell Process Company on the gross product of both ore and tailings per year.

TALCOTT H. RUSSELL,
Secretary Russell Process Company.

NEW HAVEN, Jan. 3, 1891.

The American Bell Telephone Company closed its fiscal year December 20th with an increase of the number of instruments in use of 36,235, or the increase was 3,535 greater than in 1889.

Exports of South African Gold.—The value of the gold exported from the Cape Colony and Natal in the first 10 months of this year is semi-officially computed at £1,215,812.

VALUES OF FOREIGN COINS JANUARY 1st, 1891.

In the Act of March 3d, 1873, entitled "An act to establish the Custom House value of the sovereign or pound sterling of Great Britain, and fix the par of exchange," there is a section in regard to the valuation of foreign coins, and in accordance with the requirements contained therein it has been the practice of the Department of the Treasury to estimate and proclaim the value of foreign coins on the 1st of January of every year since 1874.

Section 52 of an Act, commonly known as the "McKinley Tariff Act," contains the following provision:

"That the value of foreign coin as expressed in the money of account of the United States shall be that of the pure metal of such coin of standard value, and the values of the standard coins in circulation of the various nations of the world shall be estimated quarterly by the Director of the Mint and be proclaimed by the Secretary of the Treasury immediately after the passage of this act and thereafter quarterly on the first day of January, April, July and October in each year." We give herewith the values that were proclaimed by the Secretary of the Treasury on January 1st, 1891:

VALUES OF FOREIGN COINS, JANUARY 1ST, 1891.

COUNTRY.	Standard.	Monetary unit.	Value in U. S. gold.	Coins.
Argentine Republic.....	Double.	Peso	$0.96·5	Gold: Argentine ($4.82·4) and ½ Argentine. Silver: peso and divisions.
Austria-Hungary.....	Silver	Florin..... ...	.38·1	Gold: 4 florins ($1.92·9), 8 florins ($3.85·8), ducats ($2.28·7) and 4 ducats ($9.15·8). Silver: 1 and 2 florins.
Belgium	Double.	Franc	.19·3	Gold: 10 and 20 francs. Silver: 5 francs.
Bolivia.....	Silver .	Boliviano.....	.77·1	Silver: Boliviano and divisions.
Brazil	Gold. ..	Milreis.....	.54·6	Gold: 5, 10 and 20 milreis. Silver: ½, 1 and 2 milreis.
British Possessions N. A. (except Newfoundland.....	Gold. ..	Dollar.....	1.00	
Central American States— Costa Rica.. Guatemala.. Honduras... Nicaragua.. Salvador....)	Silver ..	Peso	.77·1	Silver: Peso and divisions.
Chili..... ..	Double.	Peso	.91·2	Gold: Escudo ($1.82·4), doubloon ($4.56·1), and condor ($9.12·3). Silver: peso and divisions.
China	Silver...	Tael { Shanghai.... Haikwan (customs) .	1.13·9 1.27	
Colombia	Silver ..	Peso	.77·1	Gold: condor ($9.64·7) and double condor. Silver: peso.
Cuba	Double.	Peso	.92·6	Gold: doubloon ($5.01·7). Silver: peso.
Denmark	Gold. ..	Crown	.26·8	Gold: 10 and 20 crowns.
Ecuador.....	Silver ..	Suere	.77·1	Gold: condor ($9.64·7) and double condor. Silver: suere and divisions.
Egypt.....	Gold. ..	Pound (100 piastres)	4.94·3	Gold: pound (100 piastres), 50 piastres, 20 piastres, 10 piastres and 5 piastres. Silver: 1, 2, 5, 10 and 20 piastres.
Finland	Gold. ..	Mark.....	.19·3	Gold: 20 marks ($3.85·9), 10 marks ($1.93).
France...	Double.	Franc.....	.19·3	Gold: 5, 10, 20, 50 and 100 francs. Silver: 5 francs.
German Empire	Gold. ..	Mark.....	.23·8	Gold: 5, 10 and 20 marks.
Great Britain.	Gold. ..	Pound sterling.....	4.86·6½	Gold: Sovereign (pound sterling) and ½ sovereign.
Greece	Double.	Drachma	.19·3	Gold: 5, 10, 20, 50 and 100 drachmas. Silver: 5 drachmas.
Hayti	Double.	Gourde.....	.96·5	Silver: gourde.
India.....	Silver .	Rupee.....	.36·6	Gold: mohur ($7.10·5). Silver: rupee and divisions.
Italy	Double.	Lira	.19·3	Gold: 5, 10, 20, 50 and 100 liras. Silver: 5 liras.
Japan.....	Double*	Yen { Gold .. Silver.	.99·7 .83·1	Gold: 1, 2, 5, 10 and 20 yen. Silver: yen.
Liberia.....	Gold. ..	Dollar.....	1.00	
Mexico	Silver..	Dollar.....	.83·7	Gold: dollar ($0 98·3), 2½, 5, 10 and 20 dollars. Silver: dollar (or peso) and divisions.
Netherlands .	Double.	Florin..	.40·2	Gold: 10 florins. Silver: ½, 1 and 2½ florins.
Newfoundland....	Gold. ..	Dollar.....	1.01·4	Gold: 2 dollars ($2.02 7+).
Norway	Gold. ..	Crown	.26·8	Gold: 10 and 20 crowns.
Peru.....	Silver ..	Sol.....	.77·1	Silver: sol and divisions.
Portugal	Gold. ..	Milreis.....	1.08	Gold: 1, 2, 5 and 10 milreis.
Russia	Silver ..	Rouble.....	.61·7	Gold: imperial ($7.71·8), and ½ imperial † ($3.86·0). Silver: ¼, ½ and 1 rouble.
Spain	Double.	Peseta.....	.19·3	Gold: 25 pesetas. Silver: 5 pesetas.
Sweden.	Gold. ..	Crown	.26·8	Gold: 10 and 20 crowns.
Switzerland ..	Double.	Franc.....	19·3	Gold: 5, 10, 20, 50 and 100 francs. Silver: 5 francs.
Tripoli	Silver ..	Mahbub of 20 piastres.....	.69·5	
Turkey.	Gold. ..	Piastre	.01·4	Gold: 25, 50, 100, 250 and 500 piastres.
Venezuela	Silver ..	Bolivar.....	.15·4	Gold: 5, 10, 20, 50 and 100 bolivars. Silver: 5 bolivars.

* Gold the nominal standard. Silver practically the standard.

† Coined since January 1, 1886. Old half-imperial = $3.98·6.

In estimating the value of foreign coins the value of the monetary unit of countries having a gold or double standard was ascertained by comparing the amount of pure gold in such unit with the pure gold in the United States dollar, and the silver coins of such countries were given the same valuation as the corresponding gold coins with which they were interchangeable by law.

In countries having a silver standard the values of the silver coins were reckoned at the commercial value of the pure silver contained in such

coins. In ascertaining this it has been the practice of the Director of the Mint to use variously the average price in London of silver for one month or the three months preceding the publication of his estimate. The figure used in the estimate of January 1st, 1890, was the average price of silver in London for the month of December, 1889, at the par of exchange in United States money. The value used in estimating foreign coins in this table was the average price paid for the silver purchased by the Treasury Department from October 1st, 1890, to December 31st, 1890.

TOTAL COINAGE OF THE UNITED STATES MINTS FROM THEIR ORGANIZATION.

According to the report of the Director of the Mint, the precious metals received at the mints and assay offices of the United States, during the fiscal year 1890, aggregated in value $92,793,958, an increase of $2,436,055 over the deposits of the preceding fiscal year. There were 2,521,361 ounces of gold of a coining value of $46,909,041, and 65,293,056 ounces of silver of a coining value of $75,977,373 operated upon in the coining department alone, and the total quantity operated upon in the mints and assay offices aggregated 240 tons of gold and 4,817 tons of silver. The value of the operative wastage and loss on sale of sweeps was $26,141.05, while the incidental gains in the operations on bullion were valued at $36,683.87, leaving a net gain in the operations of the mint during the year of $10,542.82.

On account of the diversity in the character and amount of the coinages executed at the various units, it is impossible to make comparisons as to relative cost.* At Philadelphia all the minor coinage is executed, while the mint at San Francisco turns out the bulk of the gold coins, which require greater care and skill. At New Orleans the coinage consists exclusively of silver dollars and affords thus an opportunity of obtaining the cost—1·8 cents per piece.

The Director of the Mint adds in his report an interesting description of the vaults for the storage of silver which are being constructed at the mints at San Francisco and New Orleans. There are to be two in San Francisco, each 29 feet 4 inches × 11 feet 10¾ inches × 17 feet 9 inches, with a cubic contents of 6,161 cubic feet. The capacity of each vault is $42,000,000 in silver dollars, stored in boxes and bags. The vaults are to be lined with three layers of ⅜-inch steel, 5-ply welded steel and iron and Bessemer ductile steel, each furnished with outer and inner doors, the former to be single, made of six layers of ½-inch welded steel and iron and Bessemer ductile steel, fitted with bolts made of 7-ply welded chrome steel. The inner door is to be folding, made of four layers of the same material, all hardened, drill, saw and file-proof. Each door is fitted with four tumbler combination locks. The two vaults are estimated to cost $25,196.

TOTAL COINAGE OF THE UNITED STATES MINTS FROM THEIR ORGANIZATION.

Calendar Year	Gold	Silver	Minor Coins	Total
1793 .... 1795	$71,485 00	$370,683 80	$10,373 00	$453,541 80
1796 ...	77,960 00	77,118 50	10,324 40	165,402 90
1797	128,190 00	14,550 45	9,510 34	152,250 79
1798	205,610 00	330,291 00	9,797 00	545,698 00
1799	213,285 00	423,515 00	9,106 68	645,906 68
1800	317,760 00	224,296 00	29,279 40	571,335 40
1801	422,570 00	74,758 00	13,628 37	510,956 37
1802	423,310 00	58,343 00	34,422 83	516,075 83
1803	258,377 50	87,118 00	25,203 03	370,698 53
1804	258,642 50	100,340 50	12,844 94	371,827 94
1805	170,367 50	149,388 50	13,438 48	333,239 48
1806	324,505 00	471,319 00	5,260 00	801,084 00
1807	437,495 00	597,448 75	9,652 21	1,044,595 96
1808	284,665 00	684,300 00	13,090 00	982,055 00
1809	169,375 00	707,376 00	8,001 53	884,752 53
1810	501,435 00	638,773 50	15,660 00	1,155,868 50
1811	497,905 00	608,340 00	2,495 95	1,108,740 95
1812	290,435 00	814,029 50	10,755 00	1,115,219 50
1813	477,140 00	620,951 50	4,180 00	1,102,271 50
1814	77,270 00	561,687 50	3,578 30	642,535 80
1815	3,175 00	17,308 00	....	20,483 00
1816	....	28,575 75	28,209 82	56,785 57
1817	....	607,783 50	39,484 00	647,267 50
1818	242,940 00	1,070,454 50	31,670 00	1,345,064 50
1819	258,615 00	1,140,000 00	26,710 00	1,425,325 00
1820	1,319,030 00	501,680 70	44,075 50	1,864,786 20
1821	189,325 00	825,762 45	3,890 00	1,018,977 45
1822	88,980 00	805,806 50	20,723 39	915,509 89
1823	72,425 00	895,550 00	....	967,975 00
1824	93,200 00	1,752,477 00	12,620 00	1,858,297 00
1825	156,385 00	1,564,583 00	14,926 00	1,735,894 00
1826	92,245 00	2,002,090 00	16,344 25	2,110,679 25
1827	131,565 00	2,869,200 00	23,577 32	3,024,342 32
1828	140,145 00	1,575,600 00	25,636 24	1,741,381 24
1829	295,717 50	1,994,578 00	16,580 00	2,306,875 50
1830	643,105 00	2,495,400 00	17,115 00	3,155,620 00
1831	714,270 00	3,175,600 00	33,603 60	3,923,473 60
1832	798,435 00	2,579,000 00	23,620 00	3,401,055 00
1833	978,550 00	2,759,000 00	28,160 00	3,765,710 00
1834	3,954,270 00	3,415,002 00	19,151 00	7,388,423 00
1835	2,186,175 00	3,443,003 00	39,489 00	5,668,667 00
1836	4,135,700 00	3,606,100 00	23,100 00	7,764,900 00
1837	1,148,305 00	2,096,010 00	55,583 00	3,299,898 00
1838	1,809,765 00	2,333,243 40	63,702 00	4,206,710 40
1839	1,376,847 50	2,209,778 20	31,286 61	3,617,912 31
1840	1,675,482 50	1,726,703 00	24,627 00	3,426,812 50
1841	1,091,857 50	1,132,750 00	15,973 67	2,240,581 17
1842	$1,829,507 50	$2,332,450 00	$23,833 90	$4,[illegible]85,991 40
1843	8,108,797 50	3,834,750 00	24,283 20	11,967,830 70
1844	5,427,670 00	2,235,550 00	23,987 52	7,687,207 52
1845	3,756,447 50	1,873,200 00	38,948 04	5,668,595 54
1846	4,034,177 50	2,558,580 00	41,208 00	6,633,965 50
1847	20,202,325 00	2,374,450 00	61,836 00	22,638,611 69
1848	3,775,512 50	2,040,050 00	64,157 99	5,879,720 49
1849	9,007,761 50	2,114,950 00	41,984 32	11,164,695 82
1850	31,981,738 59	1,866,100 00	44,467 50	33,892,306 00
1851	62,614,492 50	774,397 00	99,635 43	63,488,524 93
1852	56,846,187 50	999,410 00	50,630 94	57,896,228 44
1853	39,377,909 00	9,077,571 00	67,059 78	48,522,539 78
1854	25,915,962 50	8,619,270 00	42,638 35	34,577,870 85
1855	29,387,968 00	3,501,245 00	16,030 79	32,905,243 79
1856	36,857,768 50	5,142,240 00	27,106 78	42,027,115 28
1857	32,214,040 00	5,478,760 00	178,010 46	37,870,810 46
1858	22,938,413 50	8,495,370 00	246,000 00	31,679,783 50
1859	14,780,570 00	3,284,450 00	364,000 00	18,429,020 00
1860	23,473,654 00	2,259,360 00	205,660 00	25,938,701 00
1861	83,395,530 00	3,783,740 00	101,000 00	87,280,270 00
1862	20,875,997 50	1,252,516 50	280,750 00	22,209,264 00
1863	22,445,482 00	809,267 80	498,400 00	23,753,149 80
1864	20,081,415 00	609,917 10	926,687 14	21,618,019 24
1865	28,295,107 50	691,005 00	968,552 86	29,954,665 36
1866	31,435,945 00	982,409 25	1,042,960 00	33,461,314 25
1867	23,828,625 00	908,876 25	1,819,910 00	26,557,411 25
1868	19,371,387 50	1,074,343 00	1,697,150 00	22,142,880 50
1869	17,582,987 50	1,266,143 00	963,000 00	19,812,130 50
1870	23,198,787 50	1,378,255 50	350,325 00	21,927,368 00
1871	21,032,685 00	3,104,038 30	99,890 00	24,236,613 30
1872	21,812,645 00	2,504,488 50	369,380 00	24,686,513 50
1873	57,022,747 50	4,024,747 60	379,455 00	61,426,950 10
1874	35,254,630 00	6,851,776 70	342,475 00	42,448,881 70
1875	32,951,940 00	15,347,893 00	246,970 00	48,546,803 00
1876	46,579,452 50	24,503,307 50	210,800 00	71,293,559 00
1877	43,999,864 00	28,393,045 50	8,525 00	72,401,434 50
1878	49,786,052 00	28,518,850 00	58,186 50	78,363,088 50
1879	39,080,080 00	27,569,776 00	165,003 00	66,814,859 00
1880	62,308,279 00	27,411,693 75	391,395 95	90,111,368 70
1881	96,850,890 00	27,940,163 75	428,151 75	125,219,205 50
1882	65,887,685 00	27,973,132 00	960,400 00	94,821,217 00
1883	29,241,990 00	29,246,968 45	1,604,770 41	60,093,728 86
1884	23,991,756 50	28,534,866 15	796,483 78	53,323,106 43
1885	27,773,012 50	28,962,176 20	191,622 04	56,926,810 74
1886	28,945,542 00	32,086,709 90	343,186 10	61,375,438 00
1887	23,972,383 00	35,191,081 40	1,215,683 [illegible]	[illegible]
1888	31,[illegible]80,808 00	33,025,606 45	[illegible]	[illegible]
1889	21,413,931 00	35,496,683 15	1,283,408 49	58,194,022 64

THE ROSSENDALE CAMEL'S HAIR BELTING.

The substitution of camel's hair, cotton, paint and chemicals for leather in machinery belting seems to have met with success as carried out by the Rossendale Belting Company, of Newark, N. J. The new invention was first perfected in England, where it was received with so much favor that it rapidly gained prominence. It was brought to this country some six or seven months ago, and the American company has erected extensive works at Newark, N. J., where the new material is now being manufactured. It is claimed for this fabric that it is stronger than other belting, more durable under strain, more efficient, and as low priced, and therefore cheaper in the end.

The object of the inventors has been to secure a belting which would give greater friction between the belt and the pulley; avoid piecing in belts of large width; secure uniform tensile strength, and be unaltered by changes in moisture or temperature of the atmosphere.

If testimonials are to be relied upon the Rossendale Belting Company has mastered these difficulties, and now manufactures a product which is rapidly gaining in favor in this country.

At the Newark works, which cover about an acre and a half of ground, the company has erected a very complete factory and plant. The motive power is a 150 horse-power Corliss engine, which also serves to generate electricity for the various buildings.

In the main room of the factory are twelve looms constructed on patents owned by the company, where the substance of the belting is woven in widths of from two inches to forty. The weft and binder are composed of cotton and the woof of camel's hair yarn. When the belting is woven, with round and complete edges, it is treated in a bath or cylinder with the company's anti-friction compound. This substance, a mastic which resembles a rather soft pitch, is one of the secrets of the manufacture. The material is thoroughly impregnated with this compound, and is then passed through an oxide bath. From this process it emerges thoroughly saturated with the oxide of iron and oil, and is then dried. The belting is then taken to a heavy coiling machine where it is subjected to a test strain, greater than it would have to undergo in actual work. As it passes through the rollers, the edges are also treated by a patent contrivance, and the whole wound up into coils ready for delivery.

One of the chief claims of the company for this belting is its improved edge. This improvement consists in the method of manufacture and the mastic material used. At the works is a score of belts which have been in constant use for nearly six months. The edges remain hard, and, according to the company's statement, harden with age and use. They remain round, hard, and flexible. One of the 12-inch main driving belts at the works has been exposed to the weather outside the building for five months, and appears to be as good now as when put up. Neither heat nor cold, dryness nor moisture, seems to have any effect on the anti-friction edged hair belting.

The company also claims a process for hardening the surface of its belts when they are to be used as conveyors for carrying substances such as coal and minerals. In these belts at varying intervals the belting is raised by the insertion in the woof of strands of prepared rope, which make a ridge to prevent the slipping or shifting of the substance carried.

In the construction of this camel's hair belting the number of yarns or "ends" used in the loom varies proportionately to the width, the number for the 10-inch width being 2,800. Each of these ends will bear a strain of 15 pounds. As to the relative strength of this belting and leather, the Rossendale makes the following claim of strength per square inch :

Width of belt.	Camel's hair.	Leather.
2 inches	2,490 lbs.	968 lbs.
3 "	3,740 "	1,452 "
6 "	7,480 "	2,904 "
10 "	12,460 "	4,840 "

Among the belts already in use is one at the Newark works of the Lister Agricultural Chemical Works. This is a 12-inch driving belt about 60 feet in length, attached to a 150 horse power Corliss engine. It affords incontestable evidence of the great "biting" power of these belts. It is so loose that the upper half sags fully 18 inches, yet the bottom half is as taut as is possible. This belt has been running for several months.

ORE DOOK OF THE DULUTH, SOUTH SHORE & ATLANTIC RAILWAY COMPANY AT MARQUETTE, MICH.—I.

Written for the Engineering and Mining Journal.

The last two years have been marked by unusual activity in the mining and shipping of iron ore from the rich fields of Michigan and Minnesota. The strenuous efforts of the companies to take advantage of favorable conditions in the market by crowding production, made necessary the improvement of transportation facilities, and brought to bear upon the railroads a pressure that demanded immediate relief. It was at the shipping ports that this demand was most urgent. Dockage was grossly inadequate and construction on a grand scale was immediately commenced. Especially was this true of Escanaba and Marquette, two of the leading ports from which the ore is carried by lake routes to eastern furnaces.

At Marquette work was commenced in midwinter and completed shortly after the opening of navigation. It resulted in more than doubling the shipping capacity of that port. The shipments of the season of 1889 had been handled at three docks. Dock No. 1, 1,150 feet long, fully loaded, held 15,000 tons of soft ore; No. 2 (now out of use) was incapable of extension on account of a large rock at the lake end. It is 682 feet long and holds 3,600 tons. No. 3 is 1,238 feet long, having a capacity of 13,000 tons. In these three docks, old in pattern and ill-adapted to the construction of a modern lake steamship, there was room for 31,000 tons of ore, measured by the soft ore standard. Soft ore, being generally more uniform in weight, is usually the basis of comparison. The average hard ore is about one-seventh heavier than the soft.

The work of extension met with a slight check. It was found that the proposed additions would encroach upon harbor lines and the progress of the work drew forth a protest from the United States board of harbor commissioners for the district of Superior. After several conferences, involving the loss of several days of precious time, the difficulty was satisfactorily adjusted and the work went on. No. 1 was extended 600 feet, raised 4½ feet above the floor level of the old portion and the capacity of the dock increased to 26,000 tons. A new trestle was constructed forming a junction with this dock about one-third its length from the shore, and upon this trestle a track was laid to facilitate the egress of empty cars. The material was mostly obtained from a dismantled dock at St. Ignace, the pockets of which were cut down from 13 to 12 feet centers to accommodate modern vessels.

Construction was commenced upon the new dock, the subject of this sketch and accompanying illustrations, on March 8th, 1890, and was completed on the 27th day of the following June. The huge structure was designed by Mr. Henry J. Payne, Chief Engineer of the Duluth, South Shore & Atlantic Railway Company, the owner of the dock, and the work from beginning to end was under his supervision. The contract was awarded to the firm of Henry & Balch, of Minneapolis, Minn., who had built the large docks at Ashland, Wis. The contractors placed Mr. M. J. Peppard in charge for themselves. The dredging contract was awarded to Williams, Upham & Co., of Duluth.

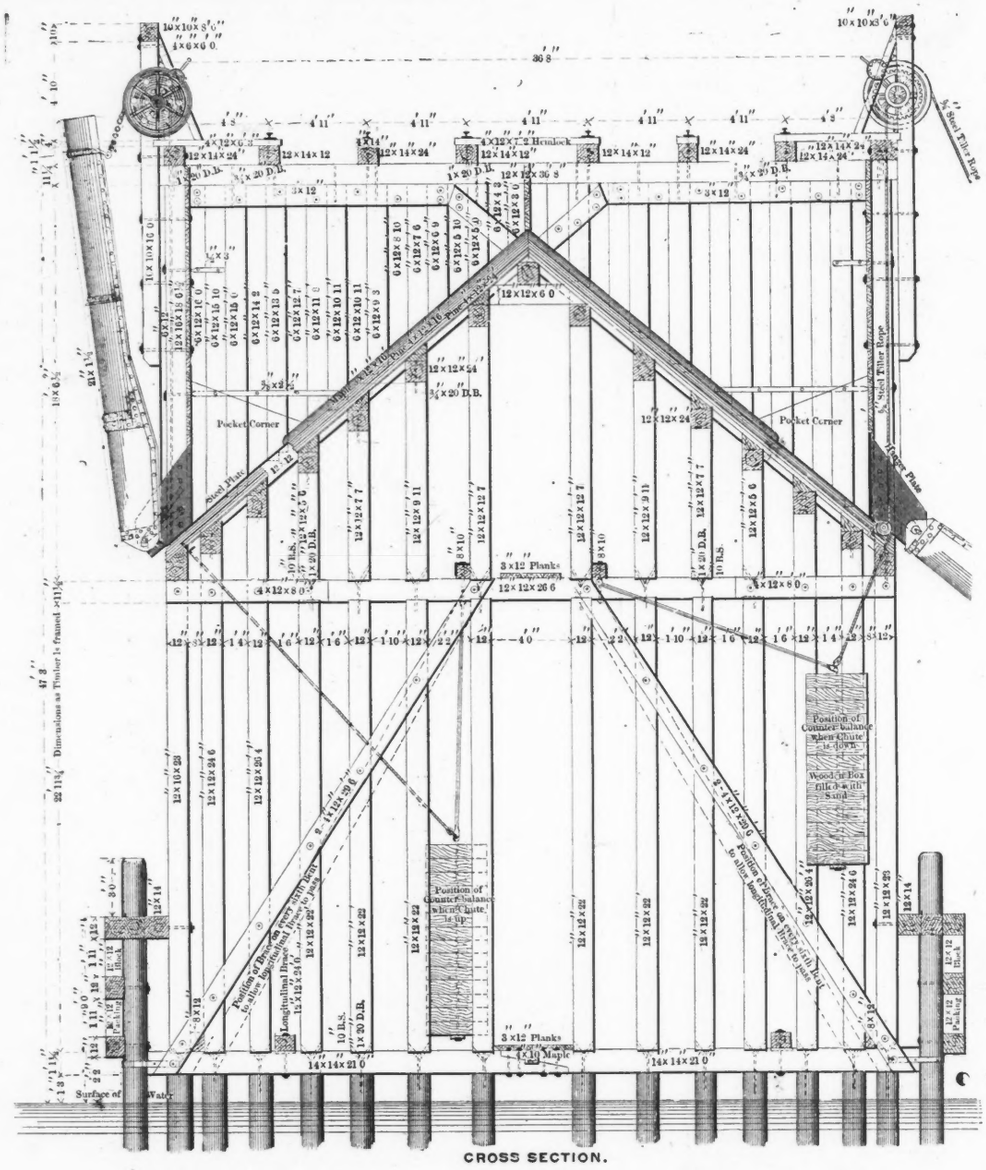

FIG. 7.

The portion of this dock (which is designated No. 4) accessible to vessels, is 1,302 feet in length, with an approach 530 feet long. Its capacity is 29,000 tons of soft ore, for the handling of which it is especially designed. Its construction gives a total dockage in the harbor for 71,000 tons of soft ore (about 82,000 tons of hard ore). The structure embodies many modern improvements, some of which, not being incorporated in any other existing structures of the same class, make it worthy of a somewhat detailed description and illustration in these columns.

The evolution of the modest ore-carrying schooner of 600 tons burden into the modern leviathan whose hold will readily accommodate from 2,500 to 3,000 tons of ore, rendered it almost impossible to load the new vessels at the old docks. It became necessary, therefore, to build on a scale that would accommodate any craft that can pass the Sault Ste. Marie canal. The enlargement of the old lock, now in progress there, the completion of which is still two years distant, will permit the passage of the largest lake steamers. At present vessels are limited to an average draught not exceeding 15 feet.

The pocket doors of No. 4 dock are 25 feet 4½ inches above water level and the height to the floor is 47 feet 3 inches. The width between centers of snubbing posts is 39 feet 4 inches; on floor level, 36 feet 8 inches. It rests upon a foundation of 3,580 piles, measuring 100,285 lineal feet, arranged for bents placed 6 feet apart, with 14 piles besides fender posts, under each bent (see Fig. 1). The piles were sawed off 15 inches above water level and capped with 14-inch × 14-inch × 21-foot pine sills overlapped and keyed at the center line of the dock (Figs. 1 and 7). The superstructure is staunchly constructed of heavy selected pine. The

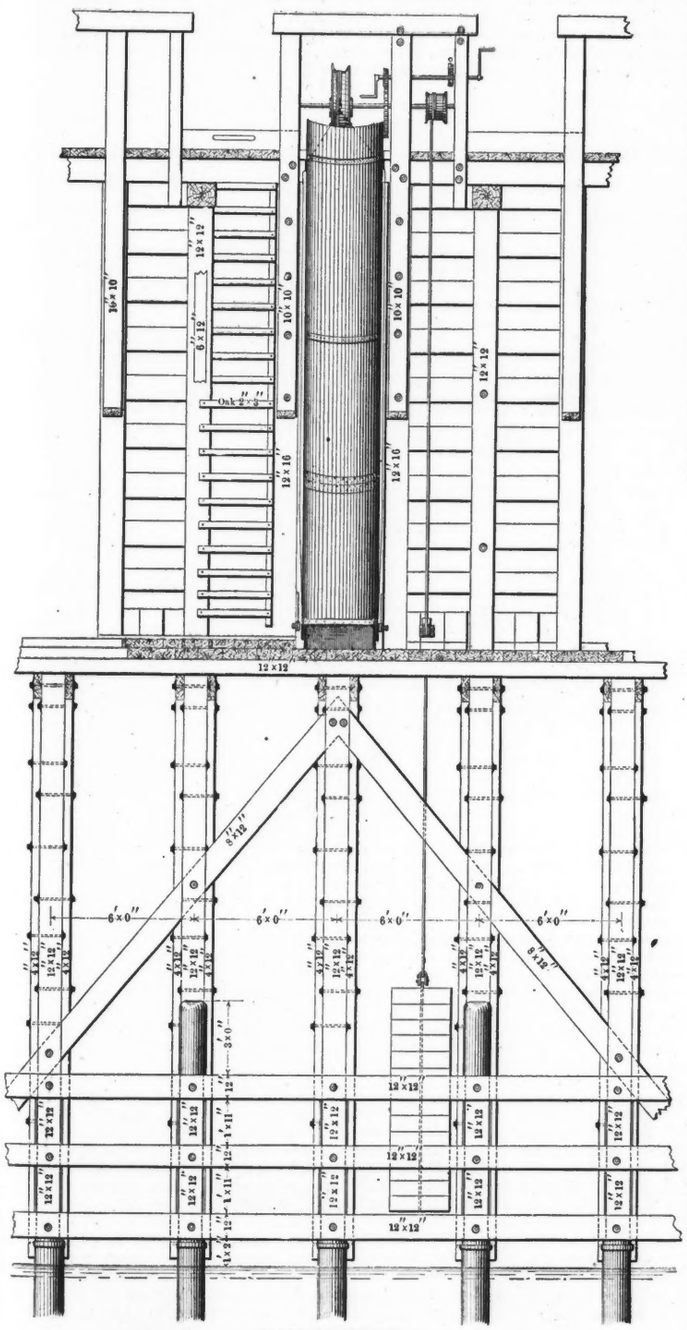

FIG. 6.

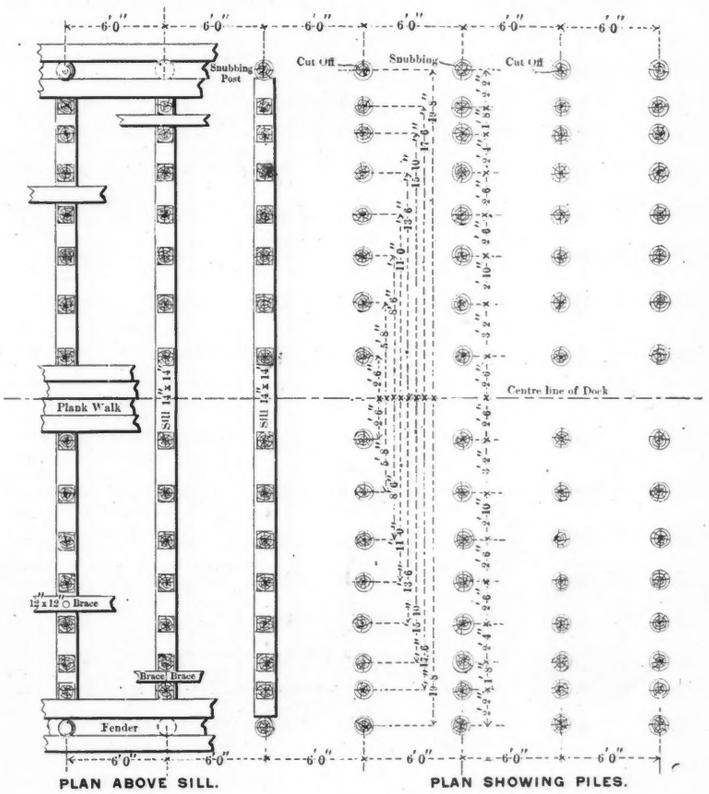

FIG. 1.

DULUTH, SOUTH SHORE & ATLANTIC RAILROAD COMPANY'S NEW ORE DOCK AT MARQUETTE, MICH.

bents (see cross-section, Fig. 7) consist of fourteen 12-inch × 12-inch posts each, all 22 feet high except the three outer posts on each side which extend to the pocket floor plates and are respectively 23 feet, 24 feet 6 inches and 26 feet 4 inches long, the variation in length being caused by the pocket floor angle of 50°. They are raised on the cap sills and double braced as shown in Figs. 6 and 7.

(To be continued).

Platinum.—The greatly increased price of platinum has given rise to strenuous efforts to discover new mines. A few months ago Mexico was reported to be rich in platinum ores, and now the Ballarat *Courier* announces that ore has been found in Australia containing nearly 160 pounds of platinum to the ton.

THE MINING INDUSTRY OF BUTTE, MONTANA FOR 1890.

(From our Special Correspondent.)

To commence with the great silver producing mines, such as the Lexington, Alice, Moulton and Gagnon, the year has been one of unusual prosperity.

During the summer and early fall months, while the price of silver fluctuated between $1.09 and $1.20, the increase in the value of their product stimulated the old companies to renewed exertions, while small capitalists having claims which had remained idle for years, were inspired with confidence and at once placed men at work on these claims, the ores of which could be profitably treated at the then prevailing price of silver. Since the decline of silver most of those low-grade mines have either closed down or continue work in a desultory manner, keeping water out of the mines, with the expectation of resuming operations should the silver market become again favorable. The natural result of the enhanced value of the white metal was to largely increase its production in this locality, and despite the legal complications that kept the Blue Bird mine, one of the greatest silver producers in Montana, closed for almost one year, and the fire that raged for many months in the Anaconda and St. Lawrence mines, the yield of silver for 1890 will exceed largely in value the output of the previous years. In the latter part of October last the Blue Bird Company resumed operations and has been a large and steady producer ever since.

An examination of the books of the American and Pacific Express Companies of this city shows that from January 1st to date there have been shipped by the various companies 2,377 bars of silver, valued at $3,897,230.

The Alice mine is the leading silver producer of the district. This company owns fifteen claims, most of which are productive. The Alice and Magna Charta claims are the greatest silver producers and the former, although not the deepest, is the most extensively developed silver mine of the district. Its present depth is 1,300 feet. The company owns two mills, one of 60 stamps and the other of 25 stamps. The combined capacity is about 50,000 tons per annum. The ore of the Alice is not high grade, but the enhanced price of silver has enabled the company to run at its full capacity, barring the usual delays for repairs, etc., in the mills. Though considerable time was consumed in this way, the annual report of Superintendent Wm. Hall, recently issued, shows that the Alice has shipped bar silver to the value of $1,338,238. A most gratifying circumstance in the company's affairs has been the resumption of dividends, which had been necessarily suspended during the previous four years. The amount distributed in dividends to date is $895,000, of which $95,000 was paid during the year.

As stated above, the Blue Bird mine, located about two miles southeast of the city, remained closed down for almost nine months of the year, owing to litigation with the owner of the Little Darling, an adjoining claim. Work was originally suspended with the intention of awaiting the result of the suit, but after ten months of idleness the company resumed

operations, and is producing at present at the rate of about $750,000 a year. The Blue Bird, as the Anaconda, is a close corporation, and though its profits are undoubtedly large, a statement of dividends does not appear in the reports. Its value is best understood by the fact that Manager Frederick Van Zant received and declined an offer of $2, 00,000 for the mine last year. The Blue Bird has 80 stamps working on ore. The depth of the shaft is 500 feet.

The Anaconda, which is really a copper producer, has also an output of $75,000 per month in silver. It is opened to a depth of 1,100 feet. Prior to the breaking out of the fire in the Anaconda and St. Lawrence mines the bulk of the ore treated by the company's smelters was received from these two mines: but since then the Mountain Consolidated, High Ore, Wake-up-Jim, Green Mountain, Modoc, and other properties of the company have been supplying the 2,500 tons, daily required at the smelters. The Anaconda and St. Lawrence adjoin one another, and are connected underground. The workings are lighted by means of electricity. The main shafts are down 1,000 feet, and the veins are from 60 to 100 feet in width. The average daily product of these two mines prior to the fire was 1,800 tons, and now that the fire is extinguished and the mines are being placed in working condition, it will be but a short time before they resume their place among the great copper producers of the world.

The flooding of these mines, rendered necessary in order to extinguish the smouldering fire, involved a large expense beside that incurred by the long shut-down. Again, after the water had been pumped out, it was found that the acid generated had almost eaten up and practically destroyed the underground machinery. This had to be replaced, and now, in a short time, these great copper producers will again be in operation. The reduction plant owned by the company is the largest in the world, giving employment to 1,000 men. The pay roll aggregates about $275,000 per month. The Mountain Consolidated, a valuable property, also owned by the Anaconda Company, is located about 2,000 feet northwest of the parent mine and is at present developed to the 600-foot level. It will be sunk 400 feet further during the year.

Next in importance to the Anaconda Company is the Boston & Montana, which derives its ore from ledges similar to the Anaconda. The mines belonging to the Boston & Montana are the Mountain View, the two Colusas, the Liquidator, Harris & Lloyd, and Moose. Two rich veins of copper run through the Mountain View. The shaft is down 1,000 feet, and the veins show no diminution in width or richness. The East Colusa is down 800 feet, while the West Colusa is 400 feet deep. The Harris & Lloyd is 400 feet down. With the completion of the smelters now in process of erection at Great Falls, the Boston & Montana will have increased its smelting capacity to about 600,000 tons per year.

The Butte & Boston, another great silver and copper producer, ranks next to the Boston & Montana. The principal mines belonging to this company are the Silver Bow, Belle of Butte, the La Plata and the two Gray Rocks. The silver product of these mines for the year 1890 was $500,000. The company has recently completed a new concentrator of 400 tons capacity. These improvements have necessitated additional development of the mines; in consequence the Gray Rocks have been sunk 200 feet further, and the Silver Bow 100 feet, with corresponding lateral development. These mines are yielding the company handsome returns upon the investment. The mines of this company are under the supervision of Charles H. Palmer, one of the most thorough managers of the Northwest.

Another great copper producer is the Parrot mine. The ore carries considerable silver. The main shaft is now down 800 feet, having been driven down 100 feet during the year. The ordinary output of the Parrot is about 300 tons per day when the smelter is in full blast. At the present time the mine is closed down, but there is a large accumulation of concentrates, and enough to supply the smelter. The smelter is a model of its kind. The company does a large custom or ore-buying business, which explains the difference between the quantity produced by the mine and that treated at the smelter. The Parrot being a close corporation, details of its business are not easily obtainable, but that it is profitable is shown by the fact that it has yielded dividends to the aggregate amount of $696,000 to its four owners. This includes the dividend declared and paid last September.

The Lexington mines are located on the summit of the mountains, near Walkerville. The main shaft is 1,500 feet, and is the deepest in the state. This mine was the first in Butte to yield silver ore in 1868, and at this time, 22 years later, it is still producing ore. Its shipments for 1890, estimated for a part of December, were almost $1,000,000. It has paid dividends to the amount of $609,000, and is one of the most productive and valuable mining properties in the state. It has 50 stamps and a capacity of about 100 tons per day. The discovery of a body of copper-silver ore on the 1,500-foot level is reported, and, though not verified, has not been denied.

The Moulton mine, adjoining the Alice on the west, is a large producer. The Poser, belonging to the Moulton Company, also yields a fine grade of silver ore. W. A. Clark, the well-known Butte millionaire, is the practical owner of the Moulton properties, while Joseph K. Clark, his brother, is the superintendent. This mine is splendidly equipped and has a forty-stamp mill. The Moulton, while a large producer, has not paid dividends until recently, when the enhanced price of silver bullion enabled the management to declare small dividends. The shipments of bar silver, from the Moulton, for the year just closed are valued at $348,000.

Mr. Clark is also the sole owner of the Butte Reduction Works, treating 150 tons of ore per day. These works, formerly owned by a company, passed into the possession of Mr. Clark last summer, the consideration being $250,000. The ore treated is partly custom and partly the product of mines owned by Mr. Clark, notably the Black Rock, Late Acquisition and the Elm Orlu. The product this year was about $700,000.

The Colorado and Montana Company, at its reduction works, is treating 115 tons per day, and has been active during the entire year. The company's mines are the Gagnon, Caledonian, Hibernian and Burlington. All but about 10% of the ore produced requires concentration before being sent to the smelter. The principal producer is the Gagnon, now down 1,000 feet. The company treats about 30,000 tons of its own ore per annum, and also a large quantity of custom ore.

The grades of various furnace products, as shown by statistics, credit the Colorado Company's matte with carrying about $35 of the precious metals to the ton in addition to the value of the copper. The precious metals contained in the Butte Reduction Works' matte are about $20 per ton, that in the Anaconda matte is about $13 and Boston & Montana $10 per ton. The copper is utilized as a vehicle for gathering the gold and silver. The product of the Colorado Smelter will aggregate more than $1,000,000 the present year. The company is considering the advisability of increasing the capacity of its plant, and large additions to the works will probably be made early next season.

There is no important change to record with reference to the number of stamps dropping. The sixty-stamp wet crushing silver mill of the Anaconda plant at the valley Swansea, erected several years ago for the treatment of the free milling surface ores of the Chambers syndicate, has been removed, and the free ores will be left in the mine at present. This leaves the following mills operating on Butte ores:

	Stamps.
Alice	85
Blue Bird	80
Lexington	60
Silver Bow	50
Moulton	40
Total	315

The mills crush about 500 tons per day, and last year they produced about $4,000,000.

The smelters have made some changes by increasing their capacity, and are reducing much more ore than they did one year ago. Their present capacity and additions to be in operation before the end of the year will be found in the following table:

	Tons per day.
Anaconda, now treating	2,500
" increase when repairs on upper works are completed	2,000
Boston & Montana, now treating	400
" increase when smelter at Great Falls is compl'ted	1,600
Parrot	400
Butte & Boston	500
Colorado & Montana	125
Butte Reduction Works	150
Total	7,675

The chief expenditures for improvements have been made by the Anaconda Company upon its great smelters, known as the upper (old) and lower (new) works. Their expenditures for the year in rebuilding and remodeling their works will make a grand total of $3,000,000, as shown by the following.

Rebuilding the smelter that was burned (lower works), together with replacing damaged machinery	$400,000
Addition to smelter and calcining plant, constructing new smoke stack and engine house and putting in Brueckners (all at lower works)	900,000
Rebuilding Nos. 1, 2 and 3 (upper works)	700,000
New Brueckners and other machinery for the same	1,000,000
Total	$3,000,000

The smelters have been constructed entirely of iron, thus obviating all danger from fire, and No. 1 smelter is very nearly finished, and the machinery is being placed in position, and Nos. 2 and 3 will be completed in January. When these changes and improvements are completed at the upper works the Anaconda Company will have a plant there consisting of eighty-six Bruckner furnaces, with a full equipment of matting furnaces, at the lower works, located at Carroll, several miles above Anaconda, there are ninety-six Bruckners, making a total of 182 of these furnaces in use at the Anaconda smelters, representing alone an investment of $1,000,000. When these furnaces are in operation the smelters will handle 4,500 tons daily. At the lower works there are eight improved Ballstrom stamps and at the upper works there are seven, each having a capacity of 300 tons per day. The company gives employment to about 1,800 men in Anaconda.

The mining prospects in and around Butte never were more favorable and 1891 promises to be the most prosperous and profitable year yet experienced. The quantity of ore shipped by the Anaconda Company from its mines in Butte to the smelters at Anaconda during 1889 was 514,000 tons, as shown by the records of the Montana Union Railway, over which all the ore goes. Despite the fire in the Anaconda and St. Lawrence mines, the output for the present year will aggregate more than 500,000 tons, their shipments to November 1st being 475,000 tons.

New Arms Wanted by the Government.—In the recent annual report to the Secretary of War, Gen. Benet, Chief of the Bureau of Ordnance, says: "The improvements in magazine mechanism have been rapid, and it seems peculiarly necessary, now that a change in caliber is contemplated, that our present Springfield single-loading system should be replaced, if it is possible, by any equally efficient magazine system. Accordingly, this office will recommend that a board be convened to select a suitable magazine mechanism, after a full and free competition among the best existing systems, as soon as the necessary preparations can be made."

Velocity of Sound at very Low Temperatures.—A base line of 1.279 meters was accurately measured, and the interval determined between the flash of a gun at one end and the appearance of the sound wave at the other. The results, as recorded in *Phil. Mag.*, p. 507, December, 1890, were as follows, t being the temperature, x the number of observations and v the corresponding velocity in meters per second.

t =	−10·9	−25·7	−37·8	−45·6
x	53·	114·	164·	265·
v	326·1	317·1	309·7	305·6 m.

The velocity is thus seen to diminish 0·603 meter per second for 1° C.

Heat of the Moon and the Stars.—C. V. Boys has, according to Proc. Roy. Soc. Lond., 47, p. 480–499, 1890, used his radio-micrometer to detect the heat of the stars and the moon. Although the instrument was competent to detect the heat of a candle at a distance of 2·8 kilometers, an image of the brightest star produced by a silvered concave mirror, of 16 inches aperture produced no sensible indication. The moon, however, gave large indications, and the author discusses the radiation from the moon by the method of curves. The radio-micrometer could detect [illegible] of the entire heat radiation from the moon.

THE CHEMICAL AND MINERAL MARKET IN 1890.

[As announced in the issue of January 3d, this review of the acid market was crowded out by pressure on our columns.]

HEAVY CHEMICALS.

The acid market during the year just past cannot be said to have shown any improvement over that of 1889. Though the volume of business was slightly greater, prices were less advantageous to the manufacturers. Quotations per 100 lbs. of acid in New York and vicinity, on an average, have been as follows: Acetic, $1.72½ to $2.20; muriatic, 18°, 90c. to $1.20; muriatic, 20°, 95c. to $1.50; muriatic, 22°, $1 to $1.75; nitric, 36°, $3 to $3.25; nitric, 40°, $3.50 to $4.50; nitric, 42°, $4 to $4.75; sulphuric, 60°, 70c. to 80c., and sulphuric, 66°, 80c. to 95c.

In some instances acid has been sold at lower figures, but, again, higher prices have obtained in some cases for particular reasons.

For many years the productive capacity of the acid works in this country has exceeded the consumptive demand, though of late this has increased largely.

In bygone years the Standard Oil Company and other petroleum refiners used great quantities of acid which was nearly all bought from acid manufacturers; so did the makers of artificial fertilizers from phosphate rock and other raw materials. But now, the oil refineries and many of the fertilizer makers have acid plants of their own; those of the fertilizer makers who do not manufacture their own acid find it more economical to use "sludge," or the residue acid of the oil refineries.

With these important consumers taken from the market, the acid manufacturers had perforce to seek elsewhere an outlet for their product. These efforts have resulted in a general increase in the consumption but this same increase has not been sufficiently great to absorb all the existing acid works could make, and as a consequence the condition of the acid market to-day is not very satisfactory.

The recent advance in the price of brimstone seriously disturbed some of the smaller concerns but the development, now in progress, of great sulphur deposits in this country will in the near future render a recurrence of this "sulphur famine" impossible and will secure to acid makers a full supply at fair prices. In the meantime it may go hard with some of our smaller acid works. That usual panacea for all the ills that trade is heir to, the "Combination" or "Trust," has been tried in the acid manufactures during the past year, and has proved, as usual, a dismal failure.

The fact is, the usual—the inevitable—"struggle for existence" which comes in every industry when its productive capacity exceeds the demand for consumption, has commenced in the American acid-making business, and the equally inevitable result can assuredly be counted on.

"The survival of the fittest" is a law of universal application, and it is certainly the part of wisdom to recognize this and seek the only way of salvation from its inexorable decree. As was long ago stated in the pages of the ENGINEERING AND MINING JOURNAL, in a series of articles by Dr. Francis Wyatt, on "The Development of the American Chemical Industry,"* the malady from which many of our acid makers suffer is chronic incompetency and ignorance of the conditions essential to success in maintaining the "struggle for existence" under the modern conditions governing the industry. While it was young in this country and a ready market was found at high prices for all the acid that could be produced, the crudest of plants ever managed with an astounding degree of ignorance concerning modern methods of manufacture could still earn large profits on investment. The day for this has passed and those who, ignoring the requirements of modern manufacturing methods, still cling to ancient ideas, will inevitably be crushed out. No such nostrum as "combination" or "trust" can long overcome the inexorable law; it may for a time retard its operations as a dam on a river may temporarily hold back the rising waters, but the disaster which must inevitably follow this effort to balance the cost of ignorance by a tax on consumers will be all the greater the higher this dam be built and the greater the volume of the flood—in the form of productive capacity—the dam has accumulated.

The American chemical industry is making progress. Knowledge, intelligence and large capital are embarking in it, and those who are holding to old ways and asking consumers to pay for this folly had better modify their views and help themselves by adopting improved methods of manufacture.

As the history of the acid trade during the past year shows how futile are these artificial barriers to arrest the modern progress, we give some notes on what has interested the acid trade during the year.

A more or less important factor in the acid market during the year 1890 was the Knickerbocker Chemical Company, variously known as the "combination," the "trust," and, latterly, as the "Delaware Peach Crop," because it was a "howling failure." It may be useful to place on record some account of the origin, object and life of this effort to arrest the operation of Darwin's great law.

During the first six months of 1889 very few of the twelve or fifteen manufacturers located in New York and vicinity were running their works to full capacity. The advisability of some action to relieve the situation was freely discussed, but it was not until July, 1889, that a number of acid manufacturers met, and organized the "New York Chemical Club," the object of which was to promote closer social relations between the acid men and formulate some means whereby to cure the ills in the acid market. For 15 years there had been no fixed prices, and competition had been at times sharp and almost ruinous to some producers. It was decided by the members of the club to fix a schedule of prices. The firms included in the "Chemical Club" were then: J. L. Morgan & Co., G. H. Nichols & Co., Martin Kalbfleisch's Sons Company, Dundee Chemical Works, Lodi Chemical Works, Joseph Binns, Passaic Chemical Company, Staten Chemical Company, Phœnix Chemical Works (Gridley & Co.), Standard Chemical Company, and Butterworth & Judson.

Curiously enough, the numerical strength of the club was just thirteen, a portentous fact which subsequent developments only too fully emphasized.

Cards were sent to customers announcing the following schedule prices: Muriatic acid 16°, 95c. per 100 lbs.; 18°, less than 10 cbys., 1¼c. per lb.; 18°, 10 cbys., 1¼c.; 20°, less than 10 cbys., 1¾c.; 20°, 10 cbys., 1¼c.; 22°, less than 10 cbys., 2c.; 22°, 10 cbys., 1¾c.

Nitric acid, 36°, less than 10 cbys., 4¼c. per lb.; 36°, 10 cbys., 4c.; 38°, less than 10 cbys., 4¾c.; 38°, 10 cbys., 4¼c.; 40°, less than 10 cbys., 5¼c.; 10 cbys., 5c.; 42°, less than 10 cbys., 6¼c.; 42°, 10 cbys., 6c.; 43°, less than 10 cbys., 6¾c.; 43°, 10 cbys., 6½c. Carload lots, ¼c. per lb. less.

Aqua fortis 36°, less than 10 cbys., 4c. per lb.; 36°, 10 cbys., 3¾c.; 38°, less than 10 cbys., 4¼c.; 38°, 10 cbys., 4¼c.; 40°, less than 10 cbys., 5c.; 40°, 10 cbys., 4¾c.; 42°, less than 10 cbys., 6c; 42°, 10 cbys., 5¾c.; 43°, less than 10 cbys., 6¼c.; 43°, 10 cbys., 6¼c.; car-load lots, ¼c. per lb. less.

Sulphuric acid 60°, 10 cbys. and over, 80c. per 100 lbs.; 60°, 10 cbys., 90c.; 60°, 5 cbys., 1c. per lb.; 60°, less than 5 cbys., 1¼c.

Oil vitriol 60°, 50 to 100 cbys., 1¼c. per lb.; 66°, 10 to 50 cbys., 1¼c.; 66°, 5 to 10 cbys., 1½c.; 66°, less than 5 cbys., 1¾c.

These prices all bore date of July 10th, 1889, with the exception of those for nitric acid and aqua fortis, which were advanced to the prices given above on July 24th. All the quotations were "f. o. b. in one shipment," thus gaining two advantages for the seller which had theretofore been difficult to obtain. The seller did not guarantee the safe delivery of the acid, and thus escaped all liability for breakage, etc., and saved also in the cost of transportation by filling all orders in one shipment—an admirable arrangement for the seller! The agreement to observe the schedule was merely a verbal one.

At the start great cordiality animated all the meetings. The club had dinners and love feasts worthy of Lucullus. The temporary chairman was said to excel Brillat-Savarin in culinary lore. The acid business was indeed an admirable one for those who desired to establish a reputation as *bon vivants*.

A pessimist might, however, have been excused for exclaiming, "Such happiness cannot long exist." Alas! so it proved. Rumors of internal dissensions began to circulate. First one, then another, still another and finally a fourth manufacturer withdrew from the club. Their reasons for this step were various. One withdrew because he had seen at this early stage evidences, among some of the manufacturers, of disinclination to keep faith with the others. Another did not believe in "trusts" or "combinations" of any sort whatsoever. His enemies intimate that the real reason was that he could not be the chief of the concern. *aut Cæsar aut nullus* being his motto. Another deserted the ranks because, with remarkable foresight, he could not see how such a concern could possibly be a success, and he felt a very natural aversion to being identified with failure. Still another withdrew because there was a "personal friction" between him and some of the other members.

Undismayed by these defections and because the ideas and predilections of the remaining members "trended trustward," the Knickerbocker Chemical Company was incorporated in New Jersey in November, 1889. The incorporators were Messrs. Henry S. Deshon and James L. Morgan, Jr., both of Brooklyn, N. Y., and John M. Goetchius, of New York City, and William M. Johnson, of Hackensack, N. J. The stated object of the corporation was the manufacture and sale of acids and chemical products. The total capital authorized was $25,000. The par value of the shares was $100. The principal office was in Hackensack, Bergen County, New Jersey.

Officers were elected as follows: J. M. Goetchius, of Jas. L. Morgan & Co., president; Wm. M. Johnson, of the Dundee Chemical Works, first vice-president, and Leander Savage, of Martin Kalbfleisch's Sons Company, secretary and treasurer. The board of directors was composed of one representative from each of the firms. The executive committee was: H. S. Deshon, Eugene Waugh and Franklin H. Kalbfleisch.

The subsequent history of the "combination" can be told in few words.

Competition of the sharpest kind ensued. It was "war to the knife" between the "trust" and the independent producers. Reports of sales at very low rates were soon current and intensified the "war of rates." When the smoke of battle cleared away it was seen that the "combine" was crippled, for beside its struggle with the "outs" the Knickerbocker Company had fights "within" among its own members. As is usual in such trade combinations, the agreement was not strictly adhered to, and in December, 1890, three manufacturers, whose aggregate strength was fully 40% of the total forces of the "combine," signified their intention of withdrawing from it. These latest seceders admitted that the "whole thing was a dead failure." And it was clear to all, though it took a year and a half to demonstrate to the Knickerbocker Chemical Company so self-evident a fact, that the attempt of an organization that could not control even one-half of the acid production, to control prices was nothing short of "midsummer madness," and was foredoomed to ignominious failure.

The selling policy of the Knickerbocker Chemical Company, as explained to us by one of its members, was an odd mixture of timidity and rashness. It consisted in "cutting" prices when it was desirable to take away customers from the "outsiders." A general and promiscuous cutting was not instituted. New customers were favored at the expense of old and tried patrons. These were quickly disgusted, and insisted on the very lowest prices or took their trade elsewhere.

Familiar with the history of many trade combinations and corners and with the story of their conception, growth and demise, the ENGINEERING AND MINING JOURNAL all along pointed out what must be the outcome of this ill-judged scheme to "regulate the acid trade."

It is true, the name of the Knickerbocker Chemical Company still has a legal existence; perhaps it is intended to preserve it as a monument to warn those who follow that "this way lie danger and disaster."

When trade combinations and corners are "successful," they are almost always ultimately injurious and frequently disastrous to the industries they aim to improve, and when they are "failures," they merely aggravate the ills they were intended to cure.

A letter containing the following questions was sent to the various acid manufacturers:

1. How have prices ruled as compared with 1889? 2. What has been the volume of business as compared with that of 1889? 3. What are the various causes that have affected the course of the market? 4. General remarks.

The following answers have been received:

Martin Kalbfleisch's Sons Co.: "1. Prices ruled low in 1889 until July.

*The ENGINEERING AND MINING JOURNAL, XLIV., 132, 145, 186, 204, 222, 240, 255, 74, 290, 310, 327, 346, 361, 351, 411, 432, 448, 485.

After the pool was formed prices were advanced about 10%. In 1890 the market price has been low, owing to competition between the Knickerbocker members and the 'outs.' 2. Business for 1890 has been greater than for 1889, and there has not been an appreciable increase in production. Had it not been for the war between the 'ins' and the 'outs,' we think prices would have been maintained. 3. The action of the Knickerbocker Company in Connecticut and some parts of New Jersey has caused goods to be sold at a price much below the cost of production."

G. H. Nichols & Co.: "1. Early in the year prices were higher than in 1889. Subsequently they declined to a point lower than in '89. The average has been lower than in '89—say 5%. 2. It has been larger, we should say, by 5% to 10%, taking all the various makers into consideration. Our own works have run to their utmost capacity. 3. Primarily, an increase in manufacturing capacity; secondarily, insane jealousy and competition among makers. 4. Conditions are favorable to an advance provided manufacturers exercise ordinary common sense."

Gridley & Co: "1. About 5% lower in 1890. 2. About same or slightly increased. 3. This is a long story, and the principal points have been treated in the various issues of your paper."

Butterworth & Judson: "1. Same as in December, 1889. 2. About 30% greater. 3. Overproduction and the desire of the combination to take trade from outsiders."

Knickerbocker Chemical Company: "1. 10% less on the average. 2. About the same. 3. Overproduction the cause of low prices."

FERTILIZERS.

A leading firm of fertilizer dealers in this city writes us as follows: The market for fertilizer materials and chemicals during the year just drawing to a close has been an active one in nearly all lines. The slaughtering of hogs (an increase of about 33⅓% against 1888–89) in the principal slaughtering centers has brought into the market an increased supply of tankage and dried blood, which tended to depress prices considerably, regardless of increased consumption of these materials. The increase has come principally from the South.

The Southern cotton-seed mills were either not ready or not willing to name prices for this season's output of cotton-seed meal to the fertilizer mixers of the South, who have heretofore used it almost exclusively as a source of ammonia, until late this fall. These mixers, being afraid to risk a squeeze in prices of cotton seed meal, proceeded to supply themselves liberally with the then much cheaper, higher-grade and equally valuable animal products, tankage and blood. Had it not been for these unexpected and unprecedented outlets, the price of tankage and blood must have declined lower. Another important factor in depressing values of ammoniacal materials, was nitrate of soda, which gradually declined from about $2.00 nearly a year ago, to $1.70@$1.72½ per 100 pounds, for spot, and $1.65 per 100 pounds, for future arrivals. (This contains about 19% to 19½% ammonia).

The production of fish guano was a very large one, and prices correspondingly depressed. Fish scrap sold lately as low as $18.50 per 2,000 pounds, at fish factory, for prime dry, platform-dried Menhaden scrap, maximum 12% moisture, and at about $9.50 per ton for wet scrap, basis 40% moisture. This is equivalent to a reduction of about $2.50 per ton.

Sulphate of ammonia is the only article on the list of ammoniates which advanced, in sympathy with the unprecedented demand and advance in price of aqua and anhydrous ammonia for refrigerating purposes.

Another and new source of ammonia is the article known as "concentrated tankage." It is obtained by the evaporation and treatment of tank waters in the pork packing establishments of the West, by the patent process of the National Chemical & Fertilizer Company, of Chicago, which company was organized through the efforts of a New York firm of commission merchants in fertilizer materials. Of this material there are about 12,000 tons produced per annum, testing on an average 14½% of ammonia, with some phosphoric acid and some potash. It commands a price almost as high as that of dried blood; is finely pulverized; is largely soluble in water and is more readily available as plant food than any other animal matter.

Phosphate Rock.—South Carolina rock has had a boom—caused by rush of orders from Europe. Prices advanced from about $6 for kiln-dried rock a year ago to $7@$7.25 free alongside, South Carolina ports, and the quantity marketed reached almost 600,000 tons, worth about $4,000,000.

Florida Rock.—Several steamer cargoes of this phosphate, both land and river rock, were exported and several thousand tons distributed for local consumption. The large percentage of low-grade and alumina-bearing rock in the Florida land phosphate has prevented that rapid development of the latter, which its exploiters had hoped for. The prospects seem to be favorable for large quantities of good phosphate to be obtained from that state, though not sufficient in extent materially to cripple the South Carolina interests. The discovery of phosphate will tend to encourage the establishment of fertilizer works in Florida. Good Florida land phosphate commands about $12 per ton, basis 70%, at shipping point, and good river phosphate about $7, basis 60%, at shipping point. The State of Florida is destined to be a large consumer as well as producer of fertilizer.

Potash salts are constantly growing in favor and importance, and their consumption is rapidly increasing. The experiment stations and colleges have established their value by a series of field tests, which corroborate the results of similar tests made at European experiment stations. Kainit and the very similar article, sylvinit, are to some extent used in Europe for composting with raw bone, which it "cuts" or makes "available" as efficiently as sulphuric acid, this being quite an economical process, since the sulphuric acid is rather undesirable in fertilizers for some soils.

Prices of potash salts ruled somewhat lower this year than in 1889, and for 1891 will be still further reduced, so as to encourage increased consumption. These potash salts are produced at the German potash works of the Verkaufs-Syndicat der Kaliwerke, at Aschersleben, Wester Egeln, Leopoldshall-Strassfurt, Germany, large corporations which have placed their output under joint management. The sales in this country are made through seven firms, who have for many years handled and pushed the sales of these goods, made a thorough study of the subject, and know from practical experience and personal observation, just what the country requires in that direction. This business is to-day in a healthier condition than it ever was before, though possibly there may have been single years during which an exceptionally large total quantity was imported, and perhaps not actually consumed.

The tariff bill just passed has placed one of the potash salts, high-grade manure salt, testing 90% to 95% sulphate of potash, on the free list. There has been a struggle for several years on the part of one of the firms importing this article to establish their claim that this manure salt should be free, because it was used principally for manures. While it could be used as a raw or crude material, and after much and expensive purification converted into other "chemicals," or even into pure sulphate of potash, it was not in itself "sulphate of potash," which was protected by a duty of 20%. The custom house and Treasury officials maintained that its use for fertilizer purposes did not exempt it from the payment of duty, under the distinct provision that sulphate of potash exceeding 30% pure potash, according to one Treasury decision, should pay 20% ad val. Two law suits were decided in favor of the importing firm, reported by the ENGINEERING AND MINING JOURNAL at the time, and a third one begun by the Treasury Department. In the meantime the Department of Agriculture, the Experimental Stations, and members of both houses of Congress were being constantly appealed to, and at last this valuable potash salt was removed from the list of dutiable protected articles and placed within reach of everybody, largely through the help of ex-Governor Rusk, Secretary of Agriculture, the farmers' friend, who worked with might and main toward the accomplishment of this result.

The fertilizer industry is about the only one still encouraging to a great extent the pernicious and unsatisfactory "long credit" system, buying raw materials for cash or on short time and trusting it out to farmers on "crop time." The latter term, in its very indefiniteness, indicates what can be expected, namely, payment from the proceeds of a crop when there is one, or at least one sufficiently bountiful to pay all debts, and "no pay" in case of a crop failure. Sharp competition and, in a measure, excessive distrust among manufacturers, have prevented the abolition of this evil: it is high time that it should be eradicated.

GLATZEL'S METHOD OF PREPARING CHROMIUM.

In a recent issue of the *Berichte d. deutsch. Chem. Gesellschaft*, Emanuel Glatzel has described a ready method for the preparation of almost chemically pure chromium in quantities sufficient for laboratory experiments on the properties of this metal in combination with others, and which may easily be modified so as to furnish larger quantities. He first reduces a solution of potassium bichromate and hydrochloric acid by means of alcohol, so as to form a solution containing chromium and potassium chlorides, thus:

$$K_2Cr_2O_7 + 8HCl + 6H = 2KCl + Cr_2Cl_6 + 7OH_2,$$

and this solution when evaporated to dryness yields an intimate mixture of the two chlorides in the above proportions. This solid is then mixed with magnesium filings and heated strongly in a Hessian crucible in an injector furnace, when metallic chromium and magnesium chloride are produced, thus:

$$2\,KCl + Cr_2Cl_6 + 3Mg = 2KCl + 2Cr + 3MgCl_2.$$

The fused mass is extracted with water and boiled with a little dilute nitric acid to dissolve any residual magnesium, when the metallic chromium is obtained as a light gray powder having a specific gravity of 6·728 at 16° C. It is practically pure, and is non-magnetic. The yield is remarkably good, as the author states that he has obtained 27 parts by weight of chromium from 100 parts of potassium bichromate. This adds another to the list of difficultly reducible metals which have at last been obtained in a state of purity by the use of magnesium. As far as we are aware, *Industries* remarks, the only other alloy of chromium known, besides the iron chromium already alluded to, is its alloy with aluminum (Wöhler, *Annalen*, 106, 118), which exists as very fusible tin-white crystals, which become brittle after fusion. We should imagine that this alloy, if prepared in large quantities, now that pure chromium is available for the purpose, would give a series of data, when added to steel, which would throw considerable light on the behavior of these foreign elements on the properties of the new steels.

Voluntary Services of Corporation Officer.—Where the president of a commercial corporation has served without salary or agreement for pay, and sells his stock to others who assume control of the corporation and vote a sum of money to the retiring president for his past services, they are liable to the creditors of the corporation for the amount so paid, as the president was not entitled to compensation.

Ellis v. Ward, Supreme Court of Illinois, 25 *N. E. Rep.*, 530.

License to Prospect for Minerals.—A grant to plaintiff of the right to enter on land to prospect for mines and minerals, and to dig, carry away and test such portions as he may think proper, is simply a license to plaintiff to enter on the land for the specified purposes, and conveys no title or interest in the land, though it purports to bind the heirs and assigns of the parties. A further provision giving plaintiff the right to work the mines on the land if, in his opinion, after making the tests, they are worth working, makes it obligatory on plaintiff to make the tests, and to declare his intention in regard to working the mines within a reasonable time; and, where he has delayed for ten years in defining his position, the grantor is justified in revoking the license.

Cahoon v. Bayard, Court of Appeals of New York, 25 *N. E. Rep.*, 376.

Fraudulent Representations in Sale of Mining Stock.—Where it is sought to avoid a contract for a purchase, upon the ground that the purchase was made as the result of fraudulent representations it is necessary that the representations should have been such as the purchaser relied upon and such as influenced him toward making the purchase. A false representation made upon a sale of mining stock, to the effect that the company had $1,500,000 worth of silver ore then lying on the surface of the ground at the dump, was not so flagrantly extravagant as to justify the court, in an action for deceit, in holding, as a matter of law, that the plaintiff could not have relied on it.

Barndt v. Frederick, Supreme Court of Wisconsin, 47 *N. W. Rep.*, 6.

GEMS AND PRECIOUS STONES.

The Witwatersrand Mining and Metallurgical Review of Africa, in its November issue, reviews this book as follows:

A copy of this splendid work, published by the Scientific Publishing Company, New York, has just come before us and we do not hesitate to pronounce it the most finished and artistic scientific book that has ever come under our notice. The colored plates are marvelous productions, representing the gems in the most realistic manner, and the whole work is produced in very creditable style, making it at once scientifically and artistically valuable. The price of the book is $10 and we do not hesitate in stating that it is very cheap to all those who are interested in mineralogy or the study of precious gems, and we strongly recommend public libraries such as those at Kimberly, Cape Town, &c., to purchase it as a work of reference.

THE M. C. BULLOCK MANUFACTURING CO.'S CHAMPION VENTILATOR.

Some alterations have been made in the Champion ventilator, manufactured by The M. C. Bullock Manufacturing Company, improving its mechanical details, as will be seen from the cuts. The hood, or casing, has been reduced in size, making the machine more compact and convenient for location; and the shaft has been shortened by placing the two fans side by side with a common center plate as shown in Fig. 1, so that it is no longer subject to the vibration, as formerly, when running at high speed. It is in the construction of the hood, however, that the principal changes have been made. This, with its attendant diaphragm, is hung on bearings, the center of which corresponds with the center of the fan shaft, these bearings being cast with the base of the fan shaft pillow blocks.

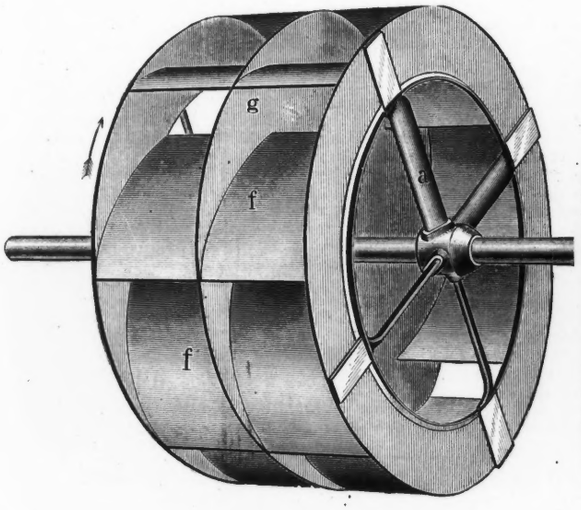

FIG. 1.

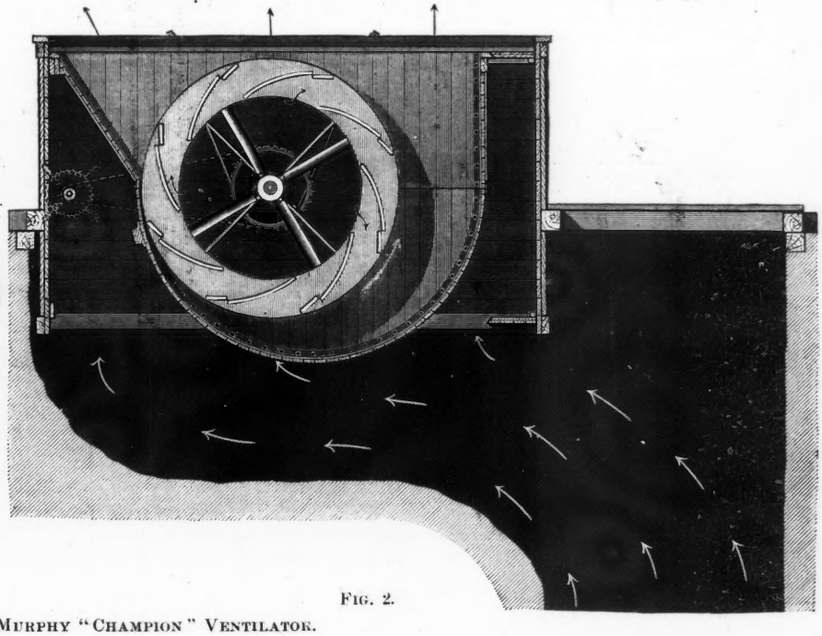

FIG. 2.

THE MURPHY "CHAMPION" VENTILATOR.

Thus the current may be reversed by revolving the hood around the fan by means of a hand wheel, as shown in Fig. 2, instead of by manipulating a number of doors as was necessary in the old types of the machine.

This fan is a simple, convenient and economical ventilator, and the name of the manufacturers is guarantee that the workmanship is excellent.

THE MISSOURI MINING INDUSTRY IN 1890.

(From our Special Correspondent.)

The year just passed has been a prosperous one for the mining industry of southeastern Kansas and southwestern Missouri, and has been marked by a large and steady growth in the mining and all allied interests of the district. This has been due to the increased demand for zinc ores, and the numerous investments that have been made by mining men from various parts of the country whose attention has been attracted to the profit in zinc mining in the vicinity of Joplin. Many new mining companies have been organized, and several tracts of hitherto undeveloped land have been opened with great success, while a large amount of prospecting has been done throughout the district.

At Joplin, the center of the district, the Picher Lead Works have produced 15,000 tons of lead during the year, and the Empire Zinc Company has maintained a steady output of spelter at the rate of 7½ tons, daily. All branches of business have been very active in the city, which has now a population of about 15,000. An electric street railway, which will shortly be extended to Webb City, has been installed during the year.

The principal mining companies have been the Consolidated, the Granby Mining and Smelting Company, the Thacher, the Turkey Creek, the Sterling Lead and Zinc Company, the Tuckahoe, the Porterland, the Windsor, the Carlotta Land and Mining Company, the Great Western Lead and Zinc Company, the Superior Lead and Zinc Company, the Pinkard mines, the Oswego, the Guinn and Loyd mines, the O'Keefe mines, Cox mines, Mahaska Mining Company, Empire Zinc Company, Emile Lead and Zinc Company, Diamond Mining Company, Snyder Bros., South Joplin Lead and Zinc Company, the P. Murphy mines, and the West Joplin Lead and Zinc Company.

The Oswego Mining Company has produced 4,140,060 pounds zinc ore and 1,515,600 pounds lead ore, valued at $90,080.39; the Guinn & Loyd mines, 1,038,210 pounds zinc ore and 503,030 pounds lead ore, valued at $25,197.85; the Tuckahoe Mining Company, 754,030 pounds zinc ore and 734,470 pounds lead ore, valued at $28,286.96.

At Webb City affairs have been as active as at Joplin. A number of sales of mineral land have been consummated during the year, the most important of which was the purchase by the Center Creek Mining Company, for $315,000, of the 160 acres of land which it has occupied under lease for a number of years. The principal producers have been the Nevada Mining Company, T. C. Guinn land, Ashcroft mines, Ohio Mining Company, Sucker Flat mines, Garrison Mining Company, Kehlor Mining Company, Warwick Mining Company, Big Four Mining Company, and Star Mining Company. The production of the Center Creek Mining Company was 47,101,820 pounds zinc ore valued at $512,323.

At Cartersville the producers have been the North Cartersville Mining Company, the Pacific Lead and Zinc Company, the Motley Mining Company, the Troup mines, Eleventh Hour Mining Company, Southwest Development Company, L. Helen Mining Company, Taylor Brothers, Victor Mining Company, Tracy land, Clermont Mining Company, Viroqua Mining Company, Vivian & Sons, of Swansea, Wales, and the Creswell Lead and Zinc Company.

The principal producers of the Belville or Zincite district, 4½ miles from Joplin, during the past year have been the Standard Lead and Zinc Company, the Holden mines, the Homestake, South St. Louis, Pony and Tiger mines, on the P. Murphy land, and the Gretchen Lead and Zinc Company operating the Stevens mine. This last company has erected two new plants of machinery upon its property. In the Standard Company's mine some large bodies of ore have been opened. One stope recently showed a solid breast of zinc ore 110 feet in height, and another a breast 50 feet high and 25 feet wide.

In the Lehigh district, north of Belville, affairs have been rather quiet during the latter part of the year, many of the companies having been engaged in putting up heavier plants of machinery. The principal producers have been the Gulch mines, the Nickel Plate Mining Company, the White Elephant Mining Company, the St. Louis Mining Company, the Johnson mines, the Lehigh Mining and Drainage Company, the Park Land and Mining Company, and the A. Knight land.

At the Sherwood mines, near Lehigh, formerly large producers of surface lead and zinc ores, but little mining was done in the first six months of the year on account of the heavy flow of water. Large pumps were installed, however, and the water is now under control at a depth of from 100 to 135 feet. Other producers near the Sherwood mines have been the Jackville Mining Company and the Mineral Creek Land and Mining Company.

In Newton county the producing mines have been those of the Ruby Mining Company, the Emile Zinc Company, the Roaring Springs Land and Mining Company, the E. H. Norton Land, the Silver Creek Lead and Zinc Company and the Johnson and Saginaw Lead and Zinc Company. Considerable prospecting has been done in and about the town of Neosho and some ore has been found, but not enough yet to determine the value of the deposit. Quite a large amount of development work has also been done at Granby, and some large bodies of ore have been opened.

Aurora, Lawrence county, Kansas, a comparatively new mining district, has had a prosperous year, and has produced a large amount of surface ore—"dry bone" and zinc silicate. In Cherokee county, Kansas, the industry has also been in a thriving condition.

The entire product of the lead and zinc ore districts of southwestern Missouri and southeastern Kansas, compiled from railway shipments and careful estimates in 1890, amounts in value to $3,367,685. There were shipped 112,355 tons of zinc ore, valued at $2,584,165; 7,760 tons of zinc silicate from Lawrence county, Mo., valued at $93,520, and 150,000 tons of lead ore, valued at $690,000.

JOPLIN, Mo., December 27, 1890.

PRODUCTION OF MINES, SALT WORKS AND IRON WORKS IN THE GERMAN EMPIRE IN 1889.

The Imperial Statistical Office of the German Empire publishes the final intelligence on the production of mines, salt works and iron works in the German Empire and Luxemburg in 1889. In 1889 the total production of the German Empire and Custom Union amounted of mineral coals and bitumen to 58,029,644 tons at a value of 4,308 million marks, of mineral salts to 1,741,413 tons at a value of 17·5 million marks and of ores to 12,642,995 tons at a value of 106·8 million marks, whereas in 1888 the corresponding production was for mineral coals and bitumen 82,016,890 tons at a value of 383·4 million marks, mineral salts 1,663,342 tons at a value of 16·9 million marks and ores 12,185,987 tons at a value of 94·4 million marks. Of salts of watery solutions the total production in 1889 amounted to 814,465 tons at a value of 35·7 million marks as compared to 806,641 tons in 1888 at a value of 39·4 million marks.

In the works the production of pig iron was 4,524,558 tons at a value of 217·4 million marks as compared to 4,337,121 tons at a value of 191·3 million marks in 1888, that of noble metal in 1889 404,995 kilograms at a value of 56·3 million marks as compared to 408,395 kilograms at a value of 59·5 million marks in 1888, and that of the other production of the works in 1889 721,035 tons at a value of 127·1 million marks as compared to 68,089 tons at a value of 122·1 million marks in 1888. Finally, taking in account the indicated productions in the working of the iron foundries, weld iron works and ingot iron works in 1889, it will come to a total of 4,835,063 tons at a value of 685·9 million marks as compared to 4,345,371 tons at a value of 566·2 million marks in 1888. The single products compared with those in 1888 would give the following tables:

	Quantity of production.		Value of prod'tion.	
	1888. Tons.	1888. Tons.	1889. 1000 Mks.	1888. 1000 Mks.
I. Mining produets.				
Coals	67,342,171	65,386,120	385,080	341,063
Lignite	17,639,051	16,573,963	44,349	40,896
Rock salt	554,591	414,557	2,255	1,816
Kainite	324,477	318,576	4,727	4,667
Other potassic salts	861,273	918,739	10,405	10,248
Iron ores	11,002,187	10,664,307	46 469	39,961
Zinc ores	708,829	667,764	37,960	13,747
Lead ores	169,599	161,777	17,736	16,684
Copper ores	573,290	530,956	18,199	17,519
Silver and gold ores	22,264	20,390	4,042	4,669
II. Salts from watery solutions.				
Kitchen salt (chloride of sodium)	492,522	496,388	11,977	10,662
Chloride of potassium	133,957	142,765	16,791	18,360
Glauber's salt	69,101	52,203	1.660	1.332
Sulphate of potash	29,709	33,412	4,926	4,973
III. Production of the works.				
Crude iron of all kinds	4,523,558	4,337,121	217,371	191,320
Amongst them:				
Pigs for casting	610,893	597,351	32,842	27,858
Pigs for the manufact. of ingot iron	1,965,395	1,794,806	92,115	78,785
Pigs for the manufact. of weld iron	1,905,311	1,898,125	87,976	80,100
Zinc (ingot zinc)	135,974	133,224	49,335	43,624
Lead (ingot lead)	100,601	96,995	25,490	24,848
Copper (ingot & cakes of rose copper)	24,597	21,569	28,109	31,535
	Kilog.	Kilog.		
Silver	403,037	406,603	60,813	51,476
Gold	1,958	1,783	5,466	5,004
	Tons.	Tons.		
Sulphuric acid of all kinds	431,258	399,938	14,192	13,525
IV. Wrought pig iron.				
Castings of second fusion	989,622	838,251	172,617	137,657
Weld iron and weld steel	1,749,962	1,614,443	233,098	198,769
Ingot iron and ingot steel	2.095,479	1,862,677	279,912	229,782

The coinage in the German Empire up to the end of November, 1890, was, in marks, of gold, 2,510,073,075; of silver, 452,234,156; of nickel, 45,992,439, and of copper, 11,330,136. From these figures the number of coins withdrawn has been deducted.

New Method of Measuring Expansion and Contraction of Metals.—In the physical laboratory of Colby University, Prof. Edward W. Worley, of Adelbert College, Cleveland, and Prof. William A. Rogers, of Colby University, have succeeded in measuring, by means of wave lengths of light, the changes in the length of metal caused by radiation of the temperature. A machine constructed by Prof. Rogers for the special purpose was employed, and changes in length were measured in millionths of an inch.

Unpaid Stock Liability.—Persons who subscribe to the capital stock of a corporation without knowing of the existence of a fraudulent agreement between the corporation and one of its officers by which the stock was to be issued to him and by him sold for 40 cents on the dollar, are nevertheless liable to the creditors for the unpaid 60% as subscribers, as such an assignment does not make them purchasers in good faith.

Bates v. Great Western Telegraph Company, Supreme Court of Illinois, 25 *N. E. Rep.*, 521.

Responsibility of Corporation Promoters.—Where the promoters of a mining corporation so manipulate the organization that all the money is paid in by the purchasers of stock, and all the unsold stock becomes their personal property, they stand, as to purchasers in good faith for value, not as sellers of the stock, but by reason of the concealment from the buyers of the fact that the latter are furnishing all the money and taking all the risk, they will be held to a strict accountability as trustees, and subject to any damage sustained by the buyers by reason of such concealment.

Brewster v. Hatch, Court of Appeals of New York, 25 *N. E. Rep.*, 505.

The Mississippi Levee.—Captain S. S. Leach, of the Mississippi River Commission, says that it has been estimated by skilled engineers that $10,000,000 would pay for a levee system on the Mississippi River that, if watched and maintained, would be safe against flood. The cost of maintenance to the nation and states he estimated at less than $1,000,000 per annum. The effect of such a system, he said, would be to revolutionize the carrying trade of the river and redeem 30,000 square miles of the finest agricultural land. The nature of the work is such that it cannot be left to individual enterprise. The government must take entire charge or a neglected point will let in the flood and destroy miles of good levee.

The Tunnel Under the Hudson River.—From November 1 to December 15 about 470 feet were added to the Hudson River Tunnel, which brings the total completed length up to 2,720 feet, a progress at the rate of about 7 feet per day. The work is progressing without interruption. By removing the intermediate accumulating pump, and bringing the power of the pump direct to the hydraulic jacks, the pneumatic shield is advanced the width of one of the rings in eight minutes, a progress which before required from two to four hours. A system of chutes is soon to be tried, one under each opening in the shield front, down which the silt will slide direct into the waiting cars, instead of shoveling it by hand as heretofore.

Hoarded Gold in India.—The report of the working of the new Indian Mints for the past year shows that during the year a sum of 461 lakhs of rupees in gold was imported into India, of which only two lakhs were passed on to the mint for coinage, leaving gold to the value of £4,000,000 to be absorbed in India. During the first half of the year 2,000,000 of new sovereigns entered India, and instantly disappeared from circulation. According to the report, although this is a specially large amount, every year numerous sums disappear in a similar way in India, and it is suspected that the greater part of it is melted down to make ornaments, and the remainder is buried to be dug up again only in the event of some great calamity in which money is needed. The gold finds its way into remote districts and into the hands of peasants, who appreciate no way of saving it except to convert it into ornaments or to hide it in the ground. This, no doubt, is due largely to the fact that the currency is silver and the two metals cannot keep afloat together, the more valuable is always hoarded and the least valuable circulated. This is what will follow the adoption of free silver coinage in these United States.

Mining in Cornwall.—From a Parliamentary return just issued it appears that there are now in operation in Cornwall 32 mines, in which 1,502 persons are employed working underground, but which have no appliances for raising and lowering the men other than ladders; and 15 mines, in which 3,305 persons are employed underground, which have machinery other than ladders for the purpose. There are six mines in which boring machinery worked by compressed air is in use without any special machinery for raising and lowering the men, and two mines, in which 264 men are employed, with special raising and lowering machinery, without compressed air appliances at work. As regards Devonshire, the Devon Great Consols, in which 139 men are employed underground, is the only mine with both compressed air and special raising and lowering machinery. Langford mine, with six men, has a cage, and the Emily mine, with eight men, has two boring machines worked by compressed air, while Mid-Devon mine has one. The remaining 11 mines at present working in Devonshire, and having between them 218 men employed underground, have no compressed air or special raising and lowering machinery.

[The curious thing in this report is that it refers to the year 1889, and not to a quarter of a century ago, as one would suppose on reading it.—ED. E. & M. J.]

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, DECEMBER 23D, 1890.

443,430. Automatic Coal Cage. Abner W. Davidson, Leavenworth, Kan.
443,438. Calcining or analagous Furnace. George W. Goetz, Milwaukee, Wis.
443,458. Canal Digging Machine. John McMullen and Henry S. Wood, San Francisco, and Hermann Krusi, Alameda, Cal.
443,461. Grate Bar. William J. Owens, Utica, N. Y.. Assignor to the Kernan Furnace Company, same place.
443,488. Conveyor for Carrying Crushed Stone. Frank St. Clair, Manchester, N. H., Assignor of one-half to John B. Varick, same place.

TUESDAY, DECEMBER 30th, 1890

443,501. 443,502. Pipe Threading Machine. Roderick P. Curtis, Southport, Assignor to Curtis & Curtis, Bridgeport, Conn.
443,513. Ejecting Oil out of Oil Wells. William Geiser, Salina, Pa.
443,585. 443,586. Mining Machine. Samuel B. Stine, Osceola Mills, Pa., Assignor of two-thirds to George M. Brisbin and D. B. Good, both of same place.
443,598. Apparatus for Preventing Steam Boiler Incrustation. John Langstaffe, Batterson, England; Story B. Ladd, Administrator of said Langstaffe, deceased.
443,601. Tube Machine. Thomas M. McNair and Francis Wood, Brooklyn, N. Y.
443,629. Manufacture of Flowers of Sulphur. Edward F. White, Bergen Point, N. J.
443,750. Rock and Earth Drilling machine. Samuel W. Douglass, Fort Collins, Colo., Assignor to the M. C. Bullock Manufacturing Company, Chicago, Ill.
443,753. Furnace. George W. Ensinger, Elm Station, Pa.
443,786. Steam Boiler. Michael J. O'Leary, Green Bay, Wis.
443,819. Rock or Earth Drill. Milan C. Bullock, Chicago, Ill.
443,835. Fuel Gas Burner. John F. Mains, Indianapolis, Ind., Assignor of three-fourths to Bruce Carr, Harvey M. La Follette and Edward J. Robison, same place.
443,836. Ore Concentrator. John M. Miller, San Jose, Cal.
443,879. Apparatus for Coating Metal Sheets with Tin. John G. Thomas, Llangennech and George H. White, Lliw Forge, near Pontardulais, England.
443,905. Turbine. William H. Elmer, Berlin, Wis.
443,925. Coal Mining Machine. Samuel B. Stine and James V. Smith, Osceola Mills, Pa., Assignors to the Stine-Smith Machine Co., same place.
443,939. Metallic Railroad Tie. Thomas Foulds, Trevorton, Pa., Assignor to himself, William Graeber and John T. Heenan, all of same place.
443,943. Aluminum Alloy, etc. Ira H. Johannes, Washington, D. C.

TUESDAY, JANUARY 6TH, 1891.

444,027. Mining Machine. Joseph Stephenson, Sparland, Ill.
444,066. Rotary Valve for Steam Engines. Samuel Grant, Jr., Fort Worth, Tex.
444,087. Rotary Compound Steam Engines. Samuel E. St. O. Chapleau, Ottawa, Canada.
444,115. Injector Oil Burner for Boiler Furnaces. James H. Jones, San Francisco, Cal.
444,116. Francis A. Pocock, Scranton, Pa.
444,140. Mining Column. Charles H. Sergeant, N. Y.
444,162. Method of Casting. Johan L. Sebenius, Stockholm, Sweden.
444,202. 444,203. Apparatus for Distilling Oil. Allan Mason, Brooklyn, N. Y.
444,217. Electrical Range Finder. Bradley A. Fiske, U. S. Navy.
444,223. Magnetic Ore Separator. Clarence Q. Payne, Stamford, Conn.
444,275. Ore Concentrator and Amalgamator. John D. Coplen, Denver, Colo.
444,381. Process of Forming Ingots. William R. Hinsdale, Jersey City, N. J.
444,408. Bucket Clip for Wire Rope Tramways. Christopher T. Finlayson, Denver, Colo.

PERSONALS.

W. George Waring, mining engineer from Silver City, N. Mex., is in the city and returns to New Mexico in a few weeks.

Mr. R. C. Canby has been engaged as metallurgist by the North Carolina Smelting Company, of Thomasville, N. C., vice Mr. West, who is now sick in the West.

Prof. Albert Gallatin has resigned the Chair of Analytical Chemistry, University of the City of New York, and Robert W. Hall, M. D., has been elected to fill the vacancy.

Mr. Thos. H. Leggett, M. E., has retired from the management of the Darien gold mining properties, located in the United States of Colombia, and has opened an office at 237 Broadway, Room 31, this city.

The *Denver Republican* issued a very creditable number upon January 1st, giving statistics of the gold, silver, lead and other mineral products of the State of Colorado during 1890, as well as thorough reviews of all other important industries of the State. The number is illustrated and its preparation shows much enterprise on the part of its publishers. Such work is of great and permanent value to the State and is a triumph in which the pubishers may well feel great satisfaction.

Dr. Clement Le Neve Foster, inspector of mining under the British Home Office, has been appointed to the Chair of Mining at the Royal School of Mines, rendered vacant in June last by the death of Sir Warrington Smyth. Dr. Foster was a distinguished student of the School of Mines, London, and at Freiberg, as well as a graduate of the Universities of London and of Paris. His appointment gives much satisfaction in England.

The Copley Medal of the Royal Society, London, has, as we find in the *Sidereal Messenger*, been awarded to Prof. Simon Newcomb, superintendent of the American Ephemeris, Washington, D. C., for his contributions to gravitational astronomy. The medal was first given by the society in 1753, to Dr. Benjamin Franklin and afterwards to R. W. Bunsen, L. Agassiz, C. Darwin, C. Wheatstone, J. R. Mayer, H. L. F. Helmholtz, L. Pasteur, J. D. Dana, Wm. Thompson, T. H. Huxley. Prof. Newcomb has also of late received from the University of Tokio, Japan, two fine bronze vases of exquisite workmanship in recognition of his aid in selecting a suitable person to construct a photo-heliograph for the university. Another large jasper vase, on a marble base, has been sent by the Russian Czar to the distinguished scientist, who was instrumental in procuring for the government the great 30-inch telescope at Pulkowa.

OBITUARY.

Addison Connor, assistant engineer in the New York Dock Department, died of pneumonia on the 4th inst., aged 41 years. He was a graduate of the Boston School of Technology, and a member of the American Society of Civil Engineers. At different times he was engaged in engineering on the Sadbury River, on the Northern Pacific Railroad and on the big bridge at Cairo, Ill.

The Rev. Robert Dick, the inventor of the newspaper mailing machine which is in use in most newspaper offices, died at the age of 74 in Buffalo, N. Y., on December 10th. Mr. Dick made his first mailing machine in 1856, and he added improvement after improvement till the capacity of one of his machines will run up to 15,000 or 20,000 labels per day.

E. F. Spinner, ex-Treasurer of the United States, whose death occurred on December 31st, in Jacksonville, Fla., was born at Mohawk, N. Y., January 21st, 1802. General Spinner was twice re-elected to Congress, and during his last term was Chairman of the Committee on Accounts. When the Lincoln administration was organized Secretary Chase selected him for the post of Treasurer, which he filled under successive Presidents from March 6, 1861, till June 30, 1875.

Archibald O. Ronaldson, for the last 12 years the secretary of the Union Trust Company of this city, died on the 8th inst. from pneumonia in Passaic, N. J. He took a course of study in West Point Military Academy. Later he was engaged as a civil engineer in the construction of the St. Paul and Fond du Lac Railroad in Wisconsin and the Don Pedro Railroad in Brazil. Prior to his connection with the Union Trust Company he was a gold and stock broker of this city.

Col. W. H. Paine, who was regarded as one of the foremost engineers of the country, died suddenly at Cleveland, O., on the 31st ult. Colonel Paine was born in Chester, N. H., in 1828. After obtaining an academic education he took a course of engineering, and his first employment was as a land surveyor in the wilds of Wisconsin. From there Colonel Paine went to California, where he introduced new methods of engineering and engaged successfully in many mining enterprises. In 1849 he surveyed a wagon road across the Rockies, and in 1853 had charge of a party that surveyed a route for a Pacific railroad across the Nevada Mountains from Sacramento to Utah. He raised several regiments of Wisconsin troops during the war of the rebellion and accompanied the Fourth Wisconsin to Washington. He entered the Engineer Corps, where his training and experience immediately made him a prominent and successful officer. At the close of the struggle Col. Paine resumed the practice of his profession, and in 1869 he was chosen one of the engineers of the Brooklyn Bridge. He assisted John A. Roebling in making the original surveys, superintended the building, placing, and sinking of the caissons, built the New York tower, and was in charge of the laying of the superstructure and the regulation of the cable wires. He invented the grip in use on the cars, and planned the whole system of cable traction on the bridge. He remained with the bridge as assistant engineer for some years, and in 1889 resigned to open an office in Cleveland, as consulting engineer in connection with cable railroad enterprises.

SOCIETIES.

At a meeting of the American Society of Civil Engineers held at No. 127 East Twenty-seventh street., New York, on the 7th inst., a paper on steel railway tracks was read by T. G. Gribble, and discussed by those present. Charles Irwin Brown, C. W. Hazleton, F. E. Sicles and George Westinghouse, Jr., were elected members. Louis D. Fouquet and Clinton L. Riggs were elected junior members.

INDUSTRIAL NOTES.

A manufactory for the preparation of ground mica for wall paper has been established in Denver, Colo.

The Scale Committee of the Amalgamated Iron and Steel Workers is in session in Joliet, Ill., arranging a scale of prices for the current year, based on the prices of rails.

Two furnaces were started up at the Edgar Thomson Steel Works, in Pittsburg, Pa., on the 6th inst., with new men, and it is said that all will be in operation in a few days.

The Mahoning Valley Iron Company of Youngstown, Ohio, will extend its plant by the erection of a puddle mill containing ten double puddling furnaces, increasing the production of muck bar 50 tons a day.

The New Jersey and Pennsylvania Concentrating Works, at Ogden Mine, N. J., are said to have commenced the erection of a puddling furnace at that place. It will be used for manufacturing the concentrated ores into wrought iron.

Many of the Newark, N. J., celluloid companies have allied themselves with the Celluloid Trust. Deeds were registered in the Essex County Register's office last week by the Celluloid Manufacturing Company, the Celluloid Brush Company and the Celluloid Novelty Company.

A large tire mill is being constructed at Youngstown, Ohio, for the Latrobe Steel Works, which will roll a tire from the size of the largest locomotive to that of a small car wheel. The mill weighs 100 tons, contains seven hydraulic cylinders, and will be driven by a pair of 1,400 horse power engines.

The rolling mills of McLanahan, Smith & Co., of the Portage Iron Company, Hollidaysburg Iron Company and Furnaces No. 1 and 2 of the Cambria Iron Company, in Hollidaysburg, Pa., have closed down on account of the coal and coke famine. The Gap Furnace is also expected to close down shortly.

The new muffle room for the Scovill Manufacturing Company, at Waterbury, Conn., is now completed. The side walls are of brick and the roof is of iron, designed and built by the Berlin Iron Bridge Company, East Berlin, Conn. The same company has also just completed a new boiler house for the Orono Pulp and Paper Company, at Basin Mills, Me.

We have received a holiday present from the Mason Regulator Company in the form of a handsome card bearing the compliments of the season. In the corner is attached a miniature envelope containing a newly minted CENT of 1890. We shall carefully follow the injunction of the card, viz., to spend it freely for art, literature or tutti-frutti, and not to squander it in an unseemly or extravagant manner.

The New York Belting and Packing Company, of New York City, finds steady demand for its celebrated rubber "test" and cotton hose from the mining regions, where its great strength and durability show to particular advantage. The hard treatment which hose must necessarily receive in mining work makes the employment of the best obtainable almost a necessity.

The Sturtevant mill manufactured by the Sturtevant Mill Co., of Boston, Mass., is meeting with continued favor on account of its great capacity and economy for grinding hard and refractory material. The demand is steadily increasing, and the mill is endorsed by many of the leading engineers, contractors and users of grinding machinery. The principle of this mill is novel and unlike that of any other process.

The receipts from the Eiffel tower at Paris, France, for the past year, are reported to have been 665,000 francs. The cost of keeping the tower open was 350,000 francs, and 300,000 more were spent for repairs. It is expected that a considerable deficit will appear next year in place of this small profit. One hundred and sixty-eight thousand francs was reserved for future use from the profits of the exhibition year.

The Rhodes Manufacturing Company, of Philadelphia, Pa., made an assignment on the 5th inst. The company was incorporated on March 10th last for the manufacture of electric motors. It was stated yesterday that the authorized capital was $200,000, of which amount it was claimed $170,000 was paid in, made up of machinery, tools, stocks, real estate, and patents, the latter of which were valued at $50,000.

The directors of the Westinghouse Electric Company at Pittsburg, Pa., met on the 6th inst. and passed the following resolution: "That the stockholders of the company be requested to subscribe for the preferred stock to the extent of at least one share for every two shares of common stock, and that they shall have the option of either paying $10 per month for each share until the total of $50 a share has been paid, or $25 a share in cash and the surrender of one share of common stock." The option terminates on January 26, 1891.

Report reaches us from Albany that the North American Salt Company has filed a certificate with the Secretary of State showing a decrease of its capital stock from $11,000,000 to $4,000,000. Erastus Wiman, H. K. Thurber, F. Woodruffe, Chas. F. Burger, Wm. A. Hazard, and Francis B. Thurber are among the trustees of the company, which has its principal office at Warsaw, N. Y. See ENGINEERING AND MINING JOURNAL, July 20, 1889.

It is reported that at a meeting of the Eastern window glass manufacturers and the American Window Glass Company, the new trust combination of Western window glass makers, held in Chicago recently, some definite understanding was reached. This will make a combine of all the window glass factories in the United States, and form one of the strongest trusts ever organized in this country. It is generally supposed that the price of window glass will be advanced.

The Board of Experts has completed its report on a plan for increasing the terminal facilities of the Brooklyn Bridge, and will present it to-day to the Committee on Terminal Facilities. It will not be made public until submitted. It is said that 46 plans were under consideration. They include the tail-switching system now in use; the head house system, the loop system and the Wellington or circulating system. The last was the one adopted by the first Board of Experts.

A very large railroad locomotive is said to have been completed at the locomotive works at Schenectady, N. Y., for the Michigan Central Railroad. It is a "compound" ten-wheeler, and the drivers (six in number) are 6 feet 2 inches in diameter. The shell of the boiler is 68 inches in diameter above the fire box. It weighs about 64 tons, and with tender loaded for service, about 102 tons. The Schenectady Locomotive Works are turning out nine engines per week at present and expect to soon reach 12 per week. They are running night and day with a force of nearly 2,000 men.

Tests were made at the naval proving grounds, at Annapolis, Md., on the 7th inst., to discover the best projectile to use against the nickel plate armor. The tests were for the benefit of the Carpenter Steel Company, makers of the projectiles, under the superintendence of Lieutenant Commander J. H. Dayton. Four shots were fired and the tests were declared satisfactory. The representatives of the corporation and the naval officers who witnessed the tests declined to make known the character of the projectiles and the results obtained.

A celebration of the beginning of the second century of the American patent system, by inventors and manufacturers of patented inventions, will be held in Washington, D. C., in April of the present year. The executive committee, in the course of an address just issued to-day to inventors and manufacturers, says: The necessity for a National association of inventors organized for mutual benefit has been frequently discussed in the technical and other journals. No time could be more opportune for the formation of such an association than when men from every part of the country meet to celebrate so important an anniversary.

Leading road-making machine manufacturers have been in session this week in Pittsburg, Pa., and it is thought a combination or trust will undoubtedly be made. Representatives of the Austin Manufacturing Company of Chicago, the Fleming Manufacturing Company of Fort Wayne, the American Road Machine Company of Pennsylvania, and the Western Company of Mount Pleasant, Ia., are at the meeting. The four com-

panies are the largest manufacturers of road-making machines in the United States. They have a capitalization of over $1 000,000, and have an aggregate capacity of about 6,000 machines per year.

The New York Belting and Packing Company, limited, has been registered in London, England, with a capital of £426,000, in 22,500 preference and 20,000 ordinary shares of £10, and 1,000 founders' shares of £1 each. Object, to carry into effect, with or without modification, an agreement which has already been prepared, and is expressed to be made between the the New York Belting and Packing Company, a company organized under the laws of the State of Connecticut, of the one part, and this company of the other part to carry on the business heretofore, carried on by said American company.

The War Deparment on the 6th inst., opened bids for the construction of heavy cannon under the three and a half million appropriation made at the last session of Congress. The aggregate bid of the South Boston Iron Works, recently removed from Boston, Mass., to Kentucky, was $4,900,340, and that of the Midvale Company, $5,359,500. The South Boston Works submitted an alternate proposition, by which they agreed to build the guns at the same price for which they could be built by the government, with such additions as would represent interest on plant and material, insurance, deficiencies and contingent risk, the amount to be determined by the Secretary of War.

The Illinois Steel Company's works at Milwaukee, Wis., have during the past year, it is said, done a business aggregating $5,500,000. A nine-inch train was added to the plant. It has a monthly capacity of 1,000 tons of finished product. The only department not in operation during the past year was the nail factory. The nail plate train has been converted into a splice bar mill which makes two mills of this character at the plant, giving them the largest capacity in the United States. Over 75,000 tons of iron ore and coal were received at the company's dock. The total finished product will foot up to nearly 100,000 tons, which is shipped to all parts of the country.

Miles ahead of any advertising scheme up to date is a little story without words, entitled "A Midsummer Night's Dream; being a somnambulist's ramble with Merchant & Co., and their friends The Brownies." The Brownies are a few goblins or grotesque elfs engaged in variously using the manufactures and productions of Merchant & Co. The name of the artist does not appear, but to whosoever he or she may be the greatest credit is due. Each goblin's face is a study. All the varying expressions of emotion of which the human face is capable are transferred to the life in these goblins. There is a better half-hour's enjoyment in this little advertising brochure than in half a dozen comic papers.

The United States Projectile Company has been organized by E. W. Bliss, Daniel F. Lewis, Henry W. Slocum, John Winslow, Henry D. Polhemus and Nelson G. Carman, with a capital of $500,000, to make a new style of steel shell under a Government contract. The factory is to be situated in New Utrecht, L. I., where both Mr. Bliss and Mr. Winslow live. The shells will be made under the Cayley-Korthman patents. It is expected that the new factory will do a big business in making all kinds of projectiles. It was located outside of the city both to avoid complications over the storage of projectiles and because taxes are lower. The property extends to the water front on the bay.

In his final message to the Penusylvania Legislature Governor Beaver calls especial attention to the report of the commission to consider the feasibility of connecting by a ship canal the waters of Lake Erie with the Ohio river. "The work of the commission," says Governor Beaver, "has led to surprising and gratifying results. It is believed that the waters of Lake Erie and the Ohio river can be connected by a ship canal, the construction of which is feasible and comparatively cheap." The water supply, heretofore regarded as doubtful, was found to be ample, while the grades offer no serious impediment to the work. The advantages that would accrue from such a canal both to the State of Pennsylvania and to the nation, in the opinion of Governor Beaver, would be beyond all calculation both commercially and for defensive purposes.

The Chrome Steel Works, of Brooklyn, N. Y., complain that, like other good things, chrome steel has been the victim of many imitations. The word "chrome" has, in these imitations, been "got around" by various misspellings, and what the company claims to be inferior metal has been sold as theirs. Chrome steel is made in crucibles, by a re-melting process, from ordinary Norway iron and a given quantity of chromium. The product, which is rolled from ingots in the ordinary commercial round, square, and octagon bars, has an insertion of a layer of chrome steel hidden between an inner and outer layer of iron; the combination plates of 5-ply thickness are prepared in the same manner.

The completed material is said to be the hardest steel known, and easily resists the drilling, cutting or boring tool of the burglar, hence chrome steel bars and plates are extensively used in making burglar-proof safes and vaults, and in the construction of jails and prisons. The imitation chrome steel is said to cost from $20 to $30 a ton less than the Brooklyn company's product.

The Fort Scott Foundry and Machine Works Company, of Fort Scott, Kan., has received a mammoth order for sugar-making machinery from Edinburgh, Scotland. When this order is finished it will require 15 cars to move it. The order is for a large sugar-manufacturing concern in Honolulu, Sandwich Islands. The capacity of the machinery ordered is double the size of that recently shipped by the manufactory to Cuba, and consists of a patent improved quadruple evaporator (described in the ENGINEERING AND MINING JOURNAL some time ago), with a capacity to evaporate 1,500,000 pounds of water each 24 hours, and which is equal to the production of 200,000 pounds of sugar in the same time.

A private meeting of furnace owners of the Mahoning and Shenango valleys, Ohio, is reported to have been held at the rooms of the Iron Manufacturers' Association in Youngstown, O., to discuss the action taken by them two weeks ago. They demanded a reduction on all railroad freights, coming into or going out of the two valleys, and that coke manufacturers should reduce the price of coke to $1.75 per ton. Neither demand having been conceded, it was unanimously decided to shut down 23 blast furnaces in the two valleys on January 10th, and not resume operations until the railroads and the coke men come to the furnace owners' terms. The blowing out of this large number of furnaces will throw from 8,000 to 10,000 men out of work, and seriously cripple the business of the railroads.

The Great Western Construction Company, has been incorporated by Messrs. Hugh R. Walker, Alfred Skinner and Thomas A. Winham. It is proposed to build works in Chicago, Ill., covering nine acres, for the construction of locomotives on a plan designed by Hugh R. Walker, a mechanical engineer, with an office in Chicago. The chief characteristic of Mr. Walker's design is said to be in the fuel-saving portion of the invention, which he claims results in a saving of 9%. This is brought about by an automatic admission of air to the fire box by various devices, the principal ones being steam injectors. Whenever the fire door is swung, additional air is furnished to the fresh fuel. The site for the works has not yet been selected, but steps will at once be taken to have the factory in operation next spring.

The improvement of Philadelphia's harbor is to be commenced, and bids are called for by the U. S. Engineer's office of Philadelphia, for February 12th, 1891, for removing Smith's, Windmill and Petty's islands in the Delaware River, and the shoals adjacent thereto. The general project of improvement contemplates the formation of a channel 2,000 feet wide, from Kaighn's Point to Fisher's Point, with a mean tide cross section of about 55,000 square feet. The general depth in this channel will be 26 feet. The ultimate cost of the dredging required is estimated at $3,500,000, with $390,000 now available. The work now to be let includes the removal of piles and revetment, extending over a length of about 18,000 feet, and the dredging of 700,000 cubic yards at Windmill Island, 300,000 cubic yards at Smith's Island, and 1,000,000 cubic yards at Petty's Island.

An important decision by Judge Henry B. Brown of Detroit, who has just been appointed an Associate Justice of the Supreme Court, was filed in the United States Circuit Court at Cleveland, Ohio, on the 27th ult., in the case of the Electrical Accumulator Company of New York against the Brush Electric Company of Cleveland, and the decision is upon the request of the Accumulator Company to dismiss a suit against the Brush Company, and upon the demurrer made by the Brush people to amended and supplemental bills of the Accumulator Company. Camille A. Faure, a Frenchman, now of New York, was granted a patent in this country on a unique secondary battery January 3d, 1882, and in a month or two afterward a patent was granted on almost exactly the same invention to the Brush Company. The Faure patent passed to the possession of the Electrical Accumulator Company, of New York, and this concern began a suit against the Brush Company to procure an adjudication of the invalidity of the Brush patent. A demurrer and answer were filed by the Brush Company affirming the validity of its own patent and denying the validity of the Frenchman's patent. The Accumulator Company proceeded to take *prima facie* proofs and the Brush Company to take its answering proofs. Then the Accumulator Company filed a supplemental bill setting forth that the first claim of the Faure patent had been adjudged to be valid in the Circuit Court of the Southern District of New York. The supplemental bill alleged that since the filing of the disclaimer the Faure and the Brush patents had not been interfering within the meaning of the law, and asked the court to dismiss the case. The Brush Company, however, objected to having it dismissed and denied that the two patents were not interfering. This raised the question as to the right of a plaintiff to dismiss a case after proofs have been taken and before the hearing, and after an answer praying for affirmative relief has been made. After citing many decisions Judge Brown said he had come to the conclusion that leave to dismiss a bill should not be granted where the action would be manifestly prejudicial to the defendant. In this case litigation has been pending for three years, and the Brush Company is entitled to a decree, declaring the invalidity of the Faure patent, provided it can establish the priority of its own patent. The petition to dismiss the case was therefore denied.

CHICAGO INDUSTRIAL NOTES.

(From our Special Correspondent.)

It has been estimated by good authority that besides the vast number of manufacturing industries now actually located in Chicago, a much larger number are now negotiating for sites in the World's Fair City. Manufacturers from the East particularly are looking toward this point as a future business center. More interests of this character have located in Chicago during 1890 than in any five previous years.

The most important developments of the year along the Calumet River have been connected with the iron industry. At South Chicago the new arrivals include the Iroquois Furnace Company, the works of the Chicago Ship Building Company, the Chicago Refined Metal Company, and the Chicago Refining Smelting Company. Besides these entirely new interests the large extensions made by the Illinois Steel Company almost constitute a new industry. These interests cluster around the mouth of the Calumet River, and their operation means the employment of many thousand men.

At Hammond the new manufacturing interests are a starch factory, an axe factory and the nail mill, which was purchased by Youngstown, O., capitalists, and duly noticed in this journal at the time. The Muhler & Chappell Chemical Works have been built during the year between South Chicago and Hammond, and the Kenwood Bridge Company has built works at Grand Crossing.

When we look toward Cragin and the district near Pacific Junction we find located during the past year the Belden Motor and Manufacturing Company. The Cragin plant has been purchased by Westinghouse, Church, Kerr & Co., who are now refitting the old factories.

The town of Harvey, as heretofore reported in these columns, has made much actual progress, and is apparently out of the line of experiments as a manufacturing town; six factories have been located there, either built, ready for operation, or in course of construction.

The new town of Spaulding, immediately west from Harvay, has also made fair progress during the year. The Atchison Steel Spring Works are among its late acquisitions.

The Columbia Steel Car Company bought a tract of 537 acres at Riverview and will establish its plant there. This will be one of the largest manufacturing industries located in the northern part of this county. About 1,000 men will be employed. The capacity of the plant will be from 15 to 20 per day of all descriptions of railroad cars, postal, baggage, passenger and freight, made entirely out of steel.

The Graut Locomotive Company, as is already well known, is at work upon the plant at Cicero, preparatory to turning out an annual product of 250 locomotive engines.

SOUTHERN INDUSTRIAL NOTES.

(From our Special Correspondent.)

The Columbia Phosphate Company, of Charleston, S. C., has increased its capital stock from $50,000 to $100,000. This increased stock will be utilized in increasing its plant.

Wm. Kehoe & Co., of Savannah, Ga., will enlarge their iron works by putting in new machinery, for the purpose of manufacturing sugar mills.

The Princess Iron Company has been organized at Glen Wilton, Va., for the purpose of enlarging the Princess iron furnaces and building a rolling mill. The capital stock is $650,000; D. S. Cook is president and D. T. Kaufield the secretary and treasurer.

The South Raleigh Improvement Company, of Raleigh, N. C., will apply for a charter for a phosphate and fertilizing works, a cotton mill and a land and improvement company. Arrangements are being made to build a cotton factory at the cost of $150,000, cotton seed oil mills and fertilizer mills, which will use North Carolina phosphates. One hundred acres of land have already been purchased for the purpose.

The Fairmont Machine Works Company has been incorporated at Fairmont, West Va., for the purpose of building an iron foundry and machine shop. The capital stock is $100,000.

The Southern Metal Company has been incorporated at Atlanta, Ga., by J. R. Gray, B. J. King and S. G. Nandyke, with a capital stock of $100,000. It will manufacture all kinds of metals and machinery.

The Maxton Manufacturing Company has been organized at Maxton, N. C., with a capital stock of $50,000, for the purpose of manufacturing machinery of all kinds. An iron factory will constitute part of the plant. The officers of the company are: John C. McCaskill, president, and J. C. Farrish, vice-president and general manager.

It is reported that the Doe Mountain Manufacturing Company, the Bristol, Elizabethton & North Carolina Railroad Co., the Crab Orchard

Coal Company, the South Boston Land & Improvement Company, the Pioneer Steel Company, the Pioneer Land Company, possibly the Bristol Iron & Steel Company, and the Irontown Steel Company, all of Tennessee, will consolidate. The capital stock of the consolidated company will be $10,000,000. The company will build a large steel plant at Bristol, Tenn., where it owns 5,000 acres of town property.

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.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from 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 American 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.

These services are rendered gratuitously in the interest of the 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.

2,011. Machinery for a canning factory. Alabama.
2,012. A 50 to 60 horse power boiler and engine. Virginia.
2,013. Elevator. Virginia.
2,014. Hoisting and drying fan. Virginia.
2,015. Shafting, pulleys, hangers and couplings. Virginia.
2,016. Boring machines. Virginia.
2,017. Sanding machines. Virginia.
2,018. Power hammer. Virginia.
2,019. Dry kiln. Virginia.
2,020. A small marine boiler for a steam launch—water tube boiler preferred. Virginia.
2,021. Small saw mandrels, suitable for 20-inch saws. Virginia.
2,022. Iron top table suitable for table saws. Virginia.
2,023. Second-hand engine, about 6 × 8. Virginia.
2,024. An edger. Virginia.
2,025. A machine for sawing box slots, ¼ inch thick, 28 inches long and 5 inches wide. Virginia.
2,026. Machinery for hoisting coal; 40 or 50 horse power engine and boiler, drum, wire rope, etc. Alabama.
2,027. Electric light plant. Ohio.
2,028. Boiler and engine. Ohio.

AMERICAN GOODS WANTED ABROAD.

1,189. Catalogues from the leading manufacturers of wire tramways. Mexico.
1,190. Price lists and catalogues of improved clay-working and brick-making machines. Mexico.
1,191. Catalogues from the leading manufacturers of rock drills. Mexico.
1,192. Catalogues and price lists of machinery for working the jute plant, *i. e.* Henequen o pita, which grows in considerable quantities in the Argentine Republic.
1,193. Brushes. Argentine Republic.
1,194. Spades. Argentine Republic.
1,195. Forks. Argentine Republic.
1,196. Ice machinery. Argentine Republic.
2,001. Estimates on a small canning outfit. Canada.
2,007. Prices and particulars of mining machinery. Australia.

GENERAL MINING NEWS.

It is said that a call was issued on the 6th inst. from the headquarters of the United Mine Workers of America in Columbus, O., for the annual national convention to be held in Columbus, February 10th. The leading question to come before the convention will be the scale of prices and the eight-hour movement.

ALABAMA.

(From our Special Correspondent.)

HORSE CREEK COAL AND COKE COMPANY will consider the advisability of issuing $200,000 of bonds at its meeting to be held on January 27th, at Birmingham.

MAG-ELLEN COAL AND MINING COMPANY.—This company will consider the issuance of $100,000 of bonds at its meeting on the 27th inst. at Birmingham.

LADY ENSLEY COAL, IRON AND RAILROAD COMPANY.—At its meeting, to be held January 19th, at Russellville, this company will consider the question of issuing $1,500,000 of bonds.

A meeting of the Trades Council was held in Birmingham on the 4th inst., for the purpose of bringing about a conference between the operators and striking coal miners. Letters were read from the following companies: Cahaba Coal Mining Company; Sloss Iron and Steel Company; Tennessee Coal, Iron and Railway Company; Marylee Coal, Iron and Railway Company; Pearson Coal, Iron and Railway Company.

The tenor of the letters was of such a nature that a set of resolutions was adopted. These set forth the fact that the coal operators of Alabama had refused to recognize the United Mine Workers of America, and called upon all bodies represented in the council to help the strikers morally and financially. They recommended that all lawful means be adopted to prevent the use of "scab" coal by any member of organized labor, and that the only settlement of the strike which would be accepted would be based on the full recognition of organized labor.

It is said that the six coal companies who wrote letters in response to the circulars and letters of the committee expressed a willingness to confer with committees from their own miners, each company to consult with individual workers, but they were unwilling to meet general representatives of the strikers, either from this or any other state. This, the miners claim, would mean death to organized labor and their organization. The Birmingham *Age-Herald* says: "The breach between the operators and the men is wider than ever, and the fight is desperately earnest."

FORT PAYNE COAL AND IRON COMPANY.—A meeting of the stockholders of this company was held on the 1st inst. in Boston, Mass., with 38,000 shares out of a total of 50,000 represented by some 300 persons. Governor D. H. Goodell, of New Hampshire, and Dr. J. M. Ford, of Kansas City, gave notice of intention to resign from the board of directors. The stockholders nominated for the prospective vacancies T. P. Randall, of Chicago, and J. A. Wilder, of Fort Payne. The meeting also voted that the executive committee, which has hitherto consisted of three members, Colonel J. W. Spaulding, Mr. W. P. Rice and F. G. Gibson, should be increased to five, the two new directors being added as the new members of the committee. The stockholders also voted that the company should issue 8 per cent. bonds for $300,000, maturing in ten years, but redeemable at a premium of 5 per cent. after one year at the option of the directors. A directors' meeting succeeded, and the wishes of the stockholders were carried into effect and made legally binding on the company. Major C. O. Godfrey, general manager of the company, resigned, and the directors voted that the office should not be filled before the annual meeting of the stockholders on the third Wednesday in February.

The ENGINEERING AND MINING JOURNAL, from an intimate knowledge of the property, has steadily warned investors to investigate this concern before parting with their money.

CALIFORNIA.

A party of naturalists and topographers left Keeler, California, during the early part of the week, and was sent by the government to study the biology of the famous Death Valley, in the southeastern part of California. The valley was formerly supposed the lowest on the American continent. It is believed to be at least 225 feet below the level of the sea. A part of the sink of the San Felipe, in the Colorado Desert, Southern California, is deeper. Portions of a stretch about 130 miles long by 30 miles wide, are 360 feet below the sea level. Death Valley gets its ominous name because of the emigrants who have perished there, traces of whom were later found by Captain Bendire, during the reconnoissance of this region in 1867. The valley skirts the middle portion of the southwestern boundary of Nevada, is about 18 miles wide and 100 miles long, and only about 70 miles southeast of Mt. Whitney. In the dry season the atmosphere is so destitute of moisture and the heat is so intense that dead bodies are said not to decay. The life of this region has never been studied, and the purpose of the present expedition is to make a biological survey that shall be as thorough as possible, in connection with a tographical survey, in charge of Prof. J. M. Dikeman. Dr. C. H. Merriam, of the Department of Agriculture, is at the head of the expedition.

AMADOR COUNTY.

PLYMOUTH CONSOLIDATED GOLD MINING COMPANY.—Through the courtesy of Mr. H. W. Lazelle, the secretary of this company, we are enabled to publish the following letters from Superintendent Jones, dated the 20th and 22d ult., respectively: "In the south drift we have about 18 inches of rock that will go from $6 to $8. In the crosscut we have a mixture of quartz and slate that prospects about $3 or $4, and in the north drift we have a vein 3 feet at the top and 15 inches at the bottom that will go $10 to $12 per ton. The south drift advanced 8 feet; crosscut 6 feet and the north drift 4 feet."

"The vein in the south drift has narrowed down again to 10 inches, but the rock is rich. No change in the north vein, which continues of the same thickness."

CALAVERAS COUNTY.

UTICA.—On the 6th inst. a cage in the shaft of this mine containing 10 men fell 300 feet. The occupants were killed. It is but little over a year ago that a cave-in occurred in the same mine, burying 16 men.

NEVADA COUNTY.

EVENING STAR MINING COMPANY.—This company has brought suit in the Superior Court against the Desmond Brothers and D. J. Lynch of Grass Valley to quit title of the Seven Thirty mine; the latter, it is said, has been yielding richly of late under the operations of Messrs. Rawling, Ford, McLachlin and Hammill, lessees.

(From our Special Correspondent.)

MONO COUNTY.

It is expected that the mining industry of this district, now dull, will be active in the spring. Large amounts of capital have been invested, long tunnels have been driven, law suits are settled and other favorable conditions been brought about. In the Prescott and Tioga districts, Mr. Swift, of Swift, Armour & Co., has invested about $250,000. Their property is called "The Great Sierra Mine." The deposit is silver ore. A number of other properties in the district are being prospected. The mines in the Homer district produce gold ore of a high grade. The Pike Estate of Callais, and Messrs. Fox & Kellogg, of San Francisco, have invested considerable over $500,000 in a group of mines called the "May Lundy." They have taken out a good deal of ore, I am told about $1,000,000. This property is now being worked under the management of Mr. R. G. Pierce. The Erie Tunnel property is also managed by Mr. Pierce and represents large investments made by New York parties.

STANDARD.—This mine is located in the Bodie district and is managed in an efficient manner by Mr. Arthur Macy. The main shaft and levels of the mine had been retimbered and new levels opened. There is sufficient ore in sight to supply the mill for six months. The 20-stamp mill is now running full time. During the month of November the Standard shipped $17,000 in bullion and $2,000 in concentrates.

COLORADO.

Mineral surveys approved by the United States Surveyor General of Colorado, during the weeks ending December 27th, 1890, and January 4th, 1891: Sur. No. 6,756; Land Dist., Garfield; Name of claim, Round Up, Sement, Sepiolite and Early Bird lodes; 6,697, Garfield, Denver City, Eureka and Nemo; 6,607, Del Norte, Miser, Knoblock, Clara, Tidal Wave, King and M. A. E.; 6,710, Leadville, Oasis, Ben Burb and Triangle; 6,772, Gunnison, First Chance; 6,778, Gunnison, Hays Placer; 6,515, Durango, Bancroft; 6,716, Garfield, Pearl, Black Diamond, Jennie Timber and G. Jackson; 6,783, Garfield, Boaz, Ide, Alpine, Brooklet and Brookside; 6,758, Leadville, A. M. Thomas, W. A. Anthony, Millennium and J. D. Dana lodes and Thomas and Anthony mill sites.

Survey No. 6,810, land district, Central City, name of claim, Argo lode; 6,529, Central City, Georgetown; 6,527, Gunnison, Seventy-eight; 6,804, Leadville, LilTle Comstock; A. & B. 6,656, Garfield. Girls, Columbia, Home and Electa lodes and Columbia mill site; 6,735, Leadville, Waltham No. 2, Waltham No. 1, Williamsport, Mountain Pride, General Grant, Lincoln and O. I. C. lodes.

Amended survey: 2,676, Durango, Frank Barber. O. K. and Meyers lodes.

The State Inspector of Mines reports that the output of coal in 1890 was 3,075,782 tons, an increase over 1889 of 600,000 tons. Las Animas County heads the list with 1,134,835 tons. The value of the production for the year was $5,751,710.47. The average number of persons employed at the mines is 6,172; average thickness of coal seams worked is five feet eight and one-half inches; thickest, 14 feet; thinnest, three feet. The average price paid to the miners for digging and loading the coal and timbering their working places is 73·4 cents per ton. The highest is $1.12½; lowest, 50 cents. The average wages paid for labor inside of the mine is $2.60 per day. The average cost (estimated) of producing the coal in railroad cars at the mine, including royalty, is $1.50 per ton.

PUEBLO COUNTY.

COLORADO COAL AND IRON COMPANY.—This company shipped during the year 1890 950,000 tons of bituminous coal from their Cañon, Crested Butte, El Moro, Cameron, Nos. 1, 2 and 3, Walsen and Santa Clara mines, and 150,000 tons of El Moro and Crested Butte coke. This is the largest tonnage in the history of the company, and developments are now in progress for the company to increase their coal shipments during the year 1891 to 1,300,000 tons. The coal and coke produced by the company is shipped as far west as Portland, Oregon, Butte, Reno, Nevada, Carson City, Eureka and Salt Lake. The Cañon and also bituminous coals mined by this company are shipped as far east as Omaha, Leavenworth, Atchison, Lincoln and Kansas City. Three thousand coal miners are employed at the mines operated by this company. The company is erecting 75 new coke ovens at Crested Butte to supply the increased demand for Crested Butte coke at Denver, Leadville and Pueblo, and also in Utah, Montana and Nevada, where the coke is used by smelting companies, and also for foundry use. With the additional 75 coke ovens under construction at Crested Butte, this will give the Colorado Coal and Iron Company a total of 500 ovens. It is the intention of the company to increase the capacity of its Bessemer works at Pueblo, and to build two new blast furnaces, which will give a daily capacity of 500 tons of pig iron.

BOULDER COUNTY.

REBECCA MINING & MILLING COMPANY.—This company has been organized by H. C. Thompson, J. E. Parker and C. D. Winn, of Colorado, and B. F. Coombs, W. A. Disbrow, H. C. Litchfield and Nat. H. Vincent, residents of the state of Missouri.

CLEAR CREEK COUNTY.

It is said that the following call, signed by many prominent mining and smelting men has been issued: "To the lead ore miners of the West: A strong effort is being made by the opponents of the tariff on lead ore to cause a repeal of the section of the tariff act which levies a duty on lead ore. To manufacture sentiment in favor of the repeal it is believed that many erroneous statements are being made. To counteract those statements by a dissemination of facts, and to secure united action upon the part of miners for the defense of their rights, a meeting of the lead ore miners of the West is invited to be held at the Mining Stock Exchange of Denver on Tuesday, January 13th, 1891."

At this meeting it is hoped that all facts regarding the production of lead and other ores in the United States may be authoritatively obtained, which will show that no necessity exists for the importation of lead ores from foreign countries, and the effect of such imports upon the mining and smelting industries. Lead ore mine operators and lead mine owners are invited to attend. It is believed that a proper determination and settlement of the question is very essential to the welfare of all miners in our country, and it is hoped that a full attendance may be obtained.

THE ENGINEERING AND MINING JOURNAL has just furnished reliable statistics of the production of lead during the past year, that the exclusion of Mexican lead ores has injured and not benefited Colorado miners, and that the whole country is benefited by "free entry of raw materials."

LAKE COUNTY.

The *Herald Democrat* gives the production of the mines of Leadville in 1890 as follows:

Total production of the Leadville mines for 1890.....$11,798,892.84
Total production for the past 12 years.....159,633,078.87

Tonnage of the camp by mines for 1890:

A Y and Minnie	40,000	Iron Silver (including Moyer)	18,000
Adams	10,000	Lee Basin	2,010
Amity	130	Louisville	6,000
Bangkok-Cora Belle	4,160	La Plata	4,680
Breece	18,720	Lilian	3,120
Benton	7,240	Lucy B Hussey	11,920
Big Chief	780	Little Sliver	3,500
Chrysolite	5 775	Matchless	18,720
Col. Sellers	39,827	Mikado	2,050
Carbonate	3,400	Morning, Evening Star	18,000
Catalpa; Crescent	9,360	Nisi Prius	3,744
Castle View	4,680	Olive Branch	4,732
Continental Chief	12,480	Pittsburg	1,950
Cleveland	300	Reed National	9,360
Dunkin	15,174	Robert E. Lee	4,689
Denver City	3,750	Smuggler Con	6,240
Dorris	316	Silver Cord	6,280
Ella Beeler	100	Small Hopes	10,650
Elk	12,730	St. Kevin	3,300
Forepaugh	300	Tip-Top	3,150
Frank	1,628	Ulster-Newton	10,100
Flagstaff	21,000	Wolftone	1,565
Humboldt	7,400	White Cap	2,667
Henrietta and Maid	55,000	*Other mines	25,000
Houghton	3,914		
Little Chief	3,950		

*This includes mines and leases that have shipped spasmodically, among which may be mentioned the Helena, Ore City, Compromise Little Johnnie, White Prince, Harvard, Dome, Stone, Buckeye, Gonabrod, Wild Cat, Amie, Climax, Montana, Shenango, May Queen, Devlin, Blind Tom, Tiger, Virginius, Brian Boru, William Wallace, Dyer, G. M. Favorite and Venture, as well as the ore shipped from the late strikes in the Berdella and the Luzerne.

Total Production of Leadville in 1890.

Arkansas Valley Smelting Company, Leadville	$2,382,743.17
American Mining and Smelting Company, Leadville	2,401,458.90
St. Louis Smelting and Refining Company, Leadville	869,291.79
Elgin Smelting Company, Leadville	413,305.65
Omaha and Grant Smelting and Refining Company, Denver	1,323,808.05
Globe Smelting and Refining Company, Denver	515,387.29
Boston and Colorado Smelting Company, Denver	910,437.15
Philadelphia Smelting and Refining Company, Pueblo	533,565.10
Colorado Smelting Company, Pueblo	173,491.17
Pueblo Smelting and Refining Company, Pueblo	835,719.83
Colorado Coal and Iron Company (steel iron)	96,961.13
Antioch and Lillian (gold mines), Leadville	87,513.68
Twin Lakes Placers (gold), Leadville	45,300.00
Ore in bins of Leadville smelters, purchased in 1890	1,200,000.00
Grand total	$11,793,892.84

PITKIN COUNTY.

The output of the Aspen mines in 1890 has been 148,500 tons of ore, valued at $7,125,000, against 120,750 tons, valued at $7,250,000, in 1889.

LITTLE FRIEND MINING COMPANY.—This company has secured a lease and built upon the Best Friend lode, adjoining its property at Aspen, and will be in shape by January 1 to commence regular shipments of ore from both claims.

ST. JOE AND MINERAL FARM.—Work has been resumed in this property, which has been idle for some time, by a new company, which has made calculations to develop it on a gigantic scale. They will sink the incline further, and prove up the ore bodies that are already exposed in the upper levels.

SAN JUAN COUNTY.

The mines of the San Juan district made an out put in 1890 amounting to $7,047,700, which is nearly three times as great as the product of the previous year.

Shipments of this ore were from the following points:

	Tons.		Tons.
Lake City	720	Dallas	4,230
Ouray	10,000	Silverton	24,725
Rockwood	1,520		
Del Norte	200	Total tons	41,725
Monte Vista	70	Total value	$6,697,700

Eight thousand tons of this amount were concentrates shipped from the various mills representing 48,000 tons of low grade ore. To this amount —$6,697,700—$350,000 must be added for gold shipped out through the various banks and express offices. The Gold King mine alone shipped nearly if not quite $150,000 of that amount.

AMERICAN BELLE MINES, LIMITED.—It is reported that this company will immediately erect a copper plant at Durango for the treatment of its ores. These carry 10% copper, and there are said to be 300,000 tons blocked out in its mines.

FLORIDA.

(From our Special Correspondent.)

ALBION PHOSPHATE MINING AND CHEMICAL COMPANY.—This company has been incorporated at Martinsburg, W. Va., with a capital stock of $500,000. Angus Cameron, of Cumberland, Md., is the organizer. The object of the company is to develop phosphate mines and build works in Florida.

PORTLAND CHEMICAL AND PHOSPHATE COMPANY.—This company was recently organized at Portland, Me., with a capital stock of $600,000, for the purpose of establishing smelting and phosphate works in Florida. J. H. Drummond, of Portland, Me., is the president and Lorenzo Taylor, of Jacksonville, Pa., is secretary and treasurer.

GEORGIA.

COBB COUNTY.

(From our Special Correspondent.)

AMERICAN MARBLE COMPANY.—The works of this company were established near Marietta, several years ago by Boston capitalists. Up to quite recently Mr. George Eager of the Marietta and North Georgia Railroad Company was the manager and Mr. Newell the Secretary and Treasurer. The company has been placed in the hands of Mr. Geo. F. Newell, as receiver. The assets are said to be $150,000, and the liabilities $300,000. The failure of the company, it is thought, is due to a lack of working capital. The plant has been bonded for a large sum to complete the works. It is understood that the company will be reorganized and shortly resume work.

LUMPKIN COUNTY.

DAHLONEGA GOLD MINING COMPANY, LIMITED.—Mr. F. W. Hall has been appointed manager of this company's property. It is expected that work will be resumed at an early day.

IDAHO.

The report is current in the Wood River district that the smelting combine has been effected, and until the prices of lead and silver shall attain some stability no ores carrying more than 100 ounces in silver to the ton will be purchased.

On lower grade ores a smelting and freight charge of $32.50 will be made. This is an advance of about $7.50 per ton. And the establishment of some sort of a co-operative organization between the ore-producers, which will have a smelting enterprise as its main feature, is spoken of.

According to reports, the Union Pacific Railroad has given notice of an advance in rates of $2 per ton on ore shipments from Cœur d'Alene district to Omaha and Denver, to take effect on January 1st. The old rate was $14.

SHOSHONE COUNTY.

CŒUR D'ALENE SILVER LEAD MINING COMPANY.—At the annual meeting of this company recently held at Butte, Mont., the following trustees were elected for the ensuing year: J. K. Clark, Ben Kingsbury, Patrick Clark, Lee Mantle, H. L. Frank, E. H. Irvine and T. S. Hamilton. At a subsequent meeting of the directors Gen. C. S. Warren expressed a desire to retire from the secretaryship, and the following officers were chosen: President, J. K. Clark; vice president, B. C. Kingsbury; secretary, Charles S. Ellinge; treasurer, J. V. Long; general manager, Patrick Clark. The reports of the superintendent and other officers show the company to be in a prosperous condition, and that the future outlook was good. Plans for the year were informally discussed, and it was determined, among other things, to add an electric light plant to the mine's equipment.

TIGER.—It is said that work has been resumed at both mine and mill, and the owners at Burke carried their point against the striking miners. The demand of the strikers was not for better pay or shorter hours, but that all men who did not belong to the union should be discharged. It is considered fortunate that the strike terminated this way, as, had it been successful, it would have extended to all the other mines in the camp.

KANSAS.

CHEROKEE COUNTY.

A special report shows that during the week ending January 3d the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 1,473,290; zinc ore, pounds sold, 405,000; lead ore, pounds sold, 50,000. Sales aggregated a total value of $5,150.

MICHIGAN.

COPPER.

CENTENNIAL MINING COMPANY.—The following concerning this company's affairs is taken from a letter written by Supt. Vivian: No. 3 shaft was sunk 70 feet in December, making a total from the surface of 2,031 feet. The lode is six feet wide, very hard and unproductive. The tenth level south of No. 4 shaft has been extended 100 feet. The lode is some nine or ten feet in width, and for five feet of it, towards the foot wall, is rich in copper. We have started to sink No. 4 shaft below the tenth level, which will, to all appearance, soon strike the copper ground that is in the tenth level. No. 6 shaft is now down 30 feet below the third level. The lode is still poor. The third level has been opened north 44 feet, which is also lean. We shall doubtless reach the copper ground that is in the levels above before the month is out. The second level has been extended north 41 feet. The lode at this point is about nine feet wide, of which 7½ feet is producing good paying rock. The first level was extended north 47 feet, all of which will pay to stope. We have started to frame a rock house for No. 6, which will be put up as fast as possible.

NATIONAL MINING COMPANY.—Superintendent Vivian writes as follows concerning the affairs of this company: "We have started to open the twelfth level west to find the 'fissure,' on which we shall start to sink a winze. In stoping on the 'fissure' in the bottom of the tenth level we have taken out a mass of copper about 400 pounds, and have discovered another which promises to be much larger. The stopes in the back of the twelfth level are producing some good barrel copper."

PEWABIC MINING COMPANY.—A Boston contemporary says: "It is 'rumored' that certain legal action is to be taken in the Pewabic case, which will postpone the sale of that property for another three years. It is rumored that a $4 dividend on Franklin will be paid in February."

TAMARACK, JR., MINING COMPANY.—The Marquette *Mining Journal* quotes Professor Lawton, state commissioner of mineral statistics, as follows: "The Tamarack, Jr., lode will carry three per cent. of copper for a width of ten feet."

GOLD.

(From an Occasional Correspondent.)

MICHIGAN GOLD COMPANY.—There had been treated at this company's mine up to May 12th, 1890, when the Huntington mill was stopped, 430¼ tons of 2,000 pounds quartz rock, yielding in gold $14,061.36, which figure was swelled to $14,341.07 by the sale of $280.31 worth of specimens. The company has on hand several hundred pounds of rock carrying gold visible to the naked eye. It also has 2,000 tons of mill rock on the dumps. Work of sinking shafts and running drifts, all on the vein, has been carried on during the past season. A mill will probably be constructed in the spring. A 70-horse-power boiler and Ingersoll-Sargeant compressor plant, having 16-inch steam and 16¼-inch air cylinders, with 18-inch stroke, will be set up at the mine some time during January. It will be used to run drills, pumps and other machinery.

ROPES GOLD AND SILVER MINING COMPANY.—The product of this company for eleven months, to December 1st, 1890, has been:

Gold	$70,093.07
Silver	8,658.70
Total	$78,751.77

Rock is now being opened in the vein which gives promise of increasing the output for 1891.

IRON.

MARQUETTE RANGE.

(By Special Telegram.)

MARQUETTE, Jan. 9.

Official changes have been made in Schlesinger syndicate through a desire to strengthen it. John Scott has been chosen president of the York and Florence Iron companies and M. A. Hanna president of all other companies of the syndicate. This list includes the Chapin, Armenia, Queen, Buffalo, South Buffalo, Prince of Wales, Claire, and Sunday Lake mining companies, the Hydraulic Power Company, Interstate Transit Company, and Ashtabula Dock Company. Douglass Van Dyke was elected secretary and William Schlesinger treasurer of all above companies, and Mr. Hanna, of Cleveland, Douglass Van Dyke, Ferdinand Schlesinger, John Scott, and William Schlesinger, of Milwaukee, were elected directors. No vice-president was appointed.

(From our Special Correspondent.)

MARQUETTE. Jan. 6th.

CHAMPION MINING COMPANY.—This company is doubling the capacity of its compressor plant. The present plant is working 45 drills, about 15 drills beyond its stated capacity. The new compressors are being manufactured by E. P. Allis & Co., of Milwaukee, after special designs. The air cylinders will he 28 inches × 48 inches, and the steam cylinders 36 inches × 48 inches and 40 inches × 48 inches. They will be in operation by the opening of navigation.

JACKSON MINING COMPANY.--The tools and appliances of the South Jackson mine have been removed to No. 7 pit of the Jackson. A fine new engine house had just been completed at the South Jackson when the mine shut down, and was partially equipped with boilers and machinery. It will be removed to the Jackson.

LAKE SUPERIOR IRON COMPANY.—The rights to subscribe for new stock of this company at par, one new share for each five old shares held December 26th. 1890, have sold at 4¾@5, and the lower price is quoted bid. The old certificates will be stamped with the fact that authorized capital is 72,000 shares instead of 60,000 shares as at present. Payments for new stock are $15 per share January 28th, $5 February 28th, and $5 March 28th The subscription right will expire January 28th.

MENOMINEE RANGE.

MASTODON.—A new and important find of ore has been made at this mine, says the Crystal Falls *Diamond Drill*. In the 300-foot level a drift was run in a southeasterly direction. ecountering a vien of ore about four inches wide. The lead was followed until the drift now has a length of 140 feet and the vein a width of thirty feet and still widening. Indications are that the vein holds with the ore body in the main part of the mine. The mode of work mapped out for the new find, is to run back in line with skip shaft and raise for another opening. The sinking of the vertical shaft to the 400-foot level has commenced and twenty feet of the additional depth cleared up. Work of cleaning up the open pit will be inaugurated before long.

MISSOURI.

JASPER COUNTY.

JOPLIN, Dec. 29.

(From our Special Correspondent.)

Mining operations for the week ending Saturday, December 29th, were so curtailed by holiday festivities and the unsatisfactory condition of the ore market that the output was less than one-half the average. Zinc ore averaged $24 per ton. There was a slight advance in the price of lead over the previous week, the closing price being $22.70 per thousand. Following is given the sales from the different districts as far as reported:

Joplin mines, 966,390 pounds zinc ore and 127,720 lead; value, $14,979.

Webb City mines, 154,630 pounds zinc ore and 57,220 lead: value, $3,227.90.

Carterville mines, 521,060 pounds zinc ore and 82,470 lead ; value, $8,373.40.

Zincite mines, 197,540 pounds zinc ore and 1,240 lead; value, $2,438.70.

Lehigh mines, 86,810 pounds zinc ore; value, $1,118.

Oronogo mines, 44,000 pounds zinc ore and 2,270 lead; value, $871.40.

Galena, Kan., mines, 248,440 pounds zinc ore and 139,740 lead; value, $5,488.80.

All districts, total value, $36,497.20.

Total sales from the Aurora district for the same week were 420,000 pounds silicate, 215,000 zinc blende and 55,000 lead; total valuc of sales, $6,785.

The entire output of the lead and zinc mines of this district for the calendar year closing December 31st amounted to $3,367,685 in value, an increase of $645,185 over the previous year. This figure does not include ore on hand at the mines, of which there are several hundred tons being held for a better market. If we were to include stocks on hand at their present commercial value the amount of lead and zinc ores produeed would possibly reach the $4,000,000 mark. It is now a generally conceded fact that Europe will be in the market with the opening of the new year for a good share of the zinc ore; this will open up a new avenue of consumption. We are reliably informed that a new zinc smelter will be built in Joplin very soon.

The Little Josie mine on the Windsor land turned in 18,3.0 pounds of zinc orc.

The Choctaw mine on the Snyder Bros.' lease mined and sold 58,210 pounds of zinc ore during the week.

The Sterling Lead and Zinc Company is mining on full time. The Manhattan, operating on this land, turned in 22,100 pounds of zinc ore. The Little Nugget, on the same land, produced 16,720 pounds of zinc ore.

JOPLIN, January 5.

Mining operations for the week ending Saturday, January 3, 1891, were rather quiet owing to the holidays. There was a slight advance in the ore market. The average price paid for zinc ore was $25 per ton. Lead advanced to $23.50 per thousand. Large amounts of ore are held by operators for better prices. Following are the sales of ore as far as reported from the different camps.

Joplin Mines, 1,150,280 pounds zinc ore and 150,220 lead; value $17,900.

Webb City Mines, 489,870 pounds zinc ore and 51,850 lead; value $7,341.85.

Carterville Mines, 558,070 pounds zinc ore and 93,980 lead ; value $9,184.40.

Zincite mines, 290,847 pounds zinc ore and 2,540 lead ; value, $3,684.

Lehigh mines, 86,770 pounds zinc ores; value, $1,171.40.

Galena, Kans , mines, 405,000 pounds zinc ore and 50,000 lead ; value, $5,150.

All districts, total value, $44,431.65.

The most important transaction of the week was the sale of the Buckeye Mining Company to St. Louis parties by W. A. Campbell for $25,000. The purchasers incorporated under the name of the Hoff Land and Mining Company, with a capital stock of $100,000, one-half fully paid up. The company begins operations with a treasury fund of $25,000. Mr. Campbell was eleeted secretary and treasurer. As soon as all details ean be arranged, prospecting and development will he commenced on various parts of the property. The land adjoins the south line of the Standard and Holden tracts.

The Little Nugget mine on the Sterling Land and Zinc Company's land produced 12,340 pounds zinc ore. The Manhattan mine on the same land, 15,850 pounds zinc ore.

The Bay State mines on the Oswego land turned in 85,960 pounds zinc ore and 2,540 lead.

Holibaugh & Stealey, mining and civil engineers, have just completed laying out a new town site in Newton County, called "Hub City." It is centrally located between Joplin, Webb City, Carterville, Carthage, Sarcoxie, Granby and Neosho.

MONTANA.

DEER LODGE COUNTY.

BI-METALLIC EXTENSION MINING COMPANY.—The shaft on this property is down 85 feet and well timbered. The gallows frame is being placed in position, and foundations for boilers and engine are under construction. As soon as the machinery is ready to run, three eight-hour shifts will be put on and sinking for the 500-foot level will be actively pushed. With the development fund the company has on hand carefully managed the ground is to be thoroughly prospected and developed.

LEWIS & CLARK COUNTY.

MONTANA MINING COMPANY, LIMITED.—The following data coneerning this company's affairs are received from the London office: A dividend of 3d. per share has been declared. It is free of income tax, payable on and after the 15th of January, being at the rate of 5% per annum. A Davy pumping engine has been delivered at the mine, and the large air compressor is being erected. A part of the cost of this machinery has been provided out of the revenue of the present half year, leaving the remainder to be debited against the revenue for 1891. A suit has been instituted by the St. Louis Mining and Milling Company for an alleged trespass by the Montana Company upon its property. It is considered probable that some months may elapse before the action is tried. On the Empire lode, 400 feet level north, the face is in low grade rock, assaying $15 per ton, and is now nine feet wide. The stope over this is opened out 500 feet long. The intermediate drift has been driven 250 feet, mostly in high grade ore, assaying $20@$25 and over per ton. The face is now eight feet wide. In the 1,400 feet level, north of the No. 1 shaft, a crosscut is being driven to the vein, and has already been advanced 70 feet.

SILVER BOW COUNTY.

AMY & SILVERSMITH GOLD AND SILVER MINING COMPANY.—The recent fire which consumed the Amy & Silversmith hoisting works is thought by some to have been due to the fact that the fire in the furnace was not properly banked when the lessees, who have been working the mine, left early in the evening. The entire loss on the building and machinery is about $22,000, but the insurance amounts to $8,000. Through the efforts of the Alice fire brigade the fire was prevented from burning out more than two sets of timbers in the shaft.

NEVADA.

EUREKA COUNTY.

EUREKA CONSOLIDATED MINING COMPANY.—This company closed down its smelting works Christmas eve. Operations will prohably be resumed in April next.

LAUDER COUNTY.

SILVER WEST CONSOLIDATED MINING COMPANY.—Mr. Charles Read, it is reported, has purchased the entire mining interest of this company in the Eureka district. The mines embraced in the sale are the Excelsior, Carl Zeno, May Day, Queen, Huguenot and Silver West. The Silver West furnace is included in the sale

STOREY COUNTY—COMSTOCK LODE.

ALTA MINING COMPANY.—Ore extraction has been suspended until the lower levels can be drained and reopened, and the ore bodies known to exist thereon can be reached. Considerahle exploration work is also in progress.

BELCHER MINING COMPANY.—West crosscut No. 1 on the 230 level of this mine is being pushed for the west wall. The south drift on the same level continues to cut hunches and streaks of ore. The raise is still in a mixture of clay and quartz. About 250 tons of ore a week are being sent to the Vivian mill, and averages $18.50 per ton.

CONSOLIDATED CALIFORNIA AND VIRGINIA MINING COMPANY.—Report reaches us that during the week ending December 27th 1,613$\frac{1343}{2000}$ tons of ore were extracted. All was shipped to the Eureka mill. Average assay value of the ore worked during the week (1,610 tons) was $18.10 per ton, and the bullion shipped to Garson Mint was valued at $37,455.96.

HALE AND NORCROSS MINING COMPANY.—In this mine the west crosscut on the 800 level is still in vein porphyry. The east crosscut on the 900 level has passed out of low grade quartz into porphyry The west crosscut, now in 40 feet, has passed through some rich ore; the face is in hard quartz and porphyry. The north drift on the 1,100 level shows stringers of quartz, and the northwest drift is in material that gives low assays. The incline is nearly retimbered, and as soon as the station at the 1,400 foot level is complete, cross-cutting will commence.

OCCIDENTAL CONSOLIDATED MINING COMPANY.—It is reported that the stamps of the Occidental mill will now remain idle till spring. During the three mon hs' run the mill made a very good showing and accumulated money enough to carry on the prospecting work in the mine for several months. The discount upon silver and the expenses consequent upon bad roads and cold weather are the reasons given by the management for stopping the mill.

It is hoped that the good showing made in this last run will encourage prospecting on the Brunswick ledge, which is traceable on the surface for several thousand feet and on which the Occidental mine is situated.

SAVAGE MINING COMPANY.—The winze from the track floor on the 1,300 level in this mine still continues in good ore. A large amount of exploring work is being done, and ore is being mined on the 300, 400, 500, 600, 750 and 1,300 levels. About 520 tons of ore, averaging $16.25 a ton, are sent weekly to the Mexican mill.

NEW JERSEY.

E. W. Perry announces in the *American Journal of Science* that he has found the following minerals at Snake Hill, N. J., within the past three years: datolite, pectolite, laumontite, prehnite, apophyllite, natrolite, analcite, gmelinite, stilbite, heulandite, calcite. Of these the gmelinite and pectolite are in fine specimens, the former rivaling the Nova Scotia mineral. Snake Hill is an ejection of trap, surrounded by sandstone forming a distinct hill about five miles from Bergen Hill.

NEW MEXICO.

GRANT COUNTY.

ALHAMBRA MINING COMPANY.—This company has heen incorporated hy F. N. Burchard, Lydia J. Caldwell, F. E. Morse, Abner Hurd, James R. Young, C. M. Stone, L. W. Flersham, of Chicago. Capital stock, $1,000,000. H. L. Pickett, of Silver City, N. Mex., agent.

NEVADA SMELTING AND MINING COMPANY.—This company has been incorporated hy W. B. Catchings, V. Van Hall and D. C. Roherts, of this county. Capital stock, $1,000,000. Principal place of business, Lordsburg.

NORTH CAROLINA.

ROWAN COUNTY.

(From our Special Correspondent.)

NEW GOLD MINING COMPANY, LIMITED.—Recently while cutting a lead at the 165 foot level a vein of ore was struck on this company's property that is reported to be three feet thick and very rich.

PENNSYLVANIA.

On the 28th of December the underground workings of the United Coke Works of H. C. Frick & Co., near Mount Pleasant, were accidentally fired by the explosion of a barrel of oil in the underground stables. The flames spread to all parts of the mine. The tipple houses and several other buildings at the top of the shaft were burned. There were 120 men at work in the mine, but they all came to the surface through an air shaft. A brattice was put up near the heading to prevent the fire from spreading. The company's loss is estimated at $76,000, and months will probably elapse before work can be resumed.

COAL.

CAMBRIA.—This coal mine, which was closed when gas was introduced into Johnstown, will now resume operations. A test of the cable system which will operate the mine was made on the 6th inst. and proved satisfactory.

LEHIGH AND WILKES-BARRE COAL COMPANY.—The report reaches us that a diamond drill is at work at the lower end of Plymouth, putting down an eight-inch bore hole into the abandoned workings of the Nottingham colliery of the company. The object is to fill in the workings with culm from the surface, which is packed into the old chambers to prevent the surface above this part of the workings from caving.

(From an Occasional Correspondent.)

ELK HILL COAL AND IRON COMPANY.—This company has been two years at work sinking a

shaft to coal near the Lackawanna River in the city af Scranton. It had to contend with quicksand and a large amount of water for the first 100 feet. The 14-foot vein of coal has been reached after passing through two veins, one of little less than four feet, and one a little less than three feet in thickness, and all in a depth of 230 feet. A coal breaker of 1,200 tons daily capacity has been constructed, on a site a mile distant from the shaft, and at a place where it will be convenient to ship by Delaware & Hudson Railroad, Erie Railroad, Delaware, Lackawanna & Western Railroad, or on the Scranton branch of the New York, Ontario & Western. The company expects to ship mainly on the latter. Will commence in two months.

OIL.

The monthly oil report for December shows that 49 wells were completed in the Bradford and Allegheny fields, 43 in the middle, 75 in Venango and Clarion, 54 in Butler and Armstrong, 98 in the southwest district and 29 in the Eureka; total, 448. Of these 64 were dry, and the others have a production of 8,396 barrels. The decrease in completed wells is 172; in new production, 3,901, and in dry holes, 30. There are drilling in the New York, Pennsylvania and West Virginia fields 445 wells; rigs up, 245; total, 690. The decrease in drilling wells is 97 and in 33 since November. The average for producing wells in December was 29½ barrels.

SOUTH CAROLINA.

(From our Special Correspondent.)

GULF PHOSPHATE MINING AND MANUFACTURING COMPANY.—This company has been incorporated at Charleston, S. C., with a capital stock of $240,000, by E. C. Williams, Jr., A. J. Salinac and Edward Salinac.

ROYAL FERTILIZER COMPANY.—This company has been incorporated with a capital stock of $300,000. W. B. Smith, Andrew Simon and A. M. Rhett are among the incorporators.

SOUTH DAKOTA.

LAWRENCE COUNTY.

The first passenger train to enter the City of Deadwood arrived over the Fremont, Missouri & Elkhorn Railroad at 9:35 o'clock on the morning of December 29th, and was greeted by a crowd of enthusiastic citizens.

The Deadwood *Pioneer* says: "The result of the regular 10-day clean up at the chlorination works was deposited last evening in the Deadwood National Bank, in the shape of a gold brick weighing 324 ounces, and worth $6,480, a splendid voucher as to the success of the method in treating our dry ores. This clean-up is almost the entire result of the work of one barrel, the other one being undergoing repairs which were completed on Friday and the barrel put in operation. The actual value of the bullion daily produced by these works is $800 with present facilities. Superintendent John E. Rothwell made the directors smile by offering to bet a $50 overcoat that on January 1st he would produce, at the lowest estimate, a $10,000 brick; none of them, however, would accept the wager. This bullion is worth $20 an ounce, being almost pure. When the company get their two new barrels in operation the capacity of the works will be more than doubled, and next season it is safe to say that their bullion shipments will be at least $50,000 per month. In spite of numerous difficulties and drawbacks, 'of which the general public know nothing,' the management have made a financial success of the experiment and are now on the high road to fortune, all owing to their indomitable pluck and energy."

PENNINGTON COUNTY.

HARNEY PEAK TIN MINING AND MANUFACTURING COMPANY.—This company is about to erect concentrating works near Hill City, to be commenced by May 1st. They will have a capacity of 500 tons of ore a day. The Chicago, Burlington & Quincy Railroad has been extended to Custer City and from Custer City to Hill City. The cars have been running since November 1st. The track runs through the groups of tin lodes and switches have been extended to outlying groups. Smelting works will also be built.

TENNESSEE.

JOHNSON COUNTY.

(From our Special Correspondent.)

DOE MOUNTAIN MINING AND MANUFACTURING COMPANY.—This company is developing its property, known as the Doe Mountain Iron Mine. It is reported that a plant will be erected at an early date. The company's P. O. address is Johnson City.

TEXAS.

LLANO COUNTY.

(From our Special Correspondent.)

Recent reports from San Antonio, Tex., are to the effect that Mr. Louis Giraud, a civil engineer, has discovered cassiterite on the Colorado River, in this county, south of the famous Ballinger iron hill. The deposits are said to cover a large extent.

UTAH.

JUAB COUNTY.

The Omega Mining district in Juab County, in one of the desert ranges south of Dugway district, has recently been organized. The ores are medium gray Galena and lead carbonate. The formation is a siliicious limestone, bordering on a slate or shale belt. The surface showing indicates permanency and large ore bodies. The district has a bountiful supply of wood and water, and is near enough to the contemplated Deep Creek Railroad to make the ores available for the Salt Lake market.

TINTIC MINING AND MILLING COMPANY.—This company, according to reports, has purchased the Silver Moon mine, at Silver City, Tintic district. The price paid was $58,000. A recent test was made of ore taken from the 50-foot shaft, and was very satisfactory. On 16,235 pounds of argentiferous iron ore the following result was obtained: Silver, 18·4; gold, 1·10. On 14,160 pounds: Silver, 67 ounces, 8% lead, $\frac{13}{100}$ ounces gold. On 13,524 pounds ore: 86 ounces silver, 3¼% lead, and $\frac{13}{100}$ ounces gold.

MILLARD COUNTY.

A deposit of alum has been discovered in the vicinity of Fillmore, 50 miles from a railroad. The alum, it is said, is found in sufficient quantities to be of commercial value.

SUMMIT COUNTY.

A reported ore strike in Iron Cañon is causing considerable excitement in Park City. This is the next cañon west of Thayne's and a new place for mining. Lately some prospecting was done there, and after a small amount of work some 100-ounce silver ore was discovered. Many prospectors are said to have gone to the new locality.

The snow from which the inhabitants of Park City are usually very much inconvenienced was very late in coming this year. It was not until the 31st of December that sleighs could be used in the town.

ANCHOR MINING COMPANY.—The vein recently opened below the tunnel level is being stoped. The ore is of better quality than that in the upper levels, though it is still concentrating ore. The raise to tap the bottom of the hole made by the boring machine is progressing nicely, and it is quite probable that connections will be made soon.

CRESCENT MINING COMPANY.—The tramway continued to run up to December 30th, and had to stop on account of snow. This will prevent ore from being sent down from the mine till spring, unless teams are used to haul first-class ore from the hill.

GEM.—The strike in the Gem group which was recently made is looking better as the work of developing goes on. The vein has been drifted on for more than 40 feet and has widened to about 18 inches. The ore assays 36 ounces silver and 36% lead.

VIRGINIA.

(From our Special Correspondent.)

EUREKA GAS, COAL AND COKE COMPANY.—This company has been organized at Graham with a capital stock of $75,000, for the purpose of developing the mineral resources on Bull Run. Ralph Izard is to be president and B. W. Dickenson secretary.

WISE COUNTY.

KENTUCKY COAL AND COKE COMPANY.—This company has been organized at Pineville, Ky., with a capital stock of $50,000, for the purpose of developing the coal mines of the county.

WEST VIRGINIA.

MCDOWELL COUNTY.

A charter has been issued from the Secretary of State of West Virginia to Constant A. Andrews, Calvin S. Brice, Russell Sturgis, Everton Chapman, Samuel A. Croser, Frank E. Randall, Clarence Andrews, Edmund Smith and others, incorporating a company for leasing and mining valuable coking coal land recently acquired in McDowell County. The names of the capitalists interested in this enterprise mark it at once as perhaps the strongest combination that has been formed for the purposes named since the opening of the Pocahontas coal field. The extension of the railroad down the Elkhorn River will probably enable the company to develop at once its properties.

WISCONSIN.

During the season of 1890 the brownstone quarries of Bayfield County and the Apostle group of islands in Chequamegon bay, Lake Superior, produced as follows:

Quarries.	Cubic feet.
Prentice Brownstone Company	623,334
Ashland Brownstone Company	127,542
Hartley Bro's	107,421
Smith & Babcock	125,438
R. D. Pike	77,473
Basswood Island, rubble and ton stone	40,000
Total	1,101,208

WYOMING.

(From our Special Correspondent.)

LARAMIE COUNTY.

LARAMIE, Jan. 8, 1891.

The State Mining Convention, which closed at Cheyenne last evening, was a grand success, and resulted in a permanent organization. The display of minerals was the largest and best ever seen in the State. During the session the following papers were read: Address of welcome, J. K. Jeffrey; response, the Chairman of the Convention; Douglas fields, Hon. Wilbur C. Knight; Newcastle and its neighborhood, Hon. Frank W. Mondell: Reminiscences of old times in Wyoming, Gen. Henry Mizner; Wyoming as the Pennsylvania of the West, Hon. E. S. N. Morgan; The infancy and growth of our mining industries, Hon. S. W. Downey; Mineral deposits of Fremont County, Capt. H. G. Nickerson; The Silver Crown mining district, James Adams; Marble and other minerals of Sheridan, Hon. Wm. Brown.

Railroads as a Factor in Our Mineral Development, Hon. J. W. Hoyt; Hartville Iron, Hon. I. S. Bartlett; Precious Metals of Carbon County, Hon. J. F. Crawford; Mining in the Big Horn with Indians, W. M. Masi; Copper Deposits of Wyoming, Prof. F. J. Stanton; Resources of Sweetwater County, G. C. Hewitt; Uinta Mineral Paint, M. M. Lezeart (Letter); Mineral Paints of Carbon, Hon. J. C. Friend; Wyoming Minerals in the Columbian Exposition, Hon. A. S. Mercer; Mineral Wealth of Johnson County, Hon. Joe DeFarthe; South Pass Gold Hunting, E. A. Slack; Casper Fields, E. C. Bartlett; Marble and Building Stone, H. G. Hay, M. P. Keefe.

ALBANY COUNTY.

The plaster of Paris mill at Laramie is turning out 400 tons of excellent plaster each month.

CARBON COUNTY.

The Brush Creek camp is very busy sinking. The deepest shaft is run 30 feet, quartz decomposed and looking well.

Argentiferous galena has been discovered west of the Platte River, just above Saratoga. Assays are reported as high as 200 ounces of silver. The formation being lime in that vicinity, a large strike would not be surprising.

Wyoming expects to spend $30,000 upon the display of her resources at the World's Fair in 1893.

FREMONT COUNTY.

There is a new 10-stamp gold mill being erected near Miners' Delight, which is to cost $8,000.

In the valley below the Lander oil wells is a basin which contains, according to estimates, 30,000 gallons of petroleum. This oil has escaped since the wells have been plugged.

WESTON COUNTY.

The Kilpatrick & Collins coal mines are shipping 1,200 tons of coal per day and are now burning their first run of coke. The coke displayed at the mining convention was first-class in every respect.

FOREIGN MINING NEWS.

ENGLAND.

A big blast was exploded at the Dinorwic Quarries, Carnarvonshire, lately, by which about a quarter of a million tons of rock was removed. The part to be removed was an obstructive rock which prevented the quarrymen from carrying on their work. About 7,000 pounds of gelatine, equal in strength to 20 tons of gunpowder, was used in the blast, which was the greatest ever attempted in North Wales, the cost of the explosive being about $3,000, and the quantity of rock displaced being so enormous that it will take a large force of men several months to remove it.

GERMANY.

The report reaches us from Bochun, Westphalia, that a disastrous explosion has taken place in a coal pit at that place on the 2d inst. The total number of lives lost is unknown. The bodies of two men killed and nine injured have been recovered from the pit, but it is feared that a number of other mines have perished.

SPAIN.

RIO TINTO COMPANY, LIMITED.—Report reaches us from Paris that the Rio Tinto directors have declined to enter into a year's contract with a number of vineyard syndicates for the supply of sulphate of copper. The reasons assigned for the refusal are the reduction of their stock of copper ore and large exports to America on contract, reported in the ENGINEERING AND MINING JOURNAL Jan. 3, 1891.

MEETINGS.

The annual meeting of the stockholders of the Scientific Publishing Company will be held at the offices of the company, 27 Park Place, New York City, on the 13th January, 1891, at 12 o'clock, M., for the election of trustees, and for the transaction of such other business as may be brought before the meeting. S. BRAEUNLICH, Secretary.

NEW YORK, January 9th, 1891.

Diamond B. Mining Company, at Room 1, Patterson and Thomas Building, Denver, Colo., January 13th, at 3 P. M.

Little Rule Mining Company, at Aspen, Colo., January 16th, at 3 P. M.

National Lead Trust Certificate holders, at No. 1 Broadway, New York City, February 4th, at 12 o'clock, noon.

Rialto Mining and Milling Company, at the office of H. S. Morris, 1,649 Champa street, Denver, Colo., January 19th, at 10 A. M.

DIVIDENDS.

Aspen Mining & Smelting Company, dividend No. 20 of 10 cents per share, $20,000, payable January 15 at the office of the company, No. 54 Wall street, New York City.

May-Mazeppa Consolidated Milling and Mining Company, dividend No. 8 of 1¼%, $12,500 payable January 15, at the office of the Company, Room 7, Patterson & Thomas Block, Denver, Colo.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Atlantic Con., Nev.	..	Nov. 11	Dec. 29	Jan. 19	.25
Confidence, Nev	17	Nov. 17	Dec. 22	Jan. 12	.75
Con. Imperial, Nev..	30	Dec. 13	Jan. 13	Feb. 9	.05
Crown Point, Nev..	53	Dec. 3	Jan. 7	Jan. 28	.50
Exchequer, Nev....	30	Dec. 11	Jan. 15	Feb. 5	.25
Locomotive, Nev....	..	Dec. 15	Jan. 22	Feb 10	.05
Potosi, Nev..... ...	35	Dec. 16	Jan. 20	Feb. 10	.50
Union Utah	..	Dec. 6	Jan. 10	Jan. 28	01
Utah Con.. Nev.....	11	Dec. 9	Jan. 19	Feb 9	.25

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 81 and 82.

NEW YORK, Friday Evening, Jan. 9.

The market for the week under review, all things considered, was slightly better than during the week preceding. However, the bright expectations of the Exchange Optimist, who predicted an entire change in the situation after the first of the year, were far from being realized. There seemed to prevail a feeling akin to confidence for the future. This was given expression in a more general inquiry and marked increased prices. The wide difference between the bidding and asking prices, a marked feature of the week's market, was suggestive and eloquent. As usual the speculative element seemed to prevail; low price stocks were the favorites. The sales for the week aggregate 63,650 shares, of which 40,200 were of non dividend paying shares.

Copper shares were completely out of the market, not a share being dealt in. This fact may perhaps be taken as indicative of the general unsettled belief as to the turn which copper will take, and possibly to the belief that it will reach 14c. before it touches 16c.

The Comstocks were in fair demand and the prices of most of the stocks made a perceptible advance. This is attributed to the fact that small or weak holders have been frozen out or otherwise disposed of. Contemplated silver legislation is said to have something to do with the advance. However, as the Comstock mill ring steals all the profits, there is no apparent reason why the mine shares should improve.

Alta closed at the opening price of 75c. on sales of 900 shares. Belcher experienced a small sale at $1.50. Best & Belcher gained 35c. on small sales, closing at $2.50. Chollar was active and gained 10c. closing at $2.15. Crown Point surprised its friends by jumping to $1.75, a gain of 60c. and dropping to $1.70 on light sales. Consolidated Imperial was inactive at 25c. Consolidated California & Virginia opened at $2.50 and closed at $3.35 on light sales. Comstock Tunnel was inactive, 500 shares selling at 14c. Gould & Curry rose 35c.@$1.65 on light sales. Hale & Norcross on light sales gained 15 cents, closing at $1.50. Julia Consolidated opened at 38c. and closed at 25c. on sales of 1,400 shares. Mexican gained 35c. closing at 250 on sales of 600 shares. Ophir is to be accredited a rise with 30c., closing at $3.20 on sales of 500 shares. Occidental lost 5c., closing at 70c. on light sales. Potosi remained unchanged, the price being $4.75. Savage was inactive, and gained 15c., closing at $1.80. Utah closed at 55c., the opening price on active sales.

The Tuscaroras were scarcely called into the market. Of the sales, Navajo is to be accredited with 300 shares at 20c., the closing price. North Belle Isle, one small sale at 75c. Nevada Queen, one sale at 60c. Del Monte has levied assessment No. 4 of 20c. a share. The stock was not dealt in.

As usual there was the same feverish speculative tendency manifest in regard to some of the low-priced stocks. Middle Bar records sales of 14,800 shares. The opening price, .06, was the highest during the week, closing at .05c. Brunswick gained 1c. during the week closing at .08c. on sales of 4,400 shares. Sutter Creek was active during the week, closing at $1.10, an advance of 5c., due presumably to manipulation.

The Belmont Gold Mining Company, of Sutter Creek, Amador County, California, has made application for listing. It is a reorganization of the Sutter Creek Mining Company. The application is now before the committee on mining securities. We have the statement of one of the members of this body that it will be granted. Mr. H. R. Lonsbery is the transfer agent. History repeats itself, and we look for as brilliant a career as that which attended the manipulation of the Amador, Gila, Brunswick and other Amador properties. The application contains the following sworn statements: Incorporated December 13, 1890 in California, with an assessable capital stock of $500,000 in as many shares. Of this number 400,000 shares were issued in payment of the property and 100,000 shares placed to the credit of working capital. The officers and directors are: President, John Henderson; vice-president, C. H. Batchford; secretary, S. Gardner; assistant secretary and treasurer, W. F. Trotter; directors. J. Henderson, F. C. Moschack, Oscar Woodhouse, C. H. Batchford, and Sylvester Gardner. The claim on which the company is to operate is the "Iowa," 1,140 × 400 feet. There has been expended in developing the property $85,000, and in equipment $15,000.

The Bodie Consolidated gained 30c. on small sales, closing at $1.50. In our issue of December 27th we credited Mr. Arthur Macy with the statement that the Bulwer, Mono, U. Syndicate and other mines of the Bodie District were closed. The statement should have been "most of the mines of the Bodie districts are closed, but the Bulwer and Mono are operated by Superintendent Jno. W. Kelley. The Syndicate has been working under a lease to Mr. Samuel Lyack. There was nothing doing in these stocks during the week.

Freeland was active at 28c., the closing and ruling price.

Horn Silver lost 20c., closing at $3 on sales of 1,650 shares.

Yellow Jacket on light sales closed at $1.85, an advance of 20c. over last week.

Julia dropped 13c. to 25c. on moderate sales. Phœnix of Arizona lost 11c., closing at 58c. on sales of 2,100 shares. Scorpion dropped 5c. to 20c. on sales of 1,600 shares.

Adams had one sale of 1,300 shares at $1.65. There is said to be a probability that the company will declare a dividend, after three years of silence, within a short time.

Boston. Jan. 8.

(From our Special Correspondent.)

The first week of the New Year, while showing a little more activity in copper stocks, has not come quite up to the hopes and expectations of operators; at the same time there is a better feeling pervading the market and the high priced dividend stocks show some advance over the closing prices of the last year. The reduction in the price of ingot to 15c. per pound by the lake companies has been already discounted, and it is hoped the present price of the metal can be maintained throughout the year.

Calumet and Hecla advanced from $249 to $260, with very little stock coming out at these prices. The output of the mine for December shows a large falling off. Whether this was accidental or in pursuance of a plan to reduce production, time will tell.

Tamarack also shows an advance from $140 to $151, but sales have been very limited, holders being apparently contented to wait.

Franklin advanced from $15¼ to $17½. With its large surplus on hand it looks cheap at this price. Osceola has been the most active stock on the list and advanced from $35 to $38½, but did not hold the price and receded to $37.

Boston and Montana touched $43¼ at one time during the week, but closed to-day at $41½, showing no net gain for the week.

Butte & Boston has been in good demand. The advices from this mine are of a favorable character. It opened at $13¼, and sold up to $15¾, losing the fraction only in latest sales.

Centennial sold at $16, closing at $15¾, a net gain of the fraction. Reports from the mine look well, but a great deal of work will have to be done to put the mine on a paying basis. The same may be said of Kearsarge. Both mines have good possibilities, which time alone will develop. Kearsarge sold at $12@$11½.

Quincy sold in a small way at $93, same as last week.

Atlantic sold at $16, Huron at $3½, National at $2¾, and Santa Fe at 40c.

Allouez declined from $3 to $2¼ on reports that an assessment was talked of, but Treasurer Stanton denies that any assessment is contemplated at present. The latest reports touching the Calumet conglomerate in Allouez says the lode is looking more promising.

Silver stocks continue dull and inactive. Catalpa sold at 25c. and Napa Quicksilver at $4.

By Telegraph.—Calumet and Hecla $258, Tamarack $150, Osceola $35¼, Franklin $17¼, Centennial $15. Butte $14¼, Kearsarge $11½, Atlantic $15½, Allouez $1⅞.

Denver. Jan. 5.

(From our Special Correspondent.)

The holidays seem to have had a depressing effect upon the market, especially in to-day's sales and quotations. The "prospects" suffered most, and I believe this was the first call on this exchange where Hard Money, .01 bid, Amity, 1¼, Pay Rock, 3½, Aspen United, ½, Claudia J., 4, Diamond B., ½, Big Six, 5, Iron Clad, 2, Potosi, 3¾, and Legal Tender 2½, has been equalled. The mines owners, miners, ore buyers and smelters, as well as the railroads, are suffering from the uncertainty of the present course of Congress, and the mass meeting held at the Chamber of Commerce the other evening by the most prominent business and professional men of our city, with the concise resolutions they passed, show plainly that our silver interests must receive early and decided action. These meetings are being called in cities all over the State, also in all prominent cities of the whole mining region, not only by the miners but other organizations. Very few samplers or smelters but what are well supplied with the class of ore that there is some little profit in handling at present, and none are using any extra exertion to contract for, or buy high grades, or great amounts, in comparison to their desires of three months ago.

Company.	Opening.	H.	L.	Closing.	S.
Alleghany, Colo.....	20a	20a	10b	10	.....
Amity, Colo.....	01¼b	*02b	01¼b	*02	.....
Bangkok, C. B., Colo....	04b	04½	04½	04½	1,900
Bates-Hunter, Colo	55	55	55	55	1,500
Brownlow, Colo.....	04¾b	04¾b	04¼b	04½	.....
Calliope, Colo.....	21b	24	23	24	1,200
Cash, Colo.....	10b	19b	10b	10	.....
Clay County, Colo.....	93b	*99	93	93	900
Hard Money, Colo.....	....	....	....	....	.....
Leavenworth.....	70	70	70	70	100
Little Rule, Colo.....	93	93	93	....	200
Matchless, Colo.....	....	....	....	....	.....
May-Mazeppa, Colo.. ...	113b	113	111	111	800
Mollie Gibson, Colo.. . .	....	....	....	....	.....
Oro, Colo.....	50b	50b	50b	50	.....
Pay Rock, Colo.....	03¼b	03¼	03¼	03¼	200
Puzzler, Colo	....	....	....	....	.....
Reed-National, Colo. ...	71a	71a	68b	68	.....
Running Lode.....	20	20	20	20	500
Silver Cord, Colo.... ..	35a	20b	20b	20	.....
Whale, Colo.....	....	....	....	....	.....
Prospects.					
Argonaut, Colo.....	....	15b	15b	15	.....
Aspen United, Colo.....	....	....	....	....	.....
Big Indian, Colo.....	....	....	....	....	.....
Big Six, Colo.....	04	*05	04	04	1,200
Century, Colo.....	35a	35a	34a	....	.....
Claudia J., Colo..... ..	....	....	....	....	.....
Nat. G. & Oil Co...	08b	*09	*09	*09	300
Diamond B., Colo.....	01	01	01	01	100
Emmons, Colo.....	‡42b	‡42	*40	36	200
Golden Treasure, Colo..	16b	16½	15	16	800
Ironclad, Colo.....	02b	02¾b	02b	02¾	.....
John Jay, Colo	10a	10a	03b	03	.....
Justice.....	15a	15a	15a	....	.....
Legal Tender, Colo.....	*05a	02½b	02½b	02½	.....
Morning Glim, Colo.....	48b	50	50	50	100
Park Consolidated.....	15b	16b	15b	16	.....
Potosi, Colo.....	03½b	03½b	03½b	03½	.....
Rialto. Colo.....	60	60	60	60	300
Total for the week.....					10,200

*Buyer 30 days. †Buyer 60 days. ‡Seller 60 days. §Seller 30 days a Asked. b Bid.

Lake Superior Iron and Gold Stocks.

IRON MINING STOCKS.

Name of Company.	Par value.	Bid.	Asked.
Anvil Iron Co.....	.....	$3.00	$3.25
Ashland Iron Co.....	$25.00	60.00	66.00
Aurora Iron Co.....	25 00	8.50	9.50
Brotherton Iron Co.....	....	3.00	3.25
Champion Iron Co.....	25 00	80.00	85.00
Chandler Iron Co.....	25.00	38.00	39.50
Chicago & Minn. Ore Co....	100.00	113.00	117.00
Cleveland Iron Co.....	25.00	17.00	18.00
East New York Iron Co.....	....	2.00	2.25
Germania.....	25.00	11.50	12.00
Jackson Iron Co.....	25 00	110.00	125.00
Lake Superior Iron Co.....	25.00	70.00	75.00
Milwaukee Iron Co.....	25.00	.....	.....
Minnesota Iron Co.....	100.00	77.00	78.00
Montreal Iron Co.....	25.00	9.00	10.00
Norrie (Metropolitan).....	25.00	70.00	72.00
Odanah Iron Co	25.00	17.00	18.00
Pittsburg Lake Angeline Co..	25.00	160.00	170.00
Republic Iron Co.....	25.00	27.00	29.00
Section "23" Iron Co.....	.....	20.50	21.00

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co.....	....	....	....
Grayling Gold & Silver Co....	$25.00	....	...
Michigan Gold Co.....	25.00*	....	....
Peninsula Gold & Silver Co....	25.00	....	
Ropes Gold & Silver Co...	25.00	$2.00	$2.25

* Quotations nominal.

St. Louis. Jan. 7.

(From our Special Correspondent.)

St. Louis begins the year with a very dull market—what little activity there is being divided between only two or three stocks. Sales are very light and prices on the whole are on the decline.

Breen opened on the year with 81¾c. bid, but managed in spite of a good demand to drop to 76¼c. During the week 4,400 shares were sold.

Elizabeth had a fall of 15c. in the last six days and is now quoted at $2.50. It opened at $2.65 and soon advanced to $2.67½, but the general depression of the other stocks soon lowered it. During the week sales amounting to 35,000 shares were made.

Cleveland was very weak and had a bid of only 2½c.

Granite Mountain had a bid for 10 shares but buyers and sellers were too far apart for any business. Regular shipment of the Granite Mountain amounted to 22 bars, containing 28,900 ounces of silver and 62 ounces of gold. Mr. Charles Clark, who is a large stockholder in the Granite Mountain, has recently purchased the Mattie, Tyson and Maggie C. claims for $15,000. The claims adjoin the Granite Bell property at Granite.

American & Nettie opened at 45c., but soon fell to 41¼c., with only 400 shares sold to her credit.

Central Silver was the stock most in demand this week, and closed the week's business with 7,500 shares sold. The market opened at 6c., advanced to 7c., then dropped off to 3½c., and closed at 4c.

Silver Age had a slight demand. It managed to hold its own against the declining market, and

closes at the same figure with which it opened the year, $1.65. During the week it reached $1.80 and $1.50. Sales, 200 shares.

The Yuma has let its contracts for the new pipe line. The money required for this move was loaned by three of the stockholders. The new wells seem to be "panning" out very nicely.

The stock opened at 50c. advanced to 55c. and closed at 50c.; sales, 500.

Small Hopes had no call this week and closed the week without a sale. Its present quotation is 80c.

The afternoon sessions of the Exchange have been resumed.

The Board of Directors of the Mining Exchange has ordered the following properties to be stricken from call: I. X. L. Cœur d'Alene, Richmond Hill, Cleveland (of Idaho), Western World.

PIPE LINE CERTIFICATES.

(Specially reported by Messrs. WATSON & GIBSON.)

The petroleum market this week has been quite strong in sympathy with an improved speculative feeling in Wall Street, rather than owing to any circumstances connected with the production and consumption of petroleum. Business in this commodity, however, has been at almost a complete standstill, and since it attracts no interest outside of the walls of a refinery, it is hardly worth while to dilate upon the situation in the field or in the Exchanges. Until the market assumes a more active condition it is hardly worth while to quote statistics, or make prophecies.

NEW YORK STOCK EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Jan.	3.....	72	72	72	72	6,000
	5.....	72¾	73	72½	73	18,000
	6.....	73	73	73	73	5,000
	7.....	73	73¾	73	73¾	20,000
	8.....	73½	73½	73½	73½	6,000
	9.....	73¾	73¾	73¾	73¾	10,000
Total sales in barrels.....						65,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Jan.	3.....	72¾	73	72¾	73	16,000
	5.....	74⅛	74½	74	74½	17,000
	6.....	74¼	74⅞	74	74	15,000
	7.....	74	74⅝	74	74⅝	29,000
	8.....	75⅛	75⅛	74½	74½	12,000
	9.....	74¾	74¾	73⅞	74	15,000
Total sales in barrels.....						105,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, January 9.

PRODUCTION OF BITUMINOUS COAL for week ending January 3rd and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1891. Week.	1891. Year.	1890. Year.
Phila. & Erie R.R.....	2,241	2,241	1,226
Cumberland, Md.....	†101,098	3,887,822	65,000
Barclay, Pa.....	*2,533	2,533	6,000
Broad Top, Pa.....	*10,563	10,563	6,507
Clearfield, Pa.....	76,758	76,758	62,017
Allegheny, Pa.....	19,016	19,016	18,145
Beach Creek, Pa.....	45,879	45,879	35,000
Pocahontas Flat Top.....	26,046	26,046	35,000
Kanawha, W. Va.....	*44,256	44,256	35,000
Total.....	328,390	4,115,114	258,895

* Estimated.
†Nine days ending Dec. 31, 1890.

WESTERN SHIPMENTS.

Pittsburg, Pa.....	26,531	26,531	16,705
Westmoreland, Pa.....	24,362	24,362	19,315
Monongahela, Pa.....	11,478	11,478	5,410
Total	62,371	62,371	41,430
Grand Total.....	390,731	4,177,485	360,325

PRODUCTION OF COKE on line of Pennsylvania R. R for the week ending January 3rd, 1891, and year from January 1st, in tons of 2,000 lbs.: Week, 103,910 tons; year, 45,451 tons: to corresponding date in 1890, 62,293.

Anthracite.

There is no doubt that the hard coal trade is firmer at this writing than at the close of last year. And this is due to healthy causes, namely, a perceptible movement nearly all along the line caused mainly by the restricted output of December. The trade is to be congratulated that with days of spring-like weather alternating with days of mild winter weather, the new year opens under such promising auspices.

Orders have been moving much more freely since the holidays, and consequently December prices are at last reached. The activity in stove size shows that the domestic consumer, the mild weather to the contrary notwithstanding, is at last forced to come into the market. Steam sizes are also moving much better than during the past few weeks. This justifies the expectation that the scarcity of pea and buckwheat may soon be relieved. At present those sizes are as difficult to secure as soft coal, and prices have stiffened. Although on general principles it is a matter for congratulation that the amount at tidewater is 600,000 tons smaller this year than last year, the operators could dispose of more than there is there if they had it, as transportation is still very poor. Vessels, too, are scarce, and freights stiffer.

The Philadelphia & Reading Coal and Iron Company has issued a circular notifying the trade that after January 1st the production of small stove coal will be discontinued, and that chestnut coal will be improved in size and quality. All the coal operators, it is said, have agreed on the subject, and hereafter small stove will not be obtainable. Regarding the reasons for this action a prominent official of the company said: "The small stove size became so popular, as soon as it was introduced by the Reading Company several years ago, that the colliers could not fill the orders. Failure to supply the size of coal demanded caused constant irritation among dealers and consumers. To protect themselves the colliers would sell only a limited amount of small stove unless orders were made at the same time for other sizes in proportion. This caused so much trouble that retailers and middlemen importuned the operators to discontinue its production, and the request has been granted."

The sales agents met on December 30th and agreed upon 2,500,000 tons as the output for January, and continued the December prices as follows: Stove, $4.20; egg, $4.10; broken, $3.75; chestnut, $3.95. Owing to the scarcity the smaller sizes are now quoted higher: Buckwheat, Lehigh, $1.90; free-burning, $1.99@$2.15, on board; pea, $2.60; free-burning, $2.75.

Bituminous.

The situation is strained, and no immediate relief is in sight. Coal is being mined, but not moved. The railroads have for all practical purposes comparatively stopped carrying soft coal, unless to points where they can seize it for their own use. In several of the soft coal regions snow has virtually closed the mines for the time being, and also in many cases obstructs transportation. Under these circumstances soft coal operators and jobbers at this point find themselves in the harassing position of being confronted with an unusually large demand, and utter inability to supply it. Supplying new orders has entirely stopped, and the only activity noticed is in the direction of some jobbers almost begging for coal at fancy prices from other jobbers. One barge load of Cumberland coal was sold to arrive at $3.25 on Tuesday. On Wednesday another jobber had coralled it at $3.50 per ton. The latter price has been offered in several instances to enable the fulfillment of contracts. Price is not in question, it is simply one of personal claims or obligation which actuates the lending or selling of a few hundred tons, so that customers may not be disappointed. With a little growing uneasiness about labor matters in the Cumberland region, and the non-settlement of the trouble in the Clearfield region, the outlook is not cheerful for the jobbers, who are all of them on the short side of the market.

In the Clearfield region nearly 16,000 men went on strike on January 1st and returned to work on the 2d, on the understanding that the question of the new scale will be decided on the 16th inst. It is an open secret that the men are not by any means unanimous. Nearly one-fourth of them are fairly satisfied with the present scale, though it must be admitted they are in better circumstances than the majority. The operators have issued a circular, stating in positive terms that they will not comply with the demand. Altogether the position is one to cause some uneasiness and to make all concerned look to the 16th with some anxiety.

It is stated in some papers that the Seaboard Coal Association's revival is an accomplished fact. From reliable private information, we are in a position to deny this. We may add that more than one of those who have lately been enthusiastic in the cause have recently doubted the practicability of the scheme. Two of the largest producing companies certainly will not join the movement on any terms, and others in the trade have not been asked to.

Baltimore and Philadelphia freights to the East have stiffened 10 to 15 cents, and are difficult to secure at that. The prices we quote are those which might be said to prevail if there was any coal to sell: At Baltimore $2.85 f.o.b.; at Philadelphia $2.95 (with one shipment of Cumberland coal at $3.25); at New York, $3.35, and alongside $3.55. A careful canvass of the trade here to-day justifies the statement that not even at these prices will any of the jobbers accept orders for delivery within five or six weeks.

Boston. Jan. 8.

(From Our Special Correspondent.)

The demand for anthracite coal is far from being large. The market tone continues fair and agents are anticipating an improvement. The business passing is made at concessions by individual operators and, in fact, very few of the sales made command full circular prices. Stove offers at $4 a ton, and sales at a much better figure than this are the exceptions. The supply of hard coal here continues large, and though agents recognize the fact that it is being moved off freely, they still are aware that it will take some time, even at the present large rate of consumption, to decrease the stock to a desirable point. The good demand noted for pea and buckwheat sizes continues, and is likely to continue as long as bituminous remains scarce.

Bituminous coal is in active demand. Stock offerings are extremely small. It is difficult to procure spot lots, and they will command a good premium. Agents complain of the difficulty they have in making shipments, and report a small supply of coal at tide water.

The demand for vessels has decreased perceptibly, but rates continue to hold. The weather has been favorable for successful passages; however, shipments are slow. From New York 75@85c. is quoted, from Philadelphia $1@$1.10, and from Baltimore $1.15 rules.

Retailers are doing a good business. The demand is steady and large and dealers are in possession of stock to meet it. Many of them have large supplies and are not buying any coal to speak of. The coal exchange prices generally rule, and under the conditions it is fair to assume that very little cutting is being done only on specially large orders.

The receipts of coal at this port for the week ending January 3d were 11,087 tons of anthracite and 7,359 tons of bituminous against 29,421 tons of anthracite and 20,158 tons of bituminous for the corresponding week last year. So far this year the total receipts have been 1,348 tons of anthracite and 1,050 tons of bituminous against 17,014 tons of anthracite and 6,464 tons of bituminous for the same period last year.

Buffalo. Jan 8.

(From our Special Correspondent.)

There are no changes to report in quotations this week, and no special incidents worth narrating. The weather has been cold enough to warm the hearts of all coal dealers and cause a good retail demand for fuel.

Following are the prices now ruling for anthracite coal at this port: To dealers on cars at Buffalo and at the bridges for shipments west, per 2,240 pounds, grate, $4.75; egg, stove, and chestnut, $5. Retail at Buffalo, per 2,000 delivered, grate, $5; egg, stove, and chestnut, $5.25, and pea $3.75.

The cold weather has made the retail trade quite brisk for several days, and a few country orders have been filled.

Bituminous coal is fairly active at nominally unchanged quotations, viz., Reynoldsville region, A. V. R. R. and Mercer County region and low grade division of A. V. R. R., region $2.30 to $2.25, for screened lump; $2.20@$2.25 for lump and nut mixed; $2.10@$2.05 for run of mines; $1.80@$1.75 for nut and slack mixed; and $1.50@$1.65 for slack, per 2,000 lbs.; Pittsburg region, $3.45 for lump screened; $3.35 for lump and nut mixed; $2.25 for run of mines; cannal $4.50 for Ohio, and $3@$3.25 for Briar Hill on track to consumers.

The Treasury Department has decided that a duty of 10% must be paid on natural gas imported from Canada.

Dredging and blasting will be commenced in Niagara River immediately to provide an 18-foot channel from Lake Erie to Tonawanda.

The Delaware, Lackawanna & Western Railroad Company have ordered 2,000 coal cars.

The annual meeting of the Buffalo Coal Exchange was held on Monday and the following directors were elected: Thomas Hodgson, president; James Ash and Adam Schell, vice-presidents; C. M. Underhill, treasurer; C. D. R. Stowitz, secretary and executive chairman; J. J. McWilliams, John S Bartlett, T. Guilford Smith, James H. Horton, Henry Zipp, Joseph C. Batchelor, James Hanrahan, M. E. Robinson, H. E. Smith and J. H. Ball.

The freight department of the New York, Lake Erie & Western Railroad has been reorganized. The coal traffic will be under the direct supervision of Geo. H. Valliant, the second vice-president, with H. B. Crandall, chief clerk of the coal department in New York City, in charge, who will issue instructions in regard to tariff, etc., billing instructions in his own name.

The following statement is evidently official: "At the time of the sale of the controlling interest in the Buffalo, Rochester and Pittsburg Railroads and allied interests to the Bell, Lewis & Yates Coal Mining Company, early last spring, it was thought that many changes would be made. So far no change has been made on the railroad, but in the Rochester and Pittsburg Coal and Iron Company a number of agencies have been closed, many of the office force at the mines being also dropped out. President Merchant, will, however, remain at the head of the company, and will be in immediate charge of the coke trade, which is a very large item in the business of the company. All of the coal business will be looked after from the office of the Bell, Lewis and Yates Mining Company."

Locomotive engines are being built in Chicago, with fuel saving appliances, whereby a saving of 9% in the consumption of coal will be effected as well as entirely doing away with the smoke nuisances.

At last the Natural Gas Company have succeeded in drawing a pipe 2,700 feet long across the Niagara River, by this means bringing the Canadian gas into this city.

Chicago. Jan. 7.

(From our Special Correspondent.)

The almost unprecedented mild weather has played havoc with all calculations made in regard to Chicago's anthracite trade, the effect of which has been to curtail the output rather than to de-

press prices. The so-long-complained-of car service is now good for the limited amount of transportation required. All orders now are promptly filled.

Wholesale prices are f.o.b. Chicago: Large egg, $5,50; small egg, range and chestnut, $5.75; Lehigh lump, $7.

The retail prices fixed by the Chicago Coal Exchange are: Large egg, $6.75, small egg, range and chestnut, $7.

The bituminous market remains in much the same condition. Stocks held in Chicago are small, and the output is being limited to the day to day requirements. No immediate change is looked for. Prices are fairly steady, and quotations per ton of 2.000 pounds are: Erie, $4.25; Pittsburg, $3.40; Indiana block, $2.50; Blossburg, $3.90; Greene and Sullivan county (Ind.), shaft, $2.25@$2.40; Jackson Hill, $3.50; Jackson shaft, $3.50; Hocking Valley, $3.30; Youghiogheny, $3.

We note a falling off of 15 cents per ton in the price of coke. Supply and demand are both firm. quotations are: Connellsville, 72 hours, $5.05, domestic, crushed, $4@$4.25; Elk Lick, 72 hour; $4.25@$4.50 per ton of 2,000 pounds f.o.b. Chicago.

Pittsburg.

Jan. 8.

(From Our Special Correspondent).

Coal.—The market rules very firm with a largely increased demand. The unexpected rise enabled shippers to send to the lower markets about 3,000,000 bushels. The continued falling off in the supply of natural gas has made a large increase in the local demand. The miners in the Monongahela are all out on a strike for 3½ cents per bushel. Operators refuse to meet the demand. Nominal rates first hands wholesale on board, 4½c.@5c. ; railroad coal, 5c.@5½c.

Connellsville Coke.—The market was firm with a fair business being transacted. There is considerable talk about the new scale. The coke men contend that they cannot make any advance as furnace and foundry coke has been reduced. The general opinion is that matters will be arranged without a strike.

A general improvement is noticeable in shipping facilities with the Baltimore & Ohio and Pennsylvania companies. The output is restricted in proportion to the demand. The Frick Company will blow out 1,150 additional ovens. The list of idle ovens reach 4,700; active, 11,325; week's shipments, points west of Pittsburg, 2,710 cars; east of Pittsburg, 850; Pittsburg and river points, 1,400; total, 4,960; tonnage. 39,280 tons.

Price of coke:

	New rates.	Old rates.
Furnace	$190	$215
Dealers	215	230
Foundries	230	245
Crushed dealers	250	250
Crushed consumers	265	265

Freights are unchanged to all points.

METAL MARKET.

NEW YORK, Friday Evening, Jan. 9.

Prices of silver per ounce troy.

Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
3	4 84	48⅛	1.04¼	7	4.84⅛	48⅛	1.04⅛
5	4.84	47⅞	1.04	8	4.85	48⅛	1 04⅝
6	4.84⅛	47⅝	1.04⅛	9	4.85⅛	48⅛	1.04¾

Market is steady with a little European demand; and is in suspense, awaiting Washington developments.

The United States assay office, at New York, reports total receipts of silver for the week to be 103,000 ounces.

The Treasury Department reports to us the following purchases of silver during the week including to-day.

Government Silver Purchases.

	Amount offered Ounces.	Amount purchased. Ounces.	Average price.
Jan. 5	1,880,500	572,000	$1·0466
Jan. 7	1,356,009	628,000	1·0513

The local purchases for the week ending January 3d, were 3,011 ounces. The total purchases for January to the 7th, inclusive, have been 2,010,011 ounces.

[*By Telegraph.*]

WASHINGTON, Jan. 9.—The Treasury Department purchased 754,600 fine ounces silver to-day.

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
Jan. 3	104⅝	104⅝	100,000
Jan. 5	104⅝	104⅝	270,000
Jan. 6	105⅛	104¾	285,000
Jan. 7	105⅛	104¼	344,000
Jan. 8	105⅛	104⅞	67,000
Jan. 9	105⅛	104⅞	131,000
Total sales			1,197,000

Coinage at the Mints of the United States.

The following statement shows the coinage executed at the mints of the United States during December, 1890:

Denomination.	Pieces.	Value.
Double eagles	80,620	$1,600,400.00
Eagles	1,015	10,150.00
Half eagles	17,058	85 290.00
Quarter eagles	8,747	21,867.50
Total gold	106,840	$1,717,707.50
Standard dollars	3,549,166	3,549,166.00
Half dollars	12,125	6,062.50
Quarter dollars	80,125	02,031.25
Dimes	2,974,165	297,416.50
Total silver	6,615,581	$3,872,676.25
Five cents	1,638,675	81,933.75
One cent	5,836,675	58,306.75
Total minor	7,469,350	$140,240.50
Total coinage	14,191,771	$5,730,624.25

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .78	$ .80
Mexican dollars	.81	.82
Peruvian soles and Chilian pesos	.73	.75
English silver	4.80	4.84
Five francs	.94	.95
Victoria sovereigns	4.83	4.87
Twenty francs	3.83	3.88
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	1.05⅛	1.05⅛

Copper.—The topic of the week was the figures published in last issue of THE ENGINEERING AND MINING JOURNAL, which were commented upon on all sides. In general, the trade was not prepared for such a heavy increase in the production, especially in Montana, and some douhts were expressed as to the correctness of the figures of the Anaconda mine. The heavy stocks did not reassure buyers very much, and London is evidently of the same opinion in cabling rather lower prices. Our market has been greatly depressed, and hardly any business has been done. Second-hand Lake Copper is being offered at 14¼@14⅜, Arizona, 13¼@13⅜, and Casting Copper from 12@12⅜, but the business done is quite of a retail character. The exports are very heavy, and we understand will continue to be so. The price of Lake Copper which was fixed last week by the companies at 15c. is considered quite a nominal one, and the announcement failed to create any impression. The Lake companies will certainly not be able to sell any quantities at this price.

London opened fairly steady at £52 15s.@17s. 6d. After that prices gave way quite considerably, and are closing at £51 10s.@12s 6d. for spot and £52@£52 2s. 6d. for three months, which is the lowest price since April last year. The continued offers of American copper are frightening European buyers, and it is anticipated that from now the visible supply in Europe will increase for some time to come. Trade is reported to be rather slack, and the few orders which present themselves for refined copper are eagerly competed for. We quote: Tough copper, £54 10s. @£55; best selected, £58 10s.@£59; strong sheets, £64@£65; India sheets, £59@£60; yellow metal sheets, 5¼d.@6d.

The exports of copper during the past week were as follows:

To Liverpool -	Copper matte.	Lbs.	
By S. S. City of Chester	5,073 bags.	560,000	$50,000
By S. S. Monte Rosa	10,640 bags.	1,206,237	85,000
To Rotterdam—	Copper.		
By S. S. Spaarndam	705 casks.	216,544	27,840
To Antwerp—			
By S. S. Noordland	377 bars.	110,588	13,820
To Havre—	Copper matte.		
By S. S. La Bretagne	2,147 bags.	245,320	20,000
	Copper.		
By S. S. La Bretagne	29 pigs.	4,586	500

Tin.—Tin has been rather dull and the heavy arrivals have a depressing influence on the market. Transactions on the metal exchange were small, but it is understood that consumers are buying quite freely. We quote: Spot, $20.15; January, $20.15 ; February, $20¼ ; March, $20.30. There are very few sellers for future delivery, and only at higher prices.

London opened at £92@£92 2s. 6d., hut became very flat, and prices came down to day to $90 12s. 6d.@£90 15s. for spot and £91@£91 2s. 6d. for 3 months.

The firmer tendency of silver, consequent on the debates in the Senate about the new silver bill, have so far had no influence at all on this article.

Lead closed somewhat firmer last week, particularly due to very light offerings on the part of smelters, who are complaining that they are receiving very little ore just now. Numerous consumers who allowed their stocks to run very low had now to enter the market and this unavoidably lead to higher prices; hut we would scarcely have anticipated such a heavy advance as the week established. Against the prices reported in our last of 4·15@4·20, we have to-day to quote 4·50@4·55, with hardly any sellers, and the small quantities which the smelters offered at the higher prices found eager buyers. Reports from the West show that buyers are more eager there than here, and we hear of sales at 4@4·30 St. Louis, and 4@4·35 Chicago.

Spelter has become easier and we have to lower quotations accordingly. The demand, as usual at this season, has somewhat fallen off, and consumers are holding back. We quote for prompt shipment 5.75@85.

The London market is flat at £22 7s. 6d.@10s. for ordinary brands and £22 12s. 6d.@15s. for specials.

Antimony is quiet but steady. We quote: Cookson's, 18¾@19; L. X., 17@17¼; Hallett's, 16¼@¾.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 9.

Another week has passed with no changes of importance in the iron market to report.

Business has continued unqualifiedly dull, and in a few lines only is any improvement felt. Prices also remain unchanged, and in most cases quotations are but nominal. Notwithstanding this uninteresting condition of affairs, at present, however, there seems to be in many branches of the trade a slightly better feeling than for some weeks, due in part probably to the improving condition of the money market, and in part also to the hopeful sentiments with which a new year is generally commenced. It is likely, too, that the demand will be more active in the early months of the year when many of the consumers who have allowed stocks to run down again come into the market; while there does not seem to be any prospect of higher prices, there is not, apparently, much likelihood of lower figures.

American Pig Iron.—The market has been unchanged during the past week, prices remaining steady and about the same amount of business done. All buying is in small orders, and consumers who allowed stocks to run down at the end of year have not yet come into the market again.

There seems to be a decidedly better feeling among many dealers, however, than for some time past. Consumption is very large, and the fact that there are some fifty furnaces out of blast and hanked up, in Alabama, Tennessee, and the Mahoning Valley indicates a falling off in production, with some prospects of somewhat higher prices. One of the important producers expresses no hurry to open books for new contracts at present prices. We quote, as last week: Northern iron, No. 1x, $17.50@$18; No. 2x, $16.50@$17; Southern. No. 1x, $16.50@$17.50, and No. 2x, $15.50@16.50.

Scotch Pig Iron.—A steamer arrived Thursday with a small lot of Scotch pig iron which represents the total amount of imports during the week. The market has been unqualifiedly dull. A cahle from London, January 5th, states "The stock in makers' hands in Scotland has decreased during the past year 66,000 tons, and production decreased 200,000 tons. Consumption and exports have increased 13,000 tons." The stock in Connall's stores in Glasgow, Dec. 24 1890, was 590,340 tons against 941,600 the same time last year.

We quote nominally, Summerlee, $24.25; Dalmellington, $22.50; Eglinton, $20.50@21.

Spiegeleisen and Ferro-manganese.— Business is very dull and prices unchanged and nominal, there having been no transactions of any consequence during the week. Sellers ask for 20% spiegeleisen, $29; 80% ferro-manganese, $65 Second hand lots of the latter can be purchased as low as $63.

Steel Rails.—The market continues unchanged. There are few transactions, few inquiries, and no prospect for improvement until there is a more settled money market. The rolling mills are by no means suffering from want of orders, however, for the reason that they are being kept busy by active demand for steel billets. We quote nominally for rails $28. An order could be placed at this figure.

The steel companies are still endeavoring to effect a combination to fix the price of rails, hut although there is the possihility there is little prohability of such action. With the price of steel billets fixed at $26 there is little liklihood of lower figures for rails.

Rail Fastenings.—No demand, and prices lower. We quote nominally: Spikes, 2·00c.; angle plates, 1·70@1·80c.: holts and square nuts, 2·75c.; hexagonal nuts, 3 00c.; complete joint, iron and steel, according to weight.

Tubes and Pipes.—There is but little change in the market. Business continues fair, and manufacturers look for an active demand with the new year. We quote discounts on car load lots as follows: 47½% on hutt, hlack; 40% on galvanized; 60% on lap, black; 47½% on lap galvanized; boiler tubes: 45% on 1¾ inch and smaller; 50% for 2 inch and larger; casing, all sizes, 50%.

Structural Iron and Steel.—There is but little business, the money market being still against building operations. Prices are off a little, and we quote: Universal plates, $2.20; hridge plates, $2.15; angles, $3.20; beams, $3.10.

Merchant Steel.—Business is much better, and customers who were holding off at the close of the

year are now buying much more freely, and there are prospects of still more active trade.

We quote: Best English tool, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel 5c.; crucible spring, 3⅜c.; open-hearth machinery 2·60c.; open-hearth spring, 2·60c.; tire steel, 2·60c. toe calks, 2·60c.; flat file, 4½c.; mill file, 4½c.; taper file, 7c.; first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—Prices continue nominal at $23 for tees and $25 for doubles, with no transactions.

Chicago. Jan. 9.

(From Our Special Correspondent.)

There is no change to note in the Chicago iron market, beyond the usual falling off in the demand incidental to this season of the year. Stocks of crude material are light. The shutting down and banking of furnaces will tend to the establishment of a solid market for the spring trade. The confidence which has been shaken during the past month by increased conservatism on the part of banks, is slowly returning. Monetary skies are not yet clear, but the best class of dealers connected with the iron and steel industries are well satisfied with the outiook for business for the coming year.

Pig Iron.—No heavy business in this direction can be looked for for some weeks to come, and then the demand will be largely influenced by the condition of the money market, the price of coke, and the heavy freight tariff. Foundries are buying only as necessities require; some concessions are reported for immediate delivery, but the market remains unchanged.

We quote to-day for cash per ton of 2,240 pounds, f. o. b. Chicago, for Nos. 1 and 2, Lake Superior charcoal No. 3, for car wheels, Nos. 4 and 5 for malleable, $18.50@$19; Lake Superior coke, Bessemer, $18.50; Lake Superior coke, Bay View No. 1, $16.50; No. 2, $16; No. 3, $15.50; Southern coke, No. 1, $16@$17; No. 2, $15.50@$16; No. 3, $15@$15.50; Southern charcoal, $19@$19.50; standard Southern car wheel, $22@$24.50; Ohio softeners, Hanging Rock, $18@$18.50; Jackson County, $18.25@$18.75; Hanging Rock, cold blast, $26@$28; warm blast, $23@$25; No. 1 Scotch, according to brands, $26@$27; American Scotch, $18.50@$19; Bay View Scotch No. 1, $18; No. 2, $17; Chicago Scotch, No. 1, $17; No. 2, $16; Emma Scotch, $19@$19.50; black band, Hubbard Scotch, $18.25; Hazelton, $18.50; Soft Silvery, $17; Wellston, No. 1, $18.75; No. 2, $18.25; Hamilton, No. 1, $19.25@$19.75; Norton, No. 1, $17.50@$18; Zanesville, No. 1, $18.75@$19.25.

Structural Iron.—Business in this line is surprisingly good as to present demand and for immediate deliveries, to say nothing of the business for the coming season. The present open winter has permitted extensive building operations. It is safe to say that structural irons in all lines will be consumed in Chicago during the coming year at a rate heretofore unknown.

Prices are firm without change. For car lots, f.o.b. Chicago, iron and steel angles, $2.35@$2.40; Universal plates, $2.50; sheared plates, $2.50; tees, $2.80@$2.90; beams and channels, $3.20. Store prices are: Angles, $2.50@$2.60; tees, $3@$3.10, and beams and channels, $3.50@$3.70.

Bar Iron.—Railroads, manufacturers and other large consumers of bar iron are placing but little or no new business. Large orders cannot be looked for at present. Mills are very conservative and are inclined to fully maintain quotations, $1.65, half card extras, f. o. b., valley mills, is still the market rate. Stove trade is fair at $2@$2.10, according to quality.

Black Sheet Iron.—For black sheets there is but little demand at present. The market remains quite firm at $2.90 for No. 27 f.o.b. mill. Jobbers quote: $3.20 from store for No. 24, $3.30 for Nos. 25 and 26, and $3.35 for No. 27.

Galvanized Sheet Iron.—A fair inquiry and a good business is reported. Discounts remain at 62½% on Juniata and 62½ and 5% on charcoal from store.

Merchant Steel.—Merchant and tool steels are quiet, but mills are busy on contracts. Prices are unchanged. We quote as follows: Tool steel, $7.75@$8; specials, $12@$25; open-hearth machinery, $3, Bessemer machinery, $2.50@$2.70; open-hearth spring steel, $2.75@$2.80; tire, $2.50@$2.60; toe calk, $2.70@$2.80; sleigh shoe, $2.40@$2.50; cutter shoe (T. & B.), $2.65@$2.70; crucible sheet steel, $7@$10; crucible spring, $3.75.

Plates, Tubes, etc.—The close of navigation always creates an increased demand from the marine trade, and the business of this year is fully up to the average. Prices are unchanged. Tank iron, $2.70; tank steel, $2.90; heavy sheets from 10 to 14, $2.90@$3; steel sheets 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4.25; flange steel, $3.50; shell steel, $3.25; boiler rivets, $4@$4.25; fire box iron and steel, $4.75@$5.50; boiler tubes, 4½ inches and larger, 52½%; 2 to 4 inches, 50%, and 1¾ inches and smaller, 45%.

Nails.—Steel cut and wire nails are in very fair demand both from city and country trade. Orders from any source are entered only for prompt shipment.

The jobbing trade is seasonably fair at $1.85 in quantities and $1.90 for small lots from store. Wire nails have been selling from factory at very low figures; store trade is good and country dealers are stocking up at the low prices now ruling, viz.: $2.25 for car lots and $2.40 for smaller quantities from stock.

Steel Rails.—There is nothing new in this market. No large demand can be expected until next month; there is considerable inquiry, and it is believed that the business of next year will far exceed that of 1890. Standard weight sections are quoted at $30@$31.50 f. o. b. Chicago.

Railway Track Supplies.—While business at present is almost nothing, a good trade is expected with the opening of another year. No change in quotations. Prices are: Iron fish plates, $2.05@$2.10; steel fish plates, $2.25@$2.30; bolts, square nuts, $3; hexagon nuts, $3.08@$3.10; spikes, $2.20@$2.25.

Scrap Iron.—The depressed condition of this market reported last week contines. We quote as follows: Country mixed scrap, $15.50@$16.50, according to condition; No. 1 mill, $14@$14.50; light wrought, $9@$9.50; horseshoes, $19@$19.50; axles, $26; cast machinery, $12; stove plates, $9.50@$10; borings, $8@$8.50; wrought turnings, $13.50; No. 1 railroad shop or forge, $21.50; track scrap, $19.

Old Wheels and Rails.—But few sales are reported, and dealers look gloomily upon the outlook. No change can be expected under two or three weeks. Old iron rails are held at $24 f.o.b. Chicago; steel rails are steady at $18, according to condition; guards and frogs $15.50; old car wheels bring but $17, and are quiet at that.

Louisville. Jan. 3.

(Special report by Hall Brothers & Co.)

There has been no change in iron to note since last report, but the new year brought out the usual good annual reports from local banks, showing they have lots of money, and a feeling of more confidence in business circles should soon begin to assert itself. With the payment of interest and dividends a large amount of cash has been at once put into active circulation, which should serve to strengthen the general situation. The ruling prices are:

Hot Blast Foundry Irons.—Southern coke, No. 1, $14.25@$14.50; No. 2, $13.75@$14; No. 3, $13.25@$13.50. Southern charcoal, No. 1, $16.50@$17; No. 2, $16@$16.50. Missouri charcoal, No 1, $17.50@$18; No. 2, $17@$17.50.

Forge Irons.—Neutral coke, $12.50@$13; cold short, $12.50@$13; mottled, $12@$12.25.

Car Wheel and Malleable Irons.—Southern, standard brands, $21@$22; other brands, $17.50@$18. Lake Superior, $21.50@$22.50.

Philadelphia. Jan. 8.

(From our Special Correspondent.)

Pig Iron.—Scarcely any new business has been done in crude iron, the only interesting feature this week being an increase in the number of inquiries from large buyers of both Foundry and Forge. The interest is partly due to the possibility of higher prices, growing out of restriction in the west and south, but there is hardly any fear yet that even should that restriction continue it will affect our Eastern market much. First class No. 1 Foundry can be had at $18, No. 2 at $17; ordinary No. 1 has been quoted as low as $17, and No. 2 at $16; Southern No. 1 is offered to-day at $17, and No. 2 at $15.50; ordinary forge iron has been offered at $14, but when it comes to a standard brand it is difficult to get a good iron under $15. Bessemer is quoted at $17.50, but there is scarcely any business.

Foreign Material.—Spiegel is nominally $29, and ferromanganese, $60@$62.50.

Slabs and Billets.—After a great deal of negotiating large sales have been made of billets at prices which outsiders are not permitted to know; quotations are $27.50@$28. It is intimated that negotiations are in progress for billets, which will close at less than $27.

Muck Bars.—Parties in this market are offering as low as $26.50 for muck bars, but 50 cents to $1 more are the lowest figures at which it is known that business has been done.

Merchant Iron.—Mills are resuming; many of them, however, with slim business, and the result of this is that on good-size t orders makers are willing to take $1.80 where they have been asking $1.90. The dullness in the iron trade will keep a number of mills from starting up until a week from next Monday.

Sheet Iron.—Orders for early spring delivery for heavy sheets have just been placed; the card is unchanged. A good demand for galvanized iron is coming in sight.

Nails.—The nail trade is unchanged; business is not likely to improve; prices are unsettled.

Skelp Iron.—Prices have weakened again to $1.75@$1.80 for grooved and $1.90 for sheared, and to-days reports are that large transactions are likely to be closed.

Wrought Iron Pipe.—No large orders have been placed. Prices are strong so far as quotations show.

Plate and Tank.—One large order was placed late last week and one or two other good contracts are in the way of being closed. Ship and tank iron is $2.00 to $2.10; steel, $2.20.

Structural Iron.—No business of importance is reported. Normal quotations are: Angles, 2·10; sheared plates, 2·15@2·20; tees, 2·60; beams and channels, 3·10.

Steel Rails.—Bottom quotations are said to be $27@$27.50, but very little business is known to have been done.

Old Rails.—Old rails are quoted here at $23@$24.

Scrap.—No. 1 has dropped to $21@$21.50.

Pittsburg. Jan. 8.

(From our Special Correspondent.)

Raw Iron and Steel.—We have very little to report in the way of business. The market is in a very demoralized condition. Between talk of strikes and strikes in reality, tightness of the money market and the want of confidence, the iron market is not in a very healthy condition, and is not likely to be until there is a general change in affairs. Iron brokers are making no effort to do business and seem disposed to take matters easy and wait for the "expected better times." The stock of iron on hand is light, but more than equal to the demand. Values are still on the down grade, the only sales made being at low figures and consisting, principally of outside or unknown brands. Standard descriptions are held ont of the market, owners refusing to accept rates offered. As usual there is a wide difference of opinions among dealers as regards the future. One thing is very certain, a change must take place before long. There is no doubt a vast amount of material will be required on the opening of the spring trade. Prices are very close to the bottom. A well informed dealer has this to say: "A good deal of preliminary work must be done before we can have oetter prices. Supplies must be adjusted to the conditions of the present year, and these may be entirely different to the conditions of the past year."

We are reported the following sales:

Coke Smelted Lake and Native Ores.

1,000 Tons Bessemer, January, February	$16.00	cash.
1,000 Tons Grey Forge, January, February	14.00	cash.
1,000 Tons Bessemer, January, February	15.75	cash.
500 Tons Grey Forge, January, February	14.00	cash.
500 Tons Grey Forge	14.10	cash.
500 Tons Grey Forge, January, February	14.25	cash.
500 Tons White	13.30	cash.
200 Tons White	14.00	cash.
50 Tons No. 2 Foundry	15.75	cash.
50 Tons No. 1 Foundry	16.75	cash.

Steel Slabs and Billets.

1,000 Tons Billets, January, February	25.00	cash.
1,000 Tons Billets, Spot	25.00	cash.
1,000 Tons Slabs, January, February	24.75	cash.
500 Tons Billets and Slabs, January, Feb.	25.00	cash.

Muck Bar.

1,000 Tons Neutral, January, Feb., March	28.75	cash.
500 Tons Neutral, January, February	28 50	cash.
500 Tons Neutral, January	28.50	cash.

Steel Wire Rods.

800 Tons American fives, February	37.00	cash.

Ferro Manganese.

75 Tons 80% Seaboard	61.50	cash

Steel Bloom Ends.

750 Tons Bloom Ends	15.50	cash.

Skelp Iron.

215 Tons Wide Grooved	1.95	4 m.
185 Tons Sheared Iron	2.00	4 m.
100 Tons Narrow Grooved	1.90	4 m.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 9.

The condition of the market does not show any decided change since our last. Reports from some sides are encouraging. The stability of the market is certainly one satisfactory feature and a slight stiffening of values is indicated. The last week of the year was noticeable for an increase of transactions, as compared with the same period in the preceding years, and business in the past week continues to show signs of coming greater activity.

Traders are holding very light stocks of the leading articles; most sales have been for consumption, and not much is said to be in second hands. Small arrivals have been reported during the week, and a generally more cheerful tone may be said to pervade the markets.

The volume of business done by the acid manufacturers, as far as that alone is concerned, is satisfactory, but the prices cause considerable grumbling. A large amount of local trade, as well as contracting for future delivery, are reported. The December business is said to have been excellent, but competition is so keen that dealers are willing to out-do each other in bidding for business. We hear nothing to confirm the rumor with reference to a coming consolidation of the acid making interests. All concerned seem as determined as heretofore to sell, and raw materials show no indications of weakening in price. Some small sales are reported at a slight advance, but the general tone of the market remains the same.

This week's quotations are: Caustic soda, 60%. For future delivery extending to April, 3·30c.@3·35c. There is very little in the market at present. 70@74% stock has not been replenished to any extent since our last, all arrivals being sold, so that the spot supply remains small. Several sales for future delivery are reported, though the tendency among buyers is to fill only their present wants; 70% could be had for 3·07½c. Very little 77% is on the market, some is reported on the way. A slight stiffening in values is noticeable to 3·12½c.

Carbonated soda ash, 48%.—Almost all arrivals are under contract, so that the stock remains small and values show a slight rise above those already quoted. Some business has been done at 1·60c., though prices rule a little lower—1·55c.@1·57½c; 58% sales have been made at 1·57½c.@1·60c.

Caustic soda ash, 48%.—Prices range from 1·60c.@1·65c.

Sal soda.—1·10c.

Bleaching powder.—Little interest is manifested in this line. Not much business doing and little demand reported. Prices are almost nominal at 1·70c.@1·72½c.

Acid per hundred pounds in New York and vicinity: Acetic, $1.65@$2.20; muriatic 18°, 90c.@$1.20; muriatic 20°, 95c.@$1.50; muriatic, 22°, $1@$1.75; nitric, 36°, $3@$3.25; nitric 40°, $3.50@$4.50; nitric, 42 $4@$4.75; sulphuric, 60°, 70c.@80c. in bulk, for smaller lots proportionately higher, and sulphuric, 66°, 75c.@90c.

Fertilizing Chemicals.—A slight change is noticed in the market for gas liquor and bone liquor; prices remain the same as already quoted, but the general tone is better; no large arrivals are reported and the demand has increased. Most of what is here is in second hands. We quote $3.20 for gas liquor spot and $3.12 for bone. The business of the month is looked forward to hopefully.

The phosphate market remains firm, with prices in sellers' favor. The recent fire in Charleston, it is said, will make no difference at all. The works will be rebuilt as soon as possible, an increased capacity being spoken of by some.

The phosphate shipments from Charleston show a decided increase for the past month over shipments for the same period in 1889. We quote: dried Charleston rock, $7@$7.50 f.o.b. vessel. Freights by sail from Charleston to New York, $2.75@$3 per ton. Charleston rock, ground, $8@$11.50.

Muriate of potash.—The arrivals during the past two weeks have been quite large (2,450 tons), all of which have gone into consumption. Most of this is bought to arrive. A small stock available for spot sales is reported. Arrivals almost daily are easily disposed of.

The prices remain the same as fixed by the combination for New York, and given in our last; $1.77½ for New York; $1.80 for Philadelphia; $1.82½ for Southern ports, and $1.85 for Gulf ports. The last shipments made the total arrivals for last year 29,830 tons, an increase of 1,085 tons over 1889. A corresponding difference exists between the arrivals for 1889 and 1888. The total arrivals in 1889 were 28,745 tons, and in 1888, 27,432 tons.

Nitrate of soda.—Business seems to be looked forward to with confidence. The outlook in this market seems satisfactory; if anything, there has been a slight rise in values since our last report. Some sales are reported for spot and near by at $1.70. Futures for March, April and May shipment are selling at $1.65.

Brimstone.—A slight rise in the price of brimstone is noted. But very small quantities are reported available for spot delivery. Best unmixed seconds are quoted at $26 for shipment, $27 to arrive, and $28 spot. Thirds are ranging from 50c. to $1 less, and very little is reported here. Large stocks were laid in at former low prices; $18 was not sufficient to pay for working the mines and, as a consequence, some of them were closed down. The small output reported is the result. For the present no fall or decline is looked forward to. If anything, a further rise is expected.

NOTES OF THE WEEK.

News reaches us that the arrangements have been completed by which the Newcastle Chemical Works Company, limited, is to be acquired by the United Alkali Company, limited. The price which the shareholders are to receive is not known publicly, but it is understood to be the largest that is to be paid by the Union to any one of the Leblanc manufacturers and was very satisfactory to the stockholders, as 51,923 out of 60,000 ordinary shares and 57,767 out of 60,000 preference shares were represented on the affirmative side for the sale.

Papers of incorporation have been filed with the Secretary of State for the Nichols Chemical Company, to manufacture acids, chemicals, etc. The capital stock is $2,000,000, consisting of 20,000 shares. The trustees are Edward R. Nichols, George Martin Luther, of Brooklyn, and George G. Teller, of Cranford, N. J. Business is to be carried on in part in Canada, and the principal office to be located in Newtown, Queens County, N. Y. Messrs. G. H. Nichols & Co. are generally regarded by the trade as godfathers to this concern, some even speaking of them as the same. Mr. W. H. Nichols was interviewed by the reporter of the ENGINEERING AND MINING JOURNAL and called his attention to the fact that none of the trustees of the new company are members of the firm of G. H. Nichols & Co. While he did not deny that there might be some future connections, negotiations are not yet complete, and as soon as an arrangement is consummated it will be given in the ENGINEERING AND MINING JOURNAL.

Liverpool. Dec. 24.

(Special correspondence by J. P. Brunner & Co.)

Business is quite overshadowed by the Christmas holidays and is practically over for the year. The Alkali Company have made no change in quotations.

Soda ash.—For 1891 delivery, prices range from 1 5/16d.@1⅜d. for caustic, and 1⅜d.@1½d. per deg. per cwt. for carbonated.

Soda crystals are without change and firm at £3 10s. for any delivery.

Caustic soda.—Nothing at all doing in this article, and quotations named in our last unchanged.

Bleaching powder in small compass and £7 is Alkali Company's minimum quotation for early delivery, although a little retail stuff may be had for prompt delivery at probably 2s. 6d. less money.

Chlorate of potash firm at 5½d. per pound for prompt, and 5½d. to 6d. asked for 1891 delivery.

Bicarb. soda scarce and firm at £7 per ton and upward for one cwt. keg, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia quiet at about £11 2s. 6d. per ton for good grey 24 per cent. in double bags f.o.b. Liverpool.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Jan. 9.

As is usual at this time of the year when the weather has been at all cold, very little is doing. The river is frozen and dealers must ship everything by rail or wait for milder weather. Building generally is prosecuted with less vigor. Future trade is looked forward to with confidence. Last winter was so mild that there may be said to have been no period when shipments had to be suspended, and as a consequence the spring business was small and there was very little doing. It is hoped that the present cold weather, coupled with the improving general financial conditions, will bring on activity in building circles.

Bricks.—No large quantities have come down river for the last three weeks. The supply then reported is being slowly used up, although consumption is very light. Small quantities are reported available. Prices are slightly higher than quoted in our last. Haverstraws, $5.75@$6.25 per M.; Hackensacks can be had for $5.62½ to $5.75; Jerseys range from $4.50 to $5, and Pale is quoted at $2.50@$3 per M.

Lime.—The available supply of lime continues very small. Very little is coming, and hardly any is being made. Prices are firm, and a general good business is looked forward to Only large vessels are going out, but the increased expense of bringing goods through the ice has not yet made itself felt in the price. Dealers generally expect a good business in the spring. Prices are 90c. for common Rockland lime, finishing $1.10; St. John, common and finishing, 85@90c.; Glen Falls, common and finishing, 90c.@$1.10.

Cement.—This market offers no new features; there is a general upward tendency, due to the increased cost of bringing material to market. Little Rosendale is reported and values are a trifle stiffer—$1.10@$1.25; Portland, American, $2.25@$2.50; foreign, $2.35@2.75; special brand, $2.60@$2.85; Roman, $2.80@$3.

IMPORTS AND EXPORTS OF METALS AT NEW YORK FROM DECEMBER 20 TO DECEMBER 27 AND FROM JANUARY 1.

IMPORTS.

	Week.	Year.
Spelter.	Tons.	Tons.
Amer. Metal Co....		422
Hendricks Bros....		50
La Marche's Sons, H.		5
Lewisohn Bros.		175
Meyer, G. A. & E.		9
Milne & Co.		74
Muller, Schall & Co.		128
Total		863
Corres. date, 1889..		801
Pig Lead.	Lbs.	Lbs.
Amer. Metal Co....		2,443
Atlantic W. Lead Co.	100	900
Bruce & Cook		125
Caswell, E. A.		958
Hendricks Bros.		250
Hooper, B. F.		100
Leroy Shot & L. Co.		95
Naylor & Co.		10
Paulsen, Wm.		1,050
Schultz & Co., A.		193
Sheldon, G. W.		149
Tatham Bros.		395
Total	100	6,668
Corres. date, 1889..		
Tin Plates.	Boxes.	Boxes.
Adams&Westl'keCo		98
Bruce & Cook	2,611	139,667
Byrne & Son.		1,060
Central Stamp. Co.	179	64,804
Coddington & Co.	2,799	170,273
Cohn & Co	741	22,379
Con. Fruit Jar Co.		120
Corbiere F. & Co.		9,690
Cort & Co.	3,885	237,874
Crooks & Co.	636	111,58
De Milt & Co, H R.	200	15,560
Dickerson, V. D. &Co.	6,506	392,096
Fenton, D. E.		4,491
Haberman, F.		66
Herring, Chas. E.		1,000
Iron Clad Mfg. Co.		597
Lalance & G. M. Co.		11,647
Lazard Bros.		1,048
Lehmaier, Schw'z &Co.		200
Merchant & Co.	426	34,626
Mersick & Co.	541	21,555
Morewood & Co.		42,062
Newell Bros.		416
Payne, S. H. & Co.		934
Pratt Mfg. Co.		95,271
Phelps, Dodge & Co	10,045	831,545
Schneider & Co., J.		3,365
Shepard & Co., S.		19,424
Shepherd & Co., W.		500
Standard Oil Co.	3,288	68,989
Taylor, N. & G.		1,539
Thomson&Co., A. A.	1,234	10,497
Warren, J. M.		6,570
Wheeler & Co.		34,708
Whittemore & Co.		17,400
Wolff & Reesing.		2,077
Wright, Peter&Co.		227
Total	33,092	2,458,217
Corres. date, 1889..		2,188,137
Tin.	Tons.	Tons.
Abbot, Jere, & Co.		225
Amer. Metal Co.		3,066
Bidwell & French.		1,505
Bruce & Cook		30
Carter, Hawley&Co		80
Cohn & Co., A.		30
Cohen, H.		20
Cort & Co., N. L.		200
Crooke Smelting & Ref. Co		6
Crooks & Co., R.		85
Davol & Son.		101
Hendricks Bros.		100
Knauth & Kuhne.		10
Lehmaier, S., & Co.		230
Lewisohn Bros.		120
Merchant & Co		115
Muller, Schall&Co.		1,000
Naylor & Co.		1,568
Nissen, Geo		10
Phelps, Dodge & Co.		4,421
Pope, Thos. J. Sons.		20
Schultz & R.		75
Thomson, A. A.&Co		124
Thomson, D. & Co.		134
Tompkins, Geo. V.		10
Townsend, &Co., J. R.		50
Trotter & Co, N.		75
Total		13,466
Corres. date, 1889..		11,866
Pig Iron.	Tons.	Tons.
Abbott & Co, Jere.		250
Baldwin & Co., A.		807
Baldwin Bros. & Co.		170
Bartlett, N. S.		100
Crocker Bros.		1,515
Crooks & Co., R.		5
Dana & Co.		150
Drummond & Co., A.		600
Geisenheimer & Co		76
Hagermeyer&Brun		30
Henderson Bros.		330
Irvin. R. I. & Co.		400
Lillienberg, N.		2,409
Naylor & Co.		150
Perry & Reyer.		53
Pierson & Co.		30
Sheldon, G. W. & Co.		200
Stetson & Co., G. W.	150	3,475
Williamson, J. &Co.		2,500
Total	150	13,250
Corres. date, 1889..		30,844
Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Abbott & Co.		1,502
Baldwin Bros. & Co.		2
Dana & Co.		1,670
Dolge & Co., A.		1
Downing, R. F. &Co.		109
Henderson Bros.		1
Holt & Co., H. N.		4
Martin & Co		80
Milne, A., & Co.		275
Naylor & Co.	255	3,797
Pope, Jas. E., Jr.		61
Richards&Co., C. B.		1
Roebling's Sons, J. A.		2,074
Ward & Co., J. C.		198
Wolff, & Co., R. H.		60
Total	255	9,604
Corres. date, 1889..		28,321
Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.		1,026
Bacon & Co.		1,319
Crocker Bros.		77
Dickerson, Van Dusen & Co.		6
Downing & Co.		343
E. J. Jacobus.		113
Fuller, Dana& Fitz.		11
Holt, H. N.		378
Lilienberg, N.		566
Lundberg, G.		3,189
Milne & Co.		2,076
Muller, Schall &Co.		606
Naylor & Co.		1,213
Page, Newell & Co.		1,855
Plenty, J		23
Wilson, J. G.		9
Total		12,804
Corres. date, 1889..		14,930
Scrap Iron.	Tons.	Tons.
Baldwin Bros. & Co.		7
Chapman, Mitchell & Co.		120
Crossman&Co., W. H.		117
Frankfort, M.		447
Gordon, G. O.		1,436
Leary, D.		27
McDougall & Potter.		92
Muller, Schall&Co.		18
Pierson, C. L.		101
Samper & Co., S.		186
Stevens, Corvin &Co.		30
Ward, J. E. & Co.		884
Total		3,365
Corres. date, 1889..		4,182
Steel and Iron Rods.	Tons.	Tons.
Abbott & Co.		11,325
American S. Co.		885
Bacon & Co.		551
Bunnell & Co., J. H.		50
Carey & Moen Co.	8	611
Cooper, Hewitt&Co.		371
Dana & Co.		1,553
Dodge & Co., A.		3
Downing & Co.		135
Galpin, S. A.		1,241
Greely & Co. E. S.		35
Hastings, W. & S.		4
Hazard Mfg. Co.		639
Holt & Co., H. N.		3
Jacobus, E. Y.		8
Lee, J. & Co.		1,832
Lillienberg, N.		300
Lundberg, G.		207
Lundell, C. G		5
Milne & Co.		2,180
Muller, Schall & Co.		987
Naylor & Co.	152	8,187
Page, Newell & Co.		1,824
Roebling's Sons, J. A.		2,914
Sanderson & Son.		1
Schulze & R.		251
Taylor, N. L.		16
Temple & Lockw'd		6
Wallace, W.		5
Wessel & Co.		21
Wiebusch & Ho.		4
Wilson, I. M.		29
Wood & Niebuhr.		25
Wolf & Co., R. H.		3,604
Total	160	29,773
Corres. date, 1889..		45,713
Old Rails.	Tons.	Tons.
Bowring&Archibald		340
Dana & Co.		1,219
Frankfort, M.		11,545
Henderson Bros.		300
Hernsheim, L.		350
Mosle Bros.		123
Naylor & Co.		3,099
Sawyer, Wallace&Co.		610
West, H.		398
Wiechers, J. F.		600
Total		18,534
Corres. date. 1889..		10,609
Spiegeleisen.	Tons.	Tons.
Abbott, Jere & Co.		2,725
American Metal Co.		100
Blakely & McLellan		1,684
Crocker Bros.		53,952
Crooks & Co. R.		106
Dana & Co.		15,975
Foley, F.		50
Geisenheimer & Co.		1,240
Henderson Bros. &Co.		14
Hernsheim, L.		23,380
Holt, H. N.		200
Irvin & Co., R. L.		50
Naylor & Co.		13,158
Perkins, C. L.		1,452
Sachs & Richmond.		2
Whittemore, H. &Co.		95
Total		112,188
Corres. date, 1889.		72,258
Iron Ore.	Tons.	Tons.
Baiz, Jacob.		67
Bergen Point Chemical Co.		4,950
Bowring & Archibald.		5,292
Earnshaw, A.		4,879
Ennis, Andrew.		438
Flores & Co., R. de		15,276
Hill, Frank		700
Johnson & Co., L.		5,030
Total		36,632
Corres. date, 1889.		12,001

EXPORTS.

From Jan. 1 to Dec. 15, 1890.

Copper.	Pounds.
Abbott & Co., Jere.	3,061,058
Amer. Met. Co., L.	1,046,802
Barber & Co	13,750
Belmont, Aug. &Co	1,768,974
Boker, C. F.	202,500
Burgass & Co.	454,953
Funch, Edye & Co.	135,374
Heidelbach, Ichelheimer & Co	672,608
Lewisohn Bros.	251,478
Muller, Schall & Co.	33,750
Paulsen, Wm.	50,000
Sawyer, W'l'ce& Co.	22,796
Seamen, S. H.	66,950
Ward, J. E. & Co.	100,000
Wiechers, J. F	41,407
Wil'ms & T'hune.	112,004
Peter Wright & Son	2,200
Total	8,016,604
Corre. date, 1889.	14,778,364
Copper Matte.	
American Metal Co	3,072,079
Lewisohn Bros.	6,333,600
Nichols, Geo. H.	267,202
Paulsen, Wm.	1,149,592
Wil'ms & T'hune.	2,848,706
Total	13,671,170
Corres. date 1889.	34,901,103

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and Amount of last			Dividends. Total paid.	Date & amount of last.		
1	Adams, s. l.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.10
2	Alice, s. c.	Mont.	10,000,000	400,000	25	*				895,000	Dec.	1890	.05
3	Alma&Nel Wood C., g	Idaho	300,000	30,000	10	*				60,000	Jan.	1889	.50
4	American & Nettie, c.	Colo.		300,000						150,000	Nov.	1889	.10
5	Amy & Silversmith, s.	Mont.		341,419						247,530	Aug.	1887	.12½
6	Atlantic, c.	Mich.	1,000,000	40,000	25	$280,000	April	1875	$1.00	660,000	Aug.	1890	1.00
7	Argenta, s.	Nev.	10,000,000	100,000	100	335,000	July.	1889	.10	40,000	Feb.	1880	.20
8	Aspen Mg. & S., s. l.	Colo.	2,000,000	200,000	10	*				560,000	Dec.	1890	.10
9	Aurora, i.	Mich.	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
10	Badger, s.	Ont.	250,000	50,000	5					37,500	Mar.	1890	.25
11	Bassick, g. s.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
12	Belle Isle, s.	Nev.	10,000,000	100,000	100	190,000	Dec.	1889	.15	300,000	Dec.	1879	.25
13	Belcher, g. s.	Nev.	10,400,000	104,000	100	2,978,000	June	1890	.50	15,397,000	April	1876	1.00
14	Bellevue, Idaho, s. l.	Idaho	1,250,000	125,000	10	120,000	Dec.	1889	.25	200,000	Jan.	1887	.19
15	Bi-Metallic, s.	Mont.	5,000,000	200,000	25					270,000	Nov.	1890	.35
16	Bodie Con., g. s.	Cal.	10,000,000	100,000	100	550,000	June	1890	.25	1,602,572	April	1885	.50
17	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*				520,000	June	1886	1.50
18	Boston & Mont., c. s.	Mont.	2,500,000	100,000	25	*				1,575,000	Nov.	1890	1.50
19	Breece, s.	Colo.	5,000,000	200,000	25	*				2,300	Feb.	1880	.01
20	Brooklyn Lead, l. s.	Utah	500,000	50,000	10					127,000	July.	1887	.05
21	Bulwer, g.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175,000	Jan.	1884	.10
22	Bunker Hill & Sull.	Idaho	3,000,000	300,000	10	*				150,000	Oct.	1883	.06⅔
23	Caledonia, g.	Dak.	10,000,000	100,000	100	505,000	May.	1885	.15	194,000	Oct.	1890	.08
24	Calliope, s.	Colo.	1,000,000	1,000,000						135,000	Dec.	1890	.00½
25	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	1,200,000				34,350,000	May.	1890	5.00
26	Carbonate Hill, s. l.	Colo.	1,500,000	200,000	10	*				80,000	April	1884	.05
27	Carlisle, g.	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
28	Castle Creek, g.	Idaho	100,000	100,000	1					51,000	Oct.	1883	.03
29	Catalpa, s. l.	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
30	Central, c.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,950,000	Feb.	1890	1.00
31	Chrysolite, s. l.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
32	Colorado Central, s. l.	Colo.	2,750,000	275,000	10	*				406,250	Aug.	1889	.05
33	Commonwealth, s.	Nev.	10,000,000	100,000	100	170,000	Nov.	1888	.50	20,000	Nov.	1890	.20
34	Confidence, s. l.	Nev.		24,960		328,880	May.	1890	.75	199,680	April	1889	1.00
35	Cons. Cal. & Va., g. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,466,800	April	1890	.25
36	Contention, s.	Ariz.	12,500,000	250,000	50					12,587,500	Dec.	1884	.25
37	**Cop. Queen Con., c.	Ariz.	1,400,000	140,000	10					210,000	Feb.	1889	.50
38	Crescent, s. l. g.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888	.03
39	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,425,000	Sept.	1889	.50	11,588,000	Jan.	1875	2.00
40	Daly, s. l.	Utah	3,000,000	150,000	20					1,762,500	Dec.	1890	.25
41	Deer Creek, s. g.	Idaho	1,000,000	200,000	5	*				20,000	June	1889	.05
42	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
43	Derbec B. Grav., g. s.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	240,300	Oct.	1890	.10
44	Dunkin, s. l.	Colo.	5,000,000	200,000	25	*				390,000	Oct.	1889	.05
45	Dunstone, g. s. l.	Mont.	1,000,000	200,000	5	*				6,000	Nov.	1888	.03
46	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
47	Elkhorn, g. s.	Mont.	1,000,000	100,000	10	50,000	July.	1883	.50	850,000	July.	1887	.05
48	Empire Lt., g.	Mont.	500,000	100,000	5					70,500	Oct.	1887	.37½
49	Eureka Con., g. s. l.	Nev.	5,000,000	50,000	100	550,000	June	1889	.50	4,892,500	Oct.	1890	.25
50	Evening Star, s. l.	Colo.	500,000	50,000	10	*				1,458,000	Dec.	1889	.25
51	Excelsior, g.	Cal.	10,000,000	100,000	100	560,000	Sept.	1885	1.00	875,000	Oct.	1880	.25
52	Father de Smet, g.	Dak.	10,000,000	100,000	100	200,000	Nov.	1878	1.00	1,125,000	Dec.	1885	.20
53	Franklin, c.	Mich.	1,000,000	40,000	25	220,000	June	1871		960,000	Jan.	1889	2.00
54	Freeland, g. s. c.	Colo.	5,000,000	200,000	25	*				190,000	July.	1886	.10
55	Garfield Lt., g. s.	Nev.	500,000	100,000	5					95,000	April	1888	.12½
56	Gould & Curry, g. s.	Nev.	10,800,000	108,000	100	3,988,800	Sept.	1890	.25	2,826,000	Oct.	1870	10.00
57	Grand Prize, s.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890	.30	525,000	Jan.	1890	.30
58	Granite, s. l.	Idaho	500,000	500,000	1	*				28,400	Oct.	1889	.02
59	Granite Mountain, s.	Mont.	10,000,000	400,000	25					10,200,000	Dec.	1890	.50
60	Green Mountain, g.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
61	Hale & Norcross, g. s.	Nev.	11,200,000	112,000	100	5,142,800	April	1890	.50	1,162,000	July.	1888	.50
62	Hecla Con., s. g. l. c.	Mont.	1,500,000	30,000	50					1,500,000	April	1889	.50
63	Hel'a Mg.& Red, g.s.l.	Mont.	3,315,000	663,000	5	*				197,979	July.	1886	.06
64	Holmes, s.	Nev.	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886	.25
65	Holyoke, g.	Idaho	200,000	200,000	1					27,000	Feb.	1883	.10
66	Homestake, g.	Dak.	12,500,000	125,000	100	200,000	July.	1878	1.00	5,631,250	Dec.	1890	.10
67	Honorine, s. l.	Utah	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887	.05
68	Hope, s.	Mont.	1,000,000	100,000	10	*				233,252	April	1888	.25
69	Horn-Silver, s. l.	Utah	10,000,000	400,000	25	*				4,150,000	June	1890	.12½
70	Hubert, g.	Colo.	1,000,000	1,000,000	1	*				247,000	Dec.	1889	.00½
71	Idaho, g.	Cal.	310,000	3,100	100					5,235,900	Dec.	1889	5.00
72	Ideal, s. l.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
73	Illinois, s.	N. M.	100,000	100,000	1	*				45,000	April	1889	.20
74	Independence, s.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept.	1879	.25
75	Iron Hill, s.	Dak.	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov.	1887	.07½
76	Iron-Silver, s. l.	Colo.	10,000,000	500,000	20	*				2,500,000	April	1889	.20
77	Jackson, g. s.	Nev.	5,000,000	50,000	100	237,500	Nov.	1880	.20	55,000	June	1889	.10
78	Jay Gould	Mont.	2,000,000	40,000	5	*				459,000	May.	1890	.04
79	Joculstita, l.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
80	Jumbo, g.	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
81	Kearsarge, c.	Mich.	1,250,000	50,000	25	190,000	Oct.	1887	1.00	100,000	Jan.	1890	2.00
82	Kentuck	Nev.	3,000,000	30,000	100	406,930	Aug.	1890	.30	1,350,000	Dec.	1886	.10
83	La Platta, s. l.	Colo.	2,000,000	200,000	10	*				610,000	Sept.	1882	.30
84	Leadville Con., s. l. i.	Colo.	4,000,000	400,000	10	*				4,423,000	April	1889	.05
85	Lexington, g. s.	Mont.	4,000,000	40,000	100	*				609,000	Jan.	1885	2.00
86	Little Chief, s. l.	Colo.	10,000,000	200,000	50	*				820,000	Dec.	1890	.05
87	Little Pittsburg, s. l.	Colo.	20,000,000	200,000	100	*				1,050,000	Mar.	1880	.50
88	Little Rule	Colo.	500,000	500,000	1					100,000	Dec.	1890	.02
89	Mammoth	Utah	10,000,000	400,000	25					480,000	Aug.	1890	.10
90	Martin White, s.	Nev.	10,000,000	100,000	100	1,225,000	Oct.	1890	.25	140,000	Dec.	1886	.25
91	Mary Murphy, g. s.	Colo.	350,000	3,500	100	*				175,000	May.	1888	5.00
92	Matchless, s.	Colo.	500,000	500,000	1	*				15,000	Feb.	1890	.00½
93	May Mazeppa	Colo.	1,000,000	100,000	1					70,900	Dec.	1890	.01
94	Minnesotta, c.	Mich.	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876	
95	Mono, g.	Cal.	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar.	1886	.25
96	Montana, Lt., g. s.	Mont.	3,300,000	660,000	5	*				2,489,675	Oct.	1890	.06
97	Morning Star, s. l.	Colo.	1,000,000	100,000	10					850,000	Dec.	1889	.20
98	Moulton, s. g.	Mont.	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
99	Mount Pleasant, g.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
100	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	160,000	Oct.	1889	.20
101	Napa, q.	Cal.	700,000	100,000	7					380,000	Oct.	1890	.10
102	Navajo, g. s.	Nev.	10,000,000	100,000	100	500,000	April	1890	.15	365,000	April	1889	.10
103	New Guston, s.	Colo.	500,000	100,000	5					337,500	April	1890	.50
104	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06½
105	Northern Belle, s.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	April	1883	.50
106	North Belle Isle, s.	Nev.	10,000,000	100,000	100	395,000	April	1890	.20	230,000	May.	1888	.50
107	North Star, g.	Cal.	1,000,000	100,000	10					250,000	Dec.	1889	.50
108	Ontario, s. l.	Utah	15,000,000	150,000	100					11,525,000	Dec.	1890	.50
109	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	July	1882	1.00
110	Original, s. c.	Mont.	1,500,000	60,000	25	*				123,000	July.	1888	.05
111	Oro	Colo.	500,000	100,000	5					60,000	June	1890	.20
112	Osceola, c.	Mich.	1,250,000	50,000	25	480,000	April	1876	1.60	1,447,500	Dec.	1890	1.50
113	Oxford, g.	N. S.	125,000	125,000	1	*				78,500	Sept.	1888	.02
114	Paradise Valley, g. s.	Nev.	10,000,000	100,000	100	57,000	April	1888	.15	150,000	April	1887	.10
115	Parrot, c.	Mont.	1,800,000	180,000	10					696,000	Sept.	1890	.10
116	Peacock, s. g. c.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
117	Plumas Eureka, g.	Cal.	1,406,250	140,625	10					2,548,046	Oct.	1889	.37½
118	Plutus, g. s. c. l.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
119	Plymouth Con., g.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
120	Quicksilver, pref., q.	Cal.	4,300,000	43,000	100					1,705,791	Aug.	1890	1.50
121	" com., q.	Cal.	5,700,000	57,000	100					643,867	July.	1882	.40
122	Quincy, c.	Mich.	1,000,000	40,000	25	200,000	Dec.	1862		5,570,000	Aug.	1890	5.00
123	Republic, c.	Mich.	5,000,000	100,000	50	400,000	Dec.	1889	.30	4,312,587	June	1887	1.25
124	Richmond, s. l.	Nev.	1,350,000	54,000	25	*				99,785	Feb.	1880	.50
125	Ridge, c.	Mich.	500,000	20,000	25	219,939	Mar.	1886	.50	585,000	Mar.	1886	.05
126	Robinson Con., s. l.	Colo.	10,000,000	200,000	50	*				100,000	Dec.	1882	.50
127	Robert E. Lee, s. l.	Colo.	10,000,000	500,000	20					4,460,000	July.	1869	3.00
128	Savage, s.	Nev.	11,200,000	112,000	100	6,604,000	Nov.	1889	.50	7,500	April	1883	.01
129	Shoshone, g.	Idaho	150,000	150,000	1					1,568,145	April	1888	.12½
130	Sierra Buttes, g.	Cal.	2,225,000	122,500	10					102,000	Jan.	1871	1.00
131	Sierra Nevada, g. s.	Nev.	10,000,000	100,000	100	6,296,910	May.	1890	.50	270,000	April	1889	.10
132	Sierra Nevada, s. l.	Idaho	1,000,000	1,000,000	1	*				40,000	May.	1889	.02
133	Silver Cord, g. s. l.	Colo.	4,500,000	450,000	10					270,000	April	1889	.10
134	Silver King, s.	Ariz.	10,000,000	100,000	100	130,000	Nov.	1890	.30	1,950,000	July.	1887	.25
135	Silver Mg. of L. V.	N. M.	500,009	500,000	1					275,000	Dec.	1890	.05
136	Silverton, g. s. l.	Colo.	2,000,000	200,000	10	*				50,000	Jan.	1881	.25
137	Small Hopes Con., s.	Colo.	5,000,000	250,000	20	*				3,162,500	Oct.	1890	.10
138	Spring Valley, g.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	3,595,000	June	1888	.05
139	Standard, g. s.	Cal.	10,000,000	100,000	100	100,000	June	1890	.50	155,000	Nov.	1881	.05
140	Stormont, s.	Utah	500,000	500,000	1	*				844,000	Dec.	1887	.20
141	St. Joseph, l.	Mo.	1,500,000	150,000	10	*				9,000	April	1888	.02½
142	Swansea, g.	Colo.	600,000	60,000	10	*				100,000	Nov.	1881	.20
143	Tamarack, c.	Mich.	1,000,000	40,000	25	520,000	April	1885	3.00	1,670,000	Oct.	1890	4.00
144	Tombstone, g. s. l.	Ariz.	12,500,000	500,000	25	*				1,250,000	April	1882	.10
145	United Verde, c.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.10
146	Valencia, m.	N. H.	150,000	1,500	100	*				41,250	April	1886	2.50
147	Viola Lt., s. l.	Idaho	750,000	150,000	5					272,500	Oct.	1887	.37½
148	Ward Con., s. l.	Colo.	2,000,000	200,000	10					20,000	Dec.	1889	.05
149	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July.	1887	.10
150	Yellow Jacket, g. s.	Nev.	12,000,000	120,000	100	5,508,000	Mar.	1889	.50	2,148,000	Aug.	1871	1.50
151	Weeb City, l. z.	Mo.	55,000	11,000	5					4,400	July.	1889	.10
152	Woodside	Utah								25,000	Oct.	1889	.25
153	Young America	Cal.								175,000		1889	.10

NON-DIVIDEND PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
1	Agassiz Cons., s. l.	Colo.	$2,500,000	50,000	$50	*			
2	Allegheny, s.	Colo.	5,000,000	500,000	10				
3	Allouez, c.	Mich.	2,000,000	80,000	25	$737,000	Jan.	1890	.70
4	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	112,500	Sept.	1890	.25
5	Alta, s.	Nev.	10,080,000	100,800	100	3,359,800	Sept.	1890	.50
6	Amador, g.	Cal.	400,000	200,000	2	*			
7	American Flag, s.	Colo.	1,250,000	125,000	10	300,000	June	1887	
8	Amity, s.	Colo.	250,000	250,000	1				
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	5				
10	Astoria, g.	Cal.	200,000	100,000	2				
11	Barcelona, g.	Nev.	5,000,000	200,000	25	*			
12	Bechtel Con., g.	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.10
13	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1886	.10
14	Best & Belcher, g. s.	Nev.	10,080,000	100,800	100	2,279,275	Aug.	1890	.25
15	Big Pittsburg, s. l.	Colo.	20,000,000	200,000	100	*			
16	Black Oak, g.	Cal.	3,000,000	300,000	10	*			
17	Boston Con., g.	Cal.	10,000,000	100,000	100	170,000	Nov.	1883	.25
18	Bremen, s.	N. M.	5,000,000	500,000	10	*			
19	Brownlow, s.	Colo.	250,000	250,000	1				
20	Brunswick, g.	Cal.	2,000,000	400,000	5	*			
21	Bullion, g. s.	Nev.	10,000,000	100,000	100	2,790,000	Dec.	1889	.25
22	Butte & Boston, c. s.	Mont.	5,000,000	200,000					.25
23	Calaveras, g.	Cal.	500,000	500,000	1	*			
24	Carisa, g.	Wy.	500,000	100,000	5	*			
25	Carupano, g. s. l. c.	Ven.	200,000	100,000	2	*			
26	Cashier, g. s.	Colo.	500,000	250,000	2	*			
27	Charles Dickens, g. s.	Idaho	1,250,000	250,000	5	*			
28	Cherokee, g.	Cal.	1,500,000	150,000	10				
29	Chollar, s.	Nev.	11,200,000	112,000	100	1,540,000	Nov.	1889	.50
30	Cleveland, t.	Dak.	1,000,000	500,000	2	*			
31	Colchis	N. M.	500,000	50,000	10				
32	Comstock, g. s.	Nev.	10,000,000	100,000	100	35,000	Mar.	1887	.15
33	Con. Imperial, g. s.	Nev.	5,000,000	50,000	100	1,875,000	July.	1890	.05
34	Con. Pacific, g.	Cal.	6,000,000	60,000	100	198,000	June	1890	.10
35	Con. Silver, s.	Mo.	2,500,000	250,000	10				
36	Crescent, s. l.	Colo.	3,000,000	300,000	10	*			
37	Crocker, s.	Ariz.	10,000,000	100,000	100	150,000	June	1890	.15
38	Crowell, g.	N. C.	500,000	500,000	1				
39	Dahlonega, g.	Ga.	250,000	250,000	1	*			
40	Dandy, s.	Colo.	5,000,000	500,000	10				
41	Decatur, s.	Colo.	1,500,000	300,000	5	*			
42	Denver City, s. l.	Colo.	5,000,000	500,000	10	*			
43	Denver Gold, g.	Colo.	300,000	60,000	5				
44	Durango, g.	Colo.	500,000	500,000	1	*			
45	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	960,000	Mar.	1886	1.00
46	El Cristo, g. s.	U.S.C.	1,000,000	500,000	2				
47	El Dorado, g.	Cal.	1,000,000	250,000	4	*			
48	El Talento, g.	U.S.C.	1,000,000	500,000	2				
49	Empire, s.	Utah	10,000,000	100,000	100				
50	Eureka Tunnel, s. l.	Nev.	10,000,000	100,000	100	*			
51	Exchequer	Nev.	10,000,000	100,000	100	365,000	July.	1890	.25
52	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	81,500	May.	1890	.25
53	Gogebic I. Syn., i.	Wis.	5,600,000	200,000	25				
54	Gold Cup, s.	Colo.	500,000	500,000	1	*			
55	Golden Era, s.	Mont.	2,000,000	200,000	10	*			
56	Gold Placer, g.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
57	Gold Rock, g.	Cal.	1,000,000	500,000	2	*			
58	Goodshaw, g.	Cal.	10,000,000	100,000	100	*			
59	Grand Belt, c.	Tex.	12,000,000	120,000	100				
60	Grand Duke	Colo.	800,000	80,000	10				
61	Great Romance, g.	U.S.C.	1,000,000	500,000	2	*			
62	Gregory-Bobtail, g.	Colo.	550,000	550,000	1	*			
63	Gregory Con., g.	Mont.	3,000,000	300,000	10				
64	Harlem M. & M. Co., g.	Cal.	1,000,000	200,000	5				
65	Head Cent. & Tr., s. g.	Ariz.	10,000,000	100,000	100				
66	Hector, g.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
67	Highland, c.	Mich.	500,000	25,000	20				
68	Holywood	Cal.	200,000	100,000	2				
69	Hortense, s.	Colo.	2,000,000	200,000	10				
70	Huron, c.	Mich.	1,000,000	40,000	25	280,000	May.	1887	3.00
71	Iron, Gold & Silver, s.	N. M.	2,000,000	200,000	10	*			
72	Ironton, i.	Wis.	1,000,000	40,000	25				
73	Iroquois, c.	Mich.	1,250,000	50,000	25				
74	J. D. Reymert	Ariz.	10,000,000	100,000	100				
75	Julia Con., g. s.	Nev.	11,000,000	110,000	100	1,463,000	Jan.	1889	.10
76	Lacrosse, g.	Colo.	1,000,000	100,000	10	*			
77	Lee Basin, s. l.	Colo.	5,000,000	500,000	10	*			
78	Mayflower Gravel	Cal.	1,000,000	100,000	10	585,000	Mar.	1890	.56
79	Medora, g.	Dak.	250,000	250,000	1				
80	Mexican, g. s.	Nev.	10,000,000	100,000	100	2,791,960	Oct.	1890	.25
81	Middle Bar, g.	Cal.	400,000	200,000	2	*			
82	Mike & Starr, s. l.	Colo.	1,000,000	200,000	5	*			
83	Mollie Gibson	Colo.	2,000,000	100,000	2				
84	Monitor, g.	Colo.	100,000	1,000,000	1	*			
85	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*			
86	Native, c.	Mich.	1,000,000	40,000	25				
87	Neath, g.	Colo.	1,000,000	100,000	10				
88	Nevada Queen, s.	Nev.	10,000,000	100,000	100	200,000	Oct.	1889	.25
89	New Germany, g.	N. S.	100,000	100,000	1	*			
90	New Pittsburg, s. l.	Colo.	2,000,000	200,000	10	*			
91	N. Commonw'h, s.	Nev.	10,000,000	100,000	100	85,000	April	1890	.25
92	North Standard, g.	Cal.	10,000,000	100,000	100	20,000	Nov.		
93	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
94	Oneida Chief, g.	Cal.	500,000	125,000	100	*			
95	Oriental & Miller, s.	Nev.	10,000,000	400,000	25				
96	Osceola, g.	Nev.	5,000,000	500,000	10	*			
97	Overman, g. s.	Nev.	11,520,000	115,200	100	3,832,800	Dec.	1889	.25
98	Park, s.	Utah	2,000,000	200,000	10				
99	Peer, s.	Ariz.	10,000,000	100,000	100	165,000	Oct.	1890	.10
100	Peerless, s.	Ariz.	10,000,000	100,000	100	405,000	Oct.	1890	.15
101	Phoenix	Ariz.	500,000	500,000	1	*			
102	Phoenix, g. s.	Ark.	5,000,000	200,000	25	*			
103	Phoenix Lead, s. l.	Colo.	100,000	100,000	1	*			
104	Pilgrim, g.	Cal.	600,000	300,000	2	*			
105	Potosi, s.	Nev.	11,200,000	112,000	100	1,573,000	Mar.	1890	.50
106	Proustite, s.	Idaho	250,000	250,000	1	*			
107	Puritan, s. g.	Colo.	1,500,000	150,000	10	*			
108	Quincy	Colo.	3,000,000	300,000	10				
109	Rappahannock, g. s.	Va.	250,000	250,000	1	*			
110	Red Elephant, s.	Colo.	500,000	500,000	1	*			
111	Ropes, g. s.	Mich.	2,000,000	80,000	25	147,200	July.	1887	.50
112	Russell, g.	N. C.	1,500,000	300,000	5				
113	Sampson, g. s. l.	Utah	10,000,000	100,000	100	288,157	July.	1888	1.08
114	San Sebastian, g.	San S.	1,600,000	320,000	5	*			
115	Santa Fe, c.	N. M.	5,000,000	500,000	10				
116	Santiago, g.	U.S.C.	400,000	200,000	2	*			
117	Security, s.	Colo.	10,000,000	1,000,000	10				
118	Sheridan	N. M.	2,000,000	200,000	10				
119	Silver Queen, c.	Ariz.	5,000,000	200,000	25	*			
120	South Bulwer, g.	Cal.	10,000,000	100,000	100	100,000	May.	1881	.25
121	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1883	.05
122	South Pacific	Cal.	500,000	100,000	5				
123	Stanislaus, g.	Cal.	2,000,000	200,000	10				
124	St. Kevin, g. s.	Colo.	100,000	100,000	1	*			
125	St. Louis & Mex., s.	Mex.	5,000,000	500,000	10	*			
126	St. Louis & St. Elmo.	Colo.	2,000,000	200,000	10				
127	St. L. & St. Felipe, g.s.	Mex.	1,500,000	150,000	10				
128	St. L. & Sonora, g. s.	Mex.	1,500,000	150,000	10				
129	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
130	Sunday Lake, i.	Mich.	1,250,000	50,000	25				
131	Sullivan Con., g.	Dak.	600,000	200,000	3	*			
132	Sutter Creek, g.	Cal.	500,000	100,000	5				
133	Sutro Tunnel	Nev.	20,000,000	2,000,000	10	*			
134	Sylvanite, s.	Colo.	5,000,000	500,000	10	*			
135	Taylor-Plumas, g.	Cal.	1,000,000	200,000	5	10,000	Feb.	1888	.10
136	Tioga Con., g.	Cal.	10,000,000	100,000	10	295,000	May.	1888	.25
137	Tornado Con., g. s.	Nev.	100,000	100,000	1	*			
138	Tortilita, g. s.	Ariz.	1,000,000	100,000	110	*			
139	Tuscarora, s.	Nev.	10,000,000	500,000	20	15,000	Oct.	1889	.10
140	Union Con., g. s.	Nev.	10,000,000	100,000	100	2,310,000	July.	1890	.25
141	Utah, s.	Nev.	10,000,000	100,000	100	245,000	Aug.	1890	.25
142	Whale, s.	Colo.	500,000	500,000	1				
143	Washington, c.	Mich.	1,000,000	40,000	25				
144	West Granite Mt., s.	Mont.	5,000,000	500,000	10	*			
145	Yuma, c. s. g.	Ariz.	10,000,000	400,000	25				
146	Zelaya, g. s.	C. A.	600,000	300,000	2	*			

G., Gold. S., Silver. L., Lead. C., Copper. * 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 Con. Virginia $40,000,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid $1,350,000 in dividends.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 3.		Jan. 5.		Jan. 6.		Jan. 7.		Jan. 8.		Jan. 9.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams											1.65		1,300
Alice													
Atlantic, Mich													
Belcher, Nev									1.50				100
Belle Isle													
Bodie Cons., Cal	.70				1.00								150
Bos. & Mont., Mont													
Breece, Colo					.40								100
Bulwer, Cal													
Caledonia													
Calumet & Hecla, Mich													
Catalpa, Colo													
Chrysolite, Colo	.24												100
Colorado Cen., Con., Colo													
Cons. Cal. & Va., Nev			2.50		3.05				3.00	2.80	3.35		420
Crown Point, Nev	1.15				1.75		1.70						200
Deadwood, Dak													
Eureka Con													
Excelsior, Cal													
Father de Smet													
Franklin													
Freeland, Colo	.28	.26	.28	.27	.30	.28	.29	.28					8,650
Gould & Curry, Nev	1.30		1.40		1.45						1.65		400
Hale & Norcross, Nev			1.35								1.50		200
Holyoke													
Homestake, Dak													
Horn Silver, Utah					3.20	3.10	3.05	3.00					1,650
Independence, Nev													
Iron Hill, Dak													
Kearsarge													
Leadville C., Colo			.13	.12									6,100
Little Chief, Colo	.37	.35					.38	.35	.37		.37		1,900
Mono, Cal													
Moulton, Mont													
Mt. Diablo, Nev													
Navajo, Nev					.20		.20						300
N. Belle Isle, Nev					.75								200
Ontario, Utah													
Ophir, Nev			2.90	2.85	3.00				3.00		3.20		500
Osceola, Mich													
Plymouth, Cal													
Quicksilver, Pref													
" Com													
Quincy, Mich													
Robinson Cons., Colo													
Savage			1.65		1.60				1.65		1.80		400
Sierra Nevada, Nev							1.45						100
Silver Cord													
Silver King, Ariz													
Silver Mg. of L. V													
Small Hopes													
Standard													
Stormont, Utah													
Tamarack, Mich													
Yellow Jacket, Nev	1.65		1.75		1.85		1.75				1.85		10

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 3.		Jan. 5.		Jan. 6.		Jan. 7.		Jan. 8.		Jan. 9.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha, Nev	1.10												100
Alta, Nev	.75		.75				.85		.70		.75		900
American Flag, Colo													
Andes, Nev									.80				200
Amador, Cal													
Astoria, Cal	.04				.04	.03			.03		.04		5,200
Barcelona, Nev													
Best & Belcher, Nev			2.15		2.15						2.50		400
Bonanza King, Cal													
Brunswick, Cal			.07				.09	.08	.08				4,400
Bullion, Nev	2.60												100
Butte & Bost., Mont													
Castle Creek, Idaho													
Chollar, Nev	2.00		2.10		2.10		2.05				2.15		500
Col. & Beaver, Idaho													
Commonwealth, Nev													
Comstock T., Nev							.14						500
" bonds													
" scrip													
Con. Imperial, Nev	.25												300
Cons. Pacific, Cal													
Crescent, Colo													
Del Monte, Nev													
El Cristo, Rep. of Col			.60		.55								200
Exchequer	.80				.65								400
Hollywood, Cal													
Huron, Mich													
Julia, Nev			.38		.39		.38				.25		1,400
Justice, Nev													
Kossuth													
Lacrosse, Colo									.05				400
Lee Basin, Colo													
Mexican, Nev	2.15				2.35		2.15		2.20		2.50		600
Middle Bar	.06	.05	.05		.04		.05	.04	.05	.04	.06	.05	14,800
Monitor, Colo									.05				100
Mutual Sm. & Mg. Co			1.45				1.45		1.45		1.50		1,400
Nevada Queen, Nev	.60												200
N. Commonwealth, Nev													
Occidental, Nev							.75		.70				400
Oriental & Mil., Nev											.05	.04	900
Overman, Nev	1.90												100
Phœnix of Ariz	.69		.64	.60	.63	.60	.64				.58		2,100
Phœnix Lead, Colo													
Potosi	4.75						4.75				4.75		800
Rappahannock													
S. Sebastian									10				200
Scorpion	.25		.20		.25				.20				1,600
Shoshone, Id													
Silver Queen													
Sullivan Con., Dak													
Sutro Tunnel, Nev													
Sutter Creek, Cal	1.05		1.05		1.10		1.10		1.10		1.10		1,400
Tioga, Cal													
Union Cons., Nev									1.85		.65		400
Utah, Nev	.55		.45		.55				.55				1,200

*Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 23,450. Non-dividend shares sold 40,200. Total, New York, 63,650.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 2.		Jan. 3.		Jan. 5.*		Jan. 6.*		Jan. 7.		Jan. 8.		SALES.
Atlantic, Mich									16.00				10
Bodie, Cal													
Bonanza Development													
Bost. & Mont., Mont	42.00	41.50	43.25	42.00					42.00	41.50	42.00	41.25	1,400
Breece, Colo													
Calumet & Hecla, Mich			253	246					260	258			99
Catalpa, Colo											.25		500
Central, Mich													
Chrysolite, Colo													
Con. Cal. & Va., Nev													
Dunkin, Colo													
Eureka, Nev													
Franklin, Mich	15.50		16.00						17.50		17.25		627
Honorine, Utah													
Horn Silver, Utah													
Kearsarge	12.00								11.50		11.50		155
Little Chief, Colo													
Little Pittsburg, Colo													
Moulton													
Napa, Cal									4.00				100
Ontario, Utah													
Osceola, Mich	36.50	35.50	38.50	37.00					37.50	37.00	36.75	36.25	2,050
Pewabic, Mich													
Quincy, Mich									93.00				6
Ridge, Mich													
Sierra Nevada, Nev													
Silver King													
Stormont, Utah													
Tamarack, Mich									151				5
Tecumseh, Mich													

NAME OF COMPANY.	Jan. 2.		Jan. 3.		Jan. 5.*		Jan. 6.*		Jan. 7.		Jan. 8.		SALES.
Allouez, Mich			3.00						2.50		2.38	2.25	1,500
Arnold, Mich													
Aztec, Mich													
Brunswick, Cal													
Butte & Boston, Mont	13.25		14.00						15.75	14.63	15.00	14.50	795
Centennial, Mich	15.00								15.75		15.25		130
Comstock, T., Nev													
Copper Falls Mg													
Crescent, Colo													
Dana, Mich													
Don Enrique, N. M													
El Cristo, S. A													
Hanover, Mich													
Humboldt, Mich													
Hungarian, Mich													
Huron, Mich			3.50										100
Mesnard, Mich													
National, Mich													
Native, Mich													
Oriental & M., Nev													
Phœnix													
Pontiac													
Rappahannock, Va													
Santa Fe, N. Mex											.40		500
Shoshone, Idaho													
South Side, Mich													
Star													
Washington, Mich													
Winthrop, Mich													

Boston: Dividend shares sold, 4,961. Non-dividend shares sold, 3,125. Total Boston, 8,086.

* Owing to an accident we are unable to publish the prices of the stocks on the above dates.

COAL STOCKS.

NAME OF COMPANY.	Par val. of shares.	Jan. 3.		Jan. 5.		Jan. 6.		Jan. 7.		Jan. 8.		Jan. 9.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal														
Cambria Iron														
Cameron Coal & I. Co														
Ches. & O. RR	100													
Chic. & Ind. Coal RR	100													
Do. pref	100													
Col. C. & I	100	34½	33⅝	35	34	34⅝	33½	35	34¼	35½	34½	35¼	35½	5,583
Col. & Hocking C. I.	100	18½	18	19	18			18¼	18⅛	18¼				1,600
Consolidation Coal	100							26	25	26				1,000
Del. & H. C	100	133⅛	132½	134	133	134	132½	133⅛	133	135¾	133	136½	136	5,824
D., L. & W. RR	50	134½	133⅛	135½	133⅞	134⅞	133⅜	135⅜	134¼	138	134¾	139¼	139⅜	115, 07
Hocking Valley	100	27	26¼	28½	26½	27¾	27	28	27½	28	27⅜	27⅝	27⅝	5,015
Hunt. & Broad Top		18¼	18			18¾	18	19		20	19			1,255
Do. pref		44½		45⅝	45	45¼	45	46	45½	46¼	46			690
Illinois C & Coke Co														
Lehigh C. & N	50	48⅛	48⅜	48⅛	48	48¼	48	48¼	48	48⅜	47⅞			2,539
Lehigh Valley RR	50	49¼		49¼	49	49⅝	49¼	50	49¾	50	49⅝			1 591
Lehigh & Wilk. Coal	100													
Mahoning Coal	100													
Do. pref	100													
Maryland Coal												16		100
Morris & Essex	100			147										50
New Central Coal	50											11	10¾	200
N. J. C RR	100	108¾	108½	109⅜	108	110½	109½	115	111	116½	114			5,432
N. Y. & S. Coal	100													
N. Y., Susq. & West	100	8⅞	8⅝	8½	8	8	7¾	8½	8	8¾	8⅛	8¾	8⅞	5,640
Do. pref	100	31	30½	30¾	30	28½		30½	29	32	31⅝	31⅝	31⅞	4,605
N. Y. & Perry C. & I	100													
Norfolk & West. RR	50			15	14½	14½	14¼	15	14⅞					1,730
Do. pref	50			54	53½			54¾	53¾	54½	54¼	54¾		960
Penn. Coal	50													
Penn. RR	50	50⅝	50⅜	51	50½	50½	50⅜	50⅝	50⅜	50½	50⅜			4,075
Ph. & R. RR		33	32½	33½	33	33¾	33	34½	33½	34⅝	34	34½	33¾	**82,829
Sunday Creek Coal														
Do. pref	100													
Tennessee C. & I. Co		34½	33¾	33	34½	34	33¼	36	34½	36	34½	35¾	35¼	7,740
Do. pref						80				84	82			400
Westmoreland Coal														

**Sales in New York, 87,793; in Philadelphia, 45,086. Total sales, 204,815.

San Francisco Mining Stock Quotations.

COMPANY.	CLOSING QUOTATIONS.					
	Jan. 2.	Jan. 3.	Jan. 5.	Jan. 6.	Jan. 7.	Jan. 8.
Alpha						
Alta	.60	.60	.60	.75	.50	.60
Beleher						
Belle Isle	.40	.40	.40	.35	.35	
Best & Bel	1.90	2.10	2.10	.70	2.15	2.50
Bodie	.65	.95	.95	1.90	.75	.75
Bulwer	.10	.20	.20	1.95	.15	.15
Chollar	1.85	1.95	1.95		1.90	1.95
Com'wealth	.85	.90	.90	.85	.85	.75
Con. C. & V	2.40	3.10	3.10	1.55	2.95	3.35
Con Pacific				2.55		
Crown Point	1.00	1.10	1.60	2.60	1.60	1.60
Eureka C		2.40	2.40	1.25		
Gould & C	1.20	1.35	1 35	1.20	1.40	1.85
Grand Prize						
Hale & N	1.20	1.35	1.35		1.20	1.25
M. White						
Mexican	2.05	2.20	2.20	2.05	2 30	2 35
Mono	.40	.60	.60	.45	.45	.45
Mt. Diablo						1.80
Navajo	.15	.15	.15	.15	.15	.15
Nev. Queen	.40	.35	.35	35		.40
N. Belle Isle	.65	.70	.70	.65		.60
N. Com'w'lth	.60	.60	.60			
Ophir	2.60	2.85	2.85	1.65	2 85	3 05
Potosi	4.50	4.75	4.75	4.30	4 70	4.65
Savage	1 35	1.50	1.50	1.40	1.50	1.65
Sierra Nev	1.30	1.45	1.45	1.30	1.65	1.70
Union Con	1.35	1.50	1.50	1.40	1.70	1.90
Utah	.45	.40	.40	.35	.40	.50
Yellow Jak	1.55	1.70	1.70	1.60	1.85	1.70

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	$	$ ....
Balt. & N. C.	.05	.10@.15
Big Vein Coal	....	....
Conrad Hill	.07	.10
Cons. Coal	.23½@.24¾	26¼@.26¾
Diamond Tunnel	....	....
George's Crk. C.	1.10	1.15
Lake Chrome	.15@.20	.30
Maryland & Charlotte	....	....
Nortb State	....	....
Silver Valley	.40@.60	.70@.10

Prices bid and asked, lowest and highest, during the week ending January 7.

Birmingham, Ala. Dec. 31.

COMPANY.	Bid. L. H.	Asked. L. H.
Ala. Coal & I. Co.	....	$100
Ala. Conn. C. & C. Co.	....	$23
Ala. R. Mill Co.	$100	....
*Alice Furnace	$101	....
Anna Howe G. Mg. Co.	$¼	$½
Bessemer Land	$25	....
Bir. Mg. & Mfg.	....	$35
Cahaba Coal Mg. Co.	....	$61
Camille Gold Mg. Co.	$½	....
De Bardeleben C. & I. Co.	$48	....
Decat. L. Imp.	$9½	$11
Decatur Min. L.	....	$19
Ensley Land	$7	$8
*Eureka	....	....
Florence L. & Mg. Co.	$16¾@$17	$19@$20
Gadsen Land	$3¼	$3⅝
Hecla Coal Co.	....	....
Hen. S. & M. Co.	...	$25
Jagger-Townl'y C. & C. Co.	$9	$10
Mag-Ellen	$100	....
Mary Lee C. & R. Co.	...	$20¼
Sheffield C. & I. Co.	$37½	$40½
Sloss I. & S	$22	$31
†Sloss I. & S	$80	....
‡‡ Sloss I. & S.	....	$50
Tuscaloose C. I. & L. Co.	$23	$25
Ten. C. & I. Co.	$33	$35
" pref.	$78	$80
Vulcan C. & C. Co	$5	....
Woodstock I. Co.	....	$30

* Bonds. † First mortgage. ‡‡ Second mortgage. ** Without interest.

Pittsburg, Pa. Jan. 8.

COMPANY.	B.	A.	Closing.
Allegbeny Gas Co.	$40.00	.....	$40.00
Bridgewater Gas Co.	.....	$.....	.....
Chartiers Val. Gas	12.50	14.25	14.00
Columbia Oil Co.	2.25	3.00	3.00
Consolidated Gas Co.	....	....	....
East End E. Light Co.	.....	.....	.....
East End Gas Co.	.....	.....	.....
Forest Oil	.....	.....	.....
Haziewood Oil Co.	.....	.....	.....
La Noria Mining	.19	.20	.19
Luster Mg. Co.	20.00	21.00	20.50
Mansfield C. & C. Co.	.....	.....	.....
Manuf'turers Gas Co.	20.00	.....	20.00
Nat. Gas Co. of W. Va	.....	.....	.....
N. Y. & Clev. Gas Coal.	34.50	35.50	35.00
Obio Valley Gas	.....	25.00	25.00
Pennsylvania Gas	.....	9.50	9.50
People's Natural Gas.	.....	.....	.....
People's N. G. & P. Co.	.....	11.00	11.00
Philadelphia Co.	13.25	14.00	13.75
Pine Run Gas Co.	.....	35.00	.....
Pittsburg Gas	.....	.....	.....
Silverton Mg. Co.	.....	.....	.....
Soutb Side Gas.	25 25	26.00	25.75
Tuna Oil Co.	.....	.....	.....
Union Gas	.....	.....	.....
Wasbington Oil Co.	90.00	90.00	.....
W'house Brake Co.	....	74.00	74.00
W'house A. B. Co.	102.00	109.00	108.00
W'house E. Light.	13.75	13.88	13.88
W'moreland & Camb.	17.00@18.00		17.00
Wheeling Gas	.....	15.00	.....
Yankee Girl Mg	.....	.....	.....

St. Louis. Jan. 7.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo.	$	$1.95
American & Nettie	.11¼	.50
Aztec, N. Mex.	.08	.....
Bi-Metallic	.....	.....
Central Silver	.06½	.07½
Cleveland, Colo.	.....	.....
Cleveland & An'r.	.....	.....
Coeur d'Alene	.....	.....
Elizabetb	2.50	2.55
Gold King	.08	.10½
Granite Mountain, Mont.	.....	.....
Hope	.....	.....
Ingram	.....	.....
I. X. L. Colo.	.....	.....
La Union	.02	.02½
Little Albert	.15	.....
Montrose Placer, Colo.	.47½	.50
Major Budd, Mont.	.....	.....
Mexican Imp.	.....	.....
Mickey Breen.	.80	.82½
Mountain Key	.....	.....
Nellie	.....	.....
Old Colony	.....	.....
Pat Murphy, Colo.	.03	.04
Puzzle	.....	.....
Richmond Hill	.....	...
Samoa	.....	.....
Silver Age, Colo.	1.45	.....
Small Hopes, Colo.	.85	.....
Tourtelotte	.....	.....
West Granite, Mont.	.....	.....
Wire Patch	.13½	.15
Yuma, Ariz.	.46¼	.50

Trust Stocks. Jan. 9.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

Am. Cotton Oil. Tr. Repts.	$19	@$19⅜
Cattle Trust	....	@ ....
Distillers' & Cattle Feeders'.	47½	@ 48
Linseed Oil	39	@ 40
National Lead	18⅞	@ 19
Standard Oil	159½	@160½
Sugar Refineries, Tr. repts.	6¼	@ 6½

Trust Receipts.

Sales at the New York Stock Exchange week ending Jan. 9:

	Sales.	Price— H.	L.
*American Cotton Oil	6,670	20⅛	16⅛
National Lead	31,060	19	17¼
*sugar	68,045	66¾	57½

* Trust receipts.

Foreign Quotations.

London. Dec. 27.

COMPANY.	Highest.	Lowest.
Almada, Mex.	1s.	6d.
Amador, Cal.	£⅛	£⅜
Appalachian, N. C.	6d.	3d.
Canadian Pbos., Can.	£⅛	£¼
Colorado, Colo.	3s. 3d.	2s. 9d.
Comstock, Utab.	....	....
Cordova	....	....
Cons. Esmeralda, Nev.	2s. 9d.	2s. 3d.
Denver Gold, Colo.	..	6d.
Dickens Custer, Idabo.	1s. 9d.	1s. 3d.
East Arevalo, Idaho.	2s.	1s.
El Callao, Venezuela.	£1⅝	£1⅜
Elmore, Idabo.	2s.	1s. 6d.
Garfield, Nev	1s. 3d.	9d.
Jay Hawk, Mont.	1s. 6d.	1s.
Josepbine, Cal.	1s. 6d.	1s.
Kohinoor, Colo.	2s. 3d.	1s. 9d.
La Luz, Mex.	2s. 3d.	1s. 9d.
La Valera, Mex.	15s.	10s.
Montana Lt., Mont.	£15-16	£13-16
New California, Colo.	6s.	5s.
New Consolidated	5d.	3d.
New Eberhardt, Nev.	1s.	6d.
New Emma, S. Utab.	2s. 9d.	2s. 3d.
Newfoundland, N. F.	3s. 6d.	3s.
N. Gold Hill, N. C.	1s.	6d.
New Guston, Colo.	£3¼	£2¾
New Hoover Hill, N.C.	1s.	6d.
Old Lout, Colo	....	....
Palmarejo, Mex.	£⅝	£9-16
Pinos Altos, Mex.	7s. 6d.	6s. 6d.
Pittsburg Cons., Nev.	8s.	7s.
Richmond Con., Nev.	£1⅛	£1¼
Ruby & Dunderb'g, Nev.	1s. 3d.	9d.
Sam Christian, N. C.	1s.	6d.
Sierra Buttes, Cal.	5s. 6d.	4s. 6d.
" Plumas Eur., Cal.	£11-16	£9-16
Sonora, Mex.	....	....
United Mexican, Mex.	£5-16	£¼
U. S. Placer, Colo.	9d.	3d.
Viola Lt., Idabo.	1s. 6d.	1s.
Yankee Girl, Colo.	£¾	£⅝

Paris. Dec. 26.

	Francs.
Belmez, Spain	770.00
Callao, Venez	50.00
Callao Bis., Venez	.....
East Oregon, Ore	7.00
Forest Hill Divide, Cal.	146.00
Golden River, Cal.	130.00
" parts	30.00
Lexington, Mont	150.00
" parts	3.50
Rio Tinto, Spain	607.50
Tbarsis, Spain	157.50

CURRENT PRICES.

Those quotations are for wbolesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $1.75@$2.00
Muriatic, 18° ℔ 100 lbs. 1.00@1.50
Muriatic, 20° ℔ 100 lbs. 1.12½@1.75
Muriatic, 22° ℔ 100 lbs. 1.37½@2.00
Nitric, 36° ℔ 100 lbs. 4.00@4.29
Nitric, 42° ℔ 100 lbs. 6.00@6.25
Oxalic, ℔ 100 lbs. 6.50@10.50
Sulpburic, 60° ℔ 100 lbs 80@1.25
Sulpburic, 66° ℔ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c. 1.60@1.65
Refined, 58°. 1.55@1.90

Alum—Lump, ℔ lb. 1¾
Ground, ℔ lb. 1⅞@2
Lump ℔ ton, Liverpool. £4 17 6
Sulphate of Alumina, ℔ ton. £4 10

Ammonia—Sul., ℔ 100 lbs. 3.15
Carb, ℔ lb. 7½@8½

Aqua Ammonia—18° ℔ lb. 4¾
20°, ℔ lb. 6
22°, ℔ lb. 6@7
26°, ℔ lb. 10@11

Ammoniates—Azotine, ℔ unit 1 95@ 2 00
Blood, dried, red, ℔ unit, west 1 80@ 1 90
low grade, ℔ unit. 1 70@ 1 80
Concentrated tankage, ℔ unit 1 75@ 1 80
Bones, rough, ℔ ton 20 00@23 00
ground, ℔ ton. 25 00@28 00
Bone black, refuse, ℔ ton 17 50@19 50
Kieserite 6 00@ 6 50
Fish guano, dried 18 50@19 00
acidulated 10 00@ — 00
wet 8 50@ 9 50
Phosphate rock, f. o. b Char'n 6 00@ 7 25
undried —@ 6 —
dried 7 00@ 7 50
ground 8 00@11 50
Acid pbosphate, 14% per unit. 72½@ 75

Arsenic—White, powdered ℔ lb. 3¼@3½
Red ℔ lb. 5¾@ 3¾
White at Plymouth, ℔ ton £12 2 6

Asbestos—Am., ℔ ton. $50@$300
Italian, ℔ ton. c. i. f. L'pool. £18@£60

Ashes—Pot, 1st sorts, ℔ lb. 4¾@4⅞
Pearl 6¼@6½

Asphaltum—P. ton. 13.00
Prime Cuban, ℔ lb. 4½@5¼c.
Hard Cuban, P ton $28.00
Trinidad, refined, ℔ ton $30.00
Egyptian 8@9

Barium—Nitrate, ℔ lb. 8@8½

Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, ℔ ton. 19½@21.50
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

Bleach—Over 35 p. c., ℔ lb. 1.85@1.90

Borax—Refined, ℔ lb. 9¼@9⅝
Concentrated 7¾@8⅜
Refined " Liverpool ℔ ton £29

Brimstone—*See Sulphur.*

Bromine—℔ lb. 37@38

Chalk—℔ ton. 1.75
Precipitated, ℔ lb. 4¾@5

China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton. 13.50

Chrome Yellow—℔ lb. 10@2

Cobalt—Oxide, ℔ lb. 2.60@2.90

Copper—Sulph. English Wks. ton £20@£21

Copperas—Common, ℔ 100 lbs. 70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks £1 15s.

Cream of Tartar—Am. 99% 22½
Powdered, 99 p. c. 23

Emery—Grain, ℔ lb. 4½@5
Flour, ℔ lb. 2¾@3½

Feldspar—Ground, ℔ ton 15.00

Fuller's Earth—Lump, ℔ bbl. 90@95
Powdered, ℔ lb. 1⅞@2

Gypsum—Calcined, ℔ bbl. 1.25@1.50

Iodine—Resublimed 2.75

Kainit—℔ ton. $9.75@$10

Kaolin—*See China Clay.*

Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, Englisb, ℔ lb. 8½@8¾
Acetate, or sugar of, white 12@13
Nitrate 9@10

Lime Acetate—Amer. Brown .95@1.00
" Gray 1.75@1.87½

Litharge—Powdered, ℔ lb. 6½@6¾
Englisb flake, ℔ lb. 9@9½

Magnesite—Greek, ℔ ton. 20.00

Manganese—Crude, per unit. 23@28
Oxide, ground, per lb. 2½@6½

Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. 70@72

Metallic Paint—Brown per ton. $20@25
Red. $20@25

Mineral Wool—℔ lb. 2

Mica—In sbeets according to size.
1st quality, ℔ lb. 25@$6.00

Naphtha—Black. 60

Ochre—Yellow, "B. F.," ℔ ton, f. o. b. mill. 30.00
"J. F. L. S.," ℔ lb. ex dock 2½
Yellow 10@25
Rocbelle. 1.35@1.50
Washed Dutch 5@—
Wasbed French 1½@2½
Washed Nat Oxford, Lump 6½@6¾
Washed Nat Oxford, Powder 7@7½
Golden 3¾@4
Domestic ¾@1¼
Domestic, for O. C. & W. P. ¾@1

Oils, Mineral
Cylinder, light filtered 15@20
Dark filtered 14@21
Extra cold test —@—
Dark steam refined 10@18

Phosphate Rock—S. Carolina, per ton f. o. b. Charleston 6.00@7.25
Ground, ex vessel New York 11.00
Canadian Apatite, lump. f. o. b. at Montreal, ℔ ton. 16.00

Phosphorus—℔ lb. 64@65
Precip., red 100@102
wbite 100@103

Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7

Potassium—Cyanide, ℔ lb. 39@40
Bromide, ℔ lb. 33
Chlorate, English, ℔ lb 11@14
Cblorate, powdered 13@14
Carb., ℔ lb. 4.70@5.54
Caustic, ℔ lb. 7½@8
Iodide 2,65@2.70
Muriate, ℔ 100 lbs. 1.82½
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10½@11
Dble. m'ure salt, basis of 48@50%. 1.07½
Sulphate, basis of 90% ℔ 100 lbs. 2.05
Yellow Prussiate. 17½@18
Red Prussiate. 42@45

Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2¼@2½

Pyrites—Non-cupreous, p. units 10d.

Quartz—Ground, ℔ ton. 14.00@16.00

Rotten Stone—Powdered, ℔ lb. 3¼@3¼
Lump, ℔ lb. 6@10

Salt—Liverpool, ground, ℔ sack 75@80
Turk's Island, ℔ bush. 25@28

Salt Cake—℔ lb. 70@75

Saltpeter—Crude, ℔ lb. 5¼@5½
Refined, ℔ lb. 6@8

Silex. ℔ ton. 14@25

Soda—Carb Ash, 48%. 1.60@1.65
" high test. 1.55@1.60
Caustic ash, 48%. 1.62½@1.65
" high test. 1.60
Newcastle, 48%. — @ —
" high test. 1.50@1.55
Bicarb, English. 3.50@3.75
" American. 3@3½
Crystal, carbonate. 1.95@2.00
Caustic, 60%. 3.40@5.50
" 70%. 3.15@3.20
" 74%. 3.15@3.20
" 77%. 3.25@3.37½
Sal, English. 1.17½@1.20
" American. 1.10@1.15
Nitrate. 1.80@1.85
Prussiate. 17½@18
Phospbate 7@18
Stannate. 8@15

Strontium—Nitrate, ℔ lb. 9@9½

Sulphur—Roll, ℔ lb. 1¾
Flour, ℔ lb. 20
Crude Brimstone, 2s., ℔ ton. 27.00
Crude Brimstone, 3ds. ℔ ton. 26.50

Sylvinit, 23@27%, S. F. P., per unit. 40@42½

Talc—Ground Frencb, ℔ lb. 1¼@1½
Domestic, ℔ ton. $18@$20
c. i. f. Liverpool, ℔ ton. £4 5

Terra Alba—Frencb. 80@85
English. 75@80
American, No. 1. —@—
American, No. 2. 40@50

Tin—Crystals. 15½@16
Muriate. 8@ 3

Vermillion—American, ℔ lb. 61
English ℔ lb. 82@85

Vitriol—(Blue), Ordinary, ℔ lb. 5½@5⅝
Extra, ℔ lb. 7

Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6½
Paris, Red Seal, ℔ lb. 6½@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), per lb. $1.50@$2
Sheet, per lb 2.50

Arsenic—(Metallic), per lb. .40

Barium—(Metallic), per gram. 4.00

Bismuth—(Metallic), per lb. 2.75

Cadmium—(Metallic), per lb. 1.00

Calcium—(Metallic), per gram. 10.00

Cerium—(Metallic), per gram. 7.50

Chromium—(Metallic), per gram. 1.00

Cobalt—(Metallic), per lb. 6.00

Didymium—(Metallic), per gram. 9.00

Erbium—(Metallic), per gram. 7.50

Gallium—(Metallic), per gram. 140.00

Glucinum—(Metallic), per gram. 12.00

Indium—(Metallic), per gram. 9.00

Iridium—(Metallic), per oz. 7.00

Lanthanum—(Metallic), per gr. 10.00

Lithium—(Metallic), per gram. 10.00

Magnesium—Per lb. 4.50

Manganese—(Metallic), per lb. 1.10
Chem. pure, per oz. 10.00

Molybdenum—(Metallic), per gm .50

Niobium—(Metallic), per gram. 5.00

Osmium—(Metallic), per oz. 65.00

Palladium—(Metallic), per oz. 35.00

Platinum—(Metallic), per oz. 20.00@25.00

Potassium—(Metallic), per lb. 28.00

Rhodium—(Metallic), per gram. 5.00

Ruthenium—(Metallic), per gm. 5.50

Rubidium—(Metallic), per gram. 2.00

Selenium—(Metallic), per oz. 1.80

Sodium—(Metallic), per lb. 2.50

Strontium—(Metallic), per gm. .60

Tantalum—(Metallic), per gram. 9.00

Telurium—(Metallic), per lb. 5.00

Thallium—(Metallic), per gram. .25

Titanium—(Metallic), per gram. 2.25

Thorium—(Metallic), per gram. 17.00

Tungsten—(Metallic), per oz. 2.25

Uranium—(Metallic), per lb. 5.00

Vanadium—(Metallic), per gm. 22.00

Yttrium—(Metallic), per gram. 9.00

Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000. 3.00@3.50
Jerseys, ℔ 1,000. 4.75@5.25
Up Rivers, ℔ 1,000. 5.00@5.50
Haverstraw seconds, ℔ 1,000. 5.50@6.00
Haverstraw firsts, ℔ 1,000. 6.00@6.25
Fronts, nominal, ℔ 1,000 .....
Croton. 14.00@16.00
Wilmington. 20.00@21.00
Pbiladelphia. @22.00
Trenton. @22.00
Baltimore. .....

Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch, ℔ cu. ft. 1.00@1.15

Cement—Rosendale, ℔ bbl. 85@1.10
Portland, American, ℔ bbl. 2.15@2.45
Portland, foreign, ℔ bbl. 2.40@2.50
Portland, " special brands 2.60@2.85
Roman, ℔ bbl. 2.75@2.90
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.25@8 50

Slate—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black roofing, ℔ 100 sq. ft. 4.25@5.50

Lime—Rockland, common, ℔ bbl. .90
Rockland, finishing, ℔ bbl. 1.10
St. John, com. and finish., ℔ bbl. 85@ .90
Glens Falls, com. and fin., ℔ bbl. 85@1.10

Labor—Ordinary, ℔ day. 1.50@2.00
Masons, ℔ day. 4.00
Plasterers, ℔ day. 4.00
Carpenters, ℔ day. 3.50
Plumbers, ℔ day. 3.50
Painters, ℔ day. 2.50@3.50
Stonesetters, ℔ day. 3.50@4.00
Tilelayers, ℔ day. 3.50@4.50
Bricklayers, ℔ day. 4.00