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CONTENTS.

THE New York Microscopical Society held its tenth annual reception at Lyric Hall, in this city, February 17th. Among the interesting things shown by Mr. G. F. Kunz were the microscopic diamonds in meteorite, referred to in a recent number of this journal.

ALUMINUM BRONZE IN PROPELLER BLADES, RUDDERS, ETC.

The Navy Department has recently made a notable progress in adopting aluminum bronze for the propeller blades and rudders of some of the government ships. The remarkable strength and elasticity of these alloys of aluminum, as shown by the tests which were recorded in the ENGINEERING AND MINING JOURNAL December 24th, 1887, p. 464, abundantly justified this choice, and will, we hope, induce the government to advance still further on this road of progress, and give aluminum bronze a fair and thorough test on a working scale in guns, for which the wonderful records of test pieces, and in actual work in other uses, have apparently demonstrated it to be admirably adapted. It will indeed be cause for congratulation if our government, by the exercise of a policy of enlightened economy, already shown in testing cast steel guns, should show the world that we can make guns from cast steel and aluminum bronze which are far less expensive than the built-up guns of Europe, and greatly exceed them in strength and durability.

EQUITY BILLS TO QUIET MINING TITLES.

Judge BREWER of the U. S. Circuit Court, Denver, has recently made in the case of *Hyman* vs. *Wheeler et al.*, an important decision which was reported in the *Tribune-Republican* of that city, January 22d, 1888. The plaintiff in equity sought to have nine different parties, holding claims adjacent or near to his own, enjoined from instituting various suits in different courts and called upon to come into one case, to set up their titles, and have them all asserted and determined in one litigation, alleging that he was the owner and possessor of a certain vein, having its apex within certain boundaries of his claim, and that the claims of all the defendants cast a cloud upon his title.

Demurrers were filed to this bill on the ground that there was no unity of interest among the various defendants, since they did not claim the same piece of property, or base their claims upon the same reasons. It was further asserted that the case was not properly an equity case, and that to uphold an equity jurisdiction of it would be to deny to the defendants the right of a jury trial. Judge BREWER overruled the demurrers, holding, in accordance with the case of *The Railroad Company* vs. *Dyer* (Sawyer, 641), that where there is a single title to a continuous property, and that title rests upon one state of facts, one grant, and there are many persons who, with inferior titles or claims, are threatening litigation, although their claim may spring from different sources, a court of equity has power, in order to give to the holder of this single property the full enjoyment of such property, to summon all such parties in a single suit, and in that, by decree, establish the plaintiff's title, and restrain all the defendants from further litigation or interference. He adds, that to discourage a multiplicity of suits is a fair ground of equity jurisdiction; but it may well be in many cases that when the testimony is presented there will appear such a doubtful question of fact that a chancellor would say that it ought to go to a jury, and decline to entertain further jurisdiction.

This decision, which appears to us to be perfectly sound, indicates a way in which much expensive litigation may be avoided by mine-owners. In most cases involving mining titles there are numerous difficult questions of law as well as of fact. It is usually the party having the weaker case who insists upon a jury trial, desiring to get the benefit of the uncertainties which attend the verdicts of juries, particularly when corporations are parties. A mining company threatened with attack, or forced to consider the feasibility of bringing suit against intruders, will be much better protected in its rights if it can present them first before a judge sitting in equity. In most of the States, as we understand, when suits in law and in equity are pending at the same time, involving the same title, the equity case takes precedence in trial, even though it may have been begun at a later date. This is one of the points involved in the appeal now pending before the Supreme Court, from the decision of Judge POWERS, of Utah, in the Eureka Hill and Bullion case.

Another advantage proceeding from Judge BREWER'S decision is the opportunity which it gave a mine-owner to settle his title once for all, instead of waiting upon hostile parties who threaten, but do not actually either sue or trespass. After a proceeding such as is here indicated, and a decree of court perpetually enjoining his neighbors from interference by litigation or otherwise, a person or corporation holding a patented mining claim may rest in the comfortable assurance, not easily otherwise obtainable, of a title which not only can not be overthrown, but will not be assailed.

THE EFFECTS OF THE COPPER BOOM.

The great boom in copper is already producing fruit in stimulating the opening of new mines and the re-opening of old in every part of the world, and if prices should continue for two or three years above £60 or £65 for Chili bars, which we are given to understand is the basis of the arrangements between that intangible "French Syndicate" and the Spanish companies, there is every probability of such a goodly supply of the metal being forthcoming before the end of that time that we may then expect a recurrence under aggravated forms of the bitter experience of the past few years.

It is quite true that £39 a ton was wholly unremunerative to the majority of the copper producers, and would not secure an adequate supply for the rapidly increasing consumption which the low price induced. It is also true that the basis of £45 a ton for Chili bars would secure that supply, though it would leave many mines a quite insufficient profit to reimburse investment. An average price of £50 a ton would be highly remunerative to mines quite able to supply the markets of the world.

The effect of £75 or £80 per ton, which we are told M. EUGENE SECRETAN, of the Société des Métaux, considers a moderate price, is already bearing fruit. We hear of great Mexican mines to be promptly put into produc-

tion. We do not include the Boleo, which has made but a very poor showing, and, we fear, will always be a disappointment to its proprietary. Mr. TRIPPEL, who was long the superintendent of the Old Dominion mines, reports several deposits comparable with those of the present great Arizona producers, and which are easily opened.

Mr. Cazin promptly secured the capital necessary for working the old Ely mines, which he recently purchased, and which he reports as in condition to add materially to our supply. Other mines in the same district are being investigated with the view of working. The same is true of the Tennessee and Alabama deposits. Nova Scotia and Newfoundland are bringing out their copper bonanzas that promise much, and some of them will probably make large output when fully opened.

Some famous old mines of the Province of Quebec are on hand with their 60 per cent samples and promises of great ore-bodies. That Sudbury disappointment still promises to inundate us with copper and nickel, but the name has lost its terrors, if it ever had any, in the copper market. In the West, Colorado, Montana, Idaho, Oregon, and other States and Territories are boasting of what they can do, and even British Columbia and the region far to the north of Lake Superior are pointed at as having copper enough to supply the world.

In foreign countries we hear of an increasing output from the Spanish, the Mansfield, and the Russian mines; even Turkey proposes working some copper deposits. Japan, Australia, South Africa, South America, from everywhere, in fact, we hear of efforts to increase production.

It is scarcely necessary to say that a very heavy discount has to be made on the statements and beliefs of promoters, and those who feel alarmed should bear in mind the fact that new mines cannot be put in large production much under two years and old ones require a year for re-opening. Moreover, many of both classes will prove of little value, or incapable of producing at the £45 basis, but it is equally certain that even these will continue to produce long after the prices have become unprofitable. The probabilities are that several real bonanzas will be opened as the result of the work these high prices induce, and these good mines will continue to compete with or replace the great mines which brought the price down to £39 for Chili bars and 10 cents for Lake.

Improvements in mining and in metallurgy and greater facilities in transportation will tend steadily toward reducing the cost of production and increasing the area within which mines can be profitably operated. And, on the other hand, the high prices now ruling, should they be continued for a year or two, would very seriously check the growth of consumption of copper, so that the two effects of high prices are likely to bring about a reaction sooner than a superficial consideration of the subject might lead one to expect, and when it comes it may be such a reaction that even the reputed millions of the mythical "French syndicate" might be as incapable of resisting as were those of the great California "corner" to keep up the price of wheat.

These, however, are forecasts of the somewhat distant future; for the present and the near future the prospects are that prices will be maintained at or above present figures, for all reports agree in asserting that the syndicate has now control of the output of most of the large mines in the world, and is, therefore, in a position to make prices whatever it desires.

The arrangements in some cases are only for one year, with the option of making it three, but long before the expiration of that time we shall see clearer where we are going. Apparently manufacturers must now accept the position, and steadiness in prices will go far to compensate them for the higher cost of the metal.

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.

A Good Site for Chemical Works.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The region of Middleport and Pomeroy, Meigs County, Ohio, possesses every advantage suggested by Dr. Francis Wyatt in your issue of February 4th, for the establishment of a Leblanc alkali plant, it being the center of the salt industry of the Ohio Valley.

There would be no difficulty in obtaining sites where wells are sunk which yield a brine testing 50 degrees Beaumé, at an average rate of twenty gallons per minute, and to which coal can be delivered on trestle at a cost within 75 cents per ton, and having the Ohio River and railroad for shipping facilities. Limestone on line of railroad or river. Labor commands $1.10 a day. Nothing to suffer damage from fumes. There are several abandoned salt works, with wells already sunk, that can be had at a trifling cost.

The coal is of excellent quality. I am told that the cost of the manufacture of salt is within $2 per ton. I have no interest in either coal or salt, but consider the locality unexcelled for the manufacture of soda has.

CHAS. C. HALL, Chemist.

MIDDLEPORT, Ohio, Feb. 13.

SPECTROSCOPIC WORK ON IRON AND STEEL.

Written for the Engineering and Mining Journal by John Parry, Ebbw Vale, Wales.

Whilst fully admitting the importance and value of speculation on the primary forms of matter, and the probability that the so-called elements owe their existence to variations in the molecular grouping of the primary matter, yet it is submitted that such speculation is beyond the scope of the practical chemist or metallurgist, who knows as a matter of course that bodies of the same chemical percentage composition may possess entirely different physical properties, that under normal conditions they are unlike and will remain so.

It follows that even if it be demonstrated we have or may form different molecular groupings of the element we term iron, that to us the problem to be solved is simply the isolation and identification of these molecular groups, and their effect in varying proportions on the physical properties of iron as a whole.

The search for and determination of substances technically termed impurities in iron and steel is nearly over. We have little left for research except the iron itself. It is possible that research in this direction may furnish the clue to many as yet unresolved problems. Sorby microscopical examination of iron and steel finally concludes that the differences in the behavior of cast-iron are due to a variable mixture of the following constituents:

1. Iron free from carbon. 2. Carbon as graphite. 3. The pearly constituent. 4. The intensely hard compound of iron and carbon. 5. The small ruby or dark crystal. 6. An impure residue. As regards the purest wrought-iron and steel, these also appear to be composed of a mixture resembling the above, but in different proportions. Varieties of cast and cement steel also indicate a non-homogeneous structure. Mr. Sorby states that one can not help noticing that in the case of annealing wrought-iron and many other cases, the different constituents of manufactured iron behave like the different materials in compound rock.

Without further quotation from Mr. Sorby's paper, which must be carefully read to be appreciated, it would appear that he has indicated a new field of research.

The microscope and spectroscope render visible what is. The chemist must isolate these different compounds seemingly as a whole forming iron or steel; or finally, as before said, we want an addition to elementary proximate analyses of manufactured metal.

DECEMBER, 1881, ANALYSIS OF PIG-IRON, SPIEGEL AND STEEL FROM STEEL WORKS.

Date.		Silicon.	Phos.	Sulp.	Mang.	Carb.	Oxide of iron.	Heated almost over heat.
14 (1)	Steel ingot	0·032	0·095	0·057	0·720	0·300	0·532	FeO ·200
15 (2)	Pig	2·560	0·105	.....	.....	.....	.....	.....
	Spiegel	0·505	0·250	.....	13·500	.....	.....	.....
	Steel	0·070	0·136	0·057	00·720	0·370	0·600	.....
16 (3)	Pig	2·870	0·091	.....	.....	.....	.....	.....
	Spiegel	1·320	0·220	.....	16·000	.....	.....	.....
	Steel	0·040	0·152	0·030	00·870	0·300	2·200	.....
17 (4)	Pig	2·300	0·120	.....	.....	.....	.....	.....
	Spiegel	1·100	0·210	.....	19·500	.....	.....	.....
	Steel	0·260	Lost	0·122	00·720	0·530	0·730	.....
21 (5)	Pig	2·350	0·126	.....	.....	.....	.....	.....
	Spiegel	1·090	0·204	.....	19·250	.....	.....	.....
	Steel	0·090	0·156	0·062	00·790	0·330	0·400	FeO 32 (fair heat).
22 (6)	Pig	3·300	0·089	.....	.....	.....	.....	.....
	Spiegel	0·900	0·170	.....	18·250	.....	.....	.....
	Steel	0·065	0·120	0·038	0·650	0·500	1·460	.....
23 (7)	Pig	2·160	0·109	.....	.....	.....	.....	.....
	Spiegel	1·000	0·187	.....	19·500	.....	.....	.....
	Steel	0·023	0·105	0·050	00·720	0·370	0·240	.....
30 (8)	Pig	2·160	0·081	.....	.....	.....	.....	.....
	Spiegel	0·630	0·180	.....	18·500	.....	.....	.....
	Steel	0·060	0·075	0·040	00·790	0·500	0·540	.....

The ingots from 1 to 8 carefully heated; heat moderate, all rolled well into ⅝ bars. Again reheated and rolled at higher heat.
No. 1.—Overheated hot bar broke when thrown down, but rolled out fairly.
No. 2.—Good heat rolled well. Engine medium speed.
No. 3.—Fair (rather hot) heat rolled well. Engine slow rolled at finish.
No. 4.—Too hot, but rolled fairly on being allowed to cool.
No. 5.—Very hot, but not burnt; broken in two; half rolled fairly.
No. 6.—Fair heat; rolled well; engine slow.
No. 7.—Very hot, but not burnt; broke in two; half rolled pretty well.
No. 8.—Good heat; rolled well; engine medium speed.

A Liliputian Locomotive.—The locomotive works of Messrs. Krauss & Co., München, have recently delivered an engine which is an interesting production both on account of its destination and construction. The locomotive (together with a carriage and a kilometer of portable railway) is a present from the King of the Belgians to the Sultan of Morocco. As all material has to be transported on the back of camels from the port of Mogador to the capital, the several parts had not to exceed a certain weight. The railway is on the Decauville system, has a gauge of 60 centimetres, and rails weighing 6 kilogrammes per meter run, a piece of track 5 meters long weighing only 80 kilogrammes. The heaviest pieces of the engine—that is to say, frame and boiler—weigh only 300 kilogrammes each. The carriage resembles a tramcar, has seats for twelve persons, and its frame weighs 200 kilogrammes. The engine develops a power of about four horses, and, with half a load, attains a speed of of 14·4 kilometers per hour. It is a four-wheeled tender locomotive, and, in order to combine lightness with durability, is largely constructed of phosphor-bronze and steel, the cylinders, pistons, rods, and all bearings being of the former metal. As the fuel to be employed is wood, a relatively large fire-box and an American spark catcher are provided. The principal dimensions of the engine are: Diameter of cylinders, 80 millimeters; stroke of piston, 160 millimeters; diameter of wheels, 390 millimeters; distance between axles, 700 millimeters; heating surface, 1·91 square meter; hearth surface, 0·14 square meter; steam pressure in boiler, 12 atmospheres; boiler water, 50 liters; space for feed water, 140 liters; space for wood, 180 liters; weight of engine empty, 1100 kilogrammes; weight of machine loaded, 1400 kilogrammes. The pigmean locomotive has been named the "Occident," which is inscribed on it in Arabic letters.

THE GREAT BLAST-FURNACE RECORD OF THE UNION STEEL COMPANY.

The *Bulletin* of the American Iron and Steel Association gives the following particulars concerning the work of the Union Steel Company's furnace No. 2, at Chicago, under the superintendence of Mr. C. H. Foote. The record is magnificent and reflects the greatest credit on the management. We believe the fuel consumption per ton of pig-iron produced is the lowest yet recorded.

The dimensions of the furnace are as follows: Total height, 72 feet; height under hopper, 68 feet; diameter at bosh line, 14 feet; diameter at stock line, 9½ feet; diameter at hearth, 8½ feet; size of bell, 5 feet; number of tuyeres, 6; height of tuyeres, 6 feet; size of tuyeres, 5½ inches; stock contents of furnace, 6676 cubic feet. There are two 18 feet 6 inches by 75 feet Cowper stoves with Kennedy brick. The engine is one Cuyahoga steam cylinder, 38 inches by 54 inches; air cylinder, 84 inches by 54 inches; air per revolution, 346 cubic feet.

Time.	Stock record.				Blast record.		
	Product.	Stock for 2,240 pounds of iron.			Pressure.	Temp.	Cu. ft. air per ton iron.
	No. 1 pig.	Coke.	Stone.	Ore.*			
1887.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.		
September	7,071,510	1,768	693	3,578	4½	1,087°	131,109
October	8,109,780	1,728	629	3,576	4⅞	1,098°	118,946
November	7,489,860	1,757	632	3,635	4½	1,069°	121,270
December	7,779,840	1,809	696	3,701			

Average yield of ore—September, October, November—62·3 per cent iron.
Average product per week, 786·3 tons. Product per day for 1000 cu. ft. of furnace contents, 117·8 tons.

In the three months mentioned the ore used amounted to 36,396,000 pounds, of which 9,128,700 pounds were Iron King ore; 2,867,925 pounds were Cambria; 3,572,175 pounds were Ludington; 11,728,200 pounds were Angeline, and 9,199,000 pounds were Minnesota ore. The composition of these ores is given in the following table:

LABORATORY RECORD—ORES DRIED AT 212 DEGREES.

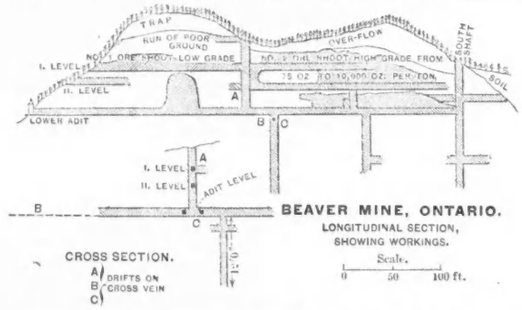
MATERIAL.	Ash.	Sulphur.	Silica.	$Al+Fe_2O_3$.	Calc. carb.	Magnesic carb.	Phosphorus.	Water.	Iron.
Connel'sville coke	10·21	·90	.....	.....	.....	.....	.....	.....	.....
Limestone	.....	·031	·42	2·77	54·29	42·07	·003	.....	.....
Minnesota ore	.....	.....	3·99	.....	.....	.....	·057	4·50	65·16
Angeline ore	.....	.....	3·80	.....	.....	.....	·050	11·88	64·46
Ludington ore	.....	.....	2·07	.....	.....	.....	·030	7·71	67·15
Cambria ore	.....	.....	11·74	.....	.....	.....	·039	12·15	57·57
Iron King ore	.....	.....	5·21	.....	.....	.....	·027	13·63	61·58
Furnace slag	.....	.....	35·40	17·24	29·08	16·98	.....	.....	.....
Pig-iron	.....	·033	.....	.....	.....	.....	.....	.....	.....

THE BEAVER MINE, ONTARIO, CANADA.

Written for the Engineering and Mining Journal by Charles Brent, M. E.

In view of the very considerable amount of interest taken during the past year in the mines of this district, a few notes upon the richest and most promising of these may prove of interest to some of the readers of your valuable journal.

The history of mining on the north shore of Lake Superior has been to a lamentable extent a history of mismanagement, of reckless expenditure, of want of backbone and—of failure. Notwithstanding the brilliant success of Silver Islet, a success that should have lasted to the present time,



and the encouragement meeting the explorer and miner at every step, the district seemed until lately dead and forgotten. A series of brilliant discoveries during the past two years, coupled with intelligent management and development, and backed by capital and grit has, however, resurrected the country and galvanized it into a new and most promising life. These new mines are situated in the valley of the Whitefish River, a tributary of the Raministiquia, about 25 miles from Port Arthur. The country presents a series of flat-topped hills separated by wide valleys, formed of horizontal slates belonging to the Animikie series of Cambrian age, which are traversed by dikes of greenstone trap, and capped by overflows of the same material. The Beaver vein cuts one of these flat-topped hills rising about 200 feet above the plain, and consisting of Animikie slates with a cap of about 40 feet of trap.

The vein occupies a well-defined fault fissure running in a general northeasterly direction with a slight dip to the west. The vein stuff consists mainly of quartz and calcite with smaller quantities of fluorite and barite and a good deal of a curious hydrous magnesium silicate of the consistence and feel of soap, locally termed "grease." Associated with the "grease" are flakes and sheets of asbestos and nuggets of silver glance. Disseminated through this gangue occur pyrites, blende, galena argentite and native silver, the latter indeed in such quantities at times that drilling is difficult and almost impossible. The ore is taken from the mine to a sorting house, where the richer portions are picked out and barreled for shipment. The remainder is sent to the mill. An assay of everal tons of high-grade stuff picked out last week gave 8661 ounces per ton. The average of the stuff sent to the mill for the last month exceeds 100 ounces.

The mining plant consists of a compressor and four drills, two hoists with pumps, and other accessories, a first-class machine shop, and well-equipped saw-mill.

The ore is sent down to the mill situated on Silver Creek over a tramway about a quarter of a mile long.

The milling plant consists of a crusher, 10-stamp battery, 4 Frue vanners, a Golden Gate concentrator (not used), settling tanks, 6 pans with settlers, and agitator. About 25 tons a day are crushed, producing from 1000 to 2000 pounds of concentrates of an average value of 1500 ounces. About 90 per cent of the contained value is obtained in concentrates. The tailings are amalgamated, and about 60 per cent of their value is saved.

The building for an additional 10 stamps has been erected, and these will be placed in position as soon as practicable, with accessory vanners, pans, etc.

The accompanying rough sketch will convey an idea of the amount of work done up to the present time.

BEAVER MINE, Jan. 16, 1888.

OFFICIAL REPORTS.

The Horn-Silver Mining Company's Report for 1887.

The scandal which has grown up about the management of the Horn-Silver Mining Company, of Utah, for the past few years led recently to the election to the board of two members, Mr. A. C. Washington and Mr. B. Mc.E. Whitlock, whose special duty it was to investigate and make public the actual condition of the company's affairs, and, if possible, to recover for the stockholders a large amount of money which had been misappropriated by some of their trustees.

The columns of the ENGINEERING AND MINING JOURNAL have kept the public informed upon the results of the investigations. The present report, which is the first since the appointment of these gentlemen to the board, gives a little more information. It is, however, far from embodying all that the directors should give to their stockholders, or all that we had expected; but it is supplemented by a statement from Messrs. Washington and Whitlock, and which we published in the ENGINEERING AND MINING JOURNAL last week (page 120), in which they apologize for the meagerness of the information concerning the missing $650,000 by saying that fuller information might interfere with negotiations now going on through which it is hoped to realize something for the benefit of the stockholders.

The accompanying financial statement shows all that the directors are willing to publish at present. In the report of the secretary it is stated that of the $640,000 due to the company (which it is generally understood was borrowed without security by Mr. Charles G. Francklyn, the President), $107,000 "had been clearly expended for the benefit of the company." Elsewhere in the report we find that this $107,000, or, to be exact, $107,337.50, was for railroad iron purchased in 1880, and charged to general expense. It is drawing very heavily upon the credulity of stockholders to ask them to believe that an item of $107,000 should have been overlooked during the past seven years, or have been paid out carelessly by the president, without having been charged up to the company. We think a good deal more explanation than the mere statement we have quoted is needed to satisfy the stockholders that it "has been clearly expended for the benefit of the company."

Beyond this, it appears that the new directors have been able to get some kind of security for $80,000 of the amount misappropriated. There is no explanation whatever made as to the security for $456,855, unless it be the statement in the Secretary's report that "the company holds as security for its final reimbursement valuable property upon which every effort has been made to realize." Whether this sentence refers to the $80,000 or the $456,000 is not quite clear. There evidently was a gross violation of trust on the part of President Francklyn, and we think the stockholders are entitled to more information concerning the recovery of the missing moneys and the punishment of the unfaithful trustee than is given in this report.

Manager H. C. Hill reports that a good deal of dead work has been done in the mine, and ore to the value of $104,858.73 has been sold, and almost the whole of this sum has been expended for labor and supplies. Most of the ore appears to be from the upper levels and old stopes, while the bottom levels are unsatisfactory. Manager Hill says that the prospecting has thus far found no large bodies of ore. In the lower levels the ore becomes poorer and contains less lead, so that it is unprofitable to mine it. The average value of the ore sold was only $29.42 per ton. The expenses in many departments were very heavy. Thus the New York expenses amounted to $20,530, and of which $8000 was for salaries and clerk hire, and the general expense at the mines was something over $19,000. Say $40,000 for management ! !

On the whole, it seems to us that Messrs. Washington and Whitlock have a good deal to do before the company's management will satisfy the stockholders.

We would also commend to them the investigation of the scandal connected with the selling out of the material in the Chicago Refining Works, which it is currently reported was a "job." No explanation whatever has been given concerning this important item.

The Secretary, Wm. F. Van Pelt, reports as follows:

"I herewith submit for your inspection statement showing our financial transactions for the year ending December 31st, 1887. The present Board of Directors elected at the annual meeting of shareholders, held at Frisco, Utah, October 4th, 1887, found upon examination of the affairs of the company that there were amounts due to the company to the extent of about $640,000. A portion of this sum, or about $107,000, had been clearly expended for the benefit of the company, and was therefore charged off. In addition, about $34,000 in cash, and $80,000 in notes, secured upon real estate, has been paid into the treasury of the company. The company holds as security for its final reimbursement valuable property upon which every effort is being made to realize. The present Board of Directors is making every effort to enforce immediate and complete reimbursement of the company. With the year beginning October 1st, 1887, the expenses of the New York office will be largely reduced. The large expenditures for the year 1887 were not all

incurred during said year, but arise largely from the settlement of claims of counsel employed in the tax and other suits against the company.

Mine Work in the Year 1887.—On hand January 1st, 1887, 158·05 gross tons; extracted, 3317·15; total, 3476. On hand January 1st, 1888, 155·14; average value per ton, $29.42; 3906 pit cars ore hoisted; 7733½ days' work on ore extraction, 2565½ days' work on dead work (888·8 feet of drifts and cross-cuts), 2910 days' work on ore surface, 580 days' work on ore contract, 60,884 feet timber and 73,756 feet plank received, 8 railroad cars stone coal (105·25 tons), 260 railroad cars H. S. ore shipped, 84 railroad tanks water received.

Roasted matte, 488,573 pounds, $16.50, $4030.72; unroasted matte, screenings and flue dust, for $1000; barrings, waste heaps, etc., for $500; total, $5530.72.

Receipts, 1887.

January 1. Balance from last report	$657,574.69
Chicago refinery: Sale of silver not reported in 1886 account, $1115.73; sale of supplies not reported in 1886 account, $468 22; sale of old iron, 1887, $8	1,591 95
Ore sales: gross sales for year, $104,858.73; less freights, etc., $16,478.92	88,379.81
Matte sales, flue dust, etc., for year	5,530 72
Works and plant at Francklyn: Sale of four oxen, $160; building rock, $32	192 00
Store at Frisco: Balance due account supplies	9.36
Interest account: On amounts due company, for year	35,544.08
Total	$788,904.61
Payments—Mining: Labor, supplies, timbering, dead work and expenses	$58,837.91
Smelting: Labor, supplies, etc	2,097.97
General expense: Manager, clerk, etc., Frisco and Salt Lake	19,136.36
Exchange: On money transfers	36.00
Chicago refinery: Insurance premiums, $888.86; taxes on real estate, $526.87	1,415 73
New York office: Printing and stationery, $203.36; salaries and clerk hire, $8035.02; legal expenses, $7606.44; general and office expenses, $308.96; registration of stock, $400; rent, $2600; taxes, 1886 and 1887, $1376.71	20,530.49
Total working expenses for year	$102,054.46
Outstanding amounts: Due to company	456,855.61
General expense: Payment in 1880 for R. R. iron for completion of railroad	107,337.50
Bills receivable: Notes held by company, secured by lien on real estate	80,000.00
Suspense account: Payments at Frisco not yet classified	340.01
Supplies on hand: At Chicago refinery, Frisco and Francklyn, sundry material	8,674.73
Cash on hand	33,642.30
	$788,904.61

Other assets in addition to the mine paid for from previous earnings of mine and cost charged off: Works and plant at Francklyn, $179,016.64; hoisting works at mine, $52,134.12; refinery at Chicago, $68,436.04; real estate at Frisco, $34,755.54; total, $334,342.34."

Report of the Lehigh & Wilkes-Barre Coal Company.

We publish herewith extracts from the report of this company for the year 1887.

As announced in this journal last week, Mr. Wm. H. Tillinghast, the President, will shortly retire from the company and there will be a general reorganization, bringing the coal company under the management of theofficers of the Central Railroad of New Jersey, which holds a large majority of its stock.

In reviewing the results of the last year's work, it seems fitting to call attention to the services rendered by Mr. Tillinghast—services which have been disagreable and thankless, from the fact that no satisfactory results could be expected for the stockholders, the company being loaded down with bonds and simply used to supply freight to the railroad that controls it.

If the coal company had been permitted to gets its transportation from any of the roads that can reach its mines, it would no doubt have made a still better exhibit. Nevertheless this report shows the administration of the company to have been able, economical and honest, as indeed was to be expected of Mr. Tillinghast, whose whole record has been marked by thoughtful consideration for his employés, unfailing courtesy to all with whom he came in contact, and the strictest probity and high sense of honor in all business transactions.

The cost of mining coal averaged the company $1.20¼ cents per ton, which is an exceedingly low figure even exclusive of royalty.

Though a large part of the company's coal was delivered at various points between the mines and tide-water, the average freights still amounted to $1.23 per ton on the entire amount moved.

LEHIGH & WILKES-BARRE COAL COMPANY STATEMENT OF BUSINESS FOR THE YEAR ENDING DECEMBER 31ST, 1887.

Coal on hand December 31st, 1886, 105,421 tons	$311,146.60
Mining coal	3,036,967.63
Coal purchased	270,060.79
Tunnels, second openings and new work	193,477.97
Royalty on coal mined	248,360.24
Transportation	3,259,814 67
Harbor and coast freights	117,792.79
Shipping, Fort Johnston	186,570.83
Pier rent, Port Johnston	60,000.00
Newark yard	17,335 61
Eastern wharves, Mystic, Salem, etc	31,649.09
Salaries, rent, legal and other expenses	69,710.36
Taxes	70,994.26
Insurance	15,611.81
Interest	680,983.34
Charges for sinking fund	269,922.91
Balance	605,679.71
	$9,446,078.01
Received from sales of coal	9,135,806.10
Received from coal leases	140,862.12
Rents	85,973.87
Less expended for buildings and repairs	37,126.09
Barge earnings	12,555.88
Interest	9,090.63
Miscellaneous	23,108.00
Coal on hand, 22,600 tons	75,807.50
	$9,446,078.01

CONDENSED BALANCE SHEET LEHIGH & WILKES-BARRE COAL CO. FOR THE YEAR ENDING DECEMBER 31ST, 1887.

Coal lands and other real estate	$23,061,246.23
Mining improvents, railroad and equipment	3,461,953.30
Balance due on town lots sold, piers, etc	118,325.31
Personal property	547,253.62
Barges, New York Harbor	45,000 00
Paid for coal to be mined in the future	810,739.19
Cash deposited with trustees for purchase of L. C. & N. Co. bonds, 1894	144,851.32
Coal on hand, tide, Eastern wharves, etc	75,807 50
Bonds, mortgages and other securities owned by company	184,622.00
Bills and accounts receivable	1,056,527.06
Cash	227,377.06
	$29,733,702 59
Capital stock	$10,000,000.00
Less owned by the company	1,300,000 00
Mortgage debt:	
W. B. C. & I. Co., 1892	20,000.00
Lehigh Coal & Nav. Co., loan, 1894 (in hands of trustees for further reduction of this loan, $144,851.32)	685,500.00
Lehigh Coal & Nav. Co., loan, 1897 (for above three mortgages sterling bonds are deposited with Fidelity Co)	500,000.00
Sterling loan of 1899 issued	1,673,000 00
Sundry mortgages on property acquired previous to consolidated loan	259,968.74
Consolidated loan, 1900	5,384,000.00
Balance due on Nottingham colliery and other mortgage indebtedness	331,711.01
Income bonds issued for funding consolidated coupons (interest earned and paid)	1,119,300.00
Bonds owned by C. R. R. Co. of N. J., consolidated loan, 1900 (interest payable if earned)	6,116,000.00
Income bonds do do	2,353,000.00
Transportation, mining supplies, etc, for December (since paid)	718,620.31
Accounts payable, royalties, etc	64,388 68
Coupons matured and due January 1st	17,965.00
Interest (accrued not yet due)	80,748.72
Breaker insurance fund	57,578.42
Set aside for unsettled claims	8,528.13
Sinking funds for payment of mortgage debt	312,213.11
Balance	1,331,150 47
	$29,733,702.59

Coal purchased cost an average of $2.05 per ton, and the average receipts for all coal sold was $3.34 per ton. Perhaps the best proof of the economy of the administration is found in the item of "salaries, rent, legal and other expenses," and which we presume includes all the cost of selling that amounted to only 2½ cents per ton on the coal sold.

The care with which the business was conducted is evidenced in the fact that on sales of coal aggregating over nine million dollars, there was not a single loss, even of a cent, through bad debts. This record is, we believe, unrivaled, and it reflects the very highest credit upon Mr. John A. Wilson, who has for many years acted as the general sales agent of the company. The net profit to the company on its coal business appears to have been about 57 cents a ton on the coal sold.

THE MINING SHARE MARKET.

From our London Correspondent.

Since I last wrote, the mining market has been uneventful, except from its copper side. The business in copper shares continues to be enormous, and despite the fall in the metal to the extent of nearly £10 per ton, the fondness of the public for this class of security knows no abatement. To give your readers a clear idea of the extent to which this rise has gone, I may mention a few facts in connection with the five principal ore-producing companies.

	Paid up. £	Value, Oct. £	Value, Jan. £	Rise. £
Rio Tinto	3,250.000	2,437,500	6,500 000	4,062,500
Mason and Barry	1,851,640	1,111,000	2,222,0.0	1,111,000
Tharsis	1,174,660	1,761,000	2,52 ,000	761,000
Cape Copper	160,000	490 000	980,000	490,000
Panulcillo	200,000	100,000	350,000	250,000
Total	6,636,300	5,899,500	12,574,000	6 674,500

A broker in the Stock Exchange the other day offered to buy 10,000 Cape Copper shares at £51½, and the only response was twenty shares. This will give an idea of the firmness with which these shares are held and of the faith there is in their immediate future.

The profits of the syndicate are from two sources: First and foremost, from trafficing in the shares, and next from holding stocks for the rise. They are said to hold 100,000 shares in Rio Tinto, and as for stocks of copper, when they wish to frighten a big company into the syndicate, they make sales and force the price down, and that is just what they have now done. All depends upon the strength of the syndicate to carry out their engagements. Copper is now £75 5s. per ton; tin, £166 15s.; and lead, £14 15s.

The resignation of Captain Plummer is the important event with regard to Indian gold mines. It has knocked down the shares. Who is Captain Plummer? When Indian gold mining was on its last financial legs; when there was no one who would say a good word in its favor, Captain Plummer, who had been previously manager of the Nundydroog, said it would be a great success if it had a fair trial. At that time the Nundydroog had stopped working, and the funds of the other Indian gold mines being for the most part exhausted, they had either gone into liquidation or were in the comatose state that precedes it. The fate of this industry depended literally and truly upon an unexpended balance of £13,000, possessed by the Mysore Company. It was a question with the shareholders whether they would divide this or whether they would make one last effort to save the mine. The latter course was resolved upon and Captain Plummer was sent out to see what he could do. The Mysore shares were then about 2 shillings 6 pence each. Captain Plummer had not been on the spot more than eighteen months or two years before they were £9 10 shillings, and before nearly all the companies were resuscitated on the reconstruction principle, and thus it happens that Indian gold mining is to-day a busy industry.

Latterly the Mysore shareholders have become dissatisfied with Captain Plummer because it is thought he is not amenable to instructions and because the progress of sinking the shafts, etc., is miserably slow. Rightly or wrongly they think that new blood will move matters forward more quickly, and though not unmindful of the services of Captain

Plummer, in many quarters his resignation of the management of the Mysore and Nundydroog mines will be received with relief. Some point is given to the complaint of dilatoriness by the fact that although Captain Plummer has now had the control for about five years, the deepest shaft is not down much more than 400 feet. It remains to be seen whether another manager, with the same labor at his disposal—a mixture of Englishmen, Italians and Coolies—will do any better. If not, then Capt. Plummer's justification will be complete.

We have just had the fortnightly settlement, and every thing has passed off satisfactorily. The volume of business was of about the average amount. With the exception of copper shares, the market has been dull and Queensland descriptions have been neglected.

From American mines there is a scarcity of news, but this is attributed to the fearful weather through which you have passed. It may interest some of your readers to know that there are nine Venezuelan mines worked from Europe (nearly all of them from England) and that their total capital is over £8,000,000.

ROMAN MINING TOOLS 1600 YEARS OLD.

By Philip Argall.

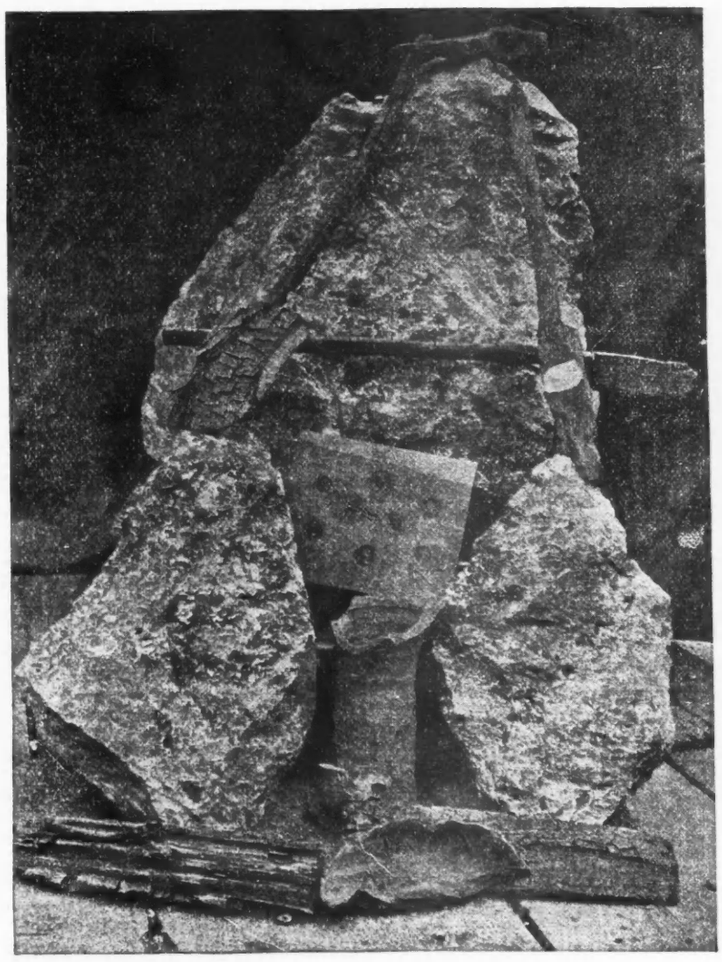
Having seen many Roman workings and remains during professional isits to European mining districts, I was very much interested in the description of the old Roman wheel of the Rio Tinto mines, in a recent issue of THE ENGINEERING AND MINING JOURNAL, of 31st December, 1887.

Last spring I visited some of the principal silver lead mines of central France. Tradition stated many of them had been worked by the Romans and some by the English of the 13th century.

About 80 kilometers from Alby, the capital of beautiful and romantic *Tarn*, a mine has recently been opened, now called Dadaw mine. One of the lodes was discovered to have been worked extensively by the Romans. The management had all the finds of tools, pottery, etc., carefully preserved, while the coins were sent to Paris and examined by experts, who reported them to belong to the following reigns: Augustus, B. C. 24; Nero, A D. 54 to 68; Domitian, A. D. 81 to 96; Antoninus Pius, A. D. 138 to 161; Gordian, A. D. 238 to 244; Maximian, A. D. 310; Gallienus, 253 to 268; Constantine, 306 to 361.

From the foregoing it would appear that the Dadaw mines were worked by the Romans 1900 years ago and they conducted mining there for nearly 400 years. At the time of my visit three large blocks of argentiferous galena had just been extracted from a recent strike on the "old Roman lode;" they were intended for display at the Toulouse exposition. I had some of the more interesting Roman remains grouped on these stones and took a photograph of them. On the left of photo is seen an oak shovel almost perfect; on the right the handles and part of blades of two other oak shovels; in the center are the coins fixed in a board; at the bottom a vase, a gourd shaped piece of oak used for bailing water, and two other pieces of decayed oak. The iron pick surmounting the whole was found with some of the remains, but is evidently of more recent date. The oak tools were mostly decayed on the outside; the hearts, however, were in every case perfectly sound.

LEADVILLE, Colo.



ROMAN MINING TOOLS.

A NEW OCCURRENCE OF GERMANIUM.

By Prof. W. B. Phillips.

The report in the *Chemiker Zeitung*, Vol. XI., No. 104, of the meeting of the Chemical Society of Munich, held December 16th, 1887, is of more than usual interest. Gerhard Krüss communicated to the society that he had found germanium in euxenite. Since Winkler, in 1885, discovered this new metal in argyrodite, from the Heimmelsfürst mine, near Freiberg, it has not been observed in any other mineral. In the *Chemiker Zeitung*, of February 17th, 1886, Vol. X., No. 14, appeared one of the first public notices of the discovery of germanium in the mineral "argyrodite," discovered and named by A. Weisbach. In the *Chemiker Zeitung* of February 24th, 1886, was given an analysis of argyrodite: Silver, 73–75 per cent; sulphur, 17–18 per cent; mercury, 0.21 per cent; iron, small quantity; arsenic, trace. In addition there was 6 to 7 per cent of a new substance, found by Winkler to be a new metal and named by him "Germanium." Since then numerous publications have been made describing the metal, its oxides, sulphides, chlorides, etc., but it has not been found in any other mineral nor in any other locality. The supply of the 6 to 7 per cent germanium ore soon gave out, and now a "germanium regulus" is prepared from a 0·3 per cent ore and offered for sale. Euxenite, the new source of germanium, is a titanate and niobate of yttrium.

Rammelsberg (Naumann-Zirkel, Elemente der Mineralogie, 12 ed. Leipzig, 1885, p. 749) found in a variety from Alvo, near Arendal:

	Per cent.		Per cent.
Niobic acid	35·09	Cerous oxide	3·17
Titanic acid	21·16	Ferrous oxide	1·38
Yttria	27·48	Water	2·63
Erbia	3·40		
Uranium dioxide	4·78		99·09

It is not stated whence Krüss obtained the specimen containing germanium, but it contained only a few tenths of a per cent of the metal. The metal is considered to be accompanied by titanium, so Kiesewetter is investigating other titanium minerals, rutile, yttrotitanite, wohlerite, polycrase, etc. We shall await his results with interest.

UNITED STATES IMPORTS AND EXPORTS IN 1886 AND 1887.

ARTICLES.	IMPORTS OF MERCHANDISE.				EXPORTS OF FOREIGN MERCHANDISE.			
	Quantities.		Values.		Quantities.		Values.	
	1887.	1886.	1887.	1886.	1887.	1886.	1887.	1886.
Free of Duty:								
Asphaltum, crude, lbs	62,216,885	65,129,889	$97,377	$108,528	170,518	638,157	$3,995	$8,051
Chemicals—Lime, chloride of, lbs	103,086,679	101,974,620	1,686,742	1,418,023	15,000	14,919	315	511
Potash, muriate of, lbs	40,891,063	47,062,964	597,588	723,010	.....	.....	.....	.....
Soda, nitrate of, lbs	163,776,049	139,381,066	2,253,806	2,373,068	6,331,161	36,598	136,753	2,325
Sulphur or brimstone, crude, tons	90,703	101,644	1,461,056	1,862,044	20	9	400	181
Diamonds, uncut, including glaziers	.....	.....	286,072	300,226	4,000	18,250	800	2,506
Fertilizers—Guano, tons	10,195	13,344	252,265	302,154	.....	.....	.....	.....
Phosphates for fertilizing, tons	24,197	30,837	206,933	310,413	140	15	2,320	295
All other	.....	.....	792,620	1,447,336	.....	.....	.....	1,821
Ores—Gold-bearing	.....	.....	14,028	654	.....	.....	.....	.....
Silver-bearing	.....	.....	4,228,107	2,534,949	.....	.....	606	.....
Plaster of Paris, unground, tons	133,061	141,600	147,228	150,586	.....	.....	.....	.....
Platinum, unmanufactured, lbs.	5,277	3,511	508,716	373,941	189	.....	22,800	.....
Plumbago, cwts	187,161	119,428	376,554	231,692	.....	.....	.....	.....
Tins, bars, blocks or pigs, grain, lbs.	29,344,553	29,531,355	6,921,948	6,728,908	368,660	151,868	100,980	32,886
Dutiable:								
Brass, and manufactures of	.....	.....	378,290	410,967	585	.....	10,163	2,183
Cement, barrels	1,506,721	916,152	1,469,183	963,225	9,878	8,502	12,065	11,511
Chemicals—Potash, nitrate of, lbs	9,601,381	10,132,805	264,560	278,859	369,251	.....	10,435	.....
Soda, bicarbonate of, lbs	1,803,183	3,417,803	31,603	59,967	45,498	67,115	646	1,100
Soda, carbonate, sal soda and soda ash, lbs	280,777,383	301,963,864	2,843,892	3,244,700	39,302	184,901	542	2,213
Soda, caustic, lbs	89,162,856	79,746,941	1,651,337	1,553,158	1,237,905	1,189,023	24,383	24,242
Soda, all other salts of	16,171,130	10,593,681	51,665	40,770	.....	24,470	.....	286
Clays, including kaoline, tons	42,497	32,504	293,439	261,504	1	28	13	277
Coal, bituminous, tons	850,331	861,021	2,620,975	2,545,879	176	7,226	1,997	24,402
Copper—Ore (fine copper contained therein), lbs	3,935,432	4,795,050	199,696	346,781	48,724	215,288	4,890	22,189
Figs, bars, ingots, old, and unmanufactured, lbs	212,539	531,789	15,086	40,381	900,459	82,768	94,145	5,831
Manufactures of	.....	.....	107,100	126,722	.....	.....	12,094	8,063
Earthen, stone and china-ware	.....	.....	6,138,769	5,402,524	.....	.....	14,759	17,718
Glass and glass-ware	.....	.....	7,687,051	6,757,108	.....	.....	26,878	11,471
Iron and steel, and manufactures of	.....	.....	56,420,540	41,630,779	.....	.....	149,808	242,702
Jewelry, of gold, silver and precious stones	.....	.....	11,684,830	10,203,152	.....	.....	27,095	59,639
Lead, and manufactures of	.....	.....	608,165	1,661,617	.....	.....	286,229	478,077
Marble, stone and manufactures of	.....	.....	901,657	965,268	.....	.....	3,738	2,251
Metals, compositions and manufactures of, n.e.s.—								
Bronze manufactures	.....	.....	814,626	782,890	.....	.....	1,597	1,631
All other	.....	.....	2,277,401	2,157,185	.....	.....	48,716	46,145
Mineral substances, n.e.s.	.....	.....	145,325	191,233	.....	.....	.....	.....
Salt, lbs.	712,444,637	792,937,313	1,267,111	1,450,634	1,756,010	1,939,451	3,276	3,269
Zinc—Spelter, and manufactures of in blocks, pigs and old	9,517,070	4,791,521	309,744	150,101	13,495	1,455	175	59
Manufactures of	.....	.....	44,703	48,278	.....	.....	18	427

EXPORTS OF DOMESTIC MERCHANDISE IN 1886 AND 1887.

Articles.	Quantities.		Values.	
	1887.	1886.	1887.	1886.
Brass, and manufactures of	.....	.....	$275,919	$183,686
Bricks	.....	.....	80,543	104,724
Chemicals: Acids	.....	.....	97,946	100,313
Ashes, pot and pearl, lbs	947,024	572,159	39,163	28,681
Coal: Anthracite, tons	825,486	667,076	3,469,166	2,713,143
Bituminous, tons	706,364	544,768	2,001,966	1,440,631
Copper: Ore, tons	25,064	20,876	2,774,464	2,341,164
Ingots, bars, and old, lbs	12,347,507	19,504,087	1,323,260	1,960,189
Sheets, lbs	123,886	49,331	24,668	8,583
All other manufactures of	.....	.....	92,064	76,386
Fertilizers, tons	221,272	170,032	1,405,501	1,090,715
Gunpowder and other explosives	.....	.....	482,949	486,319
Iron, steel, and manufactures of	.....	.....	16,235,922	14,865,087
Jewelry, and manufactures of gold and silver	.....	.....	463,950	428,326
Lead, and manufactures of	.....	.....	140,065	136,666
Lime and cement, bbls	63,500	83,247	97,771	123,684
Marble, slate and stone, and manufactures of	.....	.....	541,932	593,728
Mineral oils: Crude, galls	80,650,286	76,346,480	5,141,833	5,068,409
Refined	.....	.....	41,757,009	43,076,795
Ore, gold and and silver bearing	.....	.....	87,604	56,731
Paints and painters' colors	.....	.....	497,470	401,060
Parraffine and parr. wax, lbs	33,135,398	27,441,126	2,018,601	1,843,604
Quicksilver, lbs.	895,413	477,332	455,790	210,853
Salt, lbs	4,685,680	4,828,863	27,213	29,580
Tin, manufactures of	.....	.....	172,531	151,555
Zinc, and manufactures of:				
Ore or oxide, tons	235	1,331	17,286	49,455
Pig, bars, plates and sheets, lbs	136,670	917,229	9,017	75,192
All other manufactures of	.....	.....	16,789	13,526

MODERN AMERICAN METHODS OF COPPER SMELTING.

Bulletin des Mines, of Paris, France, in its issue of January 14th, says: "The review of the book, 'Modern American Methods of Copper Smelting,' which we present to our readers, is not for the general public. It is addressed especially to metallurgists, but chemists, assayers, smelters, and copper mine owners will certainly find it to their interest to consult it.

"In American methods, Mr. Peters not only gives the different processes of smelting the compositions for the mixing floors, cost of smelting, dispositions and cost of furnaces, but also gives the different kind of ores, their deposits, the best methods to adopt to treat each different kind of copper ore. "Mr. Peters's book embraces, in fourteen different chapters, the general metallurgy of copper as practiced to-day in the United States.

"Let us hope that ere long we shall have a translation in French of this remarkable book."

The *Revista Minera, Metallurgica de Ingenieria* of Madrid, Spain, in a recent issue says: "We have read with pleasure this work, in which we find such a condensation of data and information that we are certain the author knows about the subject he treats much more than he tells us, and that he could easily have made the present volume three times its size without detracting from its interest. This is a volume which ought to be in the library of all those who interest themselves in copper production, as it contains a multitude of data and of new and original ideas.

We confess to our mistake in having begun to study this volume at the last chapter, which treats of the Bessemer system, as applied to copper products, which, many of our readers will remember, was exhibited at the Mining Exhibition in Madrid, in the large hall. Seeing that the author treated of it in his volume, we could not conquer our impatience to see what he said about it. We saw with pleasure that Mr. Peters recognizes the importance which we have always supposed it has, and he admits as the best practice that of using multpile converters to treat mattes of from 20 to 60 per cent. thus producing with a set of converters metallic copper of 99 per cent.

It is a pity that books having such importance as this one can not be translated and printed in Spanish for want of a ready sale; but if a French edition be published, it will be more useful to Spanish readers than the original English edition.

Carbonite, the flameless explosive that has been found safe even in an atmosphere of fire-damp, is manufactured by Schmidt & Bichel, at Schlebusch, Westphalia, Germany, but arrangements are being made in England also for its manufacture.

Tunneling Popocatapetl for Sulphur.—A scheme is under consideration in Mexico for tunneling the volcano of Popocatapetl through the wall of the crater, in order to reach the immense sulphur deposits inside the mountain. A narrow-gauge railway is to connect the tunnel with the town of Amecameca, which, in turn, will connect with the Morelos road, leading to the national capital.

Photographing on Metal.—An exhibition was given in this city last week by a photographer of a part of a new process for producing photographs on metal. It is said that up to the present time no one has been able to do this. The work exhibited was very pretty and very delicate. The pictures were executed on watch cases, buttons, lockets, breastpins, and other pieces of metal. The process is a secret one and the negatives are taken instantaneously and by means of a flash light. A number of negatives of guests were taken and developed by a liquid which, the inventors of the process claim, is a vital part of the production of photographs on metal.

A Long Wire Span.—A remarkable engineering feat has just been carried out in China in the face of unusual physical obstacles. This was the stretching of a steel cable of seven strands across the Lunann River, by Mr. A. De Linde, a Danish civil engineer, aided only by unskilled Chinese labor. The cable is strung from two points 4648 feet apart. The height of one support is 447 feet above the present level of the river, and the second support 737 feet above it. The vortex over the water is 78 feet. The Chinese cable, says *Indian Engineering*, is the longest but one in the world. The telegraph air cable across the Kistna has a span of 5070 feet: two similar cables across the Ganges, one 2900 feet and the other 2830 feet. A third line of 1135 feet crosses the Hooghly, and in the United States there is one over the Missouri of 2000 feet

Iron and Steel Manufactures in Chili—A Hint for American Manufacturers.—The *Deutsches Handels-Archiv* states that a large sale is found in Chili for various products of the German iron and steel industry, such as gas pipes and telegraph and other wire. The sale of the first, especially, has greatly increased. Safes are also placed on the Chilian market, as well as sewing machines, brewing machinery, copying presses, files, cork-screws, shoemakers', saddlers' and builders' tools, door and box fastenings, and all small iron and brass articles. One German firm succeeded this year, thanks to the experience of a traveler whom they sent to Chili, in obtaining large orders for such wares as these from merchants settled in the country. Krupp guns, armor-plates, and other steel manufactures are used and appreciated by the government in the coast defense and in providing artillery.

Electric Sunstroke.—That portion of man's inheritance that consists of "ills" seems to be daily increasing. M. Defontaine, doctor-in-chief to the Creusôt Steel-Works, in a paper read before the French Society of Surgeons, states that workmen employed in operating the electric forges at Creusôt are subject to a form of sunstroke, which he attributes to the intense light radiated from the focus of the forge. Ordinary arc-lamps are incapable of producing such effects, as the light is not sufficiently intense, but these forges emit a light of more than 100,000 candles from

a few square centimeters of surface, producing on men exposed to their glare physiological consequences previously unheard of. Frequently, after two or three hours' work, the men complain of pains more or less intense in the neck, the face, and the forehead, simultaneously with which the color of the skin is changed to reddish-brown. Further, in spite of the precaution taken by the men of shielding their eyes with dark glasses, the retina is affected to such a degree that for some minutes after ceasing work the operatives are totally blind to all objects illumined with common daylight, nor is perfect vision restored till nearly an hour after. The conjunctiva are irritated, and remain in a state of congestion for forty-eight hours, and this is accompanied by a painful feeling, as of some foreign body introduced under the eyelids. The secretion of tears is augmented, a constant flow being kept up for twenty-four hours, during which the patient suffers from insomnia, due to pain and the abnormal flow of tears, and possibly also to fever. During the following days the skin peels off the face and neck, which become of a deep red color, fading away about the fifth day. In cases of ordinary sunstroke, heat may have some influence, but in those considered above, the whole effect is due solely to the action of an intense light.

Recent Tests of Aluminum and Magnesium.—Comparative tests of these two metals have been lately made at the laboratory of the Charlottenburg High School, Berlin. The physical properties determined were :

	Aluminum.	Magnesium.
Specific gravity	2·67	1·75
Tensile strength, pounds per square inch	271 to 286	331
Expansion, per cent	2·5	1

Magnesium can be best worked when heated to 212° Fahr., at which temperature it can be easily pressed, rolled, and drawn. More difficulty is encountered with this metal when casting it or soldering, as the melting-point and the burning point are only a few degrees apart, and the loss by oxidation is large. The molten metal does not fill the molds so perfectly as aluminum, and the castings obtained are almost always rough surfaced and have air holes. The difficulty in soldering magnesium comes from the fact that it cannot be easily kept free from oxidizing, and even the slightest layer of oxide renders the soldering more difficult. But the same difficulty it also encountered, and has not yet been wholly surmounted, in the case of aluminum. As regards their being affected by atmospheric influences, the two metals show little dissimilarity, provided the magnesium is very pure. Magnesium can be easily worked on the lathe. It can be engraved and polished, and rolled in complicated sections. The alloys of magnesium are of a beautiful brightness and fine color, but are easily affected by atmospheric influences, and are brittle, so that they are ill adapted for technical purposes. A large field of usefulness would be open to magnesium in the industries if a method could be found for covering it with other metals, such as copper, silver, etc., by the galvanic process. Its great strength, low price and lightness would render it capable of many applications in place of brass, white metal, etc.

Brazing and Welding by the Oxygen Blowpipe.—The cheapening of oxygen by Brin's process of manfacture has put into the hands of metal workers a new power. Mr. Thos. Fletcher, of Warrington, England, recently made a few experiments with the compressed oxygen and coal gas, and found that with a ½-inch gas supply a joint could be brazed in a 2-inch wrought-iron pipe in about one minute, the heat being very short, the redness not extending over 1 inch on each side of the joint. The appearance of the surface after brazing led him to experiment further with welding, a process which is not possible with ordinary coal gas and air, owing to the formation of magnetic oxide on the surfaces. Contrary to his expectation, a good weld was obtained on an iron wire ½ inch in diameter, with a very small blow-pipe, having an air jet about $\frac{1}{32}$ inch in diameter. This matter requires to be taken up and tried on a larger scale for such work as welding boiler plates, which, it appears to him, can be done perfectly with far less trouble than would be required to braze an ordinary joint. The great advantage of this would be that the boilers would require no handling, but could be welded with an ordinary large blowpipe in position, and with about one tenth the labor at present necessary. The cost of the oxygen is trifling, and it is evident from the results obtained in brazing that the consumption of gas would be considerably less than one fourth that necessary with an air-blast, irrespective of the fact that welding is possible with an oxygen blast, whereas it is not possible if air is used. The surface of iron heated to welding heat by this means comes out singularly clean and free from scale, and a small bottle of compressed oxygen with a blow-pipe and a moderate gas supply would make the repairs of machinery, boilers, brewing coppers, and other unwieldy apparatus a very simple matter. The trouble and difficulty of makiag good boiler crowns which so frequently come down would be very small indeed when the workmen has an unlimited source of heat at command, under perfect and instant control.

German Coal Combinations and Coal Prices.—The Germans have been ardent admirers of "combinations" and trusts or "syndicates," and nearly every branch of industry over there appears to be forming its "ring" or combination with the view of increasing profits. The plan proposed a few months ago for the coal business of western Germany, was to establish a syndicate or "trust" company, with a capital of about $6,000,000, to be opened not merely to colliery owners, but to persons outside of the industry. The colliery companies would transfer the whole of ther commercial business; that is, their sales of coal, to this new company, which would conduct the business in accordance with the production of each colliery in the year 1887. With a view to keep production within the limits of the demand, the selling company would have some control over the output above a certain quantity. The base prices would be the average of the last three years received by each colliery company. The selling company would, moreover, be empowered to reject any coal offered that was not of the requisite quality. The profits on each half year's business would be distributed according to the number of tons sold for each producing company or private colliery owner.

Mr. André, in *Colliery Guardian*, says: "The coal syndicate is likely to completely change the commercial situation, and to bring, at least, temporary prosperity to the coal mining industry. What the ultimate effects may be on the foreign trade it is yet too early to predict. But it is easy to see that a much wider margin for profits must soon lead to an increase of wages, and the higher cost of production will be a circumstance in favor of the importers of foreign coal."

Kuhlow's says that all the coal owners "do not approve of the artificial methods of 'rings' and conventions" for improving the condition of the trade, and it urges a reduction in rail freights to the shipping ports on export coal, and suggests 2 mks. 70 pf. (65 cents) a ton from the Westphalian coal-fields to Hamburg and 3 mks. 10 pf. (75 cents) per ton to Hamburg as rates which would greatly stimulate exportation.

According to the official quotations of the Essen Coal Club, the average prices of coal in Germany, at the close of 1887, were as follows: Gas coal, $1.75 per metric ton; round flaming coal, $1.87; nuts, $1.75; unscreened "fat" coal, $1.37; round, $1.80; washed nuts, large, $2.03; small, $1.50; washed coking coal, $1.05; unscreened "lean" coal, $1.25; round, $2.36; nuts, $3.30; smudge, 56c.; blast-furnace coke, $2; foundry coke, $1.30; briquettes, $1.80 a ton.

The Growth of Co-operative Enterprises—A paper on "The Progress, Organization, and Aims of Working-Class Co-operators" was read by Mr. Benjamin Jones before the Royal Statistical Society on January 17th. Mr. Jones first gave a summary of the present position of co-operation, in which he stated that in 1886 there were 1331 retail distributive societies, two wholesale distributive societies, and sixty-six productive societies. He then submitted some statistics showing that forty of these retail societies were each doing a trade of over £100,000 a year, fifty societies were each doing a trade of over £50,000 a year, but under £100,000, seventy societies were each doing a trade of over £30,000 a year, but under £50,000, and 269 societies were each doing a trade of over £10,000 yearly, but under £30,000. The remainder were each doing a trade of less than £10,000 yearly. Of the societies, 360 possessed 1464 branch stores. The statistics of the two co-operative wholesale societies showed that from the starting of the first in 1864 they had gradually extended, until in 1886 their total business for the year amounted to £9,368,000. As to co-operative production, the author gave statistics of the business in 1886 of sixty productive societies, showing a turnover for the year of £1,551,000. In addition to this, the workshops under the direct control of the distributive societies produced in 1886 £1,829,000, thus making a total production by co-operators in 1886 of £3,380,000. Since 1871, £625,000 had been expended in supplying members with their own dwellings. But this did not represent the total amount thus expended, as ordinary building societies were largely used by co-operators. A society was being formed to supply metropolitan working men with their own dwellings, to be held in combination, and all profits, after paying 4 per cent to capital, to be divided among the tenants. In 1886 the number of members in these co-operative societies was 833,127; their trade for the year was 32 millions sterling, and their profits over three millions sterling. The aims of co-operators were summed up by a quotation from the programme of the Rochdale pioneers, as from the starting of their society in 1844 the modern co-operative movement was usually dated: "As soon as possible this society shall proceed to arrange the powers of production, distribution, education, and government." In conclusion the author said that he believed that co-operation was certain to continue to grow. It brought out the best characteristics of men. It had all the advantages of state socialism with none of its disadvantages. It could grow much faster if it was aided and encouraged by those classes who at present enjoyed the lion's share of the good things of this life. It seemed, perhaps, absurd to ask any of those classes to help to lessen their share, but many already admitted that it ought to be lessened; their only difficulty was how to lessen it without doing more harm than good. Helping and stimulating the growth of co-operative associations was, he thought, the one way in which they could do it with permanent success, and in doing it he thought they would materially aid in promoting the happiness and prosperity of all classes.

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.

PATENTS GRANTED FEBRUARY 14TH, 1888.

377,735. Process of Carburetting Air. Robert M. Bidelman, Adrian, Mich., Assignor to the Petroleum Light and Heat Company, same place.
377,760. Amalgamator. William Johnsen and Garey W. Johnson, Portland, Ore.
377,791. Apparatus for Making Boiler-Heads. Henry Warden, Philadelphia, Pa.
377,792. Boiler. Henry Warden, Philadelphia, Pa.
377,793. Gas-Generator. August Weyer, Atlanta, Ga.
377,802. Apparatus for Separating Lead or Base Bullion in Smelting, etc. Walter B. Devereux, Aspen, Colo.
377,809. Process of Separating Precious Metals and Impurities from Solutions of Copper, Salts, Ores, Matter, etc., in Acids. Thomas Kiddie, New Brighton, N. Y., Assignor to the Orford Copper Company, of New Jersey.
377,819. Apparatus for Heating Blast for Shaft Furnaces. John L. Thomson, Bergen Point, N. J., Assignor to Walter B. Devereux, Aspen, Colo., and the Orford Copper Co., of New Jersey.
377,821. Conveyor. Aaron Wissler, Brunnersville, Pa.
377,840. Cushioning Device for Steam Pistons. Edwin F. Smith, Brooklyn, Assignor to the H. S. Smith Manufacturing Co. (Limited), Geneva, N. Y.
377,863. Machine for Folding Sheet Metal. Caspar Reising, Plantsville, Conn.
377,864. Wire-Drawing Machine. Martin F. Roberts, Kilburn, County of Middlesex, England.
377,866. Petroleum Engine. Adolf Spiel, Berlin, Germany.
377,873. Apparatus for Filling Blast-Furnaces. Samuel Thomas, Catasauqua, Pa.
377,884. Current-Regulator for Dynamo-Electric Machines. Walter A. Crowdus and Henry M. Sutton, Dallas, Texas.
377,901. Carbon-Amalgamator. Washington H. Lawrence, Cleveland, Ohio.
377,903. Well. Benjamin F. McCann, Ewing, Ind.
377,918. Metallic Alloy. James Webster, Birmingham, County of Warwick, England.
377,947. Hoisting and Conveying Machine. Milo W. Locke, Wilmington, Del.
377,962. Gas-Engine. Reuben F. Smith, Pleasant Hill, Ala.
377,967. Gas-Meter. Forrest M. Towl, Brooklyn, N. Y.
377,976. Compound Metal-Working Machine. E. Stillman Babcock, Milton, Wis., Assignor of one half to Paul M. Green, same place.
377,988. Pipe-Joint. Moses C. Bowers, McKeesport, Assignor by direct and mesne assignments to Edmund C. Converse, Allegheny City, Pa.
377,989. Valve for Air-Brakes. J. Fairfield Carpenter, Berlin, Germany.
378,031. Manufacture of Wire. Elbridge Wheeler, Boston, Mass., Assignor to himself, Ware R. Gay and George W. Gogin, Trustees, all of same place.
378,042. Duplex Pump or Blower. Josiah Dow, Lowell, Mass.
378,063. Machine for Straightening and Polishing Metallic Shafting. Aaron P. Baldwin and Thomas L. Sedgwick, Akron, Ohio, Assignors to the Akron Iron Company, same place.

RE-ISSUE.

10,901. Automatic Gas-Regulator. Myron J. Amick, Portland, Ore.

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page* 111.)

While oxidizing iron nickel and cobalt, and while reducing their oxides, carbonic oxide impregnates them with carbon, probably at all temperatures above 200° C., but most rapidly between 400° and 500° C. This action almost ceases at bright redness. Compact metallic iron absorbs but little carbon from pure carbonic oxide, but receives it more readily if a little carbonic acid be present. Spongy iron acquires much more and partially reduced oxide still more carbon, the former acquiring as much as 158, the latter as much as 808 parts per 100 of iron. Carbonic acid opposes, and if as much as 50% of it be present, completely prevents carbon deposition.

Iron evolves and sometimes absorbs carbonic oxide, both when solid and when molten: but trifling quantities are usually found on boring cold metal under water, yet sufficient to prove that it can exist undecomposed for a considerable length of time, in the cavities of the iron while still hot; indeed, in distinct blisters it is found in considerable quantity. In some cases its apparent absorption by iron is due to its decomposition, the iron absorbing its carbon and oxygen separately. There is evidence which strongly indicates, or at least very strongly suggests, that in other cases carbonic oxide as such dissolves in iron: but, with perhaps one exception, there seems to be room for a difference of opinion as to whether any or all of this collectively is quite conclusive. It may be later shown that carbonic oxide influences the properties of iron: I know of no present evidence that it does.

Table 63.—Temperatures which Limit the Action of Carbonic Oxide and Carbonic Acid.

Expt. No.		Cent.	Fahr.
18	Carbonic oxide begins to reduce precipitated ferric oxide at about.	141°	285°
17	" " Cleveland ore at about.....	199	390
200	" " deposit carbon, reactions (1) and (5).....	200@221	392@430
20	" removes 49% of the oxygen of precipitated ferric oxide in six hours at.....	232@254	450@489
241	Deposited carbon begins to react on iron oxide at or below.....	249@265	480@509
72	Carbonic acid begins to oxidize metallic iron between.....	299@417	570@783
708-9	" oxidizes soft but not hard coke at	417	783
336	Carbonic oxide begins to oxidize spongy iron at or below.....	417	783
201@225	Carbon deposition is most rapid between.....	400@450	752@842
706	Hard coke is oxidized by carbonic acid at	bright redness.	
229	Carbon deposition almost ceases at.....	very bright redness.	

Note.—These are the temperatures found by Bell. The numbers in the first column are those of his experiments as given in the Journal of the Iron and Steel Institute, 1871, 1872.

§ 182. Reduction and Oxidation by Carbonic Oxide and Acid.—Carbonic oxide reduces iron oxide at all temperatures above 141°C. as far as observed (Table 63), at a rate which increases with the temperature at least up to bright redness,[a] and with the rapidity of the current of gas, and is greatly influenced by the structure of the oxide. It is however unable to completely deoxidize it, but slightly oxidizes metallic iron, slowly if compact,[b] comparatively rapidly if spongy, perhaps thus:

(1); $Fe + xCO = FeO_x + xC$.

The influence of temperature is illustrated by Table 64, and by numbers 11, 12 and 13, and 19 and 21 in Table 65, in which gases of given composition deoxidize ferric oxide more fully at a higher temperature than in the same or a longer period at a lower one.

The influence of rapidity of current is shown by Table 67, in which the swift current removes on an average 1·76, and in one case 4 times as much oxygen as the slow one.

The influence of structure also is exemplified in Table 67. Of two specimens of the same ore but of different structure exposed together, one lost six times as much oxygen as the other; ferric oxide obtained by calcining ferrous sulphate lost 4·7 times as much as spathic ore exposed beside it. The influence of structure is also shown in Table 64, but less clearly, as it is here sometimes masked by the effects of other variables.

Table 64.—Removal of Oxygen per 100 of Original by Carbonic Oxide.

		210@254° C.	410° C ±	Low red.	Bright red.
Cleveland ore.	Total	13·65	9·4 @50·6	63·	90 a
	Per hour ..	0·28@0·66	1·34@ 8·4	7·9	24·
Precipitated ferric oxide.	Total.....	49·3	49·2 @80	....	99·
	Per hour ...	8·2	8·2 @13·3	.....	19·8

a Nearly 90%.

Pure carbonic acid oxidizes metallic iron and its low oxides energetically, if in sufficient excess probably eventually producing ferric oxide.

(2); $Fe + xCO_2 = FeO_x + xCO$,

(3); $FeO_x + yCO_2 = FeO_{x+y} + yCO$.

It thus appears that when iron, oxygen and carbon, however initially combined, are together exposed to a high temperature, the oxygen tends to distribute itself between the carbon and iron in proportions corresponding to equilibrium for the existing conditions, such as temperature, proportion of iron to carbon present, etc. This is true whether the mixture consists initially of metallic iron, carbonic acid and oxide, or of iron oxide and carbon, or whatever it be. For instance, if a mixture of equal volumes of carbonic acid and oxide be exposed at full redness to ferrous oxide, which contains 28·57 of oxygen per 100 of iron, no action occurs; neither takes nor yields oxygen; they are in equilibrium. If however the gases contain 60% of carbonic acid they yield oxygen to ferrous oxide, if only 40% they take oxygen from it: if the iron oxide has more oxygen than ferrous oxide it gives up, if less it absorbs oxygen from this mixture of equal volumes of carbonic acid and oxide. In each case the transfer of oxygen proceeds till a new equilibrium is reached.

In Table 65 the full-faced figures indicate approximately certain of these sets of conditions of equilibrium: that is, the proportion of oxygen retained by 100 of iron when exposed to certain mixtures of carbonic oxide and acid till they have ceased or nearly ceased to react. Unfortunately in but a few cases has the composition both of the gas and of the iron oxide which are in mutual equilibrium been directly determined: but in several others where one is given the other can be more or less closely estimated.

In figure 10 the five points p to p^4 indicate by their distance from the horizontal axis the percentage of oxygen which iron oxide must hold in order to stand in equilibrium with the five corresponding mixtures of carbonic acid and oxide at bright redness. Of these p, p^3 and p^4 command confidence, for in these cases the fact that the gases gave to spongy iron the same percentage of oxygen that they left in iron oxide, proves that their action was complete on both. p^1 and p^2 however were obtained simply by treating spongy iron, and not checked by reducing iron oxide with the same gases: hence the suspicion that while the outside of the sponge doubtless acquired all the oxygen required for equilibrium, its interior may not have been thus saturated. This suspicion is strengthened by the fact that p^1 and p^2 are much lower than the position of p^3 would lead us to expect.

a Bell, Jour. Iron and St. Inst., 1871, I., p. 182, states that deoxidation is at a maximum at about 417°C. If "at a maximum" means most rapid or most thorough, I am at a loss to reconcile this statement with his experimental results.

b That iron wire is oxidized by carbonic oxide and simultaneously absorbs carbon was shown by its turning blue and straw-colored after heating in this gas, and by its yielding black flakes (carbon) when dissolved in hydrochloric acid: the same wire when not previously exposed to carbonic oxide yielded no such flakes. In another case, after exposure to carbonic oxide, the solution obtained by brief contact of strong hydrochloric acid gave an intense blue with ferrocyanide of potassium, indicating the formation of an oxide higher than ferrous oxide. (Bell Journ. Iron and St. Inst., 1871, I., pp. 182-4).

TABLE 65.—REDUCTION, OXIDATION AND CARBON DEPOSITION BY CARBONIC OXIDE AND ACID.

Number.	No. of Bell's experiment.	Conditions of exposure. Material.	Hours.	Temperature.	After exposure to the gas the metal held per 100 of iron. % carbon.	% Oxygen. At low t'mp'ratures.	% Oxygen. At medium temperatures.	% Oxygen. At high temperatures.	Composition of gas by volume. Before exposure. CO.	Before exposure. CO_2.	After exposure. CO.	After exposure. CO_2.	Remarks.
1	349	Cleveland sponge	0·75	417.	0·	18·46			14·	86·			
2	90	" ore	0·5	Red.				**40·3**	14·	86·	14·—	86·+	Equilibrium nearly reached.
3	91	" sponge	0·75	Bright red.				**37·3**	14·	86·	14·+	86·—	
4	73–8	Sponge		Low red.					0·	100·	40·	60·	
5	74–350	Cleveland sponge	0·5	417.	0·	0·			50·5	49·5			
6	253	Precipitated ferric oxide	6·0	Fairly red.	0·		**29·06**		50·	50·	50·	50·	
7	248	Cleveland ore	5·5	Bright "	0·			**28·59**	50·	50·			Equilibrium reached with FeO.
8	89	Precipitated sponge	18·0	" "				**28·5**	50·	50·	50·	50·	
9	85	Cleveland ore	5·5	" "				**28·**	50·	50·	50·	50·	
10	57	Sponge		" "				**28·59**	50·	50·			
11	261	Ferric oxide from nitrate	10·5	410.	6·4	26·7			67·	33·			
12	101	Ferric oxide	11·5	417.		26·6			67·	33·			
13	263–103	Precipitated ferric oxide	6·	Very dull red.	1·5		28·2		67·	33·			Equilibrium reached.
14	79	Cleveland sponge	11·5	Bright red.				**3·5**	59·7	36·9	65·3	30·9	
15	353	" "	7·	" "	0·			**5·14**	63·7	36·3			
16	Dumas	Iron turnings		Cherry red.					0·	100·	64·29	34·84	CO_2 max. 41·86
17	Dumas	" " and filings		" "					0·	100·	68·74	31·04	CO_2 min. 31·81
18	Dumas	" " " "		Almost white.					0·	100·	71·71	27·94	36·66 25·56 35·82 16·39
19	105–266	Precipitated ferric oxide	5·	410·	9·3	16·2			76·	23·6			
20	354	Cleveland sponge	0·5	417·	0·	1·31			72·5	27·5			
21	108–434	Precipitated ferric oxide	5·	Low red.	0·9		4·2		76·4	23·6			
22	77	Cleveland sponge	0·5	Full red.				1·31	73·	27·			
23	338	Sponge	2·5		·36			9·02	91·8	8·2			Equilibrium reached.
24	80	Cleveland sponge	7	Nearly white.				**5·1**	68·2	36·5	89·2	10·	
25	72	Sponge	0·66	417·		2·6			0·	100·	96·	4·	
26	345	"	5·5	238@243·		0·3			100·	0·			Carbon deposited.
27	342	"	9	417·	158·				100·	0·			
28	331–6	"	4·5	417·	20·3	**2·2**			100·	0·			
29	332	"	1	Very dull red.	28·8				100·	0·			
30	335	"	2·5	Low red.	12·75		**0·84**		100·	0·			
32	348	Cleveland sponge	3·	Red	2·48			·40	100·	0·			Equilibrium reached.
33	337	Precipitated sponge	4·	Bright red.	·30			**·36**	100·	0·			
34	284–370	Precipitated ferric oxide	5·	" "	·24			**·43**	100·	0·			
35	286–372	Precipitated sponge	4·	" "	·36			**·30**	100·	0·			Equilibrium reached.
36	285–371	" "	1·	" "	·32			·48	100·	0·			
37	93–4	Sponge	4·	" "				**·34**	100·	0·	100·	0·	Equilibrium reached.
38	343	Iron wire	3·17	18@282		tr.			100·	0·			
39	344	" "	4·	Bright red.	0·17±a			0·18±a	100·	0·			

The horizontal rule lines divide these experiments into six groups, in each of which the final composition of the gases is nearly constant. Comparing one group with another gives at a glance the influence of the proportion of carbonic acid to carbonic oxide.

The column head " % of oxygen " is split into three, in each of which the temperature of exposure is approximately constant. The temperature is more accurately given in the column headed " temperature :" but this grouping, combined with the grouping by the horizontal lines, shows at a glance the influence of temperature. In any one of the horizontal groups, *e. g.* lines 11 to 18, on passing from left to right the proportion of oxygen acquired declines: and, as the carbonic acid is approximately constant in each group, this decline is readily attributed to the rise of temperature.

" Precip. sponge " = precipitated ferric oxide reduced by hydrogen.

" Cleveland sponge " = Cleveland ore thus reduced.

Full-faced figures indicate that the exposure had been so long that equilibrium had probably been nearly reached.

" Equilibrium reached " in the last column indicates that successive analyses or other data prove that action had ceased.

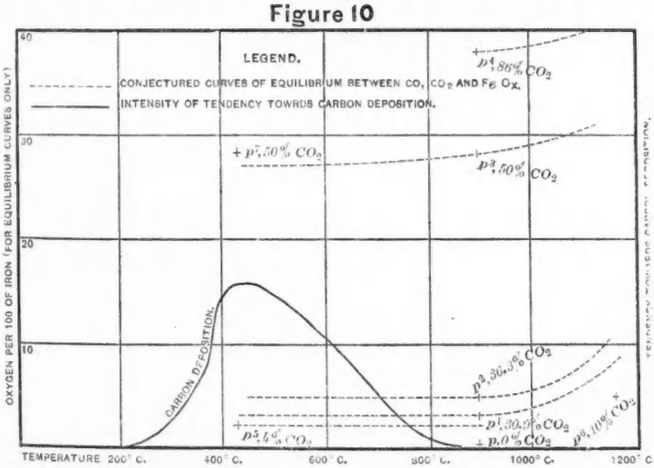
a These numbers are doubtful.

I give these results at greater length than would otherwise be expedient, because no digested statement of them exists elsewhere so far as I am aware, and the labor of mining the raw but precious material from its labyrinthine deposit is usually prohibitory.

I am at a loss to reconcile certain of these results. Thus, in No. 5, equal parts of carbonic acid and oxide are inert on Cleveland sponge: yet other mixtures with less carbonic acid, and even as in No. 32 pure carbonic oxide itself, oxidize this same substance.

§ 183. INFLUENCE OF TEMPERATURE ON THE CONDITIONS OF EQUILIBRIUM BETWEEN THE OXIDES OF IRON AND OF CARBON.—Bell's experiments indicate that, under the conditions we are studying, *i. e.*, *when carbonic acid or oxide or both are exposed to iron or its oxide, the relative affinity of iron for oxygen as compared with that of carbonic oxide rises with rising temperature.*[a] I do not consider the evidence either harmonious or abundant enough to prove this, but it points strongly toward it. For instance, a mixture of these gases which at one temperature is inert toward a given iron oxide, or which even takes oxygen from it, at a higher temperature yields oxygen to it. Thus in numbers 14 and 24, Table 65, mixtures of carbonic acid and oxide of initially almost identical composition were exposed to spongy iron (1) at bright redness and (2) just below whiteness. At redness equilibrium was reached when enough oxygen had passed from carbonic acid to iron to lower the proportion of this gas to 30·9% and to give the iron 3·5%[b] of oxygen (p^1, figure 10): at just below whiteness (p^6), however, this transfer of oxygen went much farther, ceasing only when the proportion of carbonic acid had fallen to 10% and when the iron had taken up 5·1%[b] of oxygen, the carbonic acid thus having lost and the iron having gained more oxygen than at the lower temperature. On slightly lowering the temperature in the latter experiment part of the oxygen which at the higher temperature had just left carbonic acid for iron immediately returned to the carbonic oxide, and the proportion of carbonic acid rose again to 13·4%, again to fall when the temperature again rose. In both these experiments it is known that equilibrium was reached, for further exposure of from one to two hours caused no further transfer of oxygen.

Figure 10



(TO BE CONTINUED.)

[a] This supposition that the relative affinity of carbon for its second equivalent of oxygen as compared with that of iron for oxygen, decreases with rising temperature, does not exclude the belief that its affinity for its first equivalent as compared with that of iron rises with rising temperature: in other words, while a given low oxide of iron may deoxidize carbonic acid the more readily, and be deoxidized by carbonic oxide the less readily the higher the temperature, yet with rising temperature it may be deoxidized by carbon itself the more readily.

[b] These numbers refer to the proportion of oxygen per 100 of iron.

PERSONALS.

Mr. John B. Seidal, one of the oldest iron manufacturers in Pennsylvania, died in Lebanon on the 16th inst., aged 75 years.

Mr. Ottokar Hofmann, mining engineer, has gone to Parral, Chihuahua, Mexico, for the Santa Barbara Silver Mining Co., of London.

Mr. David C. Monroe, a civil engineer in camp on the Montana Central Railroad survey, died near Monroe's Tunnel, Montana, on the 4th.

Mr. Richard Parker, mining engineer, has been appointed superintendent of the Old Argyle mine, rechristened Sampson, Marquette, Michigan.

Col. R. L. Bright, the leading spirit in the railroad and industrial development of the coal and iron territory about Athens, Tenn., is at present in New York for a fortnight's stay.

Mr. J. G. Donthitt, who has been interested in mining operations in the Wood River District, Idaho, since the first discovery of the mines, died at Albion on the 5th inst., aged 69 years.

Mr. W. De L. Walbridge has been elected president of the American Coal Co., to fill the vacancy created by the death of the former president, Mr. G. P. Lloyd. Mr. Walbridge has for several years held the offices of secretary and treasurer.

Mr. H. Bratnober, formerly connected with the Montana Company Limited, and Mr. A. Wartonweiler, until recently manager of the Lexington Mining Company, of Butte, Montana, have gone to Mexico on a visit of inspection through the mining regions of that country.

Mr. L. S. Colyer, of Chattanooga, Tenn., has resigned as general manager of the Chattanooga Iron Company, Walker Iron and Coal Company, and Dade Coal Company, and Mr. J. W. Hoffman, of Philadelphia, has been elected his successor, the change to take effect March 1st.

Mr. Francis Weiss, President of the Alden Coal Company, and one of the pioneer operators of the Lehigh region, died at Bethlehem, Pa., on the 14th inst., aged sixty-nine years. He was one of the most extensive operators in the Lehigh Valley, and was largely interested in the Bethlehem Iron Company and other neighboring industries.

The iron ore firm of Dalliba, Hussey & Co., of Cleveland, have been dissolved, and have been succeeded by Dalliba, Corrigan & Co., Mr. H. P. Hussey retiring, and being succeeded by Mr. James Corrigan, who, with Mr. John Huntington, owns a large fleet of lake carriers. Mr. Hussey unites with Mr. G. Hoyt Pomeroy in the pig-iron business, under the firm name of Hussey & Pomeroy, which firm will carry out all the pig-iron engagements made by Dalliba, Hussey & Co.

Mr. William Kelly died in Louisville, Ky., on the 11th inst., at the age of seventy-eight years. He was well known to iron and steel makers thoroughout the country, and was the real inventor of some of the important parts of the Bessemer steel process. He was a native of Pennsylvania, and moved to Kentucky from Pittsburg when a young man. He settled in the iron region of Western Kentucky on the Tennessee River, near the Eddyville iron furnaces, and began experimenting in steel making. He first conceived the idea that steel could be made by forcing strong blasts of air through molten iron, the use of charcoal being thus dispensed with. From him the idea was taken up by Eastern iron makers, who tried his method with some success. Several of his skilled English workmen left him and returned to England with the secret. Henry Bessemer applied for a patent on the process in England and in the United States, but Kelly was awarded the patent on the ground of priority. Kelly was the first to import Chinese labor to the United States, employing it in his iron works. At the time of his death he was at the head of the axe manufacturing firm of W. C. Kelly & Co.

FURNACE, MILL, AND FACTORY.

The Lynchburg Iron Company, Lynchburg, Va., intends to add to its plant a pipe foundry for cutting pipe, with a capacity of 30 tons per day; also to erect 50 coke-ovens in Pocahontas coal field, so as to make its own coke.

The Ansonia Brass and Copper Company, Ansonia, Conn., is meeting with great success in introducing Cowles's patented fire and weather-proof wire. Its thorough insulation attracts the attention of electric light men.

Advices state that at West Duluth, Minn., the Union Iron Company has begun to cut ground for extensive blast furnaces, rolling and rail mills. Chicago, Philadelphia and Boston capital is interested to extent of $1,000,000.

The recent sale of Remington & Son's property at Ilion, N. Y., mentioned in our issue of the 4th inst., has been set aside by the court. Since the sale was made for $152,000, it is said that a company of capitalists have decided to offer for the property $160,000, and asked the court to hold the sale open. The company has furnished a bond that $160,000 would be paid at the next sale.

The Kittanning mill, Pa., has started up on double turn, and now, for the first time in fifteen years, finished iron will be turned. There are 33 furnaces in the puddling department, from which nearly 70 tons daily can be made. In the finishing department there is one train of bar rolls, which are running double turn, making about 45 tons of pipe-iron for the pipe mills in Pittsburg.

The parties who recently purchased Swift's Iron and Steel-Works, at Newport, Kentucky, to the sale of which we referred in our issue of December 24th, 1887, have organized the Newport Iron and Steel Company to operate the works. The new company will manufacture iron and steel in their various branches in the same general line as its predecessor, namely, pig-iron, plate, sheet, bar, and angle iron, the rails, and boiler, tank, and sheet steel. The President of the new company is H. A. Schriver; Vice-President, R. W. Nelson; Manager, Adam Wagner; Secretary, A. P. Gahr; Treasurer, J. H. Mathews.

An explosion of an air receiver at the Hudson Iron-Works, Hudson, N. Y., occurred on the 15th inst., causing great damage. The receiver is a boiler-iron tank for receiving air used in the blast. It stood outside the furnace proper, and was about 35 feet high and 18 feet in diameter. At the time of the explosion the engine was not in motion, awaiting some trifling repair. By the explosion the receiver was torn asunder like a paper balloon in a whirlwind. The works were in full blast. The damage to the receiver, machinery, and buildings, with loss of not running, will exceed, it is said, $50,000. The works are closed.

The Carbon Iron Company, whose works are located at Pittsburg, Pa., intends to put up, in the near future, two open-hearth furnaces and necessary trains of blooming and finishing rolls to manufacture structural steel from the blooms made by the Carbon Iron Company's process. This particular process is the manufacture of wrought-iron bloom direct from the ore, where the use of graphite is a reducing and protecting agent, and is known as the Eames direct process. Mr. Andrew Dickey states that the company has a number of these reducing furnaces now put up, a blooming mill and squeezer, and the plant is producing iron regularly at present from these reducing furnaces, and upon a successful scale, and at a very economical rate compared with the puddling process for the manufacture of wrought iron. The stock is peculiarly adapted for making steel by the open-hearth process, and it is for this purpose that the concern is going to adopt it.

The secret convention of barbed wire manufacturers at St. Louis, Mo., was still in session at the time of our going to press. There is a movement on foot among the licensees to compromise differences by the payment of a five-cent royalty, or just one-third of the present tribute paid the controllers of the patents, this to include the right to manufacture the Glidden wire, which is at present withheld, but the movement up to the 16th inst. had taken no definite shape. The great majority of the licensees would be satisfied with such a compromise, but there are other companies which will hold out for no payment at all. It is the same with regard to the proposition made to advance the price of wire, for while there are a large number of companies insisting that this must be done, other and prominent firms are unwilling to assent to such a proposition when it is offered in the light of a movement, so that the prospects of a pool or combination to bull the market are not very flattering. A proposition was submitted by Washburn, Moen & Ellwood, compromising the amount to be paid in royalty by the manufacturers, but the licensees refused to entertain it, and submitted a counter-proposition of their own. This remains to be accepted. Washburn, Moen & Ellwood are said to pay Joseph Glidden a royalty of 2½ cents a hundred on all barb wire manufactured of whatever kind, and the probability is that the licensees will absolutely refuse to surrender on their part more than a comparatively nominal royalty in the future.

The extensive steel plant of the Duquesne Steel Company, located at Duquesne, on the Pittsburg, Virginia & Charleston Railroad, about 30 miles from Pittsburg, Pa., one of the most complete Bessemer steel plants in this country, containing two 6-ton converters, and fitted up with the latest improved machinery, will now be put in operation by a new company. The works were ready to begin operations in May, 1887, but owing to the decline of the Bessemer steel market, it was deemed better by the owners of the plant to allow it to remain idle. For this reason the plant has never turned a wheel. A syndicate of Pittsburg capitalists has been formed, who have purchased the entire plant, and have incorporated under the name of the Allegheny Bessemer Steel Company. Messrs. E. L. Clark, of the Solar Iron-Works; H. P. Smith, lately with Carnegie, Phipps & Co., Limited; W. G. and D. E. Park, of the Black Diamond Steel-Works, George Boulton, formerly president of the Duquesne Steel Company, and Robert B. Brown, formerly vice-president of the company, are interested in the new company. In addition to the above named gentlemen, who are all prominently engaged in the steel business in Pittsburg, there will be a number of others connected with the new company, whose names are not known at present. Plans are now being drawn up to build in connection with the plant a large rail mill 350 feet by 70 feet in dimensions. It will be supplied with all modern improvements. It is expected that the output will be from 16,000 to 18,000 tons of rails per month.

CONTRACTING NOTES.

Contracts open will be found on page xix. New contracts this week: No. 769, Stone; No. 770, Copper Tubing, Wire Rope, etc.; No. 771, Chemical Engine; No. 772, Water-Works.

The Alabama Iron-Works, Birmingham, Ala., are in the market for a 5 to 6 ton crane complete.

Mr. James Bates, Baltimore, Md., is in the market for a vertical engine and tubular boiler about 20 to 25 horse-power, shafting and pulleys.

The Pleasant Hill & Winterville Railroad Company, Winterville, Ga., is about to contract for rails, box-cars, flat car, light locomotive, etc.

The Water Commissioners, of Detroit have contracted with the Detroit Pipe and Foundry Company for water-pipe to the value of $82,000.

The Alpha Mills, the Victor Mills, and the Adna Manufacturing Company, lately mentioned as to build cotton mills, at Charlotte, N. C., will put in electric lights, and will need machinery.

Messrs. E. P. Allis & Co., of Milwaukee, have contracted with the Joliet Steel Company, of Joliet, Ill., for an 1800 horse-power compound Reynolds-Corliss engine for the new wire rod mill which the latter is building.

The Big Bend Tunnel and Mining Company, of Butte County, California, have contracted with the Sprague Electric Railway and Motor Company, of this city, for a number of Sprague electric motors, which will operate the pumps and hoisting machines of the company from fourteen points on the line.

LABOR AND WAGES.

The furnaces of Robert Hare-Powel's Sons & Co., at Saxton, Pa., are to be put in operation at once. The works were closed on January 1st, owing to the refusal of the men to accept a reduction in their wages of 10 per cent. The employés will go to work at the reduction, with the promise of a raise in two months.

Schuylkill Coal Exchange, Pottsville Pa., under date of the 9th inst., reports that the following collieries, drawn to return prices of coal sold in January, 1888, to determine rate of wages to be paid, make the following returns: Herbine Colliery, J. K. Sigfried, $3.45; Locust Spring (P. & R. C. & I. Co.), $2.76; Merriam Colliery (P. & R. C. & I. Co.), $2.66; Stanton Colliery (P. & R. C. & I. Co.), no work; North Mahanoy Colliery (P. & R. C. & I. Co.), no work. The average of these prices is $2.95⅞, and the rate of wages to be paid is 15 per cent above the $2.50 basis.

The Monongahela River miners, Pa., are uniting in an effort to have the price paid in the fourth pool that was agreed upon. There are several works in the fourth pool where the men are working at 2½ cents a bushel, which is one quarter of a cent under the price. Arrangements have been made with the miners in all of the other pools to take renewed steps to keep up the prices in the fourth pool. The men voluntarily agreed to raise a subscription, which, it is said, now amounts to $4000, to help the miners to make a stand for the extra quarter of a cent. There are three firms in the pool who are not paying the price.

GENERAL MINING NEWS.

KANSAS & TEXAS COAL COMPANY.—This company has been organized with a capital stock of $2,000,000, shares $100 each. The company is a reorganization, and has increased its capital stock from $600,000 to $2,000,000. The object of this increase is to meet the additional expense in the extension of its plant to more than five times its original size. Formerly the coal interests of the company were confined to the State of Kansas, but several thousand acres of land have been purchased in Arkansas. The incorporators are Logan H. Root, of Arkansas; George S. Sparks and Steven B. Elkins, of W. Virginia; F. E. Doubleday, of Kansas, and R. C. Keren, S. E. Hoffman, Thomas Rumsey, B. F. Hobart and E. B. Loveland, of St. Louis. Of the 20,000 shares of stock, 19,992 are in the name of E. B. Loveland, and others have one share each. Mr. Loveland is said to represent Mr. Hobart, who is the heaviest stock owner in the company. The company has moved its headquarters from Springfield to St. Louis.

LAST CHANCE MINING COMPANY.—This company has been organized in Salt Lake City with a capital stock of $50,000, shares $1 each. In the incorporation papers no locality is named for property, and, in fact the company is organized with a name and no mines, or other property; but as it assumes the name of the ore producer the past few months belonging to the Bannock Gold and Silver Mining Company, to the difficulties of which we referred in our issue of January 21st, it is understood that it has some connection with that company, the property of which was recently sold at marshal's sale, subject to redemption up to some time in June. The officers of the new company are H. Dinwoodey, President; David James, Vice-President; R. R. Anderson, Secretary, who with J. H. Cunningham, T. W. Jennings, A. W. Carlson, and George Romney, form the Board of Directors. It is understood that W. S. McCornick is to be treasurer.

ALABAMA.

TALLADEGA COUNTY.

MAY VIRGINIA GOLD MINING AND MILLING COMPANY.—This company has been organized with a cap-

ital stock of $500,000, twenty per cent of which is paid in cash and eighty per cent in property, which is located at Riddle's Mills, six miles from Talladega, where the main office will be, and consists of 740 acres of mineral lands. Development work has been in progress since last October. The mill and other machinery will shortly be in operation.

WALKER COUNTY.

SHEFFIELD & BIRMINGHAM COAL, IRON AND RAILROAD COMPANY.—The company has let a contract to build 250 beehive ecke-ovens at Jasper at once; the plant is to be increased to 1,000. The railroad track is now let from site of ovens to stone quarry, 1 mile, and 1½ miles to ovens and bins from main track of Sheffield & Birmingham Railroad, and about same distance from Kansas, City, Memphis & Birmingham Railroad.

ARIZONA.

PINAL COUNTY.

J. D. REYMERT MINING COMPANY.—We are officially advised that the production for January amounted to $6734.04.

CALIFORNIA.

The statistics of the production of oil in this State for the past eight years are reported as follows: 1879, 568,806 gallons; 1880, 1,763,215; 1881, 4,194,102; 1882, 5,402,671; 1883, 6,000,000; 1884, 6,000,000; 1885, 8,760,000; 1886, 10,950,000; 1887, 28,500,000. Througnout the southern portion of the State there has been a great development in the production, and several companies have been formed to work it. The output of Ventura County has especially shown a remarkable increase. A moderate estimate late in the fall places the daily output at 1,400 barrels, giving the Sespe Company 300 barrels, the Mission wells 700 barrels, and the Pico Company 400 barrels. It is claimed that here an oil-bearing field has been discovered which will rival the famous Russian well in the abundance of flow, and which yields a most superior oil. The new fields are only twenty-five miles from tide-water, and oil can be delivered at the shipping point by a gravity pipe line.

MONO COUNTY.

GREAT SIERRA.—This mining claim, situated nine miles from Lundy, has been in litigation a long time, and this practically stopped its working and development. The courts have at last, says the Bodie *Miner*, affirmed judgments in favor of the Frederick Swift party for, in round numbers, $281,000. The entire property is now under execution, and is in possession of Secretary Swift. It is the intention of the new management to place a small force of men at work in the mine at once, which will be increased to a large force in the spring.

STANDARD CONSOLIDATED MINING COMPANY.—The superintendent's report for the week ended the 4th inst., states that there was sent to the mill for the week 360 tons of ore. The progress of development work on the Bulwer line seems to further confirm the belief of these ore-bodies being Standard property.

CANADA.

PROVINCE OF ONTARIO.

IMPERIAL LAND AND MINING SYNDICATE.—This company has been organized by parties who have been making explorations on the north shore of Lake Superior, a few miles east of Sault Ste. Marie, in an unsurveyed Indian reservation, and from a point near Port Arthur, east to Sault Ste. Marie. They have gained perfect titles to 1100 acres of land which are said to contain rich mineral. A force of men are now at work carrying on development work. In their exploratory work they have located several iron mining properties and found deposits of copper ore.

COLORADO.

ARAPAHOE COUNTY.

HOLDEN SMELTING COMPANY.—The new method of treating zinc ores, employed by this company, has not yet passed out of the experimental stage, according to the local papers. The process is represented as being the discovery of Mr. Low, of Von Schulz & Low, assayers and chemists in Denver. As far as has been made public, the process consists in roasting the zinc sulphide to zinc oxide, and leaching the latter with a solution of sulphurous acid which has previously been prepared by dissolving the sulphurous acid evolved during the roasting of the ore.

CLEAR CREEK COUNTY.

KOHINOOR MINING COMPANY.—There is a probability that the extensive property of this company will all be started up shortly.

GILPIN COUNTY.

CASHIER MINING COMPANY.—This company has concluded to erect a plant of machinery over its main shaft on the Cashier mine, to sink it to a depth of 1000 feet. When this machinery is placed the main shaft is to be continued on down to greater depth in order to determine the value of the ore at a greater depth.

GILPIN COUNTY MINING COMPANY.—Work has been resumed by this company on the Williams mine in Lake District, on which work was suspended on account of the water. The mine has produced good ore in the past.

LAKE COUNTY.

DUNKIN MINING COMPANY.—Sinking No. 4 shaft to a greater depth has been commenced. This is done in order to command the vein which is dipping towards the northeast. The first level is at a depth of 223 feet from the surface. The shaft cut the contact at a depth of 240 feet, passing through a body of iron about 6 feet thick, which was of excellent grade. A drift started north, however, went but two feet from the shaft before this body of iron had pinched entirely and the flint and dolomite were encountered. The shaft is now down 253 feet, the last six feet being in porphyry. The shaft will be sunk 30 feet deeper and the second level started, with drifts north at a depth of 60 feet below the first level.

ST. KEVIN MINING COMPANY.—It is probable that a large mill will be constructed in St. Kevin Gulch, to dress the low-grade ore from the St. Kevin mine. The St. Kevin mine has large bodies of low-grade ores, suitable for the dressing works, already opened, and can supply more than 100 tons per day. The new mill is not to be erected by the St. Kevin Mining Company, and if it is built, the latter will probably continue to operate the mill which it now owns.

LARIMER COUNTY.

The Union Pacific Railroad has finally gone out of the quarrying business, and has leased its quarries to the Beckwith syndicate of Evanston, Wyoming. The quarries leased are the Blackhorn and Stout, near Fort Collins. A. C. Beckwith will be superintendent of the new company, and will make his headquarters at Fort Collins. Joliet and Denver parties are interested with him in the lease.

PITKIN COUNTY.

The strike in the Bonnybel, to which we referred in our last issue, has brought property into prominence on the east side of Spar ridge that has not heretofore been much thought of. The Silver Star, lying across the formation, 300 feet south of the Bonnybel, has gone to work under lease and bond to H. J. Mayham. There has been much work done on the claim heretofore, but in the wrong place. Mr. Mayham, guided by the Bonnybel discoveries, has started new workings and has found ore.

CAMP BIRD.—The mine is now producing heavily under the management of ex-Sheriff Hooper, the lessee. Since the 1st inst. the mine has been shipping about sixty-five tons per day, but on the 10th inst. 100 tons were shipped, and from this date on the daily output is expected to be kept up to that figure.

JUSTICE MINING COMPANY.—Mr. Lawson, the heaviest stockholders in this company, is reported to have sold recently at auction an option, at $10 per share, on 5,600 shares of the stock. The option runs for seven months and Mr. Lawson received $700 cash for it.

SMUGGLER.—It is reported that a strike has been made in this property. The lower level has been run alongside of good ore its entire distance. The lagging has been taken down and the ore is being extracted. The drift is being driven ahead and is in solid ore. This ore is reported to be worth about $100 per ton.

MEXICO.

The annual report of coinage statistics by Mr. Javier Stavoli, Chief of the Seventh Section of the Department of Finance, has just been issued, and gives the following information: The total coinage of Mexico to date is as follows: Colonial epoch, $2,151,581,961.81; Independence, till June, 1877, $892,069,343.42; last decade, till June, 1887, $252,235,339.07; total, $3,295,886,644.30. The total coinage of the eleven different mints during the fiscal year ending June 30, 1887, was as follows: Silver, $26,844,031; gold, $398,647; copper, $191,296.18; making a total coinage of $27,433,974.18.

MICHIGAN.

COPPER MINES.

The output of mineral (about 80 per cent copper) of six of the seven leading copper mines of Lake Superior in January, is given by the Boston *Transcript* as follows:

Mines.	1888. Tons.	1887. Tons.	1886. Tons.
Calumet & Hecla	1,802	2,694	2,563
Tamarack	625	300	174
Atlantic	229	202	200
Osceola	210	158	165
Franklin	177	202	204
Huron	110	104	127
Total six mines	3,153	3,660	3,433

ALLOUEZ MINING COMPANY.—Mr. John Stanton, treasurer of the company, states that there is no debt of any kind against the company, and, beside assets at mine, there is in bank and trust company a little over $40,000. The company is doing some work sinking and drifting, preparing for active work next summer, or when the snow is gone, and the plant can be repaired and refitted. With regard to an assessment I can only say there is no necessity for any call on stockholders at present, but there will undoubtedly be an assessment before production can be resumed. The mine shut down in May, 1885, on account of the low price of ingot copper. We leased the mine shortly after for three years, which would have expired in June, 1888. The 10c. copper market proved too much for the lessees and they failed the latter part of 1887.

NATIONAL MINING COMPANY.—A stamp-mill is to be erected at this mine and arrangements for the purchase of machinery are now being completed, that it can be delivered here on the opening of navigation. The mill will be so arranged that an additional head can be added to it when required.

MINNESOTA.

PIONEER MINING COMPANY.—At a meeting held at Duluth on the 8th inst., the following officers were elected: J. A. Humbird, Ashland, President; J. S. Ellis, Vice-President; N. J. Wiley, Secretary and Treasurer, J. H. James, Duluto, General Manager; E. J. Palmer, J. S. Ellis, J. T. Gregory, J. G. Brown, J. H. James, J. A. Humbird, N. J. Wiley, directors.

ZENITH MINING COMPANY.—The following officers were elected at the annual meeting held at Duluth on the 8th inst.: Dr. Edwin Ellis, President; J. T. Gregory, Vice-President; N. J. Wiley, Secretary and Treasurer; J. H. James, General Manager; E. J. Palmer, Edwin Ellis, J. H. James, J. T. Gregory, Walter Nice, directors.

MISSOURI.

BATES COUNTY.

Keith & Perry's coal mine, No. 6, at Richhill, caught fire on the 15th inst., and it is feared that the mine will have to be flooded to extinguish the fire.

MONTANA.

LADY RICKER MINING COMPANY.—This company has been organized with a capital stock of $300,000, shares $1 each, and owns the Lady Ricker mine, and the Lady Ricker extension, located in Lewis & Clarke County and in Jefferson County. The incorporators are William L. Vinson, Alfred P. Sweeney and John W. Eddy.

CHOTEAU COUNTY.

MONTANA SMELTING COMPANY.—It is stated that this company, to which we referred in our issue of January 21st, has completed all arrangements for the erection of reduction-works at Great Falls, and that by May next the sampling-works will be completed and the company will then be ready to buy ores.

DEER LODGE COUNTY.

CHAMPION CONSOLIDATED MINING COMPANY.—This company has been organized for the purpose of working the Champion, Tillie, May and Augusta quartz lodes in Oro Fino mining district. The capital stock is $1,600,000, shares $2 each. The incorporators are Edward P. Mills, Howard H. Zenor, Armistead H. Mitchell, Wm. Facer and James B. McMasters, and these gentlemen, with Wilbur N. Aylesworth, Carlin D. Joslyn and Charles G. Glass, constitute the first board of trustees.

GRANITE MOUNTAIN MINING COUNTY.—It is reported that this company is considering the advisability of erecting smelting works.

MISSOULA COUNTY.

TERRA FIRMA MINING, GOLD AND SILVER SMELTING COMPANY.—This company has been organized with a capital stock of $125,000, shares $1 each. The incorporators and directors are Charles J. Best, H. W. Gates, A. N. Coleman and Louis Keats. The scene of operations of the company is Thompson Falls and vicinity.

NEVADA.

DOUGLASS COUNTY.

GERMAN.—This copper mine, near Genoa, is being prospected. As yet sufficient labor has not been expended on the property to determine its value, but the outlook is said to be favorable for the development of a good mine. It is the intention of the owners to put up works for the reduction of the ore.

ELKO COUNTY.

The Victor in Kinsley District, Blue Belle, Ella, Bald, Mountain Chief and Sun Ledge in Railroad District, are the principal copper mines so far located in this county. The local papers state that the ore from the Ella is said to average 22 per cent, and the Sun Ledge 50 per cent in gray copper. It is estimated that 900 tons were extracted from the Blue Belle up to 1878. The development of the above mines has been resumed since the advance in the price of copper.

There are several other prominent copper prospects on the north and south side of Bunker Hill, but there has not been sufficient work performed on them to determine their prospective values.

Mining operations at Tuscarora are being actively pushed by the different companies. Lack of milling facilities is said to be the greatest drawback at present. This will, however, to some extent at least, be remedied in the spring, when the North Belle Isle, Nevada Queen, and Commonwealth mining companies propose to consolidate in the construction of a mill of 30 or 40 stamps

NORTH BELLE ISLE MINING COMPANY.—Official advices to us show that the production for January amounted to $124,409.54.

EUREKA COUNTY.

EUREKA CONSOLIDATED MINING COMPANY.—The production during the week ended the 4th inst. amounted to 310 tons. Previously for a long time an average of only 50 tons per week was extracted. The new chamber of ore found on the second level in K. K. ground continues to open out finely, and they are preparing to drift in on the third level to tap it at that point. The drift on the third level will pass through about 800 feet of virgin ground.

NEW JERSEY.

OCEAN COUNTY.

Press dispatches, which have not yet been confirmed, report the alleged discovery of petroleum near New Egypt.

PENNSYLVANIA.

COAL.

The case of Hecksher et al. *vs.* Sheafer et al., being a suit for the sum of $100,000 as damages sustained by the plaintiff in being prevented by the land owners from mining all the coal at Kohinoor colliery, because of the danger that a large portion of the surface ground of Shenandoah would be let down, was before the Court in Philidelphia this week.

Reports from McKeesport state that Andrew Carnegie on the 16th inst. shipped 100 barrels of coke from each of the Moorewood and Standard Works to Eng-

land to be tested. It is thought that the superiority of the quality will justify shipments to that country regularly.

LEHIGH VALLEY COAL COMPANY.—A double explosion took place in Wyoming colliery of this company at Port Bowkley on the 14th inst. A miner at work in one of the chambers left a lighted lamp, and upon returning to get it an explosion occurred in the breast, the flames from which communicated to a gangway and a heavier explosion followed, which injured a number of miners and fired the mine. The flames were quickly subdued, and it was found that five miners had been badly burned. Two were fatally injured.

PUNXSUTAWNEY COAL AND COKE COMPANY.—This company has been organized in Philadelphia, with Hon. H. G. Fisher, of Huntingdon, as President; H. S. Frank and F. McOwen, both of Philadelphia, are respectively Treasurer and Secretary. Charles F. Berwind, H. G. Fisher, E. J. Berwind, and F. McOwen are the directors. The capital stock is $600,000. The company owns 400 acres of coal land in Jefferson County, about three miles from Punxsutawney, and the town that is springing up at the seat of the operations has been called Horatio, in honor of Mr. Fisher, the president. The company is now shipping coal.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to February 11th:

	1888. Gallons.	1887. Gallons.
From Boston	182,992	610,870
Philadelphia	8,524,697	11,921,184
Baltimore	599,309	1,162,698
Perth Amboy	1,879,366	1,605,465
New York	34,202,503	37,766,119
Total exports	45,388,867	53,066,336

SOUTH AMERICA.

UNITED STATES OF COLOMBIA.

We are advised by our special correspondent that Mr. E. E. Olcott, M.E., and Mr. Robt. Peele, Jr., aided by a score of assistants, are still busily engaged in prospecting the very extensive gravel banks of El Talento mine, near Honda, in Colombia. They will be occupied constantly until early in February. Of course, until an examination is closed and authoritative utterances given, it may seem unfair to make prophecies, but, judging by all indications, it is fair to presume that this exhaustive investigation will result in great satisfaction to all interested, and insure the vigorous and extensive working of the mine at once.

El Cristo has recently passed the first water through the new ditch, which has been some two years in course of construction. No ore has been shipped from this mine for some time, as further shipments have been indefinitely postponed.

Gibson Brothers, of Honda, have made a discovery of a large tract of auriferous gravel, and have secured some 20 square miles of it from the government. There is an abundance of water and facilities for working are said to be excellent.

The Frias mine is making some improvements and additions to their Cornish concentration machinery.

The Calamonte mine will soon resume its usual shipments of concentrates to England. The Frias, the Calamonte and the Santa Maria mines ship concentrates on which the expenses of shipment and reduction amount to nearly $100 per ton. The concentrates give $200 to $300.

Robt. Blake White, M.E., the Commissioner of Mines for the government of the State of Tolima, is at Honda now. He has just come in from a visit to the Boconeme mine, and claims that it will develop as the greatest silver mine in this district.

J. H. Rappin is pushing his suit for two thirds of the La Rica property with fair indications of succeeding.

The Oritá gravel mine near El Talento has found the same old channel that was washed in the Mal Paso mine last summer, which promises to be exceedingly rich. At the beginning of the large production of the Mal Paso mine during the summer, the shares of this company jumped from 8s. to £2 on the London market. At that time the shares of the Oritá advanced from sympathy; now they are rising on solid worth. Some very few years ago W. D. Powles bought a tract of gravel of 10,000 acres for $1000. This tract embraced the Mal Paso and Orita mines, each of which he sold to the companies for $30,000.

Mr. Edward Halze, M.E., of England, is in Honda at present. He is the superintendent of the Constancia and Socorro mines, which are located in the Orgunos District, some 200 miles south of Stonda. This district is developing quite a number of good gold veins, and promises to be a great producer of gold in the future.

SOUTH CAROLINA.

An important meeting of the men engaged in land phosphate rock mining was held last week in Charlestown and the following board appointed: Capt. C. C. Pinckney, Col. Joseph Yates, Mr. David Roberts and Mr. Charles R. Drayton who are to regulate the price. This price is not to be a fixed sum, but a flexible sum, dependent upon conditions within the discretion of the board. There is no combination with the river rock men, as their market is foreign and the output on their resources does not affect the land product. The land rock is mostly sold and manufactured at home and for home consumption, the arrangement being entirely distinct from other than the land interests. The prime object of the movement is stated to be not the inflation of phosphate rock prices, but that the material may be sold at a compensating price.

During January, 1888, there were shipped from Charleston 10,473 tons of crude phosphate rock, showing a decrease of 8,725 tons, as compared with the same period in 1887, and a decrease of 12,322 tons as compared with 1886.

TEXAS.

CHOCTAW COAL AND RAILWAY COMPANY.—This company has been organized with a capital stock of $1,000,000. The object is to construct a railroad from a point on Red River, in Grayson County, to Wise County, there to connect with the Denver & Fort Worth Railroad. It will be a continuation of the proposed Choctaw Coal and Railway, in the Indian Territory.

UTAH.

Colorado capitalists have purchased 6480 acres of coal lands at $60 per acre. The parties are said to be connected with one of the proposed railways to be constructed across Colorado, through Uintah and Summit counties, Utah, to Salt Lake City. These coal lands are located on each side of Chalk Creek, emptying into Weber River at Coalville, and extending up the creek six miles, and two miles on both sides. This is the nearest coal to Salt Lake City, and in case a railroad is constructed will bring it within 43 miles. By the Union Pacific it is 81, and the next nearest coal is at Almy, Wyoming, 112 miles, Rock Springs 240 miles, and the Pleasant Valley mines 114 miles. Openings by cuts, tunnels or shafts have been made on this property, exposing coal in thickness from twelve feet down to three.

SALT LAKE COUNTY.

The Utah Central Railroad's coal mines at Pleasant Valley shipped 44,465 tons of coal during 1887.

HOME COAL COMPANY.—This company's mines at Coalville produced 30,000 tons of coal during 1887. This coal was marketed chiefly in Park City and Salt Lake City.

OLD CHANNEL PLACER MINING COMPANY.—This company, which was recently organized in St. Louis with a capital stock of $2,000,000, shares $10 each, is now at work putting the property in a condition for operations. A flume over two miles long will be built before beginning to work the giants. The company owns some sixty acres.

PLEASANT VALLEY COAL COMPANY.—This company did a big business in 1887, having mined and shipped 86,341 tons during that year.

VERMONT.

ORLEANS COUNTY.

VERMONT COPPER MINING COMPANY.—A verdict of $1985 has been found against this company for damages to farm vegetation by furnace smoke. The case had been pending for many years.

WEST VIRGINIA.

BOONE COUNTY.

It is reported that Philadelphia parties have the intention of constructing a railroad from Peytona to connect with the Chesapeake & Ohio at St. Albans, if the other owners of land in the Big Coal River region will co-operate with them. Such an enterprise would open up about 100,000 acres of the most valuable coal properties in West Virginia. The land is heavily timbered and abounds in splint, cannel and bituminous coal. Peytona is 16 miles from St. Albans.

WISCONSIN.

GOGEBIC DISTRICT.

ATLANTIC MINING COMPANY.—At a recent meeting of the directors the following officers were elected for the ensuing year: F. A. Bates, President; N. D. Moore, Vice-President; E. H. Smith, Secretary and Treasurer; Nate D. Moore, General Manager. By a unanimous vote of the directors the President and Secretary were authorized to sell the Atlantic mine, leases, etc., to a now corporation for a sum sufficient to pay all outstanding debts and accounts. The right was reserved to the principal stockholders in the mine to take stock in the new company, pro rata to their holdings in the old concern, by a payment of 50 cents per share on the present stock, providing the same is paid in by a time hereafter to be specified by the directors. With the new organization the name Atlantic will not be used, and all the stockholders will fall out unless they pay the 50 cents assessment

WYOMING.

The group of mines comprising the Diana, the Victoria, the Britannia and the Buster have been bonded for the sum of $65,000. This group of mines is situated on Cariboo Hill. The capitalists appearing in the mining deal are Messrs. Scarif & Wetzel, of Soda Springs, Idaho, who are thought to be acting for a London syndicate.

OMAHA PETROLEUM COMPANY.—It is reported that the Standard Oil Company has been trying to secure control of this company, which has three wells in the southern part of the territory. The total daily output of the three wells would be 600 barrels if it were not for the lack of transportation, which has required the plugging of the holes. The company will build a pipe line to Omaha. The wells are down only 300 feet and produce an excellent lubricating fluid, but only 41 per cent is an illuminative. It has been used on the Union Pacific Railroad for several years.

LARAMIE COUNTY.

SUNRISE.—Messrs. Matheson Brothers, of England, it is reported, have acquired a five years' lease of the Sunrise copper mine and smelter at Hartville. The works, which have been idle for some time, will now be started up. The mines have not been worked heretofore on account of the lack of railway facilities, which are now supplied by the Cheyenne & Northern Railroad.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Feb. 17.

Statistics.

Production Anthracite Coal for week ended February 11th, and year from January 1st:

TONS OF 2240 LBS.	1888 Week.	1888 Year	1887. Year
P. & Read. RR. Co.	†10.000	†120,000	827,428
Cent. R. R. of N. J.	92,076	516 222	*
L. V. RR. Co.	121,075	789,124	682,457
D., L. & W. RR. Co.	145.656	840,300	549,802
D. & H. Canal Co.	92,634	521,553	569,662
Penna. RR.	66,286	402,791	301,177
Penna. Coal Co.	30,000	177,355	116.241
Total	557.727	3,367,345	3,046,767
Increase	1,102	320,578	
Decrease			

* Included in tonnage of Philadelphia & Reading RR.
† Estimated

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1883	3,552,821	1885	2,852,898
1884	3,914,545	1886	3,471,063

Production Bituminous Coal for week ended February 11th, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1888. Week.	1888. Year.	1887. Year.
Phila. & Erie RR.	1.038	4,118	.....
*Cumberland, Md.	53,289	351,992	298,829
Barclay, Pa.	4,234	18,573	20,591
Broad Top, Pa.			
H. & Broad Top. RR.	†9,238	41,871	48,014
Clearfield Region, Pa.			
Snow Shoe	3.402	18.593	22,494
Karthaus (Keating)	2,205	25.122	20,562
Tyrone & Clearfield	72,739	404,904	346,132
Tipton	804	4,650	.....
Alleghany Region, Pa.			
Gallitzin & Mountain	19,391	104,647	94,394
Pocahontas Flat Top Coal.			
Norf'k & West. RR.	25,913	181,121	133,084
Kanawha Region, W. Va.			
Ches. & Ohio RR.	37,697	219,517	166,174
Total	230,005	1,375,118	1,156,274

* Tons of 2240 lbs. †Week ending February 4th.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.			
West Penn RR.	9,120	53,538	41,486
Southwest Penn. RR.	2,306	13,090	20,938
Pennsylvania RR	6.520	34,609	28,080
Westmoreland Region, Pa.			
Pennsylvania RR.	26 664	189,284	175,402
Monongahela Region, Pa.			
Pennsylvania RR.	6,674	46,169	47,285
Total	51,293	336,690	313,771
Grand total	281,298	1,718,868	1,470,045

Production of Coke on line of Pennsylvania RR. for week ending February 15th, and year from January 1st, in tons of 2,000 pounds: Week, 62,042 tons; year, 482,712 tons; to corresponding date in 1887, 529,705 tons.

Anthracite.

The sole question in the market now is the resumption of work in the Reading mines. We have it on authoritatively that the men are to resume work on Monday. Some of the evening papers state that Mr. Corbin has agreed to arbitrate the differences after the men are at work, and that all the strikers will be taken back, but this is obviously incorrect. Mr. Corbin spoke in no uncertain terms yesterday before the investigating committee, and our information does not indicate that any arrangement whatever has been made by him, but that the Knights have concluded to go to work because the Wyoming men would not come out, and their own people were gradually going back, thus threatening the disruption of the entire organization. No doubt it was the wisest thing they could do, but there is not the slightest indication that there will be any arbitration or any advance in the basis.

Nothing has yet been heard from the Lehigh region, but it seems to be conceded that the Lehigh men will also go to work within a few days.

Prices are nominally the same as last week, but since the announcement of the end of the strike, no one will buy coal. Companies' prices are nominally as heretofore. For free-burning coals, *net* prices f.o.b., Broken, $3.85@$4.25; Egg, $4.10@4 25; Stove and Chestnut, $4.75. Lehigh coal sells at $4.50 for Broken and Egg; $5 for Stove and Chestnut; $2.85@2.90 for Buckwheat.

The following report of the production of anthracite shows that it is already this year a little greater than it was during the first month of last year, having been 2,255,692 tons in January, notwithstanding the Reading and the Lehigh strikes.

This statement is, in itself, an instructive one for the miners to consider. If, with these two regions on strike, the production was as large as last year when there was no strike, what will it be when all the men are at work, and how long will it take to accumulate stocks to the point where they will depress prices?

The Bureau of Anthracite Coal Statistics furnishes us with the following statement of production of anthracite coal for month of January, 1888, compared with the same period last year, compiled from the tonnage reports of the several transportation companies. This statement includes the entire production of anthracite coal, excepting that consumed by employés

and for steam and heating purposes about the mine, estimated at 6 per cent of the whole:

REGIONS.	Tons of 2,240 lbs.—January, 1888.	January, 1887.	Difference.
Wyoming Region	1,908,297	1,200,115	I. 708,182
Lehigh Region	48,022	347,023	D. 299,061
Schuylkill Region	299,373	696,175	D. 396,802
Total	2,255,692	2,243,313	I. 12,379

The stock of coal on hand at tide-water shipping points January 31st, 1888, was 95,168 tons; on December 31st, 1857, 130,977 tons; decrease, 35,809 tons.

COMPANIES.	January, 1888.	January, 1887.	Difference.
Phila. & Reading RR.	94,472	500,391	Dec. 405,919
Central RR. of N. J.	329,863	237,633	Inc. 92,230
Lehigh Valley RR.	298,035	409,633	Dec. 111,598
Del., Lack. & West. RR.	633,884	350,236	Inc. 283,649
Del. & Hud. Canal Co.	391,885	255,641	Inc. 36,244
Pennsylvania RR.	316,862	253,505	Inc. 63,357
Pennsylvania Coal Co.	123,526	79,233	Inc. 44,292
N. Y., L. E. & W. RR.	67,165	57,041	Inc. 10,124
Total	2,255,692	2,243,313	Inc. 12,379

Bituminous.

There is absolutely nothing to say in this article. Prices remain as heretofore at $3.50@$3.70 alongside. Cars are still very scarce, but are expected to be more abundant very soon.

The resumption of work by the anthracite miners will quickly stock up the market, and a decline in prices will no doubt follow. This may effect bituminous coal somewhat, but the impression is very general that consumers will pay $3.75 on their contracts this year.

Boston. Feb. 16.

[From our Special Correspondent.]

The past week has been chiefly notable for the arrivals of coal on old orders. The barges have been able to make better trips than the sailing vessels, but many of the latter are now in, and there is a more comfortable state of affairs to mention. Stove coal is in very fair supply, and there is no great trouble about egg. Broken coal continues scarce, and sellers can command their own terms. The speedy termination of the strike is still looked for, but no apparent change seems to have been reached in the obstinate struggle.

The demand for bituminous coal in cargo lots is reported as having been very good of late, due in some measure, probably, to the scarcity of broken coal. The cargo rates rule from $2.50 to $2.60 f.o.b., but with very little at the lower figure. Shippers are everywhere congratulating themselves that they have adhered to the f.o.b. contract system this past season, as it has saved them from heavy losses which would undoubtedly have occurred under the old arrangement of delivered contracts. The experience of the pool in this respect is counted upon as a most potent factor in holding the shippers together another year. There is considerable talk of advancing f.o.b. quotations for next year, but many think the action would be unwise.

The rates on sailing vessels are still in the air, so to speak. A few barges are coming from Philadelphia, but no schooners. We quote, exclusive of discharging: New York, $1.60@$1.70; Philadelphia, $1.75; Baltimore, $2; Newport News and Norfolk, $1.75.

There is a steady trade retail at former prices. We quote delivered prices: Stove, $7.75; Egg, $7.50; Broken, $7.25; Franklin, $9: Lehigh Egg, $7.75; Broken, $7.50.

Buffalo. Feb. 16.

From our Special Correspondent.]

Anthracite coal firm and active for home consumption. The severe cold weather was followed by glorious sunshine for three days, but now winter is again in the ascendancy.

Bituminous coal in good demand from manufacturers and others; stocks laid in during summer and fall begin to show signs of depletion, hence the improvement. Prices nominally unchanged.

A report emanating from Minneapolis says "that the Lehigh Valley vessel line has made an alliance with the Sault Ste. Marie, or Soo, Railroad, and will build two steel steamers to ply between Buffalo and Gladstone, Mich. These vessels will carry coal westward, and flour, grain, etc., eastward. The alliance is considered one of the most important yet made by the new road, as it will furnish Minneapolis with coal via Gladstone, instead of via Duluth, as heretofore." The officials of the Lehigh at Buffalo say that an arrangement of the nature reported is doubtless pending, but nothing definite has determined. It is a fact that at present there are no docks, elevators, or handling facilities at Gladstone, and that the "town" of Gladstone is an embryo place on Lake Michigan, north of Menominee. It would not be surprising, however, to find that town, facilities, etc., had become an established fact before the season of 1888 is closed.

Mr. J. M. Brill, formerly coal sales agent of the N. Y., L. E. & W R.R. Company, has accepted a like position with the Rochester & Pittsburg Coal and Iron Company, with headquarters in our city.

The Harbor Improvement Committee of the Merchants' Exchange are taking energetic measures to secure a full depth of water the coming season of navigation in Buffalo river and harbor. The trouble now is that soundings are taken through the ice, and when the spring freshets occur the location of the bars, silt, etc., are often changed and not discovered until some heavily laden craft grounds where there should be a 16 to 18 foot channel.

It is estimated that 500 poor families in Buffalo get their supply of coal yearly from the droppings from and the scrapings of the cars at East Buffalo—including, of course, the stealings!

Pittsburg. Feb. 16.

[From our Special Correspondent.]

Coal.—The market is dull and prices weak, not quotably lower. The late run was small, not exceeding two million bushels. Price of coal at Cincinnati declined as follows: Second pool, 8 cents; fourth pool, 7 cents; Ohio River, 6 cents per bushel afloat.

PRICE OF COAL PER 100 BUSHELS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.25	Railroad coal	5.00
Third pool	3.75		

Connellsville Coke.—We have nothing new to note. The dispute between the coke and furnace men continues; the coke men refuse to lower their figures, and say, "If you want $1.35 coke, do like Carnegie, invest a couple of million dollars in a coke plant and sell coke to yourself at $1 per ton." The rates are: Blast-furnace, f.o.b. at ovens, $1.75, to dealers $1.85; Foundry, $2; Crushed, $2.50.

Twenty-five per cent of the coke ovens in the Connellsville region were shut down on the 16th inst., in accordance with the agreement made by the operators a few days ago. The suspension is for the purpose of restricting production.

MARKETS.

NEW YORK, Friday Evening, Feb. 17.

Prices of Silver per ounce troy.

Feb.	Sterling exchange	Lond'n Pence.	N. Y. Cents	Feb.	Sterling exchange	Lond'n Pence.	N. Y. Cts.
11	4.85½	44 1-16	95⅝	15	4.86	*	95½
13	4.85½	44 1-16	95⅝	16	4.86	44	95⅝
14	4.85½	44	95⅜	17	4.86	44	95⅜

* 43 15-16.

The silver market has been without feature and there are no indications of any speculative attempts to advance the price, rumors to the contrary notwithstanding.

A Washington telegram says "it is stated on good authority that the President is preparing a message on the silver question, in which he will take strong grounds against continued coinage of standard dollars."

Foreign Bank Statements.—The governors of the Bank of England at their weekly meeting reduced its rate for discount from 3 to 2½ per cent. During the week, the bank gained £497,000, and the proportion of its reserve to its liabilities was raised from 44·90 to 46·35 per cent, against an advance from 50·07 to 51·28 per cent in the same week of last year, when its rate for discount was 4 per cent. Thursday, the bank gained £120,000 bullion on balance. The weekly statement of the Bank of France shows an increase of 4,050,000 francs gold and a gain of 1,400,000 francs silver.

Copper.—During the past week the market has been rather quiet, and at the close the quotations for Lake copper are not quite sustained. The total transactions have not been large, and amount to about one million pounds for the week. In London the market for Chili bars has been strong. On Monday the opening price was £77, and there was a gradual and steady advance from that point to £78 7s. 6d., but this afternoon the price is slightly weaker again at £77 2s. 6d. In strong contrast with the market for Chili bars, it is reported that very little business indeed is taking place in copper for actual consumption, the smelters asserting that they are unable to realize a proportionate advance in price for their produce. Furnace material also (which has recently been in good request) is now neglected, and it would now appear that the condition of the markets in Europe, as well in this country, may be briefly summarized by the statement that speculation continues lively, whilst legitimate trading is almost at a standstill. The action which the Calumet & Hecla Company is like to take continues to be the subject of constant surmise and various rumors. On the one side it is asserted that arrangements have actually been concluded with the French Syndicate, while this statement is denied in other quarters. It is, of course, quite obvious that it would be of the greatest advantage to the syndicate to secure the concerted action of the powerful Calumet & Hecla Company, as this consummation would practically gain for them the power for which they have been striving, but whether such an arrangement would be equally advantageous to the Calumet & Hecla Company is a question on which we don't care to venture an opinion at present. Such an agreement would certainly involve the surrender by the C. & H. Company of the policy pursued by them during the last few years, which has always been in the direction of an independent and dominating position in the copper market.

Messrs. Henry R. Martin & Company, of London, cable that the visible supply of copper has increased 4500 tons for the first half of this month. Our market closes quiet, with little business done at the following quotations for Lake Copper: Spot, 16·35; March, 16·45; April, 16·50; May, 16·35; June, 16·35.

The London *Statist* says the Société Industrielle et Commerciale des Metaux intends raising its share capital from 25,000,000 to 50,000,000 francs. Interested circles say it will offer half the new shares to stockholders at about 700 francs, or 200 francs premium each, while the remainder will go to the two original founders, M. M. E. Secretan and T. T. Laveissiere, at par. The present capital is 25,000,000 francs, in 50,000 shares, 20,000,000 francs in 400,000 obligations, with a reserve of 357,340 francs. An extraordinary general meeting will soon be convened.

The high price of copper and the prospect of its being kept at or above present figures by the French syndicate is producing activity among the owners of mines which were shut down in 1884 because they were unable to produce the metal at the low price then offered. Among these is the Peninsula mine, formerly known as the Boston & Albany, in the Lake Superior district. This mine owns a large tract of land about four miles from the Calumet & Hecla. The mine is on the Allouez Conglomerate, which is fully fifteen feet in thickness, and is said to carry probably a little more copper than does the Allouez rock. Owing to the great thickness of the bed and the facilities for working, the rock can undoubtedly be mined and treated at a total cost not to exceed $2.00 a ton, and probably at $1.75 a ton, with efficient work and good management, the Allouez having done the work at a little less than this figure.

With a yield of twenty pounds ingot per ton of ore, the cost in New York would be about eleven cents per pound, and a selling price of thirteen cents would make this a profitable enterprise. The State Mining Commissioner estimates the yield of the rock higher than twenty pounds per ton. The mine is equipped with a large plant, and could be put in production within a short time. It is reported that negotiations for its purchase by an English syndicate are now in progress on a satisfactory basis.

The New York correspondent of Messrs. James Lewis & Sons informs us that the failure to give us credit in the use of our statistics of copper was his fault, having neglected to cable the source of his information. This, of course, absolves Messrs. Lewis & Sons of the discourtesy we attributed to them, though the figures had already been cabled to and published in the London *Financial News* with due credit.

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

	Matte.	Lbs.	
To Liverpool—			
By S.S. Saint Ronans—Sacks	4,597	540,100	$27,000
" Aurania—Sacks	104	12,000	900
" City of Chicago—Sacks	147	111,116	5,500
To Antwerp—	Copper.		
By S. S. Bilgenland—Casks	23	44,466	7,530
To Rotterdam—			
By S S. Zaudam—Casks.	71	112,500	18,400
To Bordeaux—			
By S. S. Chateau Margeaux—C'ks.	532	664,000	86,700
To Havre—			
By S. S. La Normandie—Cases	3	920	100
" " " —Casks	20	25,000	3,812

Tin.—This market has been a little firmer, having been influenced by a good demand from consumers, and we now quote: Spot, 37c.; March, 35½c.; April, 33⅞c.; May, 32c.

Heavy shipments are reported as being on the way from England to this country.

Messrs. Charles Nordhaus reports the exports of tin from Singapore and Penang during the first half of February as 200 tons to America and 800 tons to England.

Lead.—Although there has been no confirmation of the report about a syndicate having been formed in Europe to operate in this article, and the price of Spanish lead in London has declined from £15 to £14 12s. 6d., the operators here have displayed no want of confidence and have continued to buy and take up large quantities, but it seems rather strange that their operations appear to be now confined to the buying up of distant futures, whilst near futures are comparatively neglected.

On the Metal Exchange yesterday March delivery was offered at 4·95c. without finding buyers, whilst at the same time May delivery was driven up to 5·05c. and 5·07½c. Consumers continue to watch the market very closely; they only buy to cover their immediate requirements, and have bought a few lots at 4·87½@4·90c. for spot.

Messrs. John Wahl & Co., of St. Louis, telegraph to-day as follows:

As compared with the previous week, this week's business has been fair. There has been considerable more inquiry for both hard and soft lead, in consequence of which sellers have been asking a little more, but only a moderate amount of business has been transacted. Sales will probably foot up 800 tons, at prices ranging from 4·65 to 4·72½.

Messrs. Everett & Post, of Chicago, telegraph to-day as follows:

Market quiet and dull, prices unchanged. Demand is only moderate and there is but very little doing except by speculators. Offerings are only moderate except of Missouri leads. Nominal quotations for argentiferous leads, 4·80@4·85.

Spelter continues quiet but firm, domestic being obtainable at 5¼-⅛ in New York and 5⅛ in St. Louis. Reports from Europe mention a rather firmer market, as the second hand lots which have previously pressed on the market are being disposed of. The present quotations are: Ordinaries, £18 15s. to £19; specials, £19 5s. to £19 10s.

Antimony unaltered. We quote Hallett's 11⅛@11⅜; Cookson's, 14@14½. The quotations in England are firm: Hallett's, £50; Cookson's, £55.

Chemicals.—The slight improvement noted two or three weeks since has not continued, and the market, with few exceptions, is very dull and quiet.

Among the heavy chemicals, Newcastle soda ash, 48 per cent, is in some demand, with very limited supply

on the spot. Quoted prices are $1.25@$1.30, according to quality.

Refined alkali, 36 per cent, is very dull, with prices at $1.10@$1.15; 48 per cent alkali is also without animation, with no change in quotations since our last. There have been a few small sales of 58 per cent goods, but we hear of nothing worthy of note.

English sal soda is somewhat lower, and the market shows some animation. Spot lots may be had for 1c. per pound, and lots to arrive at 87½@90c.

Caustic soda continues depressed, without change in prices.

Bleach is also dull, but dealers look for improvement soon owing to the better feeling on the other side.

The acid market is without notable change. Acetic acid continues at the same prices that have prevailed for some weeks, without much activity.

The lower price on oxalic acid continues, and it is doubtful if the manufacturers will settle and return to former prices. The nominal price is 7@7½ cents, according to quantity.

Sulphuric acid is in demand in a jobbing way only, with no change in the quotations of 90@95 for large quantities and 1@1.10 for smaller amounts.

There is unabated activity in the fertilizing chemical market.

Kainit, of which the spot supply is very limited, is quoted at $12 per ton in bags, $11 in bulk.

Muriate of potash is very firm, and rather scarce. Spot is quoted at $1.77½, basis of 80 per cent. Prompt steamer shipments same price. April and May sail shipments are quoted at $1.72½. Double manure salt is rather dull, with $1.20 asked for lots ex store, and $1.12½@$1.15 for futures.

Sulphate of ammonia is very scarce and $3.30 per cwt. is demanded for immediate delivery.

Nitrate of soda is firm at $2.20@$2 25 ex'store. Nearby shipments are offered at $2.12½. Future shipments may be had at $1.87½@$1.92½.

Brimstone is easy with a fair demand; goods on the spot may be purchased for $22 per ton for best seconds. Future shipments at $19.50@$20 do not find ready takers.

THE NEW YORK METAL EXCHANGE COMPILES THE FOLLOWING MOVEMENT OF BONDED METALS, PORT OF NEW YORK, JANUARY, 1888.

METALS.	Imports. January.	Exports. Dec., 1887.	Stocks. Jan. 1.	Stocks Feb. 1.
Iron ore	689 tons	.....	.....	.....
Pig-iron	3,568 "	101 tons.	2,542 tons	2,243 tns.
Spiegel-iron.	399 "	.....	2,439 "	2,685 "
Old rails	2,473 "	....	16,781 "	17,934 "
Scrap-iron.	534 "	.....	1,442 "	1,759 "
Scrap-steel.	32 "	.....	965 "	965 "
Steel blooms and billets	172 "	.....	824 "	824 "
New st. rails	.....	.....	.....	.....
New ir. rails	.....	.....	.....	.....
Wire and nail rods	5,477 "	.....	9,910 "	10,206 tns
Iron bars, etc	563 "	19 tons.		
Iron beams.	221 "	.....	.....	.....
Sheet-iron	222 "	24 "	1,707 "	1,700 "
Steel sheets and plates.	331 "	.....	16 "	16 "
Cotton ties	.....	.....	592 "	592 "
Steel tires and forgings	263 "	.....	62 "	62 "
Steel tubes	45 "	.....	14 "	14 "
Steel bars, etc	849 "	2 tons.	79 "	79 "
Tin plates	89,804 bxs.	.....	55,778 bxs	58,434 bxs
Taggers' ir'n	1,282 "	.....	.....	.....
Pig-tin	598 tons	.....	.....	.....
Copper ore	.....	4,031tns.	.....	.....
Copper mat.	.....		.....	.....
Ingot cop	26,910 lbs.	708,054lbs	.....	26,910 lbs.
Copper (old)	4,981 "	.....	66,740 lbs.	66,740 "
Brass (old)	.....	.....	470 "	470 "
Pig-lead.	.....	.....	2,943 tons	2,943 tns.
Lead (old)	1,846 lbs	.....	468 lbs.	468 lbs.
Spelter	108 tons	.....	47 tons	47 tns.
Sheet-zinc	.....	6 tons.	11 "	11 "
Scrap-zinc	.....	.....	13,400 lbs.	13,400 lbs.
Antimony	254 cks.	.....	155 cks.	155 cks.
Nickel	20,000 lbs.	.....	13,022 lbs.	7,462 lbs.
Type metal.	100 tons.	.....	.....	.....

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 17.

At the present writing there are decided indications of the breaking up of the coal strikes, which would at once put the furnaces of the Lehigh and Schuylkill regions into position to produce their usual output of foundry irons. But as yet there are no special signs of a very active demand. It is, however, not probable that the demand can longer be delayed. The slackness of demand is partially accounted for by lack of coal at the foundries as well as at the blast-furnaces. As we have frequently pointed out, all the indications continue to point to a very large consumption of pig-iron in 1888.

The sellers of Southern irons in this market have not been slow to seize the opportunity offered by the restriction of Northern production, and several brands of Alabama, Tennessee, Kentucky and Georgia foundry irons are now regularly used in the foundries from New York to Albany, along the Sound and about Boston. The sales have largely increased durthe past few months. The introduction of these irons has not been easily made. The natural prejudice of foundrymen against new brands had to be overcome, and it has taken sometime to teach the Southern furnacemen to grade their iron so as to suit the Northern market. Much progress has been made in this direction. The natural market for these irons has been in the South and West.

Freights from Birmingham to Cincinnati and Louisville have ruled about 50 cents per ton less than to New York *via* Charleston or Savannah. Until within a few months the furnaces could sell in Cincinnati at a net price about 50 cents per ton above that obtainable in this market; on the other hand, Northern and Eastern buyers as a rule pay in shorter time than the Western consumers. It is not generally known that freights from Birmingham to Detroit and Chicago are no lower than from Birmingham to Albany and Troy.

Scotch pig is lower, with very little new business reported. Cable quotations from Glasgow show a decline since last week.

Steel rails have been very quiet, with no new sales of any size. Several of the mills have already sold their allotments.

Other steel materials are very dull, and quotations are nominal.

Old rails are rather firmer, although quotations are nominally unchanged. We hear of one sale of 500 tons of doubleheads at $22.50 on cars Jersey City, and a sale of 2000 tons of tees by the Pennsylvania R.R., price not given. On the other hand, $22.75 has been refused for a lot of doubles in store.

The meeting of the Eastern nail manufacturers, which began last week in Philadelphia, was continued in this city. Great progress was made towards forming an association on the same allotment system as that under which the makers of steel rails are working. All the companies repesented signed an agreement to form such a combination on a percentage basis, the allotments to be determined by a board of control or central committee. It is believed that all of the Northern and Eastern mills will find it to their interest to join in such an arrangement for restriction of production. This association, like that of the rail makers, does not attempt to fix prices, leaving all the mills free to sell at their own figures. The Atlantic States Nail Association is a different organization, which fixes nominal "card rates." These "card rates" do not appear to be binding. The two associations are practically composed of exactly the same members, being the thirty-one nail factories in New England, the Middle States, and Virginia. Nails are firmer and are quoted a little higher this week.

Louisville. Feb. 13.

[Reported by GEO. H. HULL & CO.]

There has been no improvement in the market. Buying for prompt delivery has been quite active. Old rails are off, owing to buyers expecting in the spring to have large quantities offered at lower prices. Old wheels continue steady and show a slight advance. There have been but few sales, and these mainly for car-load lots in this vicinity. Quotations will be found in our weekly register of prices.

Pittsburg. Feb. 16.

[From our Special Correspondent.]

There is no improvment to note on last week's report; in fact, the market, apart from extreme apathy, is absolutely featureless. There is no general demand for any thing, so that the market may still be called dull and neglected. There are many indications that consumers are running very close to the end of their supplies, and it should cause no surprise to see a sudden change of feeling. Neither is there any pressure to sell at rates that are now prevailing. Sellers see that it would be useless to ask an advance, as from some source buyers manage to supply all their wants at the inside rates quoted. There is no inducement, therefore, to increase the supply, while in not a few instances there is a gradual curtailment because of the impossibility of realizing first cost under the conditions which now prevail. What the outcome of this state of affairs will be is a difficult question to answer, and must be left for the future to decide, although it is of vast importance to the trade.

The unsettled condition in trade, generally noted in our last, continues.

Strikes and general dissatisfaction still prevail; one difficulty is hardly settled until another is announced. Furnace men are still demanding cheaper coke and reduced railroad rates, and if reports are to be believed they will make a big fight to that end, and that in the event of a refusal will bank the remaining furnaces. This would be a serious drawback to the industries of the country at the opening of the spring trade, and would make idle men of thousands who would be thrown out of employment.

As if the above troubles were not sufficient, the ore question is now coming to the front; the time for making contracts for the year is at hand. Contracts have been reported at $6.50 per ton. It is being whispered round that contracts are offered below that figure. There is one thing that would be well to take into consideration, the imports of foreign ore will depend altogether on the price you place on the native article. If the ore men don't want a big competition from across the water, the only way to prevent it will be to keep down the prices.

The city furnaces that are banked propose to remain so for the present.

SALES REPORTED SINCE OUR LAST.

Coal and Coke Smelted Lake Ore.

500 Tons No. 2 Mill Iron	16.50 4 mo.
500 Tons Gray Mill, all ore	18.25 4 mo.
500 Tons Gray Mill	16.25 cash.
1000 Tons Gray Forge	16.25 cash.
500 Tons Gray Forge	16.20 cash.
500 Tons Bessemer	17.75 cash.
300 Tons Mixed lot storage	15.25 cash.
200 Tons Gray Forge, all ore	17.00 4 mo.
200 Tons Bessemer Extra	18.00 cash.
225 Tons Gray Forge	16.25 cash.
250 Tons Gray Forge	16.35 cash.
100 Tons No. 2 Foundry	18.00 4 mo.
100 Tons No. 1 Foundry	18.00 cash.
50 Tons No. 1 Foundry, all ore	18.25 cash.
50 Tons White and Mottled Bessemer	16.50 cash.

Coke, Native Ore.

125 Tons No. 1 Foundry	19.00 4 mo.
100 Tons Gray Forge	16.25 cash.
100 Tons Gray Forge	16.75 4 mo.

Charcoal.

25 Tons No. 2 Foundry	24.75 cash.

Steel Bloom Ends.

1000 Tons Bloom Ends	18.70 cash
500 Tons Bloom Ends	18.70 cash.

Muck Bar.

800 Tons Good Neutral	27.85 cash.
500 Tons Good Neutral	27.75 cash.

Steel Billets.

500 Tons Billets	28.75 cash.
250 Tons Slabs	29.00 cash.
1000 Tons Billets	28.50 cash.

Old Iron Rails.

1000 Tons American T's	24.00 cash.
500 Tons Imported D H	25.50 cash.
200 Tons American T's	24.00 cash

Scrap Material.

300 Tons No. 1 Wrought Scrap, net	20.00@21.00 cash.
250 Tons No. 2 Wrought Scrap, net	19.00 cash.
250 Tons Cast Borings, gross	13.00 cash.
100 Tons Wrought Turnings, net	13.50 cash.
150 Tons Wrought Turnings, net	14.00 cash.
100 Tons Railroad Cast Scrap, gross	17.50 cash.
100 Tons No. 1 Wrought Scrap, net	21.00 cash.

Philadelphia. Feb. 16.

[From our Special Correspondent.]

The situation in the iron and coal trade has not materially changed since a week ago. The industries all through Eastern Pennsylvania are very well supplied with fuel, anthracite, bituminous, and coke. The Congressional Committee, in session here, have developed nothing that was not already familiar to the bulk of newspaper reporters and those who keep track of the Reading affairs. It is evidently a conscientious committee. It is aiming to get at the facts and will make an honest, but fruitless report.

The iron trade in itself is presenting very few interesting features. Beneath the surface, however, there are some things met with that may change the situation materially. For instance, to-day inquiries were made for a good deal of Southern iron and some Western iron. If the Wyoming strike takes place on Monday, it will materially change the situation, and large orders for iron will be placed, it is said, to-day. The figures that are talked of will not be far from $17 for forge delivered. Quotations remain as heretofore and but few orders have been placed for either foundry or forge, and in foreign iron scarcely a single contract of importance has been heard of. The consumption of forge iron is quite heavy throughout Middle and Eastern Pennsylvania as all the rolling mills are running pretty nearly full time with bituminous coal, then besides, there are inquiries for material which indicate a further revival in activity, so far as crude iron is concerned. There will be no change in the situation until the strike ends one way or the other. Agents who have just made a tour of the market return to-day and say that stocks are low and that there were no prospects of inducing consumers to load up. The founders are particularly slow about placing orders and think that a drop will be the outcome of the present complications. Some stove founders have been looking for material, but find prices do not suit them. There are additional rumors to-day about the blowing out of four or five more furnaces, but this depends upon contingencies. The Reading officials will not recede from their position, and the miners, it is learned to-day, are securing considerable supplies of money from their recently sent out collectors.

As to foreign materials, there are a few inquiries but no square offers on the market at this writing. Bessemer is too abundant for well-known reasons. Billets, slabs and blooms are not wanted in the present situation of railroad building. Nail slabs are not being ordered, although there are prospects for some business later on in the season if prices weaken a little abroad. Muck bars have declined about 50 cents, and business at the drop is lighter than at full prices.

The bar mills are not all running full-time. Three or four have thrown off a few puddling furnaces, and two or three, perhaps, will come down to single turn. It requires close shaving to pick up a good-sized order, and for some reason or other consumers are waiting to see how things go without being able to assign a good reason for it. The bar iron demand will eventually be good, because selling agents all say stocks are light.

The nail trade has not picked up any, but there is a better feeling in consequence of the steps taken to restrict production and to fix prices firmly at the appended rates. Our Pennsylvania nail makers in commenting upon the prospects for trade this year, say that with a proper trade spirit, five to ten cents more per keg will be obtained than last year. There will be more cohesive action, fewer stocks to work off, and building requirements will in all probability be heavy.

All of our plate and tank-iron makers have some business on hand and are picking up a little more every day, though really where a large order is concerned it takes a concession or shading to fetch it. Apparently the prices of plate and tank, both iron and steel, are declining but when quotations are made they are made at full rates. Some orders are of such a character that a little drop can be made in certain sizes and shapes.

The structural iron mills are running quite full, and with all the talk about dullness, there appears to be no slacking up of business. No heavy orders are placed, but the manufacturers feel that there will be no occasion for a restricted output. Prices remain firm.

The merchant steel mills manage to keep running

WEEKLY REGISTER OF

CURRENT QUOTATIONS.

CHEMICALS.

Acid—Acetic.....2⅝@2½
Muriatic, 18°, per 100 lbs.....1.20
Muriatic, 20°, per 100 lbs.....1.35@1.50
Nitric, 36°, per 100 lbs.....4.50@5.00
Nitric, 42°, per 100 lbs.....6.00
Oxalic.....7 @7½
Sulphuric, 60°, per 100 lbs.....90
Sulphuric, 66°, per 100 lbs.....1.10
Alkali—36 p. c.....1.10@1.15
48 p. c.....1.22½@1.25
Refined, 58°.....1.15
Alum—Lump, per lb.....1¾
Ground, per lb.....2
Lump per ton, Liverpool.....£5
Sulphate of Alumina.....£3 15
Aqua Ammonia—18°, ℔ lb.....4
20°, ℔ lb.....5
22°, ℔ lb.....6¾
26°, ℔ lb.....9¾
Ammonia—Sul., per 100 lbs. 3.00@3.50
Carb., per lb.....7¾
Muriate, per lb.....7
Arsenic—White, powdered, ℔ lb..3
White, glass.....
Red, per lb.....6½
White, at Plymouth, per ton..£10 7 6
Asbestos—American, p. ton.....20 00
Italian, p. ton, c. i. f. L'pool...£18 0 0
Asphaltum—P. ton.....13.00
Prime Cuban, ℔ lb.....5@6c.
Hard, ℔ ton.....$28.00
Trinidad, refined, ℔ ton.....$30.00
Barytes—Sulph., Am. prime white16.00
sulph., foreign, floated, p. ton....19.00
Sulph., off color, p. ton.....12.50
Carb., lump, f.o.b. L'pool, ton....£3 0 0
No. 1, casks, Runcorn " "£4 10 10
No. 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb.1.92½@1.97½
Borax—Per lb.....6¼
Refined at Liverpool, per ton..£28 10
Brimstone—*See Sulphur.*
Bromine—Per lb.....36
Cement—Rosendale, per bbl.....1.00
Portland, American, per bbl.....2.00
Portland, foreign, per bbl.....2.25
Chalk—Per ton.....3.00
Precipitated, per lb.....4
China Clay—English, per ton....18.50
Southern, per ton.....13.50
Chrome Yellow—Per lb.....8
Cobalt—Oxide, per lb.....2.15
Copper—Sulph. English Wks. ton£24
Precip., Eng. Wks, uns....fluctuating
Copperas—Common, per 100 lbs.$ 70
Best, per 100 lbs.....1.20
Liverpool, per ton, in casks, £1 16 1.20
Cream of Tartar—Am. 99%....33¼@34
Powdered, 99 p. c.....35
Emery—Grain, per lb.....4
Flour, per lb.....2½
Feldspar—Ground, per ton....14.00
Fuller's Earth—Lump, per bbl.95
Powdered, per lb.....2
Gypsum—Calcined, per bbl.....1.25
Iodine—Resublimed.....3.50
Kainit—Per ton.....11.00
Kaolin—*See China Clay.*
Lead—Red, per lb.....6
White, American, in oil, per lb....6¼
White, English, per lb.....7½
Acetate, or sugar of.....13@13½
Litharge—Powdered, per lb....6@6¼
English flake, per lb.....9
Magnesite—Syrian, per ton.....15.00
Manganese—lump, c. i. f. Liverpool, per ton.....£3 2 6
Per unit, up or down.....1s. 6d.
Ground.....£5 10
Mercuric-Chloride—(*Corrosive Sublimate*) per lb.....55
Mineral Wool—Per lb.....2
Mica—
In sheets according to size, 1st quality, ℔ lb.....25@$6 00
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston.....5.80
Ground, f. o. b. New York..9.25@10.00
Canadian Apatite, lump, f. o. b. at shipping port, per unit.....24
Phosphorus—Per lb.....70
Plumbago—Ceylon, per lb....4@5
American, per lb.....7@8
London, per cwt.....£0 15 0
Potassium—Cyanide, per lb..39@41
Bromide, per lb.....37
Chlorate, per lb.....15¾@16½
Carb. per lb.....5
Caustic, per lb.....7¼
Iodide.....2.70@2.75
Muriate, per 100 lbs.....1.77½@1.80
Nitrate, refined, per lb.....6
Bichromate, per lb.....10½
Sulphate, per 100 lbs.....1.13
Yellow Prussiate, per lb.....19
Red Prussiate, per lb.....42
Pumice Stone—Select lumps, lb. 3@5
Original cks., per lb.....1¾
Powdered, pure, per lb.....2
Pyrites—Non-cupreous, p. unit, s. 10
Quartz—Ground, per ton.....18.00
Rotten Stone—Powdered, per lb. 8½
Lump, per lb.....5
Eng., powdered, per ton.....£4
Lump, per ton.....£5
Salt—Liverpool, ground per bbl. 70
Turk's Island, per bbl.....25
Salt Cake—Per 100 lbs.....55
Saltpeter—Crude, per lb.....4½
Refined, per lb.....6
Soda Ash—Carb., 48% 100 ℔...1.25 @1.35
Caustic, 48 %.....1.27½@1.30
High test.....1.12½@1.15
Soda Caustic, 60%.....2.50@2.60
" " 70%.....2.30
" " 74–5%.....2.25
Sal, English, per 100 lbs.....90@1.00
Sal, American, per 100 lbs.....1.15
Nitrate, per 100 lbs.....2.25
Strontium—Nitrate, per lb.....10½
Sulphur—Roll, per lb.....1½
Flour, per lb.....1¾
Crude Brimstone, 2s., per ton...22
Crude Brimstone, thirds, per ton 19
Talc—Ground French, per lb.....1¼
Domestic, per lb.....6
Domestic, per ton.....15 00
C. i. f. Liverpool, per ton.....£4 5 0
Tannin—Pure, per lb.....
Vermillion—American, per lb....50
English, per lb.....65
Vitriol—(Blue), Ordinary, per lb. 5
Extra, per lb.....5½
Zinc Oxide—Am., Dry, per lb....4½
Antwerp, Red Seal, per lb.....6@6½
Paris, Red Seal, per lb.....6½@7
* Spot.

BUILDING MATERIAL.

Bricks—Pale, per 1,000.....5.00
Jerseys, per 1,000.....7.50
Haverstraw, per 1,000.....8.50
Front bricks, per 1,000, from.....10.00
Building Stone—Amherst freestone, per cu. ft., from.....75
Brownstone, per cu. ft., from.....1 00
Granite, rough, per cu. ft., from..45
Slate—Purple and green roofing, per 100 ft.....6 00
Red roofing, per 100 sq. ft.....15.00
Black, roofing, per 100 sq. ft.....5.00

THE RARER METALS.

Aluminum—(Metallic), per lb....11.00
Arsenic—Metallic, per lb.....32
Barium—(Metallic), per lb.....975.00
Bismuth—(Metallic), per lb.....2.40
Cadmium—(Metallic), per lb.....1.45
Calcium—(Metallic), per oz.....150.00
Cesium—(Metallic).....
Cerium—(Metallic) per oz.....160.00
Chromium—(Metallic), per lb...200 00
Cobalt—(Metallic), per lb.....6.00
Didymium—(Metallic), per oz..160.00
Erbium—(Metallic), per oz.....140.00
Gallium—(Metallic), per oz.....3250.00
Glucinum—(Metallic).....4.50
Indium—(Metallic), per oz.....158.00
Iridium—(Metallic), per lb.....700.00
Lanthanum—(Metallic), per oz.175.00
Lithium—(Metallic), per oz.....160.00
Magnesium—Per lb.....4.50
Manganese—Metallic, per lb....1.10
Mercury—*See Quicksilver.*
Molybdenum—(Metallic) per oz 6.00
Nickel—(Metallic), per lb.....65
Niobium—(Metallic), per oz.....128.00
Osmium—(Metallic), per lb.....640.00
Palladium—(Metallic), per lb...512.00
Platinum—(Metallic), per lb....128.00
Potassium—Metallic, per oz.....2.00
Quicksilver—Per lb.....
London, per flask of 75.....
Rhodium—(Metallic), per lb....512.00
Ruthenium—(Metallic), per oz.112.00
Rubidium—(Metallic), per oz...200.00
Selenium—(Metallic), per oz.....3.00
Sodium—(Metallic) per lb.....4.50
Strontium—(Metallic), per oz..128.00
Tantalium—(Metallic) per oz....144.00
Telurium—(Metallic) per oz.....9.00
Thallium—(Metallic) per oz.....3.00
Titanium—(Metallic) per oz.....32.00
Thorium—(Metallic) per oz....272.00
Tungsten—(Metallic) per oz.....4.00
Vanadium—(Metallic), per oz..320.00
Yttrium—(Metallic), per oz.....144.00
Zirconium—(Metallic) per oz..240.00

METALS.

Aluminum—
Bronze (10%), ℔ lb.....46c.
Copper—
Lake Ingot, Spot, ℔ lb.....16.30@16.50c.
Electrolytic, ℔ lb.....16c.
Casting Brands, ℔ lb.....15@15.50c.
Chili Bars, London, ℔ ton.....£77 2s. 6d.
Am. Matte, Liverpool, ℔ unit.....
Sheet Copper (according to size), ℔ lb.....25 @38c.
Lead—
Domestic, Common.....4.90c.
Foreign.....5 @ 5¼c
Sheet, ℔ lb.....6½c. net
Pipe, ℔ lb.....6c. "
Tin lined Pipe, ℔ lb.....12c. "
Shot, ℔ lb.....6 @ 7c.
Tin—
Tin Plates.....15s. 3d.
Tin Spot.....£16 7s.
Banca pigs, ℔ lb.....37c.
Zinc—
Domestic spelter, ℔ lb.....5¼@½
Foreign spelter, ℔ lb.....5¾@6
Silesian, London, ℔ ton....£18 15s.@£19
Sheet, American, ℔ lb.....6¾@7
Antimony—Hallet's, per lb...11¼@11⅝
Cookson's, per lb.....14@14½

IRON AND STEEL.

American Pig-Iron.
No. 1 X....$20.50@$21.50 at tidewater
No. 2 X.....$18 50@$19.50 " "
Forge.....$17@$17.50 " "
Scotch Pig—Coltness....$21.00@$21.50
Clyde.....19.50@ 20.00
Dalmellington.....19 50@ ....
Summerlee.....21 00@ ....
Gartsherrie.....20 75@ ....
Shotts.....21.50@ ....
By Cable to-day to the Metal Exchange:
Scotch Warrants.....39s. 2d.
Coltness, at Glasgow.....49s. 6d.
Langloan, at Glasgow.....46s. 6d.
Summerlee, at Glasgow.....49s. 6d.
Gartsherrie, at Glasgow.....46s.
Glengarnock, at Ardrossan.....45s. 3d.
Dalmellington, at Ardrossan.....41s. 6d.
Eglinton, at Ardrossan.....46s.
Bessemer Pig—
Foreign, nominally.....$20.25@$20.50
Domestic.....$18.50@19 at furnace
Spiegeleisen—
German, 20 per cent..$26.00@$26.25
English, 20 " " .....26.50@ 27.00
" 30 " " .....31.00@ 31.50
Ferro Manganese.....54.00
Steel Blooms, nominally. 30.00@ 30 50
Steel Billets, " 30.00@ 30.50
Steel Nail Slabs, " 30 50@ 31.00
Steel Wire Rods, " 41.00@ 41.50
Steel Rails—
Heavy sections, at mill....$31.50@ 32.50
Light " " .... 32.50@ 37.50
Structural Iron and Steel—
Bridge Plate, at mill.....2.10@2.15c.
Angles, at mill.....2.20@2.25c.
Tees, at mill.....2 50@2.70c.
Steel Angles, at mill.....2.50@2.70c.
Beams and Channels, on wharf, 3.0c. base.
Steel Plates—
Tank and Ship, on wharf.....2 6@2.7c.
Boiler Shell, on wharf.....3 @ ....
" Flange, " .....3½@.....
" Fire-Box, on wharf.....4 @4 15c.
Iron Plates—
Common tank, on wharf....2¼@2 3-10c.
Refined tank, on wharf.....2 4–10@2½c.
Boiler shell, " .....2¼@2 6–10c.
Boiler flange, " .....3½@3 7–10c.
Extra flange, " .....4 @4¼c.
Bar Iron—
Best refined.....2@2.1c. base.
Refined.....1.90@2c. "
Common.....1.80@1.90c. "
Merchant Steel—
American tool.....8½@10c.
Special grades.....13 @20c.
Crucible machinery.....5 @6c
" spring.....4½c.
Bessemer machinery.....2.20@2.30c.
" spring.....2.20@2.50c.
Cast-Iron Pipe—
According to size.....$27.00@$34.00
Wrought Iron Pipe—
Butt-Welded, Plain and Tarred, 47½ per cent disc.; Galv., 37½ per cent disc.
Lap-Welded, Plain and Tarred, 60 per cent disc; Galv., 45 per cent disc.
Boiler Tubes—52½ per cent disc.; Casing, 50 per cent disc.
Rail Fastenings—
Spikes.....2.20c. delv'd
Angle Fish-bars.....1.90 @2.5c.
Bolts and Sq. Nuts.....2.90 @ 3c.
" " Hex. " .....3.10 @3.20c.
Wrought Scrap—
Foreign, *ex store*.....$21.00@$22.00
No. 1 Yard *to vessel*.....21.00@ 22.00
Cast Scrap.....15.00@ 16.00
Old Car Wheels.....19.00@ 19.50
Old Rails—Tees.....21 50@ 22.00
—Doubles.....22.50@ 23 00
Nails—In car-load lots.....@ 2.05
—From store.....2.05@ 2.10

Louisville Prices.

Pig-Iron—
So. Coke, No. 1 Foundry..$18.50@$19.50
" " No. 2 " .. 17.50@ 18.50
" " No. 2½ " .. 17.00@ 18.00
Hg. Rock Coke, No. 1 F'dry 19.00@ 20.00
" " Charcoal, No. 1 Foundry.....22.50@ 24.00
So. Charcoal, No. 1 F'dry .. 19.50@ 21.50
Silver Gray, different gr'des 16.00@ 17.00
So. Coke, No. 1 Mill, Neutral 16.00@ 17.00
" " No. 2 " " 15.50@ 16.50
" " No. 1 Mill, Cold Short.....15.50@ 16.50
So. Charcoal, No. 1 Mill.....
White&Mottled, diff't gr'ds. 15.00@ 16.00
So. Car-Wheel, St'd Br'nds 23.00@ 24.00
" " Other " 20.00@ 21.00
Hanging Rock, Cold-Blast.. 24.00@ 25.00
" " Warm-Blast 20.00@ 21.00

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1.....$18 00@18 50
Foundry No. 2.....17.00@17.50
Gray Forge No. 3.....16.25@16.50
" No. 4.....16.00@16.25
White.....16.00@16.25
Mottled.....16.00@16.25
Silvery.....18.50@19.00
Bessemer.....17.75@18 00

Charcoal Pig—
Foundry No. 1.....24.00@25.75
Foundry No. 2.....23.00@24.75
Cold-Blast.....26.00@28.00
Warm-Blast.....25.00@27.00
20 p. c. Spiegel.....28.00@28.50
Muck-Bar.....27.75@28.00
Steel Blooms.....29.00@29 25
Steel Slabs.....29.00@29.25
Steel Crop Ends.....19.00@
Steel Bloom Ends.....@18 75
Steel Billets.....28.75@29.00
Old Iron Rails.....24 25@25.50
Old Steel Rails.....21.00@22.00
No. 1 W. Scrap.....20 00@21.00
No. 2 W. Scrap.....18.00@19.00
Steel Rails.....*31.50@32.00
" light sections.....*33.00@34.00
Bar Iron, nominal.....1.80@ 1.90
Nails.....$1.90 net car lots
Steel Nails.....$1.90 net car lots
Two per cent off for cash.
* At works.

Prices for all descriptions of iron are very unsettled. Dealers wide apart. Sales about the only criterion to go by.

Philadelphia Prices.

Foundry No. 1.....$21.00@21.50
Foundry No. 2.....18.50@19 00
Gray Forge.....17.00@16.00
Bessemer Pig.....20.00@.....
Steel Rail Blooms.....29.50@nom.
Foreign Bessemer.....20.00@20.50
Spiegeleisen.....26.50@27.50
Scrap, Selected.....22.00@.....
No. 1.....21.00@20 00
Cargo Scrap.....21.00@20.50
Muck-Bars.....30.50@.....
Merchant Iron.....1.90@@2.10c.
Plate Iron.....2.10@ 2.30
Tank Iron.....2.40@ ....
Skelp Iron.....2.00@ 1.90
Angles.....2.30@.....
Beams and Channels.....3.30@.....
Nails.....1.90@@ 2.00
Steel Rails.....31.50@33.50
Old Rails.....22.50@23.00

STOCK MARKET QUOTATIONS

Baltimore Stock Quotations.

Company.	Bid.	Asked.
Atlantic Coal	$1.45@$1.50	.....
Balt. & N. C.	.20@.25	.30@.50
Big Vein Coal	....	.....
Conrad Hill	.10	.15@.20
Diamond Tunnel	....	.60
George's Crk. C.	....	100
Lake Chrome	.11@.13	.15
N. State, Balto.	.20@.35	.....
Ore Knob	.08	.11
Silver Valley	1.55	1.65

Highest and lowest prices bid and asked during the week ending February 16th.

Birmingham, Ala., Stock Quot.

Company.	Bid.	Asked.
Ala. Conn. C.	...	100
Bir. Min. & Mfg.	....	200 @201
Decat. L. Imp. & Fur.	21¼@ 22	22 @ 23
Decatur Min. L.	...	...
Sloss I. & S.	20	...
* Sloss I. & S.	....	....
Sheffield C. & I.	68½	71 @ 72
Woodstock S. & I.	....	...

* Bonds.

Highest and lowest prices bid and asked during the week ending February 14th.

Pittsburg Stock Quotations.

Company	H.	L.	Closing.
Allegheny Gas	.....	.....	.....
Bridgewater Gas	90.00	85.00	88.00
Chartiers Val. Gas	90.00	88.00	90.00
Columbia Oil Co	4.00	3.50	4.00
Consignee Mg. Co.	.40	.10	.40
Forest Oil Co	90.00	90.00	90.00
La Noria Mining	4.00	3.50	3.88
Lustre Mining	10.00	10.00	10.00
M'f'turers' Gas	40.00	36.00	36.50
Nat. Gas Co. of W. Va	90.00	90.00	90.00
N. Y. & C. Gas Coal	39.50	37.00	39 50
Ohio Valley Gas	42.00	41.50	41.50
Pennsylvania Gas	23.00	21.50	21.50
Philadelphia Gas	53.38	52.50	53.00
Pittsburg Gas Co.	.....	.....	.....
Silverton Mining	1.50	1.00	1.50
Tuna Oil Co	65.00	59.00	64.00
Washington Oil	45.00	45.00	45.00
W't'h'se Air-Brake	120.00	120.00	120.00
W't'ghouse Brake	.....	.....	.....
Westmoreland & Cambria Gas	49.00	49.00	49.00
Wheeling Nat. Gas	28.50	24.50	26.75
Yankee Girl Mg	.....	.....	.....

Highest and lowest prices bid and asked during the week ending February 15th.

London Quotations.

Company.	Highest.	Lowest.
Alturas Gold, Idaho	24s.*	22s.
Arizona Copper, Ariz.	26s. 6d.	26s.
Birdseye Creek, Cal.	10s.	8s.
California Gold, Colo.	9s. 6d.	8s. 6d.
Carlisle, N. Mex	24s 6d.	23s 6d.
Centennial, Cal.	£1⅜	£1⅛
Charles Dickens, Id.	.....	.....
Colorado United, Colo.	20s	15s.
Denver Gold, Colo.	2s. 6d.	2s.
Dickens Custer, Id.	6s. 6d.	5s. 6d.
Eberhardt, Nev	4s	.....
Empire, Mont	£2⅝	£2⅜
Flagstaff, Utah	6s. 6d.	5s. 6d.
Garfield, Nev.	27s.	26s.
Gold Hill, N. C.	3s. 6d.	3s.
Ilex, Cal.	£1¼	£1
Josephine, Cal.	£1½	£1⅜
Kohinoor, Colo.	2s. 6d.	1s. 6d.
Montana Lt., Mont	£2⅜	£2⅛
New California, Colo.	9s. 6d.	8s. 6d.
New Consolidated	4s. 6d.	3s. 6d.
New Emma, S., Utah	5s. 6d.	4s. 6d.
New Hoover Hill, N. C.	3s. 6d.	2s. 6d.
New La Plata, Colo.	4s.	3s.
Pittsburg Cons., Nev.	49s.	47s.
Plumas Eureka, Cal.	£⅞	£⅝
Richmond Con., Nev.	£4¼	£4
Ruby & Dunderberg, Nev	4s.	3s.
Russell Gold, N. C.	4s. 6d.	3s. 6d.
Sierra Buttes, Cal.	£¾	£⅝
Stanly, N. C.	£1⅛	£⅞
Union Gold, Colo.	4s. 6d.	4s.
U. S. Placer, Colo.	£⅝	£½
Viola Lt., Idaho	39s.	37s.

Highest and lowest prices February 4th.
* Ex-dividend.

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 and amount of last.		
1	Adams, s. l.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, s. c.	Mont	10,000,000	400,000	25	*				750,000	Sept	1886	.06¼
3	Alturas, g	Idah.	1,500,000	300,000	5					95,000	Sept	1886	.50
4	Amie Con., s. l.	Colo.	5,000,000	500,000	10	*				330,000	Oct.	1883	.05
5	Amy & Silversmith, s.	Mon.		341,419						247,530	Aug.	1887	.12½
6	Atlantic, c.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	420,000	Feb.	1888	1.50
7	Argenta, s	Nev.	10,000,000	100,000	100	325,000	July	1885	.10	40,000	Feb.	1880	20
8	Aurora, i.	Mich.	2,000,000	100,000	20					155,000	Oct	1887	1.87½
9	Bassick, g. s.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
10	Belle Isle, s.	Nev.	10,000,000	100,000	100	145,000	Feb	1887	.20	300,000	Dec.	1879	.25
11	Belcher, g. s.	Nev.	10,400,000	104,000	100	2,614,000	Sept	1887	.50	15,397,200	Apl.	1876	1.00
12	Bellevue Idaho, s. l.	Idah.	1,250,000	125,000	10	57,500	Nov.	1887	25	187,500	Jan	1887	.10
13	Big B'nd Hydraulic, g	Dak.	1,000,000	200,000	5	*				258,000	Aug.	1887	.03
14	Black Bear, g.	Cal.	3,000,000	30,000	100	22,500	Dec.	1884	.25	895,000	May	1883	.20
15	Bodie Con., g. s.	Cal.	10,000,000	100,000	100	450,000	Feb.	1888	.50	1,295,000	Apl.	1885	.50
16	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
17	Bonanza K'g, Cons. s.	Cal.	1,000,000	100,000	10	*				185,000	Feb.	1885	.10
18	Boston & Mont, g.	Mont	2,500,000	250,000	10	*				520,000	Jun.	1886	.15
19	Breece, s.	Colo.	5,000,000	200,000	25	*				2,000	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	60,000	July	1887	.20	175,006	Jan.	1884	.10
22	Caledonia, g.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	40,000	Feb.	1886	.10
23	Calumet & Hecla, c.	Mich	2,500,000	100,000	25	1,200,000				29,350,000	July	1887	5.00
24	Carbonate Hill, s. l.	Colo.	2,000,000	200,000	10	*				80,006	Apl.	1884	.05
25	Caribou Con., s.	Colo.	1,500,000	150,000	10	*				50,000	Mch	1880	.10
26	Castle Creek, g.	Idah.	100,000	100,000	1					51,000	Oct.	1883	.03
27	Catalpa, s. l	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
28	Central, c.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,860,000	Feb.	1888	2.00
29	Christy, s.	Utah	10,000,000	100,000	100					10,000	Jun.	1885	.10
30	Chrysolite, s. l.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
31	Colorado Central, s. l	Colo.	2,750,000	275,000	10	*				282,500	Feb.	1888	.05
32	Cons. Cal. & Va., g. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	1,468,000	Feb	1888	.50
33	Con. Gold Mining, g.	Ga.	500,000	100,000	5	*				108,000	Nov.	1888	02
34	Contention, s	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
35	Crescent, s. l. g.	Utah	15,000,000	600,000	25					210,000	Aug.	1886	.05
36	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,725 00	Jan.	1888	.50	11,588,000	Jan.	1875	2.00
37	Daly, s. l.	Utah	3,000,000	150,000	20					450,000	Jan.	1888	.50
38	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
39	Derbec B. Grav., g. s.	Cal.	10,000,000	100,000	100	90, 0	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, s. l.	Colo.	5,000,000	200 000	25	*				300,000	Mar.	1888	30
41	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
42	Elkhorn, g. s.	Mont	1,000,000	100,000	10	50,0	July	1883	.50	170,000	July	1887	.05
43	Empire Lt., g.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
44	Eureka Con., g. s. l.	Nev.	5,000,000	50,000	100	500,000	July	1886	1.00	4,870,500	Feb	1888	.25
45	Evening Star, s. l.	Colo.	500,000	50,000	10	*				1,400,000	Nov	1883	.50
46	Excelsior, g.	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
47	Father de Smet, g.	Dak.	10,000,000	100 000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1888	.20
48	Franklin, c.	Mich	1,000,000	40,000	25	220,000	Jun.	1871		640,000	Jan.	1885	1.00
49	Freeland, g. s. c.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
50	Fresno Enterprise, g	Cal.	5,000,000	100,000	50		Mch	1882	.10	110,000	July	1882	.10
51	Garfield Lt., g. s.	Nev.	500,000	100,000	5					44,730	Mar.	1887	.12½
52	Gould & Curry, g. s.	Nev.	10,800,000	108,000	100	4,197,000	Nov.	1887	.50	3,826,800	Oct.	1870	10.00
53	Grand Central, s.	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882	.25
54	Grand Prize, s.	Nev.	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	1884	.25
55	Granite, s.	Colo.	125,000	125,000	1					6,250	May	1883	.01
56	Granite Mountain, s.	Mont	10,000,000	400,000	25					4,000,000	Feb.	1888	.50
57	Green Mountain, g.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
58	Hale & Norcross, g. s	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,598,000	Apl	1871	5.00
59	Hall-Anderson, g.	N. S.	150,000	150,000	1					7,000	Jan.	1882	.05
60	Hecla Con., s. g. l. c.	Mont	1,500,000	30,000	50					1,077,500	Dec	1887	.50
61	Hel'a Mg & Red, g. s. l	Mont	3,315,000	663,000	5	*				197,970	July	1886	.06
62	Holmes, s.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	10	75,000	Apl.	1886	.25
63	Holyoke, g.	Idah	200,000	200,000	1					27 000	Feb.	1883	.10
64	Homestake, g.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,043,750	Feb	1887	.20
65	Honorine, s. l.	Utah	500,000	250,000	2	25,000	Jun.	1883		125,000	Sept	1887	.05
66	Hope, s.	Mont	1,000,000	100,000	10	*				183,252	Oct.	1887	.25
67	Horn-Silver, s. l.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
68	Idaho, g.	Cal.	310,000	3,100	100					4,593,750	Jan.	1888	7.50
69	Ideal, s. l.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
70	Illinois, s.	N. M.	100,000	100,000	1	*				25,000	Jan	1887	.25
71	Independence, s.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
72	Indian Queen, s.	Nev.	250,000	125,000	2					368,750	July	1883	03
73	Inyo, g.	Cal.	500,000	100,000	5	*				45,000	Apl.	1882	.05
74	Iron Hill, s.	Dak.	2,500,000	250,000	10	82,500	Oct.	1885		156,250	Nov.	1887	.07½
75	Iron-Silver, s. l	Colo.	10,000,000	500,000	20	*				2,200,000	Feb.	1888	.20
76	Jackson, g. s.	Nev.	5,000,000	50,000	100	10,000	Nov	1880	.20	45,000	Oct.	1886	.10
77	Jocuistita, s.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
78	Jumbo, g.	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
79	Kentuck	Nev.	3,000,000	30,000	100	342,000	Nov	1881	.30	1,350,000	Dec.	1886	.10
80	La Plata, s. l.	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
81	Leadville Cons., s. l. i.	Colo.	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
82	Lexington, g. s.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
83	Little Chief, s. l	Colo.	10,000,000	200,000	50	*				780,000	Mch	1885	.10
84	Little Pittsburg, s. l	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	.50
85	Manhattan, s.	Nev	5,000,000	50,000	100	250,000	Dec	1887	1.00	437,500	Feb	1886	.25
86	Marguerite, g.	Cal.	500,000	25,000	20					18,750	Oct.	1882	.25
87	Marion Bullion, g	N. C.	500,000							15,000	Jan.	1886	
88	Martin White, s.	Nev.	10,000,000	100,000	100	1,150,000	Mar.	1886	25	140,000	Dec.	1886	.25
89	Mary Murphy, g. s.	Colo.	350,000	3,500	100	*				122,500	Feb.	1888	5.00
90	Minnesota, c.	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1 00	1,620,000	Mar.	1876	
91	Mono, g.	Cal.	5,000,000	50,000	100	616,000	Sept	1887	.50	12,500	Mar.	1886	.25
92	Montana, Lt., g. s.	Mont	3,300,000	660,000	5	*				1,845,96[illegible]	Jan.	1888	.25
93	Morning Star, s. l.	Colo.	1,000,000	100,000	10					750,000	Nov.	1887	.25
94	Moulton, s. g.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
95	Mount Pleasant, g.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
96	Mt. Diablo, s.	Nev	5,000,000	50,000	100	137,500	Jun.	1880	2.00	80,000	July	1885	.20
97	Napa, q	Cal.	700,000	100,000	7					290,000	Jan.	1883	.10
98	Navajo, g. s.	Nev.	10,000,000	100,000	100	455,000	Jan.	1888	.30	325,000	Feb.	1885	.25
99	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
100	Northern Belle, s.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	50
101	North Belle Isle, s.	Nev.	10,000,000	100,000	100	250,000	Mar.	1887	.50	80,000	Feb.	1888	.50
102	Ontario, s. l.	Utah	15,000,000	150,000	100					8,900,000	Jan.	1888	.50
103	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,059,440	Aug	1887	.50	1,595,800	July	1882	1.00
104	Original, s. c.	Mont	1,500,000	60,000	25	*				117,000	Dec.	1887	.05
105	Osceola, c.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,072,500	Dec	1887	1 00
106	Oxford, g.	N. S.	125,000	125,000	1	*				33,500	Oct.	1885	.02
107	Paradise Valley, g. s	Nev.	10,000,000	100,000	100	47,000	Mar.	1882	.15	150,000	Apl.	1887	.10
108	Parrott, c.	Mont	1,800,000	180,000	10					156,000	Jan.	1888	.10
109	Peacock, s. g. c.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
110	Pleasant Valley, g. s.	Cal.	10,000,000	100,000	100	10,000	Mar.	1884	.10	30,000	Dec.	1882	.05
111	Plutus, g. s. c. l.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
112	Plymouth Con., g.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
113	Prussian, s. l.	Colo.	1,500,000	150,000	10					132 000	Jan.	1883	.10
114	Quicksilver, pref., q.	Cal.	4,300,000	43,000	100					1,267,192	Feb.	1888	2.00
115	" com., q.	Cal.	5,700,000	57,000	100					151,000	July	1882	.40
116	Quincy, c.	Mich	1,000,000	40,000	25	200,000	Dec.	1862		4,770,000	Feb.	1888	4.00
117	Richmond, s. l.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
118	Ridge, c.	Mich.	500,000	20,000	25	220,000	Mar	1886	.50	100,000	Feb.	1880	.50
119	Rising Sun, s.	Dak.	750,000	150,000	5	*				52,000	May	1881	.07½
120	Robinson Con., s. l.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
121	Robert E. Lee, s. l.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
122	Rooks, g.	Vt.	500,000	50,000	10	*				61,000	Apr	1885	.40
123	Savage, s.	Nev.	11,200,000	112,000	100	6,324,000	Sept	1887	50	4,460,000	July	1869	3.00
124	Security L. Mg., Mfg.	Colo.	1,000,000	100,000	10	*				50,000	July	1884	
125	Shoshone, g.	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
126	Sierra Buttes, g.	Cal.	2,225,000	122,500	10					1,477,245	Oct.	1887	.31¼
127	Sierra Grande, s.	N. M.	2,500,000	500,000	5					860,000	Sept	1884	.25
128	Sierra Nevada, g. s.	Nev.	10,000,000	100,000	100	6,050,000	Dec.	1887	.25	102,000	Jan.	1871	1.00
129	Silver Cord, g. s. l.	Colo.	5,000,000	500,000	10					225,000	Nov.	1883	.25
130	Silver King, s.	Ariz.	10,000,000	100,000	100					1,950,000	July	1887	.25
131	Silverton, g. s. l.	Colo.	2,000,000	200,000	10	*				80,000	Nov.	1886	.02
132	Small Hopes Cons., s.	Colo.	5,000,000	250,000	20	*				3,112,500	Dec.	1887	.20
133	Smuggler, s. l.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
134	Socorro, c	N. M.	250,000	[illegible]	100					4,000	Mch	1882	.00¾
135	South Yuba, g.	Cal.	2,000,000	50,000	50	*				150,000	Oct.	1881	.75
136	Spring Valley, g.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan.	1881	.25
137	Standard, g. s.	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,565,000	Feb.	1888	.10
138	Stormont, s	Utah	500,000	500,000	1	*				155,000	Nov.	1881	.05
139	St. Joseph, l	Mo.	1,500,000	150,000	10	*				844,000	Dec.	1887	.20
140	Surinam, g.	D. G.	3,000,000	600,000	5					105,000	Nov.	1887	.05
141	Swansea, g.	Colo.	600,000	60,000	10	*				3,000	Dec.	1887	.02½
142	Syndicate, g.	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
143	Tip Top, s	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
144	Tombstone, g. s. l.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
145	United Verde, c.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
146	Valencia, m	N. H.	150,000	1,500	100					37,500	Apl	1886	2.50
147	Viola Lt., s. l.	Idah.	750,000	150,000	5					222,500	Dec.	1887	.12½
148	Vizina, s.	Ariz.	5,000,000	200,000	25					140,000	Apl.	1882	.10
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	5,448 000	Dec	1885	.7[illegible]	2,184,000	Aug.	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par Value	Assessments. Total levied.	Date & am'n of last.		
1	Agassiz Cons., s. l.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, c.	Mich	2,000,000	80,000	25	$577,000	Feb.	1884	
3	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	536,250	Jan.	1888	87½
4	Alta, s.	Nev.	10,080,000	100,800	100	2,140,800	Nov	1887	.50
5	Amador, g.	Cal.	400,000	200,000	2	*			
6	American Flag, s.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., g.	N. C.	1,500,000	300,000	5				
9	Aspen Mg. & S., s. l.	Colo.	2,000,000	200,000	10				
10	Barcelona, g.	Nev.	5,000,000	200,000	25	*			
11	Bechtel Con., g.	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.10
12	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, g. s.	Nev.	10,080,000	100,800	100	2,004,190	Jan.	1888	.50
14	Big Pittsburg, s. l.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, s.	Mon.	5,000,000	200,000	25	*			
16	Black Jack, g.	Cal.	250,000	100,000	2½				
17	Black Oak, g.	Cal.	3,000,000	300,000	10	*			
18	Boston Con., g.	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
19	Bremen, s.	N. M.	5,000,000	500,000	10	*			
20	Brunswick, g.	Cal.	2,000 000	400,000	5	*			
21	Bullion, g. s.	Nev.	10,000,000	100,000	100	3,957,000	Aug.	1887	.50
22	Bye and Bye	Ariz.	1,000,000	100,000	10	*			
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	Cen. Contin'l, g. s. l.	C. & A	2,000,000	200,000	10	*			
28	Charles Dickens, g. s.	Idah.	1,250,000	250,000	5	*			
29	Cherokee, g.	Cal.	1,500,000	150,000	10				
30	Chollar, s.	Nev.	11,200,000	112,000	100	1,208,000	Dec.	1887	.50
31	Cinnamon Mt., g. s.	Colo.	750,000	150,000	5				
32	Comstock, g. s.	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	.15
33	Con. Imperial, g. s.	Nev.	5,000,000	50,000	100	1,175,000	Sept	1887	.25
34	Con. Pacific, g.	Cal.	6,000 000	60,000	100	177,000	Sept	1887	15
35	Cons. Silver, s	Mo.	2,500,000	250,000	10				
36	**Cop. Queen Cons, c.	Ariz	1,400 000	140,000	10				
37	Courtlandt	Colo.	500,000	50,000	10				
38	Crescent, s. l.	Colo.	3,000,000	300,000	10	*			
39	Crocker, s.	Ariz.	10,000,000	100,000	100	80,000	May	1887	.10
40	Crowell, g.	N. C.	500,000	500,000	1				
41	Dahlonega, g.	Ga.	250,000	250,000	1	*			
42	Dandy, s.	Colo.	5,000,000	500,000	10				
43	Dardanelles, g.	Cal.	1,000,000	100,000	10				
44	Decatur, s.	Colo.	1,500,000	300,000	5	*			
45	Denver City, s. l	Colo.	5,000,000	500,000	10	*			
46	Denver Gold, g.	Colo.	300,000	60,000	5				
47	Deseret, g. s.	Utah	500,000	50,000	10	*			
48	Durango, g.	Colo.	500,000	500,000	1	*			
49	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1886	1.60
50	El Cristo, g. s.	U.S.C	1,000,000	500,000	2				
51	El Dorado, g	Cal.	1,000,000	250,000	4	*			
52	El Talento, g.	U.S.C	1,000,000	500,000	2				
53	Empire, s.	Utah	10,000,000	100,000	100				
54	Eureka Tunnel, s. l.	Nev.	10,000,000	100,000	100	*			
55	Exchequer	Nev.	10,000,000	100,000	100	770,000	Feb.	1888	.20
56	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	12,000	Jan.	1888	.06
57	Gogebic I. Syn., i	Wis.	5,000,000	200,000	25				
58	Gold Cup, s.	Colo.	500,000	500,000	1	*			
59	Golden Era, s.	Mon.	2 000,000	200,000	10	*			
60	Gold Placer, g.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.20
61	Gold Rock, g.	Cal.	1,000,000	500,000	2	*			
62	Goodshaw, g.	Cal.	10,000,000	100,000	100	*			
63	Grand Belt, c.	Tex.	12,000,000	120,000	100				
64	Grand Duke	Colo.	800,000	80,000	10				
65	Great Remance, g.	U.S.C	1,000,000	500,000	2	*			
66	Gregory-Bobtail, g.	Colo.	550,000	550,000	1	*			
67	Gregory Con., g.	Mon.	3,000,000	300,000	10				
68	Harlem M. & M. Co, g.	Cal.	1,000,000	200,000	5				
69	Head Cent. & Tr. s. g	Ariz.	10,000,000	100,000	100				
70	Hector, g.	Cal.	1,500,000	300,000	5				
71	Highland, c	Mich	500,000	25,000	25				
72	Hortense, s.	Colo.	2,000,000	200,000	10				
73	Huron, c	Mich	1,000,000	40,000	25	280,000	May	1887	3 00
74	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	*			
75	Ironton, i.	Wis.	1,000,000	40,000	25				
76	Iroquois, c	Mich	1,250,000	50,000	25				
77	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
78	Julia Cons., g. s.	Nev.	11,000,000	110,000	100	1,650,000	Apl.	1887	.10
79	Kearsarge, c.	Mich	1 250,000	50,000	25	190,000	Oct.	1887	1.00
80	Laclede	N. M.	2,000,000	200,000	10	*			
81	Lacrosse, g.	Colo.	1 000,000	100,000	10	*			
82	Lee Basin, s. l.	Colo.	5,000,000	500,000	10	*			
83	Lochiel, s.	N. M.	2,000,000	200,000	10	*			
84	Lucerne, s.	Colo.	5,000,000	500,000	10	*			
85	Mammoth Bar., g.	Cal.	10,000,000	100,000	100	50,000	Dec.	1881	
86	May Belle, g.	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
87	Mayflower Gravel	Cal.	1,000,000	100,000	10	300,000	Jan.	1888	.40
88	Medora, g	Dak.	250,000	250,000	1				
89	Mexican, g. s	Nev.	10,000,000	100,000	100	2,700,760	Jan.	1888	.25
90	Middle Bar, g.	Cal.	400,000	200,000	2	*			
91	Mike & Starr, s. l.	Colo.	1,000,000	200,000	5	*			
92	Monitor, g.	Colo.	100,000	100,000	1	*			
93	Moose Silver, s	Colo.	3,000,000	300,000	10	*			
94	Native, c.	Mich	1,000,000	40,000	25				
95	Neath, g.	Colo.	1,000,000	100,000	10				
96	Nevada Queen, s.	Nev.	10,000,000	100,000	100	130,000	Dec.	1887	.50
97	New Germany, g	N. S.	100,000	100,000	1	*			
98	New Pittsburg, s. l	Colo.	2,000,000	200,000	10	*			
99	North Standard, g.	Cal.	10,000,000	100,000	100	20,000	Nov		
100	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
101	Oneida Chief, g.	Cal.	500,000	125,000	4	*			
102	Oriental & Miller, s.	Nev.	10,000,000	400,000	10				
103	Osceola, g.	Nev.	5,000,000	50,000	25	*			
104	Overman, g. s.	Nev.	11,520,000	115,200	100	3,737,180	Aug.	1887	.25
105	Park, s.	Utah	2,000,000	200,000	100				
106	Peer, s.	Ariz.	10,000,000	100,000	10	135,000	Nov.	1886	.10
107	Peerless, s.	Ariz.	10,000,000	100,000	100	320,000	Sept	1887	.25
108	Phoenix	Ariz.	500,000	500,000	100				
109	Phoenix, g. s.	Ark.	5,000,000	200,000	1	*			
110	Phoenix Lead, s. l.	Colo.	100,000	100,000	25	*			
111	Pilgrim, g.	Cal.	600,000	300,000	1	*			
112	Potosi, s.	Nev.	11,200,000	112,000	2	1,293,600	Nov.	1887	.50
113	Proustite, s.	Idah	250,000	250,000	100	*			
114	Puritan, s. g.	Colo.	1,500,000	150,000	1	*			
115	Quincy	Colo.	3,000,000	300,000	10				
116	Rappahannock, g. s.	Va.	250,000	250,000	10	*			
117	Red Elephant, s.	Colo.	500,000	500,000	1	*			
118	Ropes, g. s.	Mich	2,000,000	80,000	1	103,200	July	1887	.50
119	Russell, g.	N. C.	1,500,000	300,000	25				
120	Sampson, g. s. l.	Utah	10,000,000	100,000	5	188,157	Mar.	1887	.25
121	San Sebastian, g.	San. S	1,600,000	320,000	5	*			
122	Santiago, g.	U.S.C	400,000	1,200,000	2	*			
123	Security, s.	Colo.	10,000,000	1,000,000	10				
124	Sheridan	N. M.	2,000,000	200,000	10				
125	Silver Queen, c.	Ariz.	5,000,000	200,000	25	*			
126	South Bulwer, g	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
127	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1883	.05
128	South Pacific	Cal.	500,000	100,000	5				
129	Stanislaus, g.	Cal.	2,000,000	200,000	10				
130	State Line, s.	Nev.	250,000	250,000	1				
131	St. Kevin, g. s.	Colo.	100,000	100,000	1	*			
132	St. Louis & Mex., s.	Mex.	5,000,000	500,000	10	*			
133	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
134	St. L. & St. Felipe, g. s.	Mex.	1,500,000	150,000	10				
135	St. L. & Sonora, g. s.	Mex.	1,500,000	150,000	10				
136	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
137	Sunday Lake, i.	Mich	1,250,000	50,000	25				
138	Sullivan, g. s. l.	Me.	500,000	100,000	5	125,000	Dec.	1882	.25
139	Sutro Tunnel	Nev.	20,000,000	2,000,000	10	*			
140	Tamarack, c.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00
141	Taylor-Plumas, g.	Cal.	1,000,000	200,000	5	4,000	Oct.	1887	.02
142	Tioga Cons., g.	Cal.	10,000,000	100,000	10	*			
143	Tornado Cons., g. s.	Nev.	100,000	100,000	1	*			
144	Tortilita, g. s.	Ariz.	1,000,000	100,000	2	*			
145	Tuscarora, s.	Nev.	10,000,000	500,000	100	110,000	Oct.	1881	.15
146	Union Con., g. s.	Nev.	10,000,000	100,000	100	2,185,000	Nov	1887	.50
147	Utah, s.	Nev.	10,000,000	100,000	100	70,000	Dec.	1887	.25
148	Washington, c.	Mich	1,000,000	40,000	25				
149	West Granite Mt., s.	Mon.	5,000,000	500,000	10	*			
150	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 Dec. 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 Aug., 1884, the California had paid $31,320,000 in dividends, and the Con. Virginia $42,390,000. Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1875, the Copper Queen had paid $1,350,000 in dividends.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Feb. 11. H.	Feb. 11. L.	Feb. 13. H.	Feb. 13. L.	Feb. 14. H.	Feb. 14. L.	Feb. 15 H.	Feb. 15 L.	Feb. 16 H.	Feb. 16 L.	Feb. 17. H.	Feb. 17. L.	Sales.
Adams, Colo													
Alice, Mont	.50		.50										700
Argenta, Nev			.37										200
Atlantic, Mich													
Belcher, Nev													
Belle Isle, Nev	.78												1,000
Bodie Cons., Cal	2.60		2.55		2.30						2.25		1,800
Breece, Colo					.46		.54	.45	.55		.52		2,650
Bulwer, Cal													
Caledonia, Dak					1.95		2.00						130
Calumet & Hecla											243		15
Catalpa													
Chollar, Nev	6.00		6.00										150
Chrysolite, Colo			.45				.45						600
Colorado Cent'l, Colo.					2.00								400
Cons. Cal. & Va., Nev.	16.88		17.75	17.63	18.25	18.00			17 75				625
Crown Point, Nev													
Deadwood, Dak			2.00		2.00		2.00		2.00				700
Dunkin, Colo			1.70				1.75		1.75				2,300
Eureka Cons., Nev			14.00						12.00		11.50	11.00	700
Father de Smet, Dak.	.48	.44	.50	44	.48		.49	.47	.50	.43	.53	.50	8,450
Freeland, Colo													
Gould & Curry, Nev													
Grand Prize, Nev													
Green Mountain, Cal	.05												1,000
Hale & Norcross, Nev.			9 63		10.88	10 13							740
Helena, Mont													
Holyoke, Idaho			.07				.07				.07	.06	1,000
Homestake, Dak	12.00		11.25										125
Horn-Silver, Ut	1.00		1,00		1.10	1.05	1.15	1.00	1 15	1.10	1.15		2,800
Independence, Nev													
Iron Hill, Dak			.60				.60				.60		1,000
Iron Silver, Colo	4.00						4 00						1,120
Leadville C., Colo													
Little Chief, Colo													
Little Pittsburg, Colo.													
Martin White, Nev													
Mono, Cal	2.05		2.10	2.05	2.05								1,300
Mount Diablo, Nev													
Navajo, Nev					1.75				1 70				200
North Belle Isle, Nev													
Ontario, Ut					28.00		28.50						165
Ophir, Nev					12.2								100
Pewabic, Mich													
Plymouth, Cal							17.50		17.50				65
Quicksilver Pref., Cal.	34.50	33.75	34.50	33.50	37.00	34.50			35 00		35.75	35.50	1,030
" Com., Cal.					10.00				10.50				200
Quincy, Mich													
†Ridge, Mich													
Robinson Cons., Colo.													
Savage, Nev							7.25						100
Sierra Nevada, Nev			5 38	4 90									150
Silver King, Ariz					5.00		5.00		5 00		5.00		525
Small Hopes, Colo									3.85				100
Standard, Cal									2 95		3.00		400
Stormont, Ut													
Yellow Jacket, Nev	9.00		9.88										100

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Feb. 11. H.	Feb. 11. L.	Feb. 13. H.	Feb. 13. L.	Feb. 14. H.	Feb. 14. L.	Feb. 15. H.	Feb. 15. L.	Feb. 16. H.	Feb. 16. L.	Feb 17. H.	Feb 17. L.	Sales.
†Allouez, Mich	2.88	2.75	2.93						2.88				400
Alta, Nev	2.50				2.50								200
Amador, Cal	1.70	1.65	1.70		1.75	1.70	1.75	1.70	1.80	1.70	1.70		2,800
Barcelona, Nev			.50		.48	.47	.46						600
Best & B'lcher, Nev.													
Brunswick, Cal	1.65		1.65		1.65		1 65		1 65	1.50	1.65		2,850
Bullion, Nev	2.20		2.10										420
Carupano, Venez	2.15												100
Cashier, Colo					.09		.10		.09		.09		1,400
Castle Creek, Id											.10		600
Central Ariz., Ariz.													
Con. Imperial, Nev	3.10												600
Con. Pacific													
Denver City							.09						1,000
*Eclipse, Colo													
Eastern Oregon													
El Cristo, U. S. Col.	1.60		1.50		1.50	1.40	1.45		1.55	1.40	1 45	1.40	1,600
Exchequer, Nev	1.60												200
Found Treas'e, Nev.													
Hector, Cal													
Huron, Mich									5 50				50
Julia, Nev	.60		.60										700
Kingst'n & Pemb'ke			2.25		2.38								125
Kossuth, Nev													
Lacrosse, Colo													
Lee Basin							.55	.40	.55	.50			3,400
Mexican, Nev													
Middle Bar, Cal	.33		.33		.35	.34	.34		.35	.34	.35		6,000
Monitor, Colo											11		600
†National	3.88	3.85	3.95	3.88					3.88				600
Nevada Queen, Nev													
North Stand'd, Cal.													
Ori'nt'l & Mil'r, Nev.											.11		200
Phœnix of Arkan's													
Potosi, Nev													
Proustite, Idaho	2.25	2.10	2.20	2.15	2.25	2.15	2 25	2 15	2.20	2.10	2.20	2.10	14,450
Rappahann'k, Va.					.20		.21	.20					2,500
Red Elephant, Colo.													
San Sebastian, S'nS													
Santiago, U. S. Col.	3.25										3.30		300
Scorpion, Nev	1.10												100
*Security, Colo					.95	.90			1.00	.95			400
Silver Cliff, Colo													
Silver Cord	.30				.35								400
Silver Hill													
Silver Mg. of L. V.													
Silver Queen, Ariz.			.04										1,000
Sutro Tunnel, Nev.	.17	.16	.16		.15		.16	.15			.15		6,600
Taylor Plumas, Cal.			.03						.03				3,000
Tornado, Nev	.90		.90		.90		.80		.80		.80		2,200
Union Cons., Nev.	4.80				4.65								300
Utah, Nev	2.20				2.25								200
Washington, Mich.													
†Winthrop													

Dealt in at the New York Stock Ex. Unlisted Securities † Dealt in at the Metal Ex. Dividend shares sold, 55,895. Non-dividend shares sold, 31,690. Total New York, 87,585

BOSTON MINING STOCK QUOTATIONS.

Name of Company	Feb. 10. H.	Feb. 10. L.	Feb. 11. H.	Feb. 11. L.	Feb. 13. H.	Feb. 13. L.	Feb. 14. H.	Feb. 14. L.	Feb. 15. H.	Feb. 15. L.	Feb. 16. H.	Feb. 16. L.	Sales.
Atlantic, Mich	19.00	18.25	18.50		19.00		20.00	19.50	20.00				1,220
Bodie, Cal													
Bonanza D.	1.63	1.50	1.70		1.69	1.63	1.63						5,250
Boston & Mont., Mont													
Breece, Colo	.41	.39			.41		45	42					1,650
Calumet & Hecla, Mich	235	232	234	233	235	229	230¼	227	235¼	230½	238		1,428
Catalpa, Colo	.26	.25					.25		.26				2,200
Central, Mich													
Con. Cal & Va					18.75								10
Dunkin, Colo	1.70		1.70		1 75	1.73	1.80	1.73	1 78	1.73			7,700
Enterprise													
Eureka, Nev													
Franklin, Mich	16.25	15.75	16.00		16.25	16.00	16.13	15.88	16.50	16.00	16.25		2,927
Freeland, Colo													
Hale & Norcross													
Ironton Iron Co., Mich													
Little Chief, Colo													
Napa, Cal									1.63				100
Osceola, Mich	26.50	25 75	25.75	25.50	25 50	25.25	25 75	25.50	25.50		25.25		706
Pewabic, Mich	3 00				2.50	2.00							450
Quincy, Mich	70.00	69.50	70.00	69.00	70.00		69.00		69.00		70.00		301
Ridge, Mich			3.00		3.00								125
Robinson, Colo													
Sierra Nev., Nev.													
Silver King., Ariz													
Standard, Cal													

Name of Company.	Feb. 10. H.	Feb. 10. L.	Feb. 11. H.	Feb. 11. L.	Feb. 13. H.	Feb. 13. L.	Feb. 14 H.	Feb. 14 L.	Feb. 15. H.	Feb. 15. L.	Feb. 16. H.	Feb. 16. L.	Sales.
Allouez, Mich	2.93	2 25	2.75		3.00	2.81	2.88	2 75	2.63	2.50	2.75		2,605
Arnold, Mich	.60								.60				500
Aztec, Mich													
Bowman Silv'r, Nev													
Brunswi'k, Cal	1.65		1.50				1.50		1.70				1,500
Canada													
Crescent, Colo			.12½				.12						800
Cusi, N. Mex.			.12		.12		.12		.12				800
Gogebic													
Hanover, Mich													
Humboldt, Mich													
Hungarian, Mich													
Huron, Mich	5.25		5.25		5.38	5 25	5 38		5.25		5.25		1,000
Kearsarge, Mich	8.38	8.25	8.88	8 00	8.25	8.00	8.25	8.13	8 13	8.00			1,460
Kossuth, Nev													
Mesnard			.30										200
National, Mich	3.88	3.75			4.00	3.93	4.00	3.88	3.75				1,525
Native, Mich	.15				.15								100
Oriental & M., Nev.													
Pontiac, Mich							.30						100
Rappahannock, Va			.20		.20								1,000
Royal, Mich					.49	.48							200
Security, Colo									.95				100
South Side, Mich					.58								100
St. Louis, Mich									1.00	.75			1,600
St. Mary's	.35						.40		.37½				400
Sutro Tunnel, Nev.			.11						.17½				800
Tamarack, Mich	170	169	170	169	170	169½	169		170		170		188
Washington Mich.			.40		.45								300
Winthrop, Mich													

Boston: Dividend shares sold, 22,067. Non-dividend shares sold, 14,778. Total Boston, 36,845.

COAL STOCKS.

Name of Company.	Par val. of sh'rs.	Feb. 11. H.	Feb. 11. L.	Feb. 13. H.	Feb. 13. L.	Feb. 14. H.	Feb. 14. L.	Feb. 15. H.	Feb. 15. L.	Feb. 16. H.	Feb. 16. L.	Feb. 17. H.	Feb. 17. L.	Sales.
Cameron Coal	100													
Ches. & O. RR.	100	5	3¾	3¾	2¾	3⅝	3¼	3¾		4	3¼			2,605
*Chic. & Ind. Coal RR.	100													
Do. pref.	100					93¼	92½	92¾						250
Col. & Hocking Coal	100	27⅝	27⅜	27¼		26½	25¾	26⅝	26⅜	26⅞	26½	26⅞	26½	2,000
Col., C. & I	100	37⅝	37⅜	37¼	37	37½				38¼	37¾	38⅞	37⅝	2,460
Consol. Coal	100													
Cumb. C. & I.	100													
Del. & H. C.	100	109¾		109⅞	109⅜	109¾		110	109⅝	110⅜	110	110¼	109¾	5,444
D., L. & W. RR.	50	130¼	130	130¼	129½	130¼	129¾	130½	129⅞	130⅞	130⅜	131¼	130	133,962
Hocking Valley	100							22	21½			23½		243
Hunt. & Broad Top														
Lehigh C. & N.	50	48	47¾	47¾		48¼	48	48		48				594
Lehigh Valley RR.	50	55¾	55⅝	55¾	55⅝	56	55⅞	55⅞	55¾					224
L. & W. C. & I. Co								16						200
Marshall Con. Coal	100					8								10
Maryland Coal	100	15	14.88											200
Montauk Coal	100													
Morris & Essex	50													
New Central Coal	100													
N. J. C. RR.	100	78⅝		79	78½	78¾		78¾	78½	79½	79	80⅜	79¼	7,069
N. Y. & S. Coal	50													
N. Y., Susq. & Western	100			8⅞		8		9					9	325
Do. pref	100			31⅛	30¾			31½						520
N. Y. & Perry C. & I.	100													
Norfolk & Western R.R.	100	17										16½		70
Do. pref	100	45¾	45⅜	45	44¾	45	44¾	45½	44⅞	45½	45⅛	45⅝	45⅛	7,580
Penn. Coal	50	267½	265											36
Penn. RR.	50	54¼	54⅛	54⅛	54	54¼	54⅛	54⅜	54⅛	54⅜	54¼			2,643
Ph. & R. RR.**	50	66	65⅝	66	65¼	66	65¾	66	65½	66	65¼	67¼	65⅛	237,614
Spring Mountain	50													
Tennessee C. & I. Co.	100			31⅜	30⅞	30¾		31⅛	31	31¾	31⅛	32	31⅞	1,800
Westmoreland Coal	100							68						108
Whitebreast Fuel Co.				93¾				94	93½	94		95¾	95⅛	500

**Of the sales of this stock, 22,998 were in Philadelphia, and 214,616 in New York. Total sales, 406,457.

San Francisco Mining Stock Quotations.

Company.	Closing Quotations. Feb. 10.	Feb. 11.	Feb. 13.	Feb. 14.	Feb 15	Feb. 16.
Alpha						
Alta	2 40	2.35	2.35	2.30	2.25	2.15
Belcher						
Belle Isle						
Best & Bel.	6.62½	6.50	6.87½	6.75	6.75	6 50
Bodie	2.55	2.60	2.55	2 25	2 25	2.30
Bulwer			.90	.85	.85	
Chollar	6.25	6.25	6.12½	6.00	6.00	6.00
Commonwealth.	5.50		5.00		4 60	4.60
Con. C. & V	16.87½	16.87½	17.62½	17.62½	17.25	17.62½
Con. Pac.						
Crown Pt.	7.12½	7.12½	7.50	7.50	7.12½	7.00
Eureka C.	15.25	14.62½	13.00	12.00	11.87½	11.00
Gould & C.	5.12½	5.00	5.25	12½	5 00	5.00
Hale & N.	10.12½	10.25	10.37½	10.12½	10.00	10.00
M. White						
Mexican	5.12½	5.00	5.37½	5.25	5.25	5.12½
Mono.			2.20	1.95	1.85	1.90
Mt. Diablo						
Navajo	1.75		1.70	1 65	1.60	
Nev. Queen	3.50	3.40	3.65	3.70	4.00	3.95
N. Belle I.			3.65	7.50	7.25	7.62½
Ophir.	10.25	9.87½	11.12½	10.50	10.87½	10.75
Potosi.	6.00	6.62½	5.75	5.87½	5.62½	5.75
Savage	7.50	7.37½	7.37½	7.37½	7.25	7.00
Scorpion						
Sierra Nev	5.25	5.12½	5.25	5.37½	5.25	5.00
Sutro Tun.						
Tip Top						
Union Con.	4.75	4.55	4.75	4.75	4 65	4.50
Utah	2.00	1.90	1 90	2.05	2.00	2.00
Yellow Jkt.	9.12½	9.50	9.50	10.62½	10.00	9.50

pretty nearly full and some of them have excellent prospects for a big spring business. The demands for merchant steel are multiplying and the market for specialties is much wider than it was a year or two ago. The sheet mills are doing middling well on galvanized, but other kinds are dull. Card rates are unchanged.

The demand for machinery, including engines, and boilers, will be quite good from this out. All the boiler and engine works throughout the city are pretty well loaded up with orders and from the machinists' standpoint, there is a good season ahead. Considerable textile machinery is ordered, both from northern and southern points.

The rail market is quiet. Two firms report some inquiry, but orders themselves have not yet materialized, excepting for small lots. There will be no change in quotations, no matter how long the buyers may hold out, so it is given out as an authoritative statement. In fact, rail-makers, both here and elsewhere, anticipate an improving tendency in prices early in the spring, when every body will come in, as it now seems probable they will. Five or six of the inquiries that have been before rail makers during the past seven or eight weeks will aggregate one hundred thousand tons.

Old rails are attracting very little attention, although a few days ago quite a number of inquiries were received by brokers here. The quotations given show the range of prices. Recent sales have been made very close to the inside figures. The scrap yards are rather bare of supplies, and managers are awaiting receipts. Prices are unchanged, and are as high as the consumers can afford to pay.

FINANCIAL.

NEW YORK, Friday Evening, Feb. 17.

A communication, signed by Drexel, Morgan & Co., Brown Bros. & Co., Ladenburg, Thalman & Co. and nearly all the large banking and investment houses in Wall street, has been addressed to the Stock Exchange in favor of the creation of a statistical department for that institution, for the purpose of securing trustworthy information at all times for its members, to be presided over by an auditor, thoroughly conversant with railroad reports. It is stated that to day the public demands such information as a well-trained and independent auditor alone can give. The indisposition of the public to operate in stocks comes it is thought from the doubt expressed both here and more forcibly in Europe of the truth of directors' reports to stockholders.

If not only the Stock Exchange but the Consolidated Stock and Petroleum Exchange would adopt some independent means of ascertaining facts concerning not only railroads, but mining or other securities listed by them, it would prevent the disgrace with which both exchanges have in the past covered themselves by listing the stocks of worthless concerns, or even of things which have justly received much severer titles.

Mining Stocks.

But little interest is shown in the mining stock market; the transactions are small, and prices on the whole show but little variation.

The Colorado stocks are increasing on the list at the Consolidated Stock and Petroleum Exchange. The stocks of the Lee Basin and Denver City Mining Company were listed this week. The company's properties are located at Leadville. The capital stock of the former is $5,000,000, and the shares have a part value of $10. The capital stock of the latter is $5,000,000; shares, $10 each. Denver City appeared on the list on Wednesday at 9c. A thousand shares were sold on that day; since then no sales were made. Lee Basin came out at 40c. and advanced to 55c., some 3400 shares changing hands. Silver Cord was quiet, selling at from 30c. to 35c. Iron Silver was firm at $4. Dunkin continues to attract attention; the price remains strong at from $1.70 to $1.75. Chrysolite is neglected at 45c. Breece shows some activity at from 46c. to 55c. Security at from 90c. to $1. Small Hopes shows one sale of a hundred shares at $3.35. Cashier has not yet revived, and is selling at from 9c. to 10c.

The holders of the Sutro Tunnel mortgage, now under foreclosure, have, through their counsel, served notice of motion for trial of the case at an early day. A settlement of the litigation on the basis already made public may still be effected if the stockholders who have not yet subscribed for the new bonds do so at once. Nearly one-half of the sum required has been subscribed, but the balance must be forthcoming if the settlement is to be made, and extinction of the stock thereby averted. The receipts from royalties in December and January were about $52,000. The price of the stock remains at 15@16c. The transactions were small and only amounted to 6,600 shares. Consolidated California and Virginia opened at $16.88 last Saturday, but during the week advanced to $18. The prices of the other Comstock shares show but little change as compared with last week.

Belle Isle records a sale at 78c. Navajo a few at from $1.70@$1.75. Tornado declined from 90@80c.

Eureka opened at $14 on Monday, but has since steadily declined, and is selling to-day at $11.

Proustite continues to be the most active stock on the list, showing a declining tendency, the price going from $2.25@$2.10, with sales of 14,450 shares.

Horn Silver shows more activity than for some time past, and the price advanced from $1 to $1.15. Elsewhere we published the annual report just issued by the company.

Ontario holds its own at from $28 to $28.50.

The copper stocks are beginning to show more business in this market. National advanced from $3.85 to $3.95. Huron shows one sale at $5.50, and Allouez shows some transactions at from $2.75 to $2.93. Calumet & Hecla shows a sale to-day at $243.13.

Homestake has declared its usual monthly dividend of $25,000, making a total to date of $4,043,750. The stock is neglected and is selling at from $11.25 to $12. Deadwood-Terra is firm at $2. Iron Hill shows a few sales at 6c. Father de Smet, which has been neglected for many months, has again come into prominence and was one of the most active stocks on the list, advancing from 44c. to 53c. Caledonia is quoted at from $1.95 to $2.

The fifty cent assessment declared by the Bodie Consolidated Mining Company has had a depressing effect upon the stock market, which declined from $2.60 to $2.25. Standard was neglected; it sold at from $2.95 to $3. Mono was active in the beginning of the week, selling at from $2.05 to $2.10.

Quicksilver Preferred again attracted considerable attention, and advanced from $33.50 to $37 on Wednesday, selling to-day at from $35.50 to $35.75. Common shows but little business at from $10 to $10.50.

The annual report just issued by the Plymouth Consolidated Gold Mining Company shows: Gold bullion produced, $736,305; operating expenses, $297,404; profit, $438,900. From this twelve monthly dividends, aggregating $375,000, and $46,861 for construction were paid, leaving a surplus January 1st, 1888, of $98,118. This amount is actual cash on hand, as the company has no indebtedness of any kind. A few shares of the stock were sold at $17.50.

Amador is kept at from $1.65 to $1.80, and Middle Bar at from 33c. to 35c.

Brunswick sold as low as $1.50 this week, but most of the sales were made at $1.65.

Meetings.

The annual and special meetings of the following companies will be held on the dates given:

Adventure Copper Company, Room 70, No. 52 Breadway, New York City, March 1st, at twelve o'clock noon.

Honduras Mining Company, No. 11 Wall street, New York City, March 9th, at one o'clock P.M. Special meeting to act upon a proposition to increase the capital stock of the company to $2,000,000.

Iron Silver Mining Co., No. 23 Broad street, New York city, March 7th, at twelve o'clock noon.

John Duncan Land and Mining Company, Germania Hall, Hancock, Mich., March 5th, at two o'clock P.M.

Lehigh Coal and Navigation Company, room of the Board of Trade, Mercantile Library Building, Tenth street above Chestnut, Philidelphia, Pa., February 28th, at eleven o'clock A.M.

Los Angeles Mining and Smelting Company, No. 11 Wall street, New York city, March 6th, at two o'clock P.M.

Morene Valley Gold Gravel Mining Company, Metropolitan Hotel, New York City, February 21st, at two o'clock P.M.

Montana Fire-Clay and Manufacturing Company, Room No. 2, Grix Building, Main street, Butte City, Montana. March 25th, at two o'clock P.M. Special meeting to sell certain property belonging to the company.

National Mining and Exploring Company, No. 32 Pine street, New York City, March 8th, at twelve o'clock noon.

Platero Mining Company, No. 11 Wall street, New York City, March 8th, at one o'clock P.M.

Relief Mining Company, office of Bullard S. Barbour, Helena, Mont., March 2d, at eight o'clock P.M. Special meeting for the purpose of increasing the capital stock of the company to the sum of $1,500,000, by issuing 150,000 additional shares of stock.

Ridge Copper Company, No. 60 Devonshire street Boston, Mass, March 1st, at twelve o'clock noon.

Shoshone Gold Mining Company, No. 45 Broadway, Room 226, New York City, February 25th, from eleven o'clock A. M. to noon.

Tuna Oil Company, No. 67 Fourth avenue, Pittsburg, Pa., February 20th, from eleven o'clock A.M., to twelve o'clock noon.

Dividends.

American Coal Company has declared a dividend of three per cent. payable March 10th, at No. 1 Broadway, room 152, New York City.

Chicago & Indiana Coal and Railway Company has declared a quarterly dividend, No. 2, of one and one half per cent on preferred stock, payable March 1st, at the Treasurer's office, Room 314, First National Bank Building, Cnicago, Ill.

Homestake Mining Company, of Dakota, has declared dividend No. 115, of twenty cents per share, or $25,000, payable February 25th, at the transfer-agency of Messrs. Lounsbery & Co., No. 15 Broad street, New York City.

Jay Gould Mining Company, of Montana, declared on February 6th dividend No. 9, of six cents per share, or $24,000.

Mary Murphy Mining Company, of Colorado, has declared dividend No. 7, of five dollars per share, or $17,500, payable February 14th, in St. Louis.

Philadelphia Natural Gas Company has declared monthly dividend No. 28, of one cent, or $75,000, payable February 25th, in Pittsburg.

Assessments.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of sale.	Am'nt per share.
Alpha Cons.. Nev...	23	Jan. 9	Feb. 15	Mar. 6	.87½
Alpha M. & M., Nev.	1	Jan. 9	Feb. 15	Mar. 6	.25
Anchor, Utah.....	..	Feb. 7	Mar. 10	Mar. 31	.20
Baker Divide, Cal....	15	Jan. 7	Feb. 13	Feb. 29	.25
Best & Belcher, Nev.	39	Jan. 4	Feb. 9	Mar. 2	.50
Bodie Cons., Cal.....	..	Feb. 13	.. . .	.....	.50
Climax, Dak	2	Jan. 4	Feb. 4	Feb. 27	.00
Commonwealth, Nev	6	Dec. 29	Feb. 6	Feb. 28	.50¾
Cora, Dak.....	1	Jan. 31	Mar. 6	Mar. 23	.01½
Crown Pt., Nev	25	Jan. 4	Feb. 8	Feb. 29	.50
Eva, Nev.....	6	Jan. 5	Feb. 10	Mar. 5	.05
Exchequer, Nev.....	25	Feb. 7	Mar. 13	Apr. 4	.20
Flowery, Nev.....	5	Jan. 13	Feb. 17	Mar. 9	.30
Found Treasure, Nev	2	Jan. 31	Mar. 7	Mar. 28	.06
Genesee, Nev	1	Jan. 10	Feb. 14	Mar. 6	.03
Golden Fleece, Cal...	12	Jan. 28	Mar. 15	Apr. 10	7.00
Golden Reward, Dak.	1	Dec. 31	Feb. 3	Feb. 24	.00¾
Heath, Idaho.....	3	Feb. 8	Mar. 19	Apr. 13	.05
Mexican, Nev	35	Jan. 17	Feb. 21	Mar. 13	.25
Mayflower, Cal.....	40	Jan. 19	Feb. 23	Mar. 16	.50
Mono, Cal.....	25	Dec. 20	Jan. 24	Feb. 28	.50
Morning Star, Nev....	3	Jan. 13	Feb. 15	Mar. 3	.01¾
Navajo, Nev.....	18	Jan. 10	Feb. 14	Mar. 6	.30
North Bonanza, Nev.	8	Jan. 10	Feb. 15	Mar. 14	.15
Paradise Valley, Nev	4	Jan. 28	Mar. 1	Mar. 23	.10
Pioche, Cons., Nev...	4	Dec. 30	Feb. 4	Mar. 22	.20
Quartz Mt., Cal.....	20	Jan. 17	Feb. 20	Mar. 15	.70
Rattler-Gilroy, Dak..	10	Jan. 21	Feb. 24	Mar. 14	.01½
San Francisco, Nev..	2	Feb. 3	Mar. 10	Apr. 3	.40
Spring Valley, Cal...	2	Jan. 11	Feb. 18	Mar. 17	.50

Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, 49 Broadway, report as follows for the week:

Petroleum has been dull for the past week, selling down to 86⅞c. and up to 90c. last night. There appears to be a large short interest, but speculation is apathetic. The advance yesterday was in sympathy with the advance in railroad stocks. There are less than nineteen millions of oil certificates and only about twenty-five millions of barrels of merchantable oil.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange:

	Opening.	Highest.	Lowest.	Closing.	Sales.
Feb. 11.. ..	90¼c.	90¼c.	89⅝c.	90⅛c.	234,000
13..	90	90	88¼	88¼	1,468,000
14..	88¼	88⅝	86⅞	88⅝	3,128,000
15..	88¾	88¾	87⅞	88¼	1,916,000
16..	88	88½	87¾	88⅝	1,275,000
17..	88	90	88	89¾	2,018,000
Total sales in barrels.....					10,039,000

Financial Statements.

The following are the financial balances of the various mining companies on February 1st:

CASH ON HAND.

Alta.....	$35,295.59	Julia	1,070.04
Alpha Con.....	6,306.40	Justice	$9,785 40
Andes.....	6,223 89	Lady Washingt'n	9,797.36
Belcher.....	12,286.58	Locomotive. .	3,686.01
Belle Isle.....	30,050.74	Mexican.....	1,044.13
Bodie	32,190.80	Mono.....	28,143 64
Bullion.....	28,878.47	†North Belle Isle.	104,136.84
Bulwer	7,319.87	Orleans.....	1,070.04
*Con. Cal. & Va.	83,303.56	Ophir.....	12,807.69
Confidence.....	3,741.17	‡Occidental.....	8,376 56
Caledonia.....	2,235.34	Overman.....	39,680.36
Challenge.....	14,950.93	Peer.....	2,534.54
Chollar.....	16,117.03	Peerless	15,355.77
Crocker	1,649.50	Pondere.....	389 29
Dudley	767.16	Potosi.....	14,163 72
Eureka.....	55,979.00	Scorpion.....	5,540.05
Exchequer.....	5,299.01	Sierra Nevada.	14,165.49
Found Treasure.	360.68	Standard.....	84,900.34
Gould & Curry..	14,902.38	Syndicate	10,435 80
Holmes	35,790 00	Union.....	42,193.23
Imperial	9,562.68	Utah.....	16,550.11
Independence...	5,595.15	Weldon	5,819.73

* Cash in bank and unsold bullion on hand of the value of $83,539.38, with shipments of $160,000 to arrive.

† In cash and unsold bullion valued at $43,860.88, with further shipments to arrive.

‡ There is also $1,680.50 due on a pending assessment.

INDEBTEDNESS.

Best & Belcher..	$8,618.14	Nevada Queen..	7,901 22
Commonwealth .	33,154.69	Navajo Queen...	6,676 00
Crown Point	30,826.91	Navajo	25,210.24
Grand Prize.....	47,013.39	Potosi.....	14,163.72
Hale & Norcross	5,247 07	Savage	3,292.51
Holmes.	11,725.64	Seg. Belcher....	12,376.53
Mount Cory.....	47,977.15		

Boston Mining Stocks. Feb. 16.

[From our Special Correspondent.]

The market for copper stocks has not been quite as active as last week, but prices have been well maintained, and in some cases a marked advance is recorded. This is true in regard to Calumet & Hecla and Tamarack, both of which have been in good demand, and sold at the highest prices for the year. The