THE ENGINEERING AND MINING JOURNAL

COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. XLIX. JANUARY 18. No. 3.

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

ROSSITER W. RAYMOND, Ph.D., M.E., Special Contributor.

Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition.

London: 76 Finsbury Pavement, London, E. C., Mr. Thomas B. Provis, Civil and Mining Engineer. Manager.

Mexico: Mr. R. E. Chism, M. E., Callejon Espirito Santo No. 4, City of Mexico.

Peru, S. A.: Mr. John Newton, No. 2 Calle Constitucion, Calla.

Australasia: Messrs. Moffat, Judd & Co., 11 Bridge street, Sydney, N. S. W.; Mr. W. Forster, 56 Elizabeth street, Melbourne, Victoria; Messrs. J. T. Partridge & Co., 134 Manchester street, Christchurch, New Zealand.

SUBSCRIPTION PRICE, including postage:

Weekly Edition (which includes the Export Edition), for the United States, Mexico and Canada, $4 per annum; $2.25 for six months; all other countries in the Postal Union, $5.

Monthly Export Edition, all countries, $2.50 gold value per annum.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO. All payments must be made in advance.

THE SCIENTIFIC PUBLISHING CO., Publishers,

SOPHIA BRAEUNLICH, Sec'y & Treas. R. P. ROTHWELL, Pres. and Gen'l Manager.

P.O. Box 1833. 27 Park Place, New York.

CONTENTS.

	PAGE.		PAGE.
New York State Inspector of Mines...	79	The American Society of Civil Engineers.....	87
The Petroleum Statistics.....	79	Valentine's Statistics of Gold and Silver Production in 1889.....	87
The Vertebrated Palæontologists.....	79	Engineering Association of the Southwest.....	87
Munroe's New Explosive.....	80	Review of the English Alkali Market for 1889	88
The Report of the Director of the United States Mint.....	80	The Manchester Ship Canal.....	88
Life of Charles Blacker Vignoles.....	81	Electric Cars and Snow.....	89
A Treatise on the Metallurgy of Iron..	81	Remarkable Copper Rolling.....	89
The American Railway	81	Chinese Railroad Progress.....	89
The McArthur-Forrest Process for the Treatment of Refractory Gold Ores..	82	An Electric Brake.....	89
*The Mason Steam Damper Regulator.	83	Books Received.....	89
Compulsory Use of Decimal Coinage in Mexico.....	83	Patents Granted.....	89
Some Metallurgical Experience with the Ores of the Ontario Mine, Utah..	84	Personals, Obituary, Industrial Notes.	90
*Shaft Sinking by the Poetsch-Sooysmith Freezing Process.....	85	Contracting Notes	90
The Mineral Resources of Brazil.....	85	Machinery and Supplies Wanted at Home and Abroad.....	90

* Illustrated.

MINING NEWS:	FINANCIAL STATEMENTS..... 94	Coal Stocks....101	METALS..... 97
Arizona..... 91	MEETINGS..... 94	Denver.....102	IRON:
California..... 91	DIVIDENDS..... 94	Kansas City...102	New York. .. 97
Colorado..... 91	ASSESSMENTS.... 95	London.....102	Louisville.... 98
Idaho 91	MINING STOCK MARKETS:	New York.....101	Philadelphia... 98
Michigan 91	New York..... 95	Paris.....102	Pittsburg..... 98
Missouri..... 91	Boston..... 95	Pittsburg.....102	IMPORTS AND EXPORTS..... 99
Montana..... 92	Lake Superior Gold and Iron Stocks 95	San Francisco. 101	CHEMICALS AND MINERALS..... 98
Nevada..... 92	Pipe Line..... 96	St. Louis 102	BUILDING MATERIAL MARKET. 99
New Mexico..... 93	MINING STOCK TABLES:	Auction Sales. 102	CURRENT PRICES:
Oregon..... 93	Baltimore.... .102	Trust Stocks..102	Chemicals.....102
Pennsylvania.... 93	Birmingham ..102	MARKETS:	Minerals..... 102
South Dakota.... 93	Boston.....101	COAL:	Rarer Metals. 102
Utah..... ... 94		New York. 96	Building Mat'r.102
Wyoming..... 94		Boston..... 96	ADVT. INDEX. XXXI
FOREIGN:		Buffalo..... 96	
Canada..... 94		Pittsburg..... 97	
		FREIGHTS 97	

ON the 14th instant Mr. BROWN introduced a bill in the State Senate at Albany for the appointment of ten additional factory inspectors and one mine inspector. The particulars of the bill are not reported.

Official mine inspection is a wise and sometimes an almost necessary means for the regulation of mining and the prevention of accidents. This is especially true where coal mining is pursued, and still more so if the coal mines are of the fiery class. But in the case of New York we fail to see any urgent call for State supervision. What mines are there that Mr. BROWN proposes that his inspector shall inspect? Are they the few iron mines (mainly open pits) or the quarries of building-stone?

The scheme looks more like the making of a useless office, uncalled for by the conditions of mining as practiced in this State, than an effort for the public good.

THE PETROLEUM STATISTICS.

If figures can be believed, it would seem that the consumption of Pennsylvania oil in excess of production will soon bring us face to face with an oil famine, so far as the Pennsylvania product is concerned. It is not a question of the contraction of National Transit Certificates in existence, as that might arise from an artificial condition of affairs, created by the issuers and manipulators of them; but the actual consumption at home and the amount exported largely exceeds the production. What the possibilities are for increasing the production is hard to say with certainty, but judging from the small results obtained by the energetic prospecting operations which have been carried on through a great portion of the past year, the probabilities in favor of great or steady increase are small. If this is the true situation, and everything points to it being so, we are fast approaching the time when the accumulated surplus of past years will be exhausted, and at the present rates of consumption and production the latter would be from 20,000 to 30,000 barrels a day behind the former. The energy with which prospecting for new territory is being carried on can be judged of from the enhanced prices paid for even possible oil lands, and the fact that in the past year there were 5,700 wells completed against 1,700 in 1888, and 1,800 in 1887. Prospecting was more active in the three preceding years, 1884-6, but in the first of these, in which there were the greatest number of wells completed of recent years, the figure only reached 3,400.

The daily output for the year 1889 gave an average considerably in excess of that for 1888, viz., 60.256 barrels; but, at the same time, it was slightly inferior to that of 1887, which amounted to 61,875 barrels, and greatly below that of 1886, while all the time the consumption has been largely and steadily increasing. The reduction in net stocks by all pipe lines has gone on at about the rate of 650,000 barrels a month, as they amounted on December 31st, 1888, to 18,604.474 barrels, and on the corresponding date in the past year to about 10,800,000.* It is unnecessary, however, to contemplate the time when, with stocks exhausted, we shall suddenly find ourselves with a demand that cannot be satisfied, as before that happens the price will surely adjust itself, and the demand will be curtailed in consequence of the article becoming, in certain cases, a luxury instead of a necessity.

The year has opened with a smaller daily production than what we have already recorded as the average of the past year, and the figures point to a large reduction of stocks during the current month, being 54,588 barrels a day, against deliveries, 79,597. Whether this state of affairs will continue can only be more or less a matter of guess-work, and dependent on the foreign markets, but it is interesting to note the decline of shipments of American petroleum to Great Britain during the four years ending 1888, and the increase of Russian petroleum imported into that country. In 1885 there were 1,367,720 barrels of American oil imported against 70,149 barrels Russian; in 1886, 1,363,801 against 46,814; in 1887, 1,444,350 against 188,461, and in 1888, 1,286,148 against 549,126.

THE VERTEBRATED PALÆONTOLOGISTS.

Two of a trade never agree, according to the old adage. This is certainly the truth as regards palæontologists, and, to be more specific, we may say is particularly applicable to that variety of the species known as vertebrate palæontologists.

Just now this is illustrated somewhat pointedly by the row which has been stirred up by the publication of a series of lengthy articles in the New York *Herald*, beginning on the 12th instant. These articles make public a scientific feud which has been known to be smoldering for some fifteen years or so, and which, while an old story among the scientists, now for the first time engages public attention. The amount of space given to the matter in the *Herald* and the glaring head lines which embellish it have naturally attracted considerable attention among those who, as a usual thing, hardly notice such matters.

Briefly described, the fight is one between Prof. E. D. COPE, of the University of Pennsylvania, and Prof. O. C. MARSH, of Yale, and also a member of the United States Geological Survey, both of whom are eminent in their specialties as vertebrate palæontologists—which we may take to mean in the present instance palæontologists possessing plenty of backbone. Incidentally Director POWELL, of the Geological Survey, is involved, and still more indirectly nearly every scientific man in the country has been called upon to take sides and express opinions, which most of them are doing with a vivacity which lends interest to the war. Never before has there been so pointed and personal a controvery among American scientists, nor one in which so many have taken a hand. So far the fight is a very pretty one, with the advantage of the initiative on the side of Professor COPE and his friends, and of numbers and official intrenchment on the side of Professor MARSH and *his* party.

Professor COPE openly accuses Professor MARSH of plagiarism and ignorance, and while in the humor for hitting heads attacks the management of the Geological Survey, to which Director POWELL has already made reply

* See ENGINEERING AND MINING JOURNAL, January 4th, page 30.

in kind; while Professor MARSH, as the *Herald* puts it, is loading for bear and is preparing his statement of the case and will make counter charges.

It is much to be regretted that such serious trouble should have arisen between men so prominent in their special line, but as there is and has long been known such bitter feeling, it is just as well that the whole matter should come out and be settled once for all—if, indeed, it admits of settlement. The controversy is unfortunately degenerating from argument to personalities and recriminations, which will help neither side and will tend to injure the whole body of contestants in the public opinion. But the atmosphere will be cleared, even though no definite result is reached. The most regrettable feature is th esmashing of reputations which is bound to come, for the dispute is one which admits of no compromise. It is war to the bitter end, though we doubt whether a conclusive result can be attained. Meanwhile some of the reputations are already suffering.

Professor COPE'S maiu charges are that Professor MARSH did not work out the evolution of the horse, but stole the idea from a Russian palæontologist, and that one of his assistants should have the honor of the discovery of birds with teeth (or, more broadly, the descent of birds from reptiles). We have always supposed that MARSH'S work, over his own name, and for which he is credited in the text books, was his own ; and such is the general belief. While the management of the Geological Survey is undoubtedly open to criticism in some respects, impartial outsiders will hardly follow Professor COPE in his sweeping charges of incompetency and worse. For Professor COPE. on the other hand, we may say that it is absurd for his opponents to belittle his scientific attainments. They should not meet his attacks upon the *ad hominem* ground. Calling names is not argument, gentlemen. Let us have it out squarely—a fair field and no favor.

MUNROE'S NEW EXPLOSIVE.

If one-half, or less, of what is claimed for an explosive recently discovered proves to be well founded, it is safe to say that a very startling revolution in the knowledge and use of high explosives may be looked for in the near future.

We are not at liberty to give particulars as to the new discovery, and as a matter of fact do not know its precise composition or the details of the tests thus far made, which have for obvious reasons been carefully kept from the public. Such information as we are permitted to publish is therefore of a very general nature, and consists, it must be confessed, rather in claims than in substantiated facts. Still the professional standing of the discoverer, Prof. CHARLES E. MUNROE. who is well known as a specialist on explosives, and who has long served as expert for the Navy Department, carries sufficient weight to invite serious attention to what might seem visionary if coming from a less authoritative source.

The new explosive is claimed to possess greater violence than any now employed either in blasting or military cartridges, while its chemical stability is said to be assured. It is also said to have proved insensitive to any friction or percussion yet applied, having been exposed to the blows of a steam hammer and those of a blacksmith striking with a sledge upon an anvil. Unlike many explosive mixtures, it is described to be a true chemical compound of definite composition and well-defined properties; and to be quite removed from the picrates and other nitro substances now so widely used, in its chemical composition, but in some respects to resemble those powerful diazo compounds discovered by GNEISS, though more powerful even than these. Its main field, we understand, is to be in military uses; and the discoverer asserts that the contents of a common shell would be sufficient to rupture the heaviest armorclad afloat. Its insensibility to shock and the heat of the explosion of the propelling charge is claimed to have been established by repeated experiments, so that even if its power is less than is believed, this alone would recommend it for military use. It is further stated that, although more powerful than the explosive "A" which produced such tremendous effects at Annapolis, it is much safer. Like other high explosives, it requires a suitable priming to develop its full force. Further advantages claimed are, that it is smokeless and as nearly noiseless as explosives can be. Its manufacture is said to be simple and to require no elaborate apparatus.

All this is truly startling. If only a small part of the advantages described can be shown to exist, leaving the other considerations on a par with wet gun-cotton, for instance, the discoverer has accomplished a vast deal. It seems to us to be a little too good for belief, especially in view of the numerous semi-failures of the host of new explosives brought forward within the last few years, about each of which so much was expected and which for the most part have on lengthened experimenting developed some bad feature or other to disappoint their sanguine projectors. With all deference to Professos MONROE'S experience and familiarity with the use of high explosives for warlike purposes especially, and recognizing the continued study he has devoted to this particular case, we shall await public trials and the lapse of sufficient time to establish the keeping properties of the new explosive before feeling justified in following him quite so far as his claims seem to go.

It should be remembered that for military purposes the thing desired is not so much an explosive of terrific power as one which can be safely fired from powder guns and can be made, handled and stored without more danger than, let us say, common gunpowder. Too high an explosive would blow a shell to fragments so minute that they would have little effect; so that the value of a charge would depend rather upon its bursting effect applied as in the open air, and just what this effect would be. when delivered against armor, is something which will require actual service in war to determine.

Again, in blasting it is well known that it is quite possible to have too sharp an explosive, that is, a shattering rather than a rending force. Hence miners often use lower grades than giant No. 1, without regard to the difference in price. Every cartridge must be adapted to its work, and the choice of grade will depend upon the character of rock quite as much, or more so than, the intrinsic difference of power or any small saving in cost, In military employment the high explosives have many kinds of work to perform other than as fillings for shells. and of course the requirements for torpedoes and submarine mines might open a field for an explosive which would be entirely unsuitable as a shell charge.

THE REPORT OF THE DIRECTOR OF THE UNITED STATES MINT.

Dr. KIMBALL'S last report, as director of the Mint, on the production of precious metals in the United States for the calendar year 1888, and the annual report of his successor, Mr. E. O. LEECH, for the fiscal year ending June, 1889, followed one another in quick succession. They give the usual carefully compiled tables of home and foreign production, and of the home and foreign consumption of gold and silver for coinage and the industrial arts.

When treating of the operations of the several mints Mr. LEECH'S report gives, for the first time, a table exhibiting the relative cost per piece of the coinage struck at each mint.

COST OF COINAGE AT EACH MINT.

Location of Mint.	No. of pieces coined.	No. of pieces coined exclusive of minor coins.	Expenditures for salaries, wages and incidentals.	Cost per piece, including minor coinage.	Cost per piece, exclusive of minor coinage.
Philadelphia	77,544,801	26,027,940	$543,369.50	$0.007	$0.0209
San Francisco...	3,574,504	3,574,504	255,224.88	.072	.072
New Orleans	12,307,835	12,307,835	213,498.68	.0173	.0173
	93,427,104	41,910,279	$1,012,093.06	$0.0108	$.024

"It is difficult to draw a comparison between the cost of coinage at the various mints, for the reason that the character of the coinage executed at them is so dissimilar.

"At the mint at Philadelphia a variety of coins are manufactured, comprising a limited number of gold pieces, a large silver coinage and a still larger minor coinage. For some years past and at present, the blanks or discs for the minor coinage are purchased under contract, so that the mechanical operations necessary to convert them into finished coins consist merely of heating and cleaning the discs and striking the coins. The cost of this work is out of all proportion to the cost of manufacturing gold and silver coins.

"At the mint at San Francisco, on the other hand, the coinage executed is almost exclusively gold, which is the most expensive coinage, requiring greater care and skill.

"At the mint at New Orleans the coinage consists almost exclusively of silver dollars manufactured from refined silver bars, alloyed with copper.

"So that the cost per piece of the coinage of each mint is of but little practical value as a basis of comparison of one institution with another."—Report of the Director of the Mint, page 54.

We assume that this is in answer to a plea we have more than once made in favor of a single national mint: but Mr. Leech's rejoinder, if such it be, does not touch the principal argument in favor of a single mint which we derived from the disproportion between the cost per coin for labor and that for superintendence. We have admitted all his claims for the greater cost of minting a piece of gold over a piece of subsidiary silver coinage, but the facts remain that a full staff of technical officers must be maintained for each mint; that, were all the work done in one mint, the number of officers to laborers would be much reduced, and that where a number of mints have to be maintained, cheapness is necessarily aimed at and the superintendence is therefore ill paid and inferior to what it would be if the department could attract better scientific and technical supervision by offering better pay.

We notice the same discrepancies between the wastage in different mints and between the wastage in the same mints in different years, which we have formerly insisted on as an evidence of either a deficient system of operation, or a lack of technical skill in the operators.

We have compiled the following table of wastage, valued to percentages :

The Philadelphia melter and refiner treated 765,876 ounces gold, and wasted 117 ounces = ·0223 per cent.

The Philadelphia melter and refiner treated 43,334,421 ounces silver, and had a surplus, 260 ounces = + ·0035 per cent.

The Philadelphia coiner treated 267,320 ounces gold, and wasted 16 ounces = — ·005 per cent.

The Philadelphia coiner treated 39,613,985 ounces silver, and wasted 3,651 ounces = — ·009 per cent.

The San Francisco melter and refiner treated 2,342,326 ounces of gold, and had surplus of 461 ounces = + ·019 per cent.

The San Francisco melter and refiner treated 1,156,035 ounces silver, and wasted 161 ounces = — ·013 per cent.

The San Francisco coiner treated 2,408,755 ounces of gold, and wasted 73 ounces = — ·003 per cent.

The San Francisco coiner treated 57,075 ounces silver, and wasted 137ounces = — ·023 per cent.

The New Orleans melter and refiner treated 39,707 ounces gold, and had surplus of 21 ounces = + ·052 per cent.
The New Orleans melter and refiner treated 21,452,944 ounces silver, and wasted 2,392 ounces = — ·011 per cent.
The New Orleans coiner treated 8,216 ounces gold, and wasted 1.318 ounces = — ·015 per cent.
The New Orleans coiner treated 20,888.368 ounces of silver, and wasted 7,016 ounces = — ·033 per cent.

According to the reports for 1888 and 1889, in 1888 the Philadelphia melter and refiner made a loss of both gold and silver; in 1889 the Philadelphia melter and refiner made a gain in silver; in 1888 the San Francisco melter and refiner made a loss in gold and gain in silver; in 1889 the San Francisco melter and refiner made a gain in gold and loss in silver; in 1888 the New Orleans melter and refiner made a loss of both gold and silver; in 1889 the New Orleans melter and refiner made a gain in gold and loss in silver.

Referring to the operations of the New Orleans mint, the director says: "The reduction in the silver wastage of the melter and refiner shows a marked improvement over the work of the same department for the preceding year. . . . While the wastage of the coiner was only about one-third of the legal allowance, it is greater than the wastage of this department for several prior years, and is attributed largely to the great number of pieces condemned as without the legal limit of tolerance owing to imperfect machinery."

Whether it be through deficient machinery, faulty administration, or lack of technical skill, these glaring discrepancies should not appear in the record of our mints, whose operations should be models of excellent organization and perfect workmanship to every technical establishment in the country. This will never be attained in separate mints, whose officials are liable to the vicissitudes of political appointment and displacement.

Both the advocates and opponents of bi-metallism will draw arguments from these volumes in support of their views.

The table of home and foreign production of gold and silver for the four years ending 1887, of which we reproduce the totals—

1884.		1885.		1886.		1887.	
Gold.	Silver.	Gold.	Silver.	Gold.	Silver.	Gold.	Silver.
$	$	$	$	$	$	$	$
101,720,600	105,461,350	103,779,600	118,095,150	99,250,877	120,394,400	100,826,800	125,346,310

Silver counted at $1.29 per fine ounce.

shows a remarkable uniformity in the production of gold, and a gradual and very notable increase in the production of silver. The gold production of 1889, however, has shown a large increase from the Transvaal, Mount Morgan and India, as pointed out in the ENGINEERING AND MINING JOURNAL. Although the Transvaal production has fallen below anticipation, it must have reached $8,000,000 in 1889. The Mysore Goldfields and some minor Indian companies reached about $1,000,000. As Russia pushes her Siberian railroad into the Amoor district, despite the drawbacks and restrictions under which Russian mining is practiced, her gold production, from her very great resources, will probably show a rise.

Even Wales will appear in last years' statistics, when they come to be made up, with a production of over $150,000 from the Pritchard and Morgan mines. There need be, therefore, no dread of decline in the output of gold. Nevertheless, it is remarkable how stable is the world's supply, considering the improved facilities for extraction, and the new fields which are being periodically reached and developed.

Our gold production has notably declined, and no new mine is in progress of development which gives any promise of reversing the downward tendency, and gold as a subsidiary metal accompanies lead and copper much less plentifully and frequently than does silver. The gold exported in copper matte and pig copper is returned as only $34,255, while the silver in copper matte and ore, which we presume is intended to include what is exported in copper pigs, is returned at $916,206. And as more economical methods are devised and adopted, the extraction of very small quantities of silver from copper will be effected, as is done from silver-bearing lead, to the notable increase of our silver supply. At the same time, the separation at home, instead of abroad, of whatever is valuable in our ores and furnace products will leave in the country whatever it produces. If, for example, the silver from Lake Superior copper were extracted, it would add $1,000,000 to our sum total, and most of the Butte copper still goes into consumption with its contained silver. Although, therefore, the discovery of a great silver mine is likely to be as rare an occasion in the future as the discovery of a gold mine, the production of silver from lead, copper and other ores is certain to largely increase; and the probability, therefore, is that the domestic, as well as the world's, production of silver will continue to grow with greater speed and at a higher ratio than that of gold, but, as the recent rise in the price of silver would seem to show, not a higher ratio than the demand.

The Mint and Treasury statistics further confirm what we know from our own experience, that people will not load themselves up with silver if they can get anything lighter.

They will accept as readily a silver certificate or a gold certificate as a national bank note, because they look to the government to make all of them good, and one is as light and convenient to carry as another; but ponderous dollars, whether their weight be made up of base metal or of pure silver, it matters not, are unpopular, and everybody looks cross when obliged to take one in change. We find, therefore, that there were in the vaults of the Treasury on Nov. 1, 1889 only 6,219,577 silver dollars, exclusive of $277,319,944 held for payment of certificates outstanding, while only $60,098,480 has entered circulation as coin.

Those who think that mono-metallism requires that there be available enough gold to represent the commercial needs of the country will draw comfort from the fact that the export of gold in 1889 exceeded the imports by $49,661,101, and that if the drain continues the scarcity of gold will leave mono-metallists no alternative but to adopt the greenback doctrine. Before such apprehension need amount to alarm the $147,380,181 of gain in gold which the country has accumulated from foreign trade since 1878 will have to be absorbed. The amount of coin actually needed for the commerce of the world is small. Besides proving this, the tables of gold reserves in the banks of France and England, and our own national banks, show how sensitively gold fills the functions of the balance wheel of exchange. A comparatively insignificant quantity suffices to supply the "margin" on which international commerce and trade is conducted.

NEW PUBLICATIONS.

LIFE OF CHARLES BLACKER VIGNOLES, F. R. S., F. R. A. S., M. R. I. A., etc.; SOLDIER AND CIVIL ENGINEER. By his son, OLINTHUS J. VIGNOLES. Published by Longmans, Green & Co., London and New York, 1889. Cloth, 8vo, 407 pp. Illustrated. Price $5.

This handsome volume is a worthy tribute to the memory of the great engineer. Vignoles died thirteen years ago, and the memoir is consequently late in making its appearance, but the author has in the interim been occupied in collecting material for it, and has succeeded in presenting a very complete and fairly stated account of his father's long and distinguished career.

Vignoles' name is best known in this country in connection with the early history of the railway, and especially on account of his introduction of the rail which still bears his name on the continent of Europe, and which was the prototype of present forms; for his many engineering exploits in railway construction, bridge building and tunneling, and as president of the Institute of Civil Engineers. But the reader will be surprised on glancing through this biography at the number and variety of Vignoles' achievements, which were performed in nearly every country in the world. His life was one of constant activity and fruitful to a degree which entitles him to a place in the very first rank of engineers.

A TREATISE ON THE METALLURGY OF IRON, containing outlines of the history of iron manufacture, methods of assay and analyses of iron ores, processes of manufacture of iron and steel, etc. By Dr. H. BAUERMAN, F. G. S. Sixth edition. Boards, 12mo., 523 pp., including index. Illustrated. Published by Crosby, Lockwood & Son, London, 1890. Price $2.

The earlier editions of Bauerman's "Metallurgy of Iron" were received with deserved favor, and that the popularity of the work has continued is shown by the number of editions through which the work has passed, the present being the sixth. At the time the first edition was issued (in 1868) the treatise was fairly abreast of the times, and therefore filled an open niche in the literature of the subject. Since then, however, the progress of the iron and steel industries has been so rapid that even with the changes and additions in successive editions Dr. Bauerman does not seem to have kept pace with the advances made in actual practice. The work, therefore, while an excellent elementary treatise, by no means represents the present state of iron and steel metallurgy. In this, the latest edition, the changes are but slight, consisting of a few alterations in the body of the text and the addition of eleven pages of supplementary notes at the close of the volume. These notes embrace a list of the Cleveland blast furnaces, an analysis of purple ore, a short discussion on the composition of the gases from the Bessemer converter, Abel's conclusions as to the condition in which carbon exists in iron and steel, a note on manganese steel, an account of Mitis iron, a description of some new forms of open-hearth furnaces, "direct" processes, and the record of one American blast furnace. These additions are altogether insufficient to bring the subject up to date. A certain amount of the principal text would stand revision with advantage. For example, the definition of steel as an iron-carbon compound between cast and wrought iron, will hardly pass muster nowadays. As a record of the state of the art twenty years ago the book is still well worth the attention of the student, for it is very condensed and clear; but it is misleading as to present practice.

THE AMERICAN RAILWAY: ITS CONSTRUCTION, DEVELOPMENT, MANAGEMENT, AND APPLIANCES. By T. C. Clarke, John Bogart, M. N. Forney, E. P. Alexander, H. G. Prout, Horace Porter, Theodore Voorhees, Benjamin Norton, A. T. Hadley, Thomas L. James, Charles Francis Adams, B. B. Adams, Jr., and F. W. Hewes. With an introduction by Judge Thomas L. Cooley. Cloth, half-leather, 8vo., 456 pp., including index; 225 illustrations, 13 maps, and 19 charts. Published by Charles Scribner's Sons, New York, 1889. Price, $6.

This book is made up, with some slight additions, from the series of railway articles which appeared originally in *Scribner's Magazine*, and which at the time of their publication attracted no little attention. The contributors to that series are men of the highest standing in railway circles, and are well fitted to speak with authority as to the special branches discussed by them. The whole plan was well worked out, the division of topics being very evenly balanced, and the method of treatment throughout being such as to render the subject clearly intelligible to all readers, without degenerating into puerility.

In the present compilation all these detached essays have been brought together and arranged in a natural sequence. Taken as a whole they form a very complete résumé of the entire field of railway history, construction and management. It was inevitable that, in the endeavor to

make the work thoroughly complete, there should be a large amount of repetition of matter frequently before published and now the common property of the cyclopedists. This is particularly the case with regard to the historical portions, which have been gone over very many times in books and scattered contributions to the press. And it is also true that the railway engineer will find in "The American Railway" little or nothing new to him in a purely professional sense, though perhaps a good deal on the business side. Yet railway men, whether of the engineering or the business classes, will be glad to receive a compact and fairly exhaustive description of the industry in such a convenient shape; and outsiders will also thank the compiler for having placed within their reach a study of the whole railway industry which brings out its details in a manner perfectly intelligible and at the same time attractive. It may be remarked, in passing, that it is wonderful how few, of the millions of people who habitually and constantly use the railway, there are who have ever given a thought to its technical details or the economic intricacies of the subject. We are so accustomed to the daily use of the railway that its mysteries, its magnitude and all connected with it seem familiar enough, and one unconsciously imbibes the idea that there is little to be learned. But the "general reader" (that is, one who is not an engineer nor a railroad man) will be surprised, on looking through the present volume, to discover how much there is that he does not know, and how many complex items go to make up the ensemble of a great and successful railway. We do not know any source of information so accessible and convenient as "The American Railway," which has the advantage of being prepared by authorities on the subject who have taken the trouble to express themselves in a way quite as popular as the style of the newspaper writers, but whose statements are as carefully considered as though they were addressing the profession only. We commend the general tone of the book as admirable. Its purpose, to be readable and clear, and to meet the requirements of non-professional readers, has been carried out successfully, and the editor who planned and accumulated the series of contributions is to be congratulated.

Judge Cooley, the chairman of the Inter-State Commerce Commission, in his brief introduction, presents a very fair and conservative view of the difficulties of legislation and the needs and limits of government control. Mr. Clarke describes the building of a railway from the first locating of the line. Mr. Bogert cites a few of the more striking feats of railway engineering, explaining the methods followed to overcome specially difficult obstacles. Mr. Forney submits a very interesting account of the development of American locomotives and cars, showing how and why they differ among themselves and from European patterns. General Alexander analyzes the organization of the management of a railway, and explains the subdivision of work and responsibility among the officers and chief employés. The safety appliances and operating methods for the prevention of accidents from the subject of one of the most interesting chapters, contributed by Mr. Prout. Passenger travel and the freight service are the specialties discussed by General Horace Porter and Mr. Voorhees, respectively. Mr. Norton tells "how to feed a railway," and give us an insight into the business tactics of railway management. Ex-Postmaster-General James describes our railway mail service, which has been so well organized and contributes so much to the rapid dissemination of news and correspondence. Mr. Hadley's chapter on "the railway in its business relations" is a discussion of the financial questions involved in the management of a great road. "The prevention of railway strikes" is treated of in a practical way by Charles Francis Adams, the president of the Union Pacific Some idea of the everyday life of railway men is presented in a taking fashion by Mr. B. B. Adams, Jr., who vividly pictures the responsibilties, hardships, dangers and relaxations of the different classes of employés. A set of statistical charts and deductions from the statistics, by Mr. Hewes, form the closing chapter.

There are many points of interest on which we should like to comment, if space allowed; and in carefully reading the volume through, we confess having found not a few statements new to us, as doubtless would other engineers. Possibly we may have occasion to recur to some of these in future; but the limits of the present notice forbid any but the most general impressions—and these are entirely favorable.

It is hardly necessary to say, of a book issued by the Scribners, that its illustrations and typography are all that could be desired. Some of the woodcuts are very fine indeed. Their subjects are nearly all original, unless indeed we except some of the cuts accompanying Mr. Forney's chapter, which have a familiar look as of the advertisements of the locomotive builders.

CORRESPONDENCE.

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

The MacArthur-Forrest Process for the Treatment of Refractory Gold Ores.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: "How to treat low-grade refractory gold ores" is the most interesting problem before the mining public to-day.

The article on this subject in your issue of December 21, 1889, has just been sent to me and really looks like an old friend in a new garb, the wonder being that so long a time has elapsed since we were inducted into the mysteries of the "great chemical affinity of cyanogen for gold and silver."

It is more than 20 years ago when a wave of KCN. passed over this country, the Patent Office being the repository of several very positive statements as to the easy manner of making fortunes by introducing KCN. to mother earth containing sulphurets.

I think Gold Hill tried it (she has tried a new one each year since 1880), and I know I did so, as my notes bear witness of personal encounters with the subject matter and the KCN., when the cover was off the tin-can, which have left deep stains.

I haven't the digest of the patents with me, but a few of my notes may be of interest to your readers, and lead to the closest expert workings before the acceptance of statements so carefully drawn and so evenly graded from "raw sulphurets to the gold bars in hand." Our mining districts are so fully provided with process plants that one more will not crowd the cemetery, but we can promise the camp which is first to secure this "cyanide process," that shortly after these "long zinc cases" are unpacked and unsoldered, alkali flats, concentrated lye, sodium amalgam, and all other old caustic friends will be utterly forgotten.

Prince Balgration and Elsner* made many valuable observations as to solubility of precipitated gold in cyanide and ferrocyanide of potassium. Experiments by eminent authorities who followed them were unfavorable in every instance on the score of cost. F. A. Dixon, F. C. S., says:† "It seems to me that the high price of this salt and its extremely poisonous properties preclude its use for this purpose. The reaction between precipitated gold and cyanide of potassium I found to be extremely slow if the gold was at all dense. In presence of alkaline oxidizing agents, however, I found that the solution of the gold was sufficiently rapid. Thus, on standing over night—the quantity of gold and cyanide of potassium solution being similar in each case—with the cyanide alone, traces only of gold were dissolved, but with the addition of calcium hypochlorite, ferrocyanide of potassium, or binoxide of manganese, all the gold was dissolved; with chromate of potassium, a small quantity; with permanganate of potassium, none. With ferrocyanide of potassium alone, I did not obtain any gold in solution after standing some days, but I thought that with suitable oxidizing agents it might be obtained in solution according to the equation:

$$4An + 2K_4FeCy_6 + 70 + 4H_2O = 4AnCy_2 + Fe_2O_3 + 8KHO.$$

In the cold, however, with the exception of ferrocyanide of potassium, none of the oxidizing agents had any effect, but, heated to 212 degrees Fahr., the reaction with all of them was sufficiently rapid, and I found that this was also the case with permanganate.

This reaction promised to be of considerable value, as the gold and silver would both be obtained in solution, from which the former could be precipitated by filtering the hot solution through finely divided metallic silver, of which an equivalent quantity would be dissolved, which with any silver originally present could be precipitated as sulphide. By treating the solution with ferrous hydrate, the cyanide of potassium could be retransformed into ferrocyanide.

I found, however, that copper in any form precipitated both gold and silver from the solution, or, at all events, that these metals were not dissolved until all the copper had gone into solution; also that if copper was present as sulphide, the silver was transformed into sulphide, which is insoluble. Any copper dissolved cannot be precipitated as sulphide, but I found it could be removed by digesting the solution with ferrous hydrate, the solution being kept alkaline. A portion of roasted arsenical pyrites was digested at 212 degrees for twelve hours with 120 grains ferrocyanide of potassium and 32 grains oxide of manganese (20 pounds per ton, and sufficient water made alkaline by soda to make a cream. The solution yielded 9 ounces 8 pennyweights 19 grains gold per ton, leaving 1 ounce 9 pennyweights 15 grains undissolved.

This was the best result obtained, the yield with other oxidizing agents and more prolonged digestion being all somewhat lower. With other pyrites trials were made with each oxidizing agent in succession, the duration of the digestion being varied from 12 to 56 hours; while with the soluble oxidizing agents the quantity used was in some cases a little over the amount, and sometimes 10 times as much. All the results showed that with complex pyrites a portion of the gold only could be obtained in the solutions as cyanide or chloride, while none could be obtained as sulphide.

I do not know whether it is necessary to treat the article in question seriously, and but for its appearance in your columns it would not need criticism, as the author claims for a process, which evidently is new to him, and which he credits to the skill and untiring efforts of certain other gentlemen whom he names, nothing which he could not have gleaned from excerpts and memoranda published during the past 25 years, while to practical chemists and metallurgists he condemns the process step by step as he elaborates the article. It is not necessary to technically dispute the premises of his argument, while practically the entire fabric is worthless for argumentative purposes. There is an exception, however, inasmuch as the untiring efforts of the originators of this "cyanide process" will probably be directed to manufacture of the "black bricks of cyanide," which, put up in "long zinc cases," will be sufficient source of profit.

Seriously and practically, however, the following quotations from the article, together with the memoranda already quoted, should be all that is necessary to show the impracticable nature of this new process:

1st. "To successfully carry out the extraction of gold from refractory ores a number of points have to be observed. If the ores contain basic sulphates, etc., such acidity should be neutralized by caustic lime. . . . Some ores show as much as four per cent. of acidity, in terms of soda; and such ores, on treatment with cyanide solutions, without previous treatment with lime, show *no* extraction of the gold contents. . . ."

2d. "The cyanide solution used should be as free from caustic alkali (NaHO or KHO) as possible, as it (caustic alkali) is apt to form a sulphide of sodium or potassium with the sulphur of the ores, and thus prevent gold and silver going into solution. This difficulty is got over by adding chloride of calcium."

3d. "The cyanide solutions are best preserved from too great exposure to the air, as a part of the cyanide is apt to be converted by oxidation into the cyanate (KOCN), an extremely stable compound."

4th. "The process is admirably suited for treating iron pyrites containing gold, and to ores containing fine or 'float' which yield up their gold so easily that they can be treated by merely percolating the cyanide liquor through them."

5th. "The filtration of the liquor is accelerated by using a vacuum, and there is no practical difficulty about this part of the process, except in the case of ores containing a large percentage of claycy matters."

Now, all concentrates, *i. e.*, the sulphurets gathered by any process from the battery pulp, etc., cannot be stored for a day without production of sulphates, therefore, the necessity for a caustic lime treatment based upon laboratory tests of acidity, and this at the inception. Next,

* "Watt's Dictionary of Chem."
† *Chemical News*, December 20th, 1878.

cyanide solutions are among the most virulent poisons known, and no process has ever yet been devised to safely handle them. To their acknowledged disposition to revert to the cyanate, the aqueous solution of which gradually decomposes into ammonia and hydrogen potassium carbonate, there is a worse feature, viz., the weakest acids, even carbonic acid, decompose the salt with evolution of hydrocyanic acid. Again, commercial cyanide of potassium, which can be purchased for not less than $20 per ton at the factory to day, is never free from caustic alkali (NaHO) or (KHO), therefore, a new plant would be required to treat commercial products to obtain a salt which *would* dissolve gold. At this point, wherein lies the practicability of agitating for eight hours a ton of sulphurets with 700 pounds of poisonous slop, the base of which would cost anywhere from $4 to $10 per ton of ore treated (see the author's statement) and product being *nil* unless a further process were added, as he states.

Again, cyanide of gold has a great tendency to combine with other cyanides, especially those of the alkalies and alkaline earths, and any metallurgist knows it to be practically impossible to free sulphurets which pass a 40 mesh battery screen from alkaline earths and clayey matters; therefore fines or "float," containing a large percentage of extraneous earthy matters, would yield their gold to no process of filtration now known—vacuum, cyanide or otherwise.

As compared to all this untried and theoretical procedure with destructive chemicals and delicate reactions, coming to us from Europe as suggestions at this late day, what can be further removed than the simple and effective practical every-day United States process of chlorinating sulphurets, so extensively practiced on the Treadwell mine, Alaska, or the process devised by Adolph Thies and so largely worked in several places.* Mr. Thies is regularly working sulphurets which contain $20 to $200 per ton for less than $1 per ton, and saving from 90 to 95 per cent. assay value. We have modifications of several well-tried processes which are practiced extensively in this country, and which save a larger percentage of gold than claimed by this "cyanide process." Would it not be worthy the attention of your correspondent to look into their merits?

Respectfully, W. H. ADAMS, M. E.

TOLERSVILLE, Va., Jan. 20, 1890.

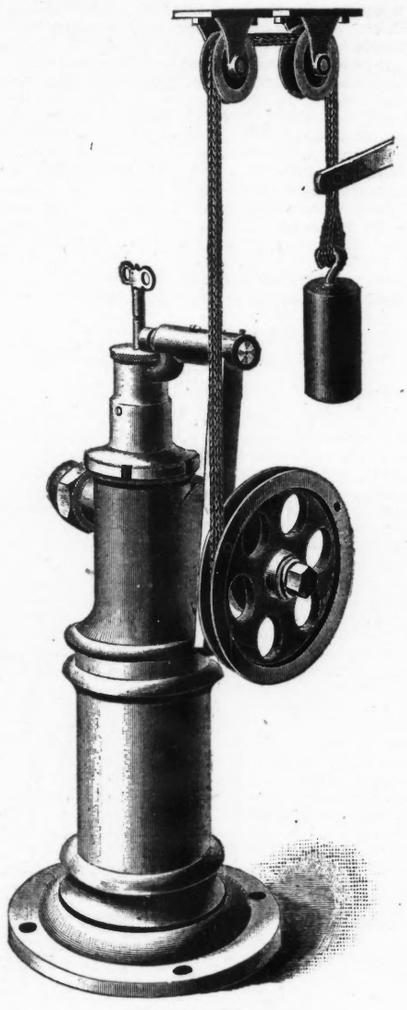
*Transactions Am. Inst. Min. Engrs., XVI., 339. Eighth Annual Report State Mineralogist, state of California, pages 60, 342, 3, 4.

THE MASON STEAM DAMPER REGULATOR.

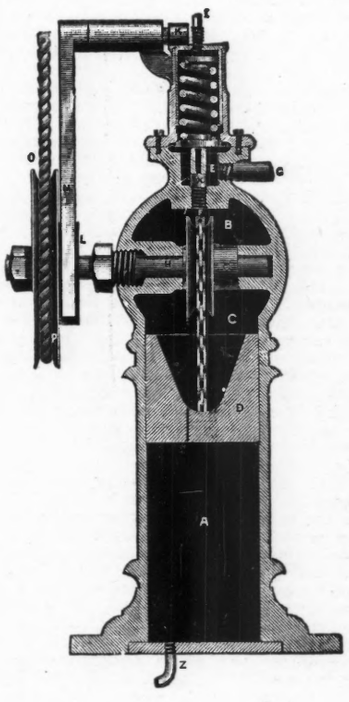
The accompanying cuts represent the exterior and sectional views of a novel steam damper regulator. From the outside view it will be readily seen that it is only necessary to set the regulator in some convenient position and attach by a chain to the damper, while a connection is made with the boiler by means of a small pipe.

The pressure desired to be carried can readily be changed by turning a key, as shown in the illustration. The practical working of the regulator is as follows, referring to the letters shown on the sectional view. The boiler pressure which is connected at the pipe *C* comes into the chamber *E*, the top of which is formed by a diaphragm, on which rests the main spring *S*. If the boiler pressure rises above the required point, or sufficiently to overcome the tension of the spring *S*, the diaphragm is raised very slightly and the steam passes down the passage *X* to the upper surface of the piston *D*, which it forces down.

This piston being connected with the wheel on the shaft *H* by a chain or rack and pinion, throws it around, communicating a like motion to the outside wheel and thence to the damper in the flue. When the boiler pressure drops, the diaphragm comes on to its seat, which covers the passage *X*, and steam pressure is removed from the top of the piston *D*, while the weight on the damper brings the wheel *P* back to its original position. It is claimed by many engineers that a regulator which suddenly opens and closes a damper to its full capacity wastes coal which is undoubtedly true, therefore a device which is known as a compensating lever is provided in the lever *M*, which rests on the cam *L*. As the shaft *H* turns, the lever is thrown over and works a cam *K*, which throws the main spring out of adjustment immediately the regulator commences to act. By this means it is found that the damper is kept more constant and the draft steady.



Exterior View.



Sectional View.

THE MASON STEAM DAMPER REGULATOR.

The regulator can be furnished either with or without the compensating lever as desired. It is entirely made of the best steam metal, and is manufactured by the Mason Regulator Company of Boston.

Compulsory Use of Decimal Coinage in Mexico.—The Mexican Government has issued a decree fixing June 30, 1890, as the date for the definite withdrawal from circulation of worn coin and of the coins known as reales, medios, cuartillas, and tlacos. Holders of such coins may before such date exchange them at their nominal value for decimal currency at the National Bank in this city, or at its agencies throughout the Republic. The mints will recoin the old money into decimal pieces. After the date fixed for the exchange of the old coinage at its nominal value it may still be exchanged at the mints, which, however, will only redeem it according to its weight and fineness and not according to the value stamped on it. From and after July 1st, 1890, all commercial transactions must be effected on a decimal basis, infractions of this rule being punished by a fine of $25 for the first offense and $50 for every subsequent offense. Notaries, in drawing up contracts, are forbidden to mention the coins of the old system, even for the sake of greater clearness, on penalty of a fine of from $50 to $100. Any one who, after June 30th, shall attempt to pass a coin of the ancient system will incur the same penalties as those awarded for passing illegal coinage.

SOME METALLURGICAL EXPERIENCE WITH THE ORES OF THE ONTARIO MINE, UTAH.

Written for the Engineering and Mining Journal by Louis Janin, Jr.

During the summer of 1886 the workings of the Ontario Mill, celebrated throughout the West for its uniformly good behavior, fell from an extraction of from 92–96 per cent. to, at times, below 75 per cent. The surprising feature of this change lay in the fact that the hyposulphite of soda tests (the usual method used to determine the percentage of chloride of silver formed in the furnace) were up to their usual standard. In consequence, the poor extraction was for some time attributed to poor amalgamation, as previously the pans had no difficulty in working the ore up to, and even beyond the chlorination as shown by the hyposulphite of soda tests. Under the assumption that the ore was well chloridized, and that the difficulty lay in imperfect amalgamation, I attributed the trouble to one of the two following causes:

1. Bad condition of the quicksilver.
2. Reduction of the chloride of silver formed in the furnace to some unamalgamable form.

Examination of the quicksilver in the storage tank showed that the reagent was in bad condition indeed. A thick scum, composed of the chlorides of mercury, lead, and copper, intermixed with fine globules of mercury in the metallic state, lay several inches deep on the surface of the tank, and, notwithstanding its frequent removal, obstinately reappeared.

Laboratory research for the possible causes of this phenomenon showed the fact that if carbonate of lead and cuprous chloride were placed in contact with mercury, water added, and the mixture stirred, the mercury was cut up into small globules, and the surface became coated with a scum similar to that formed in the pan room.

Carbonate of lead existed even in the roasted ore. As for cuprous chloride, I had some reason to suspect its presence in rather larger quantities than heretofore, owing to the fact that our bullion, notwithstanding our poor results, ran from $\frac{50}{1000}$ to $\frac{100}{1000}$ finer in silver than in the period of more successful work.

This increased fineness, without doubt, was due to the formation in the furnace of the unsoluble and unamalgamable cuprous chloride instead of the soluble and amalgamable cupric chloride.

In the laboratory I found that the reaction described above (the formation of the scum on the mercury) would not take place if a small percentage of zinc was added to the mercury previous to adding the chemicals.

Acting on this hint, one-half pound of metallic zinc was added to the normal pan charge of 345 pounds of mercury, with the result that the scum disappeared. Nevertheless, our bad workings continued. It was obvious, therefore, that the first hypothesis was erroneous.

Proceeding upon my second premise, I concluded that the only minerals in the ore which might have a decomposing action on the pans were lime and manganese. But, upon examination, I found that the percentage of lime was too small to have any deleterious effect. As for the manganese, the amount present in the ore I found to be a variable one. Upon the Comstock and elsewhere the results in amalgamation were poor when the percentage of manganese was high, and vice versa.

To determine what the effect of the manganese might be on the ores in question, I made repeated experiments by subjecting the raw ore intermixed with varying percentages of ores richer in manganese to a chloriding roast in a muffle furnace, subsequently amalgamating the ore. The results surprised me. I found that the presence of the manganese had but a slight, if any, effect upon the amalgamation, and the cause of our trouble had to be sought elsewhere.

In further tests I found that our roasted ore to which, say, 18 per cent. of salt had been added, still contained 7 per cent. of undecomposed salt. I then attempted to effect a more thorough chloridization of the silver in the pans by adding sulphate of copper to this undecomposed salt.

After experimenting with various charges of the reagent, the following treatment was resolved upon: Six pounds of crystalized sulphate of copper was added to the pan charge of 2,800 pounds of roasted ore, and worked, without quicksilver, from one-half hour to one hour, then 300 pounds of quicksilver was added and the charge amalgamated from seven to seven and one-half hours. The following table shows the results of a series of experiments. While not altogether satisfactory, it proves the efficacy and metallurgical economy of the use of sulphate of copper on roasted ores, under certain conditions:

Date.	Tailings from Bluestone charges. ozs.	Tailings from charges without Bluestone. ozs.
June 21st		10.60
" 22d	2.40	5.20
" 23d	2.40	3.80
" 24th	2.40	3.40
" 25th	5.80	9.60
" 26th	2.60	6.80
" 27th	3.40	5.60
" 28th	6.00	10.80
" 29th	2.40	4.40
" 30th	3.40	4.20
July 1st	4.00	3.20
" 2d	3.80	6.60
" 3d	5.40	6.80
" 4th	2.80	3.00
" 5th	7.00	6.20
" 6th	9.60	15.80
" 7th	3.60	13.60
" 8th	5.20	14.20
Average tailings from charges without copper sulphate		7.43
" " " with " "		4.01
Ozs. per ton in favor of the use of copper sulphate		3.42

After July 8th, sulphate of copper, although added in larger quantities, seemed to have no beneficial effect, and we were again in a quandary. Up to this time all experimenting had been influenced by the continued good results obtained by the hyposulphite test for chlorination which, a priori, would indicate that the ore was properly chloridized in the furnace. My attention was now directed to the ore before it was roasted

An analysis of the ore made in 1877 for C. A. Stetefeldt, the only complete one, to my knowledge, was as follows:

Zinc	9·60 per cent.	Antimony	1·20 per cent.
Lead	6·07 "	Arsenic	0·20 "
Iron	2·77 "	Silica	55·21 "
Copper	1·41 "	Alumina	13 14 "
Manganese	0·45 "		
Silver	0·60 "		98 33
Sulphur	7·68 "		

Analysis in 1886 by myself showed that the percentage of zinc had materially decreased; that the iron formerly present as sulphide was almost entirely in the form of hydrated oxide; the copper principally as carbonate; the lead as sulphide and carbonate; the alumina replaced by silica to a large extent; the manganese had increased, and, what was of the greatest importance, the percentage of sulphur had decreased from 7·68 per cent. to from 0·40 per cent. to 0.75 per cent.

Thus in 1886 there was barely enough sulphur in theory to decompose 1 to 2 per cent. of salt, while we were using 18 to 20 per cent. Now, as all but 7 per cent. of the salt was decomposed, this decomposition must have been effected by the action of silica, and, probably, by the oxides of manganese and iron.

The prevalent argentiferous minerals of the ore were Fahl ore or its decomposed form, Stetefeldtite. Owing to the lack of sulphur a portion of these minerals was simply oxidized in roasting, becoming arseniate and antimoniate of silver, readily soluble in hyposulphite of soda but amalgamable with difficulty. This lack of sulphur was the key to the mystery. Here we had found the source of our trouble. The chlorination was apparent only: the hyposulphite test did not accurately determine the percentage of chloride of silver. This extra solvent power of the hyposulphite had been pointed out some years previous by C. H. Aaron, in his work on the Leaching of Gold and Silver Ores, who suggested calling the test a "solubility assay" rather than a chlorination test.

Experiments with caustic ammonia indicated very closely the true percentage chloridized. I append the average of such tests for the month of July:

	Value of ore.	Percentage extracted by amalgamation.	Percentage by caustic ammonia.	Percentage by hyposulphite of soda.
1st Furnace	$41.60	86	85.1	94.8
2d Furnace	41.40	85.9	86 8	94.7
Average	41.50	85.95	85.95	94.75

It will be noticed that the average of these tests by caustic ammonia agrees perfectly with the amount extracted by amalgamation.

As the arseniates and antimoniates of silver are soluble to a slight extent in caustic ammonia, it is probable that the pan amalgamated all of the chloride of silver and a portion of the arseniate and antimoniates.

The source of our trouble—the lack of sulphur—being discovered, the remedy was easy. Either flower of sulphur or pyrites must be added to the ore before roasting. Experiments with both these reagents were then made with most satisfactory results.

The percentage extracted from ore roasted without the addition of sulphur had been as low as 67 per cent., while the same ore, roasted with the addition of flower of sulphur or pyrites yielded as high as 94 per cent.

In some of these experiments pyritiferous ores which contained as much lime as sulphur were used. These had no beneficial effect; the lime seemed to combine with the sulphur, neutralizing it, preventing the formation of sulphurous and sulphuric acid.

The following table gives laboratory tests made with various chemicals on ore roasted with the addition of flower of sulphur. The sulphur was added to the ore in the following manner: Enough flower of sulphur was added to the crushed salt to have the mixture consist of 90 per cent. salt and 10 per cent. sulphur. This mixture was then fed through the salt feeder in such quantity that the crushed ore contained 9 per cent. salt and 1 per cent. sulphur. The ore was then roasted in the ordinary manner.

Part of furnace.	Value of sample.	Percentage extracted by water.	Percentage extracted by sulphuric acid.	Percentage extracted by caustic ammonia.	Percentage extracted by carbonate of ammonia.	Percentage extracted by hyposulphite of soda.	Percentage extracted by Russell's process.
	ozs.						
Stack No. 2	39·60	0	9	70·8	83·9	92·5	92·5
Return flue	4·60	0	9·3	83·5	86·6	90·3	90·8
First hopper	47·60	0	9·3	44·6	72·3	80·7	82·0
Second hopper	46·40	0	0	43·2	66·4	79·3	81·0
First dust ch.	42·80	0	0	41·9	68·3	75·8	76·2
Second dust ch.	37·20	0	0	56·0	68·3	72·1	73·2
Stack No. 1	48·80	0	0	25·5	55·0	88·6	93·9

These samples were taken immediately on falling. The sample from Stack No. 1 was of ore roasted without addition of sulphur. In the above table the following points will be noticed:

1. No sulphate of silver was formed.
2. From ore roasted with sulphur, sulphuric acid extracted a small percentage of silver in three cases.
3. There was a wide difference in the percentages extracted by caustic ammonia and by hyposulphite of soda. These differences ranged from 7.3 per cent. on the second sample to 53.1 per cent. on the last sample.
4. The hyposulphite test for chlorination was higher on ore roasted with sulphur than on ore roasted without.
5. There was a difference ranging from 3.1 per cent. to 29.5 per cent. between the percentage extracted by caustic ammonia and that by carbonate of ammonia, as the arseniates and antimoniates of silver are more soluble in carbonate of ammonia than in caustic ammonia. This seems to prove the presence of those compounds.
6. As the fore-mentioned difference was greater in the case of ore roasted without sulphur, it is to be assumed that the addition of sulphur prevents the formation of arseniates and antimoniates of silver to a certain extent.

On the whole, it is clearly proved that the addition of sulphur increased the true chlorination, and prevented the formation of unamalgamable

compounds. It is one of the great advantages of the Russell process that these compounds, however unfavorable to amalgamation, are readily reduced and the silver extracted by the extra solution.

The ore, after roasting with this additional sulphur, was then amalgamated with the following results :

Value of ore before roasting	48.80 ozs.
Value of ore after roasting	44.00 "
Percentage of soluble salts	10.00 "
Value of ore after extracting soluble salts	49.33 "
Value of tailings	3.80 "
Percentage amalgamated	92.30 "
Chlorination by caustic ammonia	88.00 "
Chlorination by hyposulphite of soda	92.60 "

The ore roasted without this addition of sulphur was at that time amalgamating to about 82 per cent. The gain, therefore, was fully 10 per cent.

The trouble and the remedy being found, there was no excuse for further bad results. As the result of these investigations, the unreliability of hyposulphite of soda tests as a guide for furnace workings in an amalgamation plant, remains undeniably impressed upon my mind. I should suggest that, in a period of unsuccessful work, tests be made with caustic ammonia as well as hyposulphite of soda, the difference noted, and the roasting modified until the percentages extracted by the two chemicals closely approach one another.

During a former period, when base ore was milled, C. A. Stetefeldt made experiments which showed the metallurgical economy of using large quantities of salt. His results I give below for the sake of comparison with those I shall give later.

Ontario ore roasted. Per cent. salt.	Silver chloridized. Per cent.
2	44·5
4	52·0
6	60·4
8	76·0
10	82·8
12	88·4
14	90·9
16	93

Notwithstanding Stetefeldt's results, in consideration of the changed character of the ore, and the large amount of undecomposed salt found in the roasted ore, I considered it advisable to reduce the quantity of salt we were using. That these results were satisfactory the following table will show. In fact the chlorinations are so good that they prove the great efficiency of the Stetefeldt furnace.

	18 per cent. salt.			9 per cent. salt.		
Part of furnace.	Value in Ounces.	Solubility. Per cent.	Chlorination. Per cent	Value in Ounces.	Solubility. Per cent.	Chlorination. Per cent.
Stack and return flue.	33.2	20	89.8	42.3	9	93.
Dust chamber No. 1	50.4	15	94.5	62.8	7	87.6
" " " 2	54.8	14	93.0	64.0	7	89 4
" " " 3	56.4	13	92.2	64.0	6	86.9
" " " 4	56.4	12	91.2	62.2	6	90.4
" " " 5	57.4	13	94.0	64.6	6	91.4
" " " 6	50.0	10	92.0	63.6	6	91.2
" " " 7	56.0	11	90.4	59.6	8	89.3
" " " 8	57.4	10	88.6	66.0	7	91.3
" " " 9	55.4	12	90.1	62.8	9	90.5

As our salt feeder could not be adjusted to feed a smaller quantity, no experiments were made with less than 9 per cent. of salt.

The economy of using 9 per cent. of salt instead of 18 is manifest, as when milling 100 tons per day, 9 tons of salt at about $11 per ton, or $99 per day, would be saved to the company.

The changed character of the ore will be seen from the fact that in Stetefeldt's time, using 10 per cent. of salt, the yield was 82·8 per cent., while in 1886, using 9 per cent., the yield was over 92 per cent.

In the foregoing I have stated the difficulty encountered and recapitulated the various steps which led to a solution of the problem. A proper analysis of the ore in the beginning might have saved much trouble. And it is quite probable that the difficulties encountered at other mines may be due to unsuspected change in the character of the ore.

SHAFT SINKING BY THE POETSCH-SOOYSMITH FREEZING PROCESS.

The work illustrated in the accompanying cut was the sinking of a shaft 98 feet deep at Iron Mountain, Michigan, for the Chapin Mining Company. The object was to reach the solid rock through the overlaying strata of quicksand, gravel and boulders, all heavily water-bearing. Other methods having failed, after a great expenditure of time and money, the contract was taken by the Poetsch-Sooysmith Freezing Company, of 2 Nassau street, in this city, and by its system the work was successfully accomplished.

The process was as follows : Twenty-six wrought-iron pipes, eight inches in diameter, closed at the lower end, were sunk to, or slightly into, the ledge of rock. The pipes were arranged, as shown in the illustration, in a circle of 29 feet diameter, averaging three feet six inches center to center apart, and inside each of these larger pipes was a small pipe one and a half inches in diameter, extending nearly to the bottom. Both of these pipes were connected at the surface with the circulating pumps of an ice machine, which maintained a constant circulation of brine (a nearly saturated solution of chloride of calcium) through the entire system at an average temperature of about zero, Fahr. This intense cold constantly maintained in the pipes resulted in a circular wall of frozen quicksand, inclosing the proposed shaft. Ultimately the ground was frozen solid to the center of the shaft, and to a distance of 13 feet outside the pipes.

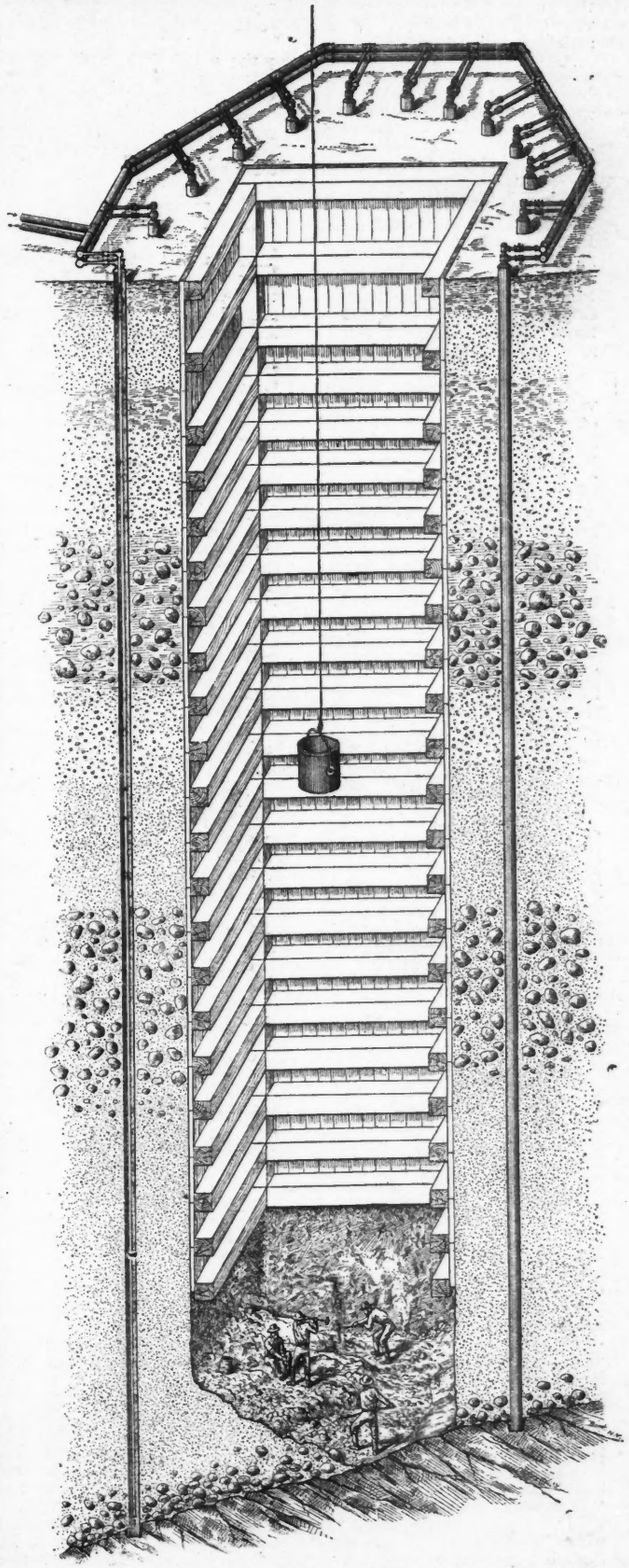
The frozen quicksand resembled a compact sandstone, having a sharp, conchoidal fracture. It showed considerable strength when in a cement tester, and had to be excavated by drilling and blasting like ordinary rock. The protection afforded by the thick, frozen wall was perfect, no water penetrating it. The shaft lining was of timber, suspended from above, according to the plans of the Chapin Mining Company, and was placed in exactly the desired position, the artificially solid nature of the excavation permitting a perfect alignment.

The freezing process is applicable not only to shafts, but to tunnels and other excavations in water-bearing strata, at depths and under conditions where no other known method is practicable.

THE MINERAL RESOURCES OF BRAZIL.

In the admirable correspondence of the New York *Times* from Brazil by Mr. A. M. Gibson, we find a clear description of the history of mining, its methods, and the mining laws of the country. This account is of the greater interest, as Mr Gibson is personally known to us and is an occasional contributor to the ENGINEERING AND MINING JOURNAL :

The highlands of Brazil are wonderfully rich in minerals. No other portion of the earth's surface has yielded, in proportion to the area exploited, such an enormous wealth of gold and diamonds.



POETSCH-SOOYSMITH FREEZING SHAFT-SINKING PROCESS.

From the first discovery of gold, in 1693, on the banks of the Bom Successo—a small tributary of the Araçuahi, which in turn swells the waters of the Jequitinhonha, one of the rivers of the northern part of the province of Minas-Geraes—to 1746, when diamonds were found in that stream

and gold mining was prohibited, it is safe to say that from "placers" alone more than $1,000,000,000 was extracted.

The value of the diamonds found up to 1847 was estimated by Count Ca-tilnan at $60.000,000. From 1861 to 1867 the official records show an exportation of diamonds of the estimated value of $9,440,250. Under the Portuguese domination diamonds were the property of the Crown, and the severest penalties were visited upon those having them in their possession without being able to give an account of their purchase from the government. It inevitably followed that diamond smuggling was a very profitable business. It was impossible to prevent illicit trade in an article so easily concealed.

All gold mined was supposed to pay the royal fifth, and the greatest precautions were taken and the most strenuous efforts made to enforce the collection of this tax, as well as to prevent diamond washing, but the undertaking was futile. Gold was found in placers over a vast extent of territory in Brazil, and the diamantiferous regions were likewise of great area, and the physical character of the country offered the best possible facilities for escaping the guards stationed at different points.

It follows, therefore, that no reliance can be placed in the official records, which deal exclusively with what the royal Treasury received. There is now a great deal of secrecy observed by traders in diamonds in Brazil. There are no regular mining operations for precious stones carried on. Nevertheless, the quantity and value of diamonds annually found are very considerable. There are dealers who make a regular business of visiting the diamantiferous localities in Minas-Geraes, Bahia, Goyaz and Matto-Grosso, and purchasing the rough stones from the natives. In Diamantina, in Minas-Geraes, diamond cutting is carried on secretly. The state now exercises no supervision, but there is an export duty, and this is sufficient to induce the secrecy which prevails.

In the interior rough diamonds of considerable size and corresponding value are occasionally found. I heard of one the other day that was offered here for $3,000 in a quiet way. One was found about a year ago in Northwestern São Paulo by a countryman who was washing for gold, which was sold for $30,000 to a dealer in this city. Two years ago I knew of one trader who brought from the Cayasso region of Goyaz rough stones, which he sold to a dealer here for $100,000.

In many parts of Minas-Geraes and in Goyaz gold dust is a regular article of barter between the natives and the "vendas"—country stores. I am told by reliable persons who have traveled in these localities that the cause of the general thriftlessness of the natives is the facility with which they can "pan" a few ounces of gold from the stream. Having got a little gold, they take it to the nearest "venda" and trade it for supplies, and so long as these last they will do nothing. Game is plentiful, they need few clothes and are content with mere existence.

A more romantic story, and one more brimful of deeds of daring, heroism and patient endeavor, clouded by awful scenes of bloodshed, rapine, treachery, monstrous depravity and human excesses of every sort, than the history of gold mining in Brazil has never been written. The wealth which the gold and diamond mines of Brazil poured into the treasury of Portugal was at once the cause of the ephemeral exaltation of that kingdom and of its no less sudden and long-continued decline and degradation. Brazil herself suffered from the same cause, and even now the curse is only in process of being removed.

The conquest of Mexico and Peru by the Spanish adventurers under Cortez and Pizarro and the vast treasures of silver which from that time for more than two centuries flowed into the coffers of Spain, excited the envy and stimulated the enterprise of the Portuguese at home and in Brazil. The Crown of Portugal insisted that its vast possessions in America must likewise be teeming with the precious metal. Almost a century before gold was found in Brazil the Crown of Portugal had published an elaborate system of mining laws and regulations for its South American colonies. The instructions to every Captain-General were burdened with one injunction—"Find gold and silver."

The Portuguese, from the fifteenth to the early part of the eighteenth century, were in many ways a superior race. They were bold navigators, and their daring adventures on the sea were equaled by their bold achievements on land. They were met on the coast of South America by lawless English buccaneers and Dutch pirates, but in the end the latter were vanquished. There was never-ceasing war with Spain, but Portugal remained master of more than four thousand miles of the east coast of South America. The now quaint looking but once strong fortifications of the Dutch, then the great masters of the art of defense in Europe, at Bahia, Maranham, and other points on the coast of Brazil, attest to-day how desperate was the struggle for the great prize.

While these struggles were going on there was founded a colony or settlement in Brazil whose history is identified with every deed of daring, with every bold enterprise, with every bright and dark scene in the Brazilian story. The settlement of Sao Paulo (Saint Paul) was effected by Martin Affonso, one of the great Portuguese admirals, who, under a decree of Dom Joao III., of Portugal, was given the privilege to explore the coast from Rio de Janeiro south to Rio de la Prata, or, in Spanish, La Plata. The adventurers who followed the great Affonso were either of the same sterling stuff of which he was made, or they became imbued with his spirit, and their descendants proved worthy successors of their hardy, venturesome, and energetic sires.

The Paulistas early became the pioneers in every undertaking of moment in Brazil. They led in every exploration of the vast interior. They were the discoverers of gold, and, in an almost incredibly short space of time, they pushed their way, in the face of seemingly insurmountable difficulties, from the seacoast to the foot of the Andes. Climbing mountain ranges, penetrating vast forests, crossing leagues upon leagues of rolling "campos." fording and swimming almost innumerable torrents, they made their way in the face of brave savage foes west to the headwaters of the Maranhao and Anoguava and washed gold from their sands. Pushing still westward, they found the gold washings of Matto Grosso and touched with their adventurous feet the confines of Bolivia.

For a century the name of the Paulistas was synonymous with heroism and also with cruelty. They were the men-stealers—the slave-hunters—of South America. They literally burned with the thirst for gold, and while they only skimmed the surface of the richest "placers" with their red and black slaves they founded cities, built churches, and by their bloody encounters gave the name of Rio das Mortes, River of Death, to dozens of streams in the interior.

It was one of these bands of adventurous Paulistas who, in 1693, following northward the valley of the Parahiba River, struck across the headwaters of the River Doce, and reached the Jequitinhonha, which they followed to the sea, and thence made their way to Bahia, then the residence of the Captain General and the seat of government.

They found somewhere on one of the streams flowing into the Jequitinhonha three divatas—three-eighths of an ounce—of gold dust. The leader of the band presented the precious "dust" to the Captain General, but could give no certain account of where it was found, save that it was on the banks of a little stream that flowed into a larger one, which in time fell into a still greater, which they followed to the sea "with infinite danger from rapids, cascades, whirlpools, to say nothing of ferocious beasts and wild Indians."

It was not until 1727 that Lemé do Prado, with a strong band of his fellow-Paulistas, bent on finding gold or capturing Indians for slaves, found gold in a little river, which he named Bom Successo—good success. From that time to 1746 an immense quantity of gold was extracted from the rich "placers" about the place, where grew up the considerable city of Minas Novas and the village of Chapada, on the Rio Capivary.

There are no means of ascertaining how much gold was washed out by the early miners because of the exaction of the "fifth part" of all the king's officers could lay their hands on, and the fierce "mineiros" of Sao Paulo disliked to give up any of their gains. Hence every means were resorted to to conceal and smuggle away the gold. However, the records of the old "fozen da real"—royal treasury house of Bahia—show that between three and four millions came to that city and paid the king's "quinto."

In 1746 the famous diamond washings of the Jequitinhonha were discovered, whereupon the Crown of Portugal forbade washing for gold in that stream and its tributaries, and diamond mining was carried on for the sole profit of the King and under the supervision of the Intendente of Diamonds. Washing for diamonds is continued to this day, with more or less success, in the Jequitinhonha, but there is no regular washing of, or mining for, gold in a region which is undoubtedly still very rich not only in "placers but in true fissure gold veins."

But gold mining, either of "placers" or of veins, in Brazil is now an undertaking attended with many difficulties, and requires not only skill, but large capital. The early miners, although their appliances were of the rudest description, thoroughly exhausted the richest placer deposits. During the later period of the gold mining era they had great numbers of stones, and undertook and executed works on a grand scale. The modern traveler in the interior of Minas-Geraes is constantly amazed as he comes across the ancient "lavras" of the early Portuguse and Brazilian adventurers.

Vein mining was rarely attempted by the "mineiras" of that period. When it was undertaken, it was by means of an open cut, no shafting being done. In some cases, where the gold formation was what is known locally as jacutinza—a rotten iron formation carrying gold—the workings were on a comparatively large scale, but were always abandoned when the water came in beyond the miners' ability to bail it out. The jacutinza formation is soft, being more or less disintegrated, and was easily crushed either in rude mortars by hand or by the quaintest and most uneconomical sort of water power. The gold was saved by panning, no attempt being made to amalgamate.

The "placer" workings were also with the pan or "batea," a wooden bowl about 18 inches in diameter at the top, hollowed, shallow, and tapering to a point. The hillsides, even the tops, were worked, water being led sometimes from a great distance by ditches. But there was never anything like hydraulic work with a "little giant." The ground was scraped and worked up with hoes, not even a pick being known. The débris was caught in a ditch at the bottom and panned with "bateas." The gravel deposit in Brazil is very remarkable, covering not only the valleys, but the hillsides, the plateaus, and sometimes extending over mountains.

The gold-bearing quartz is in great masses, with the metal greatly disseminated, and to work it profitably it must be dealt with in large quantities with every appliance for handling it cheaply. The jacutinza formation is richer and more easily worked, but there is always danger of the workings closing in. The Morro Velho mine, in Minas-Geraes, had been worked for many years by an English company, and paid millions of pounds sterling in dividends. A few years ago the shaft and old drifts closed in, and a new shaft had to be sunk. This work is nearly completed now, and in a short time the payment of dividends will be resumed. The company, known as the Sao Joao del Rei, has a large concession, and the jacutinza is rich and easily milled.

The Pasagem mine, worked by a French company, in Minas-Geraes, is successful also on a large scale. The formation here is true quartz, carrying free gold, but large masses have to be dealt with in the most economical way.

The mining laws of Brazil are not calculated to encourage individual enterprise. They are the obsolete regulations established by the Crown of Portugal and adopted and continued by the late empire. Application has to be made for privilege to explore for minerals, and a grant is given for two years to prospect a large and ill-defined region, usually the area comprised by a certain stream and its tributaries. Before the termination of two years the concessionaire must file a topographical map of the locality, present specimens of the minerals found, and mark on the map by metes and bounds the "datas" or claims he intends to work.

These "datas" can each be 169½ acres in extent. If all these requirements are complied with, then a concession to "mineiras," or "lavras," for thirty, fifty, or ninety years can be obtained from the general government for as many "datas" as the applicant can prove to the authorities that he has available capital for, in the proportion of $5,000 for each "data." He must deposit with the national Treasury a certain amount of caution money, as fixed by the Minister of the Department of Agriculture, Commerce and Public Works, or if he wants to organize a company he must get permission therefor, and if it is organized in a foreign country it must be "funcioned"—obtain license to do business in Brazil.

For many years the reformation of the general mining laws has been agitated, but without result. Until they are liberalized, mining in Brazil will not amount to much. There is a tax of two per cent. on the net yield of mines, and a so-called inspection, which is not made.

There are a few Parliamentary grants which cover large areas and are

not subject to the same restrictions as those made by executive authority. One of these covers an undefined region of the province of Goyaz—the area comprised by the rivers Maranhao and Cayasso and their affluents—which is variously estimated to extend over a territory from 10 to 50,000 square miles in area. No work has been done in the way of mining under this concession, and little, if any, exploration, but the general impression is that it is marvelously rich in gold, diamonds, iron, coal, copper, lead and tin, to say nothing of asbestos, crystals, etc. The time within which work must be commenced expires in 1894.

This grant was made to an old man who is generally believed to be *non compos* in many ways, and was, it was originally considered, a sort of Parliamentary joke, and the late Emperor was expected to refuse his sanction to it. The Ministry at the time represented to the Emperor that the grant was not only against public policy, but was not seriously meant by the legislators; but the Emperor said that a Parliamentary act must necessarily be serious, and approved it. Since then it has not only been reaffirmed by Parliament, but the time has been extended.

The result of giving concessions is, of course, to give a monopoly of both exploration and working to a few individuals of large areas of territory, and these favorites always managed in one way or another to have their privilege to "explorar" extended from time to time, and thus little or no actual mining work is done.

THE AMERICAN SOCIETY OF CIVIL ENGINEERS.

The American Society of Civil Engineers held its thirty-seventh annual meeting on the 15th inst. in the new library recently completed at the house of the society, 127 East Twenty-third street. Charles J. Becker, the president of the society, occupied the chair.

The annual report of the directors of the society was read by the secretary, State Engineer John Bogart, showing a total membership of 1,335.

The committee appointed, under a resolution adopted at the last annual convention, to consider the revision of the constitution and by-laws, submitted a report in which the change in the constitution and by-laws, by grouping all the present articles relating to one subject under one head, without changing the meaning of the articles as they now stand, was recommended.

The treasurer's annual report showed the receipts for the year to be $39,799.91, including balance on hand on January 1st, 1889, of $6,515.02. The expenditures for the year were $28,875.46, the balance on hand on January 1st, 1890, being $10,924.45.

After the finance reports were disposed of the reports of the Board of Censors to award medals, etc., were read. The Normal medal was awarded to Theodore Cooper, of No. 35 Broadway, for his paper, No. 418, on "American Railroad Bridges." Mr. Cooper is a member of the Society. The winner of the Roland prize was also a member of the Society, James D. Schuyler, chief engineer of the San Diego Land and Town Company, National City, Cal. The subject of his paper was "The Construction of the Sweetwater Dam."

The result of the election for officers was as follows: William P. Shinn, of New York City, president; A. Fteley and Mendes Cohen, vice-presidents; John Bogart, secretary; George S. Greene, Jr., treasurer, and Charles B. Brush, Theodore Voorhees, Robert Van Buren, William Ludlow, William G. Curtis, directors.

At the evening session Charles McDonald, of this city, delivered an address on the construction of the Hawksbury River bridge, of which he was the engineer, which was described by the special correspondent of the ENGINEERING AND MINING JOURNAL in the June 22, 1889, number.

Following the address, which was illustrated with stereopticon views, supper was served in the parlor of the Society House. Among the prominent non-residents present were Sandford Fleming, of Ottawa, Canada; Henry R. Towne, of Stamford, Conn., and A. Gottlieb, of Chicago.

About 10 o'clock Thursday morning the steamer "Laura M. Starin" left her pier at the foot of East Twenty-third street, having on board about four hundred members of the society and invited guests, bound for the Government station at Willet's Point. Among those on board were James B. Francis, of Lowell, Mass.; Gen. George S. Greene, United States Army; F. P. Stearn, of Boston; C. E. Good, of Montreal; S. Whinnery and F. C. Wier, of Cincinnati, O.; George Boutecow, of Kansas City; George S. Morrison, of Chicago; Edwin B. Weston, of Providence, R. I.; D. J. Whittemore, of Milwaukee; M. T. Becker, of Pittsburg, and Major O. E. Michaelis, United States Army, of Augusta, Me.

Arriving at Willet's Point about noon, they were received by Col. L. C. King, commandant of the post, and his officers, who conducted the visitors through every department of the works. After a complete investigation of the interesting points, the visitors entertained Colonel King and his staff on the "Starin," after which they were treated to several successful exhibitions of the effect of torpedoes, one of which, containing about one hundred pounds of mortar powder, was exploded under the hulk of an old sloop, sending a column of water filled with wreckage fully fifty feet in the air. Upon the return trip the visiting engineers stopped at the navy yard, where they inspected the armored cruiser "Maine," now in process of construction, and the new wooden dry dock, which, when completed, will cost $500,000, and is guaranteed to continue in serviceable condition for at least thirty years.

In the evening the Engineers' Club gave the society a reception at their club house, 10 West Twenty-ninth street, which was numerously attended.

VALENTINE'S STATISTICS OF GOLD AND SILVER PRODUCTION IN 1889.

The following is Mr. J. Valentine's, General Manager of Wells, Fargo, & Co., annual report of precious metals produced in the States and Territories west of the Missouri River (including British Columbia and receipts by express from the West Coast of Mexico) during 1889, which shows in the aggregate: Gold, $32,974,643; silver, $65,316,107; copper, $14,793,763; lead, $14,593,323. Total gross result, $127,677,836. The "commercial" value at which the several metals named herein have been estimated is: Silver, 94 cents per ounce: copper, 10 cents per pound, and lead, $3.80 per hundredweight.

As in former reports, allowance must be made for probable variations from exact figures, by reason of constantly increasing facilities for transporting bullion, ores and base metals from the mines outside of the express, and the difficulty of getting entirely reliable data from private sources. Especially is such the case in the reports from Montana and Colorado. Statistics gathered in this way are liable to be exaggerated; but, with some modifications on this account, already made, the final general results reached may be accepted as approximately correct.

States and Territories.	Golddust and bullion by express.	Golddust and bullion by other conveyances.	Silver bullion by express.	Ores and base bullion by freight.	Total.
California	$9,390,044	$939,000	$664,476	$1,849,237	$12,842,757
Nevada	3,082,653	.....	6,352,654	2,473,654	11,908,961
Oregon	654,659	100,000	30,702	.....	785,361
Washington	112,000	20,000	85,000	.....	217,000
Alaska	.....	845,000	.....	.....	845,000
Idaho	3,204,500	.....	7,564,500	6,575,600	17,344,600
Montana	4,500,900	.....	16,076,923	11,150,000	31,726,923
Utah	15,275	.....	1,764,762	8,049,976	9,830,013
Colorado	3,534,750	.....	19,341,847	5,198,251	28,074,888
New Mexico	384,507	50,000	140,325	3,362,845	3,937,677
Arizona	922,861	50,000	611,666	4,218,500	5,803 027
Dakota	3,407,177	.....	.....	.....	3,407,177
West Coast of Mexico by steamer	4,818	.....	507,470	.....	512,288
British Columbia	442,164	.....	.....	.....	442,164
Total	$29,655,448	$2,004,000	$53,140,325	$42,878,063	$127,677,836

The gross yield for 1889, shown above, segregated, is approximately as follows:

Gold	25·83	$32,974,643
Silver	51·15	65,316,107
Copper	11·59	14,793,763
Lead	11·43	14,593,323
Total		$127,677,836

The exports of silver during the past year to Japan, China, the Straits, etc., have been as follows: From London, $39,232,314; from San Francisco, $18,422,398. Total, 57,654,712, as against $43,006,618 last year. Pounds sterling estimated at $4.84.

For the fiscal year 1888-89, Mr. Valentine estimates the production of gold and silver in the Republic of Mexico upon mintage basis at a value of $1,040,000 and $40,706,000, respectively.

ENGINEERING ASSOCIATION OF THE SOUTHWEST.

A very interesting and enthusiastic meeting of the Engineering Association of the Southwest was held Thursday evening, Jan. 9th, at the assembly room of the Y. M. C. A. building, Nashville, Tenn., at which there was a good attendance of members and visitors.

In the absence of the president, Mr. John MacLeod, of Louisville, First Vice-President W. F. Foster, of Nashville, presided. Communications were received from the Association of Engineering Societies relative to the subject of the formation of a national organization of engineering societies, and from President MacLeod, of Louisville, Ky., donating a pair of fine large photographs of the recently constructed Kentucky and Indiana bridge over the Ohio River at Louisville. The photographs were taken in April, 1886, during a 55-foot rise of the Ohio River, and showed the cantilever trusses in process of erection, and presented an ocular proof of the superiority of the cantilever type of bridge in the important particular, among others, of requiring for erection no false work that might be endangered by unexpected floods in the river, which caused one of the long spans of the Chesapeake & Ohio bridge at Cincinnati to fall while resting on the false work during the summer of 1888. The photographs are the first of a collection of maps, drawings, photographs, plates, models and specimens, which it is one of the expressed objects of the association to gather and preserve in its permanent quarters.

Reports were read from the standing Committee on Rooms and Library relative to the furnishing of the recently selected quarters in Baxter Court, and from the standing Committee on Papers and Printing relative to the system of receiving and presenting papers at the regular meetings. Suitable papers, discussions of papers, notes of professional experience and items or accounts of technical interest are solicited from the membership.

The constitution of the association provides that one of the means by which its objects are to be attained may be the taking of organized action on matters pertaining to engineering and allied professions. Acting under this provision, the following resolutions bearing on the subject of highway reform were introduced:

WHEREAS, the subject of efficient highways is one of the highest importance to the social and material welfare of the public; and, *Whereas*, the questions involved in the bringing of highway systems to a high state of efficiency are largely questions falling within the province of engineers to consider; therefore, be it *Resolved*, That this association express its appreciation of the desirability and the urgent necessity for strong and effective measures on the part of county and State legislators looking to the improvement of public highway systems; and, further be it *Resolved*, That a special committee of five members of this association be appointed by the president, whose duty it shall be to consider and report at an early meeting what steps, in its opinion, the association may properly take in order most effectively to aid in the general work of highway improvement.

The resolutions were referred to the Board of Directors for submission to the membership by letter ballot, which is required by the constitution.

A number of applications for membership were read and referred to the Board of Directors.

The transaction of business being complete, the paper of the evening on "A Chemical Examination of the Water Supply of Natchez, Miss., was then read by Dr. Wm. L. Dudley, of Vanderbilt University. The paper comprised primarily a comparison of chemical analyses of water submitted from two possible sources of supply for the city of Natchez, namely, the Mississippi River opposite that city, and deep bored wells sunk between the Natchez bluffs

and the river. Though as treated by the author, the paper was given a much wider scope by his clear and concise presentation of the relation which a chemical analysis bears to a proper knowledge of the potability of a water supply; a question of great importance to sanitary engineers. The analysis showed the superiority of the well water over the river water in having less "solids in suspension," less "organic matter," in solution; less "albuminoid ammonia" and a lesser degree of "permanent hardness"; but inferiority to the river water in having nearly three times as high a degree of "temporary hardness," and a small excess of "total hardness."

The association will begin at an early date the publication and distribution among its membership of the more valuable papers read at the meeting.

REVIEW OF THE ENGLISH ALKALI MARKET FOR 1889.

[Written for the Engineering and Mining Journal by Messrs. J. P. Brunner & Co.]

During the past twelve months several important changes have taken place in the alkali trade, the principal feature being the failure on the part of the makers to renew the bleaching powder combination for 1890, the result being to seriously depress prices of this article.

Several attempts were made to meet the case on what is really the only satisfactory basis to work upon, viz., the "salt decomposition" basis; but all efforts in this direction proved fruitless, owing to makers failing to agree.

The association of caustic soda manufacturers formed in September, 1888, had a short existence, terminating in May, 1889, in consequence of some of the members being dissatisfied at the working of the combination.

A number of the Leblanc makers have erected plants to work the Chance process for the recovery of sulphur from the alkali waste, which they expect will lighten their load somewhat during these depressed times. Part of the plant is already at work, and the recovered sulphur has found a ready sale. In a few months time this trade will be much more developed.

Owing to the advent of the Salt Union, the chemical makers during the past year have had to contend with a smart advance in the price of salt, which has been a serious item for them. Most makers have renewed their salt contracts within the last month or two, for a period of five years, on the basis of last year's prices, the Salt Union declining to make contracts for a shorter period, except at higher figures. What with the smart advances in fuel and other raw materials, together with the prospect of labor troubles, Leblanc makers have not a pleasant outlook before them; but at the same time December closed with a much firmer tone in some alkalis than ruled even a few weeks back, and even bleach has improved to a slight extent for forward delivery.

Saltcake started in January at 23s. to 24s. per ton on rails, at makers' works, and, with the enhanced cost of salt, makers expected higher figures would rule for saltcake; but, on the contrary, prices steadily declined to about 19s., which figure was reached early in May. A reaction then set in, and large purchases were made during the next few months, causing prices to advance steadily until 29s. and 30s. was touched in October, and this was maintained to the end of November. In December supplies were rather more plentiful, and prices eased off, the month closing at about 26s. to 27s. 6d. per ton.

Soda Ash.—For carbonated ash and ammonia alkali, a fair demand was experienced for January–March at 1d. to $1\frac{1}{16}$d. per degree, while during the next two months buyers became more eager, causing prices to advance slightly. After May, however, orders began to fall off, and $\frac{3}{32}$d. per degree was touched, but in October an active inquiry set in, and the market was cleared of all offering for October–December, at prices ranging from 1d. to $1\frac{3}{32}$d. per degree, while numerous orders had to be returned unfilled. The year closed with makers bare of stocks and prices firm at $1\frac{1}{32}$d. to $1\frac{5}{32}$d., according to brands, for early 1890 delivery.

Caustic ash has not displayed much activity during the year, the demand for this class of ash having shown a marked decrease of late years. At the opening of the year, 1 to $1\frac{1}{16}$d. was the range of values, but prices declined until $\frac{29}{32}$d. was reached in September for some brands; then improved in sympathy with the rise in carbonated ash and alkali, and $1\frac{1}{16}$d. to $1\frac{1}{8}$d. per degree are now nearest quotations.

Soda crystals have been without any special features, prices starting at £2 10s. to £2 12s. 6d., dropping 2s. 6d. in May and June, then rallied a little and touched £2 15s. in November, closing at £2 12s. 6d. to £2 15s. last month.

Caustic Soda.—During the first four months, when the Association existed, 70 per cent ranged from £7 in January down to £6 8s. 9d. in March, and slightly better in April. When the association was broken up, prices declined until £6 2s. 6d. was reached in June. Voluntary restrictions were then made by several makers, and, with a good demand in early July, prices were run up to £6 12s. 6d., and then to £7 in August.

In September prices fell away to £6 15s., but afterward rallied to £7 7s. 6d. During the last three months prices varied considerably, in October from £7 3s. 9d. up to £7 15s., then back to £7 5s.; then in November starting at £7 5s. and declining to £7, while in December £6 17s. 6d. was the price at the opening and £7 10s. at the close. A good deal of the fluctuation in prices has been caused through large quantities of caustic soda being forced on the market at various times by resellers. Other strengths of caustic soda have undergone relatively similar fluctuations to 70 per cent.; although in the case of 60 per cent. and 74 per cent. not quite to the full extent, the production of these strengths being more limited than that of 70 per cent.

Bleaching Powder.—In spite of restrictions, the makers were unable to keep this article under control, and for the first six months the market was dull, prices dropping from £7 12s. 6d. to £7 15s., which were opening figures in January, down to £5 17s. 6d, which was touched in June. In July a good demand set in, and market advanced to £7 10s., but declined 5s. per ton before the close of the month, while £6 17s. 6d. to £7 were values in August and September.

All attempts to renew the combination were abandoned in September, but this had little effect on the spot market at the time, although it quite demoralized the market for 1890 deliveries.

In November and December the prices broke away until £5 7s. 6d. was reached in the latter month.

During the last few days a somewhat firmer feeling has prevailed, and makers are less anxious to contract ahead unless at an advance on prices lately current, and some of them are declining to quote ahead at all for the present, being of opinion that we have seen the worst, and that this article will improve. At the same time prices are not likely to show any great improvement during the first few months of 1890, the position being too unsettled.

Chlorate of Potash.—We had a dull market for the first six months, and prices went steadily back from 5½d. in January to 4¼d., this price being reached in June. In July buyers began to take hold more freely at the low prices, and all cheap offerings were cleared, and quotations advanced to 4¾d. to 5d. This advance checked business, and the market eased off the two following months, then improved during October and November, only to fall away again in December, when considerable business was done at 4⅝d. to 4½d., closing firm at the higher figure. Makers of chlorate of potash tried several times during the year to form an association, but nothing came of this.

Bicarbonate of Soda.—The consumption of this article has increased considerably, but prices showed little fluctuation for first nine months, £4 15s. being nearest value. In October, with large orders and small supplies, quotations were advanced 5s. per ton, and in November makers put up price to £5 5s. for one-hundredweight kegs, at which figure it now stands.

The following are exports of soda ash, caustic soda and bleach from Liverpool to United States and Canada for 1889, also for previous year, viz:

	Soda ash.	Caustic soda.	Bleach.
1889	126,758	31,153	39,979
1888	121,345	34,853	45,011

From above, it will be noted that the exports of soda ash from this district have increased by 5,413 tons, while caustic soda and bleach exports have decreased to the extent of 3,700 and 5,032 tons respectively, as compared with 1888 shipments.

THE MANCHESTER SHIP CANAL.

An interesting paper was recently read before the Association of Marine Underwriters in England, by Mr. W. Greer Harrison, which perhaps gives a clearer description of the works than has yet appeared.

The work may be classified under four heads. 1. The canal from Manchester to Runcorn, 22¼ miles long. 2. The Docks. 3. Railroad divisions and branches. 4. The estuary works in the Mersey.

The width of the canal is 120 feet at the bottom, which is largely increased at the locks so as to give room for vessels to turn if needed. At either end of the canal provision is made, by greater width, for large vessels to lie for the purposes of discharge, and yet to permit of two other vessels to pass. At the Runcorn end of the canal, for a distance of three-quarters of a mile, the width at the bottom is 200 feet, and for a length of four miles at the Manchester end the bottom width is 170 feet. The minimum depth of the canal at the lowest stage of water will be 26 feet which is within a few inches of the depth of the Suez Canal. There are four sets of locks, Barton, Irlam, Lachford and Runcorn. At each of these points there are three parallel locks, of various sizes to suit the different classes of vessels. One 550 feet long by 60 feet wide; a second 300 feet by 40 feet, and the other for barges and small craft 100 feet by 20 feet. The fall at low water will be, in the four sets of locks respectively, 13 feet 6 inches, 13 feet 6 inches, 15 feet, 8 feet 6 inches; total 50 feet 6 inches. The total fall is given to the low water level at Runcorn, but at high water of average tides there will be no fall at Runcorn locks, and as the spring tides flow to the Lachford locks the fall will thus be diminished in proportion to the rise of the tide, which at high spring tides will be five feet. Hydraulic power will be employed in working all gates and sluices, and it is calculated that the time necessary for passing a steamer will be about fifteen minutes.

The main supply of water will be from the river Irwell, and that portion of the Irwell which, when united with the Mersey, is called by that name. As the river will be entirely diverted from its bed into the canal, it would be appropriate to describe the canal as a canalized river. In the spring of 1883, which was an exceptionally dry one, the Irwell showed an average flow of 26,000,000 cubic feet per day. With one-half this flow there would be sufficient water to pass 175 vessels in a day, of the following dimensions, 25 steamers, 2,000 to 5,000 tons each; 50 steamers, 500 to 2,000 tons each, and 100 barges 50 to 150 tons each.

At each set of locks there will be flood sluices, 120 to 160 feet in the clear, resting on sills at the bottom level of the canal. The piers supporting the sluices will be high enough to avoid all flood danger.

The traffic of the old Bridgewater canal, which has been acquired by the Manchester Ship Canal Company, will be passed over the latter by an aqueduct at its present level, of which one span will be a caisson or wrought iron trough, which will move on a center like a drawbridge. The ends of the trough, like the hydraulic canal lifts at Fontinettes, illustrated in the ENGINEERING AND MINING JOURNAL, September 29th, 1888, will have watertight gates. Elevators at Barton will connect the Bridgewater and Ship canals, and there will be turnbridges for road traffic at the various locks.

Docks are being built, some already completed, at Manchester, Warrington and Partington, the last named for coal. The entrance to the Manchester dock is by locks similar in size to those on the canal. These docks will have a water level 10 feet higher than that in the canal. The area of the docks is 67 acres. The largest vessels will be able to turn safely inside or outside the docks. The dock quays will be three miles in length, with a further extension of three miles between Barton lock and Trafford bridge. Vast warehouses and storage sheds are being erected. The area of the Warrington dock is 20 acres.

Five railways cross the canal; these will be carried over it by high level bridges, giving sufficient headway for the largest steamers.

The main low water channel will commence at the ship canal above Runcorn and terminate opposite Garston, a distance of 10 miles. The initial point of this channel will be 300 feet wide, gradually extending to a width of 1,000 feet. The depth will be 12 feet at low water spring tides, 20 feet at low water neap tides, 40 feet at high water spring tides, and 32 feet at high water neap tides. The channel will be made by tramming

walls built of rock taken from the company's quarries. A subsidiary channel from the main channel to Sloyne deep, will complete this magnificent waterway.

Contracts have been let for the various works, based on the original estimates, as follows:

Construction of five deviation and three branch railroads	$2,280,860
Dock at Manchester	5,040,075
Dock at Warrington	566,235
Ship Canal works	19,600,855
Estuary works	6,952,095
New roads	80,810
	$34,520,930

Eleven thousand men are at work along the line of the canal, and, as a rule, they are steady, sober workers, and are vastly better, morally and mentally, than the old fashioned "navvies." At various points along the line temporary vilages have been constructed for the accommodation of the men, and these villages are very pretty and picturesque, and exceptiously clean. The chief contractor, the late Mr. Walker, took the deepest interest in his men, building churches, chapels, schools, and reading and smoking rooms for them in each temporary village along the line.

Electric Cars and Snow.—The last snowstorm in Boston afforded an opportunity for the practical demonstration of the utility of the new electrical sweeper for street-car tracks. It did its work rapidly and well, the only apparent drawback being the fright with which it inspired horses. This was common with car horses as well as those attached to private vehicles, and will doubtless wear away as did the equine surprise at the sight of the electric cars. The new sweeper leaves the snow just outside the rails, and gathers no accumulation to form into slush for the discomfiture of pedestrians. The electric cars all made good time, being delayed only by horse cars.

Remarkable Copper Rolling.—Some interesting trials of skill have recently taken place among the workmen employed in the rolling mills of Birmingham and Ansonia, Conn. One operative rolled an old-fashioned copper cent into a strip 18 inches long and $\frac{8}{1000}$-inch thick. In a spirit of emulation other workmen essayed cent rolling, and the record was broken by an Ansonia roller, who, commencing with a modern alloy cent, finished with a strip of metal 38 inches long and $\frac{1}{100}$-inch in thickness. Afterward with an 1888 cent the same man obtained a ribbon of bronze 50 inches long, $\frac{3}{4}$ inch wide and $\frac{1}{2000}$ inch thick. Trying again with a cent of this year's coinage, the Ansonia man succeeded in producing a strip 59 inches long and less than $\frac{5}{1000}$ inch thick—so thin that there was no instrument delicate enough to measure it, while it had to be glued to a strip of ribbon to prevent it breaking. Considering that the rolls used were those employed for forming great bars of copper, it will be seen what extraordinary skill and delicacy of touch were required.

An Electric Brake.—A series of experiments to test a newly-invented electric brake were recently made on the London & Northwestern between Birmingham and London. The brake has been brought out by Professor Forbes and Mr. I. A. Timmis, of London. A train of carriages fitted with it is being constructed for use on a line in Russia. The brake works upon the inside face of the wheel—or rather upon an iron disk fitted to it. Opposite the iron plate is another encircling the axle, so fixed that it does not revolve with the wheel, but can be moved laterally so as to come in contact with, or recede from, the circular plate. It contains a powerful magnetic coil, and when vitalized by the turning of a handle in the brake van, it is attracted to the plate on the wheel, thus acting as a brake. A coach fitted with the brake was slipped while traveling at the rate of 42 miles an hour and was brought to a standstill in 450 feet. Of other results during a trial lasting three hours, the best was the stopping of the car in 60 yards when traveling at 30 miles an hour.—*Railroad Gazette.*

Chinese Railroad Progress.—The correspondent of the *Hong Kong Telegraph* writes: Shêng Hsuen Huai, Customs Taotai at Chefoo and Director General of the Chinese Telegraph Administration, has lately, we hear, offered a prize for the best essay written on the proposed railway between Lu Kou Ch'iae, Peking and Hankow. The essays are to be handed to the Secretary of the Chinese Polytechnic School at Shanghai not later than the 12th of November next. A further inducement is also offered to the effect that the winner of the prize will have official preferment given him in the railway management, and those whose essays prove to be worthy of mention will also have a chance of employment under like circumstances. We have been informed also that "the man showing the best way in which the railway could be built without the assistance of foreign capital and foreign rails will be the fortunate winner of the prize." With our knowledge of the liberal views Sheng Taotai has always been credited with—the late monopoly of taels 100,000 from the European telegraph companies always excepted—we are inclined to disagree on this point with our informant; still this insinuation may not be without some foundation, as it might prove after all to be a sop thrown to that Celestial Cerebus Chang Chih-tung—whose railway memorial, it will be remembered, advocated these puerile points.

BOOKS RECEIVED.

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

A Treatise on the Metallurgy of Iron. Sixth edition, revised and enlarged. By H. Bauermann, F. G. S. Published by Crosby, Lockwood & Son, London, England, 1890. Illustrated. Pages 523 and index.

Life of Charles Blaker Vignoles, Golder and Civil Engineer. By his son, Olinthus J. Vignoles, M. A. Published by Longman's, Green & Co., New York and London, 1890. Pages 407 and index. Illustrated. Price $5.

The *Cornell Magazine.* Vol. II. No. 3. Published by the students of the University, Ithaca, N. Y. 40 pages.

Pratt Institute Record. Founder's Day Number. Vol. I. No. 1. Published by the Pratt Institute, Brooklyn, N. Y. Illustrated. 53 pages.

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.

ISSUED JANUARY 7, 1890.

418,843. Means for the Electrical Propulsion of Vehicles. Delbert E. Johnson, Atlanta, Ga.
418,873. Well Boring Apparatus. Europe F. Littlepage, San Jose, Cal.
418,892. Railway Track Fastening. Charles A. Harvey, Washington, D. C.
418,893. Electrically Propelled Vehicle. Rudolph M. Hunter, Philadelphia, Pa.
418,911. Electric Heating Apparatus for Electric Railway Systems. Mark W. Dewey, Syracuse, N. Y., Assignor to the Dewey Corporation, same place.
418,927. Automatic Feed for Blast Furnaces. Jacob Richter, South Chicago, Ill.
418,952. Feed Device for Ore Roasting Furnaces. Albert C. Johnson, Wilmington, Del.
418,960. Journal Box. Ezra L. Post, New York, N. Y.
418,999. Ingot Pusher. Samuel T. Wellman, Cleveland, O.
419,004. Hoisting and Conveying Apparatus. Erastus Day, Lakewood, Ohio.
419,007. Furnace. Absalom Francis, Liverpool, and Ernest Manbre, Garston, County of Lancaster, England.
419,008. Rolling Mill Plant. William Garrett, Joliet, Ill.
419,032. Method of Welding by Electricity. Charles L. Coffin, Detroit, Mich.
419,035. Mechanical Movement. Eckley B. Coxe and Samuel Salmon, Drifton, Pa., said Salmon Assignor to said Coxe.
419,041. Elevator. Zina Goodell, Samel, Mass., Assignor of one-half to Ahner C. Goodell, Jr., same place.
419,053. Steam Engine. John A. Lidback, Portland, Me.
419,055. Well-Boring Auger. George Meader, Fowler, Ind.
419,062. Rotary Engine. Alfred N. Parnell, Denver, Colo., Assignor of one-half to James W. Jackson, same place.
419,070. Drilling Machine. Francis H. Richards, Hartford, Conn., Assignor to Eckley B. Coxe.
419,077. Apparatus for Dumping Coal. Samuel Salmon, Drifton, Pa., Assignor to Eckley B. Coxe, same place.
419,084. Making Ingots for Plated Wire. John L. P. Spooner, Providence, R. I.
419,092. Device for Transmitting Motion. James M. Williams, Hawkinsville, Ga.
419,094. Apparatus for Propelling Vehicles by Electricity. Frank Wynne, Westminster, England.
419,113. Mechanism for Screening Coal. Eckley B. Coxe and Samuel Salmon, Drifton, Pa., said Salmon assignor to said Coxe.
419,143. Percussion Fuse for Projectiles. William H. Driggs, Washington, D. C., assignor of one-half to Mary Eddy Driggs and Elizabeth Hale Driggs, same place.
419,145. Mechanism for Loading Coal. Ezra B. Ely, Bergen Point, N. J., and Samuel Salmon, Drifton, Pa.
419,148. Elevator. William E. Hale and Norman C. Bassett, Chicago, Ill., assignor to the Hydraulic Elevator Company, same place.
419,156. Machine for Forming and Bending Metal. Isaac S. McGiehan, New York, N. Y.

JANUARY 14TH, 1890.

419,172. Car-Wheel. Richard N. Allen, Cleveland, O.
419,182. Rail Joint. Robert J. Colvin, Lancaster, Pa., Assignor of two-thirds to J. L. Steinmetz and John E. Malone, same place, and Grant Weidman, Allen D. Hoffer, and B. F. Hean, Lehanon, Pa.
419,187. Core for Casting Metal Pipes and Cylinders. Clarence G. Curry and James B. Curry, Louisville, Ky.
419,193. Stone-Cutting Machinery. Emanuel Foerster, New York, N. Y.
419,194. Process of Cutting Stone. Emanuel Foerster, New York, N. Y.
419,199. Mining Machine. Eugene Ingold, Pittsburg, Pa.
419,207. Car Coupling. Frank C. Miller, Belvidere, N. J.
419,208. Tension Carriage for Endless Rope Transmission. Thomas S. Miller, N. Y., and Jed Foster, Chicago, Assignors to the Link-Belt Machinery Company, Chicago, Ill.
419,210. Railway Track. James P. McGuire, Atchison, Kans.
419,247. Rock-Breaker. Miles B. Dodge, San Francisco, Cal., Assignor to Parke & Lacy, same place.
419,274. Process of Manufacturing Iron and Steel Alloys. Henry Marbeau, Paris, France, Assignor to the Société Anonyme Le Ferro-Nickel, same place
419,282. Electric Steam Generator. Jeremiah O'Meara, New York, N. Y.
419,294. Rock-Breaker. James Spiers and Edgar H. Booth, San Francisco, Cal.
419,304. Hydrocarbon Burner. David C. Andrews and James F. Seery, New York, N. Y.
419,312. Draft-Annunciator for Mines. William Bulluck, Centralia, Pa.
419,313. Electric Railroad Telegraph. Baylus Cade, Louisburg, N. C.
419,321. Water Motor. Edgar Courtright, St. Ignace, Mich., Assignor of three-fourths to Thomas I. Everett, Stellwagon & Kynoch, and Brooks Bros., all of same place.
419,341. Car-Coupling. Charles S. Monroe and Clinton E. Yeager, Kinsie, Ind.
419,347. Process of Purifying and Deodorizing Crude Petroleum. Robert M. Perrine, Cleveland, O.
419,386. Device for Transmitting Power. Arthur von Babo, Seattle, Wash.
419,392. Rock Drill. Marquis D. L. Windell, Corydon, Ind., Assignor to himself and Zachary T. Funk, same place.
419,401. Excavator. Henry O. Baldry, Westminster, County of Middlesex, and Joseph T. Pullon, Leeds, County of York, England.
419,404. Process of Manufacturing Basic Linings for Converters. Ernst Bertrand, Kladno, Bohemia, Austro-Hungary, Assignor to the Pottstown Iron Company, Pottstown, Pa.
419,406. Hydrocarbon Metal Heating and Melting Furnace. James H. Bullard, Springfield, Mass., Assignor to the Aerated Fuel Company, same place.
419,407. Hydrocarbon Metal Heating Furnace. James H. Bullard, Springfield, Mass., Assignor to the Aerated Fuel Company, same place.
419,409. Hydrocarbon Heater. James H. Bullard, Springfield, Mass., Assignor to the Aerated Fuel Company, same place.
419,422. Rod-Rolling Mill. Fred H. Daniels, Worcester, Mass.
419,426. Rope Transmission. Julius A. Dyblie, Chicago, Ill.
419,428. Anti-Friction Device for Car Axles. Charles B. Emery, Boston, and Charles Brigham, Watertown, Mass.
419,430. Axle Lubricator. William J. Faul, Brooklyn, N. Y.
419,445. Journal Bearing. William W. Holland, Fair Play, S. C.
419,4 4. Bearing for Car Wheels. James H. Bowden, Wilkesharre, Pa.
419,498. Crushing Rolls. John M. Case, Columbus, Ohio.
419,556. Means for Securing Pulleys to Shafts. Milton O. Reeves, Columbus, Ind., Assignor to the Reeves Pulley Company, same place.
419,573. Machine for Making Lead Pipe. Simon Traber, St. Louis, Mo., Assignor of two-thirds to George T. Matthews and Henry Flachman, both of same place.
419,577. Fish-Joint and Fish-Joint Chair for Railway and Tramway Rails. Frederick C. Wimby, Brighton, County of Sussex, and Walter Strickland, Woodford, County of Essex, England.
419,583. Hoisting and Conveying Apparatus. Franklin L. Chamberlin, Cleveland, O.
419,592. Rod-Rolling Mill. Theodore A. Meysenburg, St. Louis, Mo., and William Garrett, Cleveland, O.
419,595. Mining Plant. James C. Simpson, St. Louis, Mo.
419,598. Method of Making Ingots for Seamless Plated Wire. Levi L. Burdon, Providence, R. I., Assignor to the Burdon Seamless Filled Wire Company, same place.
419,604. Car-Axle Lubricator. Henry M. Goodman, Louisville, Ky., Assignor of one half to Charles Warren, same place.

PERSONALS.

We have several letters for D. W. G. for which we would like to have him call.

Mr. Joseph Lawson Wills, M. E., of Buckingham, Province of Quebec, Canada, sails for England to-day on the "Umbria." He goes to London on important business connected with the Canadian phosphate industry.

Mr. Herman Zadig, of San Francisco, who owns a large interest in the Utah, Best & Belcher and Gould & Curry mines of the Comstock lode, Nevada, has lately visited New York, having returned from a European tour.

Mr. John W. Kelly, a relative of Captain John Kelley, has been appointed superintendent of the Bulwer Consolidated mine, in the Bodie district, Mono County, Cal., in place of the latter, who recently resigned from the position.

The following gentlemen have been appointed by the President as commissioners to test and examine the weight and fineness of the coins reserved at the several mints during the calendar year 1889: John P. Jones, United States Senate; E. H. Conger, House of Representatives; H. L. Dodge, San Francisco; William A. Sackett, Saratoga Springs, N. Y.; William Lilly, Mauch Chunk, Pa.; Prof. William W. Folwell, University of Minnesota; Francis A. Walker, president of the Massachusetts Institute of Technology; Daniel W. Fisher, president of Hanover College, Hanover, Ind.; Austin Blair, Jackson, Mich.; Byron Reed, Omaha; Thomas Price, San Francisco; John Jay Knox, New York; W. D. Wheeler, Montana; Prof. George F. Barker, University of Pennsylvania; Prof. T. C. Mendenhall, Washington; Eliot C. Jewett, St. Louis.

OBITUARY.

Vernon Smith, civil engineer, died on the 15th inst. at Ottawa, Ont., from pneumonia, the result of an attack of influenza. Before coming to this country he was engaged upon many important works, both in England and on the Continent.

Mr. Morton C. Fisher, a well-known American engineer, resident in London, was found dead in his bed recently. Mr. Fisher constructed, among other works, the North Metropolitan Tramway system, and was instrumental in the sale of the Richmond mine on the London market.

Francis Roubillac Conder, M. Inst. C. E., died suddenly at his home at Guildford, England, while reading in his study. His name is especially well known in connection with canal and inland navigation questions, and in connection with the deodorization of sewage, his iron process being in use at Windsor Castle, Chichester Barracks, Alnwick, and many other places.

Frank S. Craven, mining engineer, of Morristown, N. J., a graduate of the School of Mines, class of 1876, died at Manchester, England, this week of pneumonia, aged 34 years. Mr. Craven had recently secured an engagement in the Transvaal, South Africa, and was on his way there when overtaken by illness. He was a very able engineer, and his death is a great loss to the profession.

INDUSTRIAL NOTES.

The Northampton Furnace at Freemansburg, Pa., owned by the Bethlehem Iron Company, of Bethlehem, Pa., has been put in blast after being relined and repaired.

The Passaic Rolling Mill Company, of New York City, has completed its new open-hearth plant, which consists of two 20-ton furnaces with blooming mill and all modern appliances, thus doubling the capacity of its work.

The Carbon Iron Pipe Company, of Parryville, Pa., is relining its large No. 3 furnace and making some changes in the stoves. It is expected that it will be in blast in February. This will put all the furnaces of the company into operation.

Extensive improvements are being made at Port Oram furnace, at Port Oram, N. J. The stack, which was 60 feet high, is being built up to 75 feet, and three new hot-blast stoves and an I. P. Morris engine are being added to the equipment.

The contracting firm of Guild & White, Chattanooga, Tenn., have offered to put down the pavement of the Hale Pavement Company, of Staunton, Va., to be paid for only if satisfactory. Bricks have also been ordered for laying some Hale pavements in Roanoke, Va.

A general assignment for the benefit of creditors of the Glamorgan Iron Company has been filed in the office of the Recorder of Deeds at Philadelphia, Pa. The liabilities of the company amount to $2?0,000, and consist solely of paper issued by the company and indorsed by the principal stockholders. The assets are estimated at $250,000. The $280,000 indebtedness is the legitimate paper, exclusive of the $72,500 fraudulent paper confessed to have been issued by Charles B. Wigton. The Glamorgan Iron Company has been in existence for forty or fifty years, and all of the original organizers have died or gone out of the company. The affairs of the company will now be wound up.

We understand that the omniverous English syndicate has purchased the works and business of the old-established and well-known mining machinery makers, Messrs. Fraser & Chalmers, of Chicago; so well known, indeed, that the name of the firm may be called a household word wherever mining men have penetrated throughout the world. The business will be conducted, as heretofore, with the present partners of the concern deeply interested in its success, and in charge of the various departments. The principal feature of the undertaking is the provision of a capital of $2,000,000 to establish branch works in England to facilitate the large export business already created, thus following in the footsteps of Messrs. Worthington, Babcock & Wilcox and the Singer Sewing Machine Company. Mr. David R. Fraser will be president of the new company, and will remain for some time in London to establish the new works.

Messrs. Wm. Simons & Co., of Renfrew, Scotland, launched recently one of their patent dredging steamers, named "Alexandra." It has a lifting capacity of 400 tons an hour, carries 400 tons débris, and is capable of dredging shoals to 35 feet depth of water. The bucket chain is made so that the bucket bodies (used for lifting ordinary free soil) can be removed and replaced by steel ripping picks for working hard material and rock without dismembering the bucket chain. It is fitted with triple cylinder engines and boilers of 300 H. P. Its first work is to deepen the outer bar at the Port of Alexandria, and will leave in a few days for Egypt. This is the type of dredger that the Nicaragua Canal Construction Company has selected for the harbor work at Greytown, and of which it has ordered two, which are now in course of construction by Messrs. Wm. Simons & Company.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

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

No charge will be made for these services.

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

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

GOODS WANTED AT HOME.

515. Engine, second-hand three-foot gauge. Virginia.

516. Cars. Passenger coach, flat and box car, Virginia.

517. Prices of steel rails, second-hand, 25 to 35 pounds. Virginia.

518. Two dummy motors and four coaches for suburban passenger traffic. Tennessee.

519. Tee rails; four miles, weight 20 to 30 pounds. Tennessee.

520. Engine 15 or 20 horse power. Texas.

521. Boiler 20 or 30 horse power. Texas.

522. Canning factory outfit. Georgia.

523. Nitrate soda; carload lots periodically. Tennessee.

524. Mixed acid; carload lots periodically. Tennessee.

525. Sweet glycerine; 50 to 10,000 pound lots periodically. Tennessee.

526. Ice machine; 6 or 10 tons, with steam boiler. Tennessee.

527. Ore washing and cleaning machine. Georgia.

528. Iron drive pipe 12 inches in diameter for four wells, each well requiring 600 feet of pipe. Texas.

529. Pumps. Four-well pumps, each to have a capacity of 250,000 gallons per 24 hours and capable of lifting the water about 200 feet and forcing it 150 feet into stand pipe. Texas.

530. Machines for grinding and corrugating flour mill rollers. Texas.

531. Two second-hand road scrapers. New York.

532. Lathe, 24-inch swing; bed not less than 12 feet between centers; also drill press. Kentucky.

533. Machinery for making hubs, spokes, rims, etc. Alabama.

534. Machine for flooring and molding; also, stave machine to saw staves and make bucket staves, hub staves, etc. Florida.

535. Engine, 350 horse power, Corliss. Texas.

536. Machinery and supplies used in railroad construction and other engineering works. Virginia.

537. Wood-working machinery; shaper, scroll saw, universal wood-worker and other machinery. Georgia.

538. Engine and boiler. Georgia.

539. Canning factory machinery. Kentucky.

AMERICAN GOODS WANTED ABROAD.

449. Dry lubricant for the journals of the bearing rolls of a revolving calcining furnace. The journals are 6 inches × 3¼ inches, resting in half brass; the movement is a very slow one, only about 1¼ revolutions a minute. South Australia.

450. Turning lathe with bed long enough to turn a stick of timber 30 inches long; also a frame for circular saws, one rip saw and one cross-cut saw, each 10 inches in diameter. West Africa.

490. Teal hoists. Australia.

492. American goods on consignment. Australia.

493. India rubber goods, mechanical. Australia.

494. Cutlery. Australia.

495. Watches; cheap grade. Australia.

496. Wire cables. Australia.

497. Blasting powder. Australia.

498. Safety burglar alarms. Australia.

499. Gas works; especially gas water system. Australia.

500. Electrical supplies; full line. Australia.

502. Spades, shovels, &c. Queensland.

506. Tin-working machinery; especially a machine that will do folding, grooving and turning, all in one, for canisters. Queensland.

507. Lighting by electricity for railway cars. Queensland.

508. Lighting by oil for tram cars. Queensland.

509. Blasting and sporting powder. New South Wales.

511. Shooks. Quotations for white pine and spruce shooks, ¾-inch dressed one side, f. o. b., in the following quantities and sizes: 2,000, 10 inches wide and 15 inches long; 2,000, 10 inches wide and 12 inches long; 6,000, 2 inches wide and 12 inches long; 2,000, 10 inches wide and 18 inches long; 2,000, 10 inches wide and 14 inches long; 6,000, 2 inches wide and 14 inches long. West Indies.

512. Portable houses. South Africa.

513. Coal cutter. South Africa.

514. Agency wanted for mining and other machinery. South Africa.

GENERAL MINING NEWS.

ARIZONA.

COCHISE COUNTY.

NEPTUNE MINING COMPANY.—Notice has been given that by virtue of a judgement and decree of foreclosure and sale entered in the District Court of the First Judicial District of the Territory of Arizona, on the 6th day of March, 1889, in favor of Joel Seymour as trustee for the bondholders under a first mortgage, as plaintiff, and the Neptune Mining Company, a corporation, defendant, sheriff of said Cochise County, is required to sell on January 20th, the company's property, or so much thereof as may be necessary to make the sum of $63,451.93, with interest thereon at 6 per cent per annum from date of judgement until paid; together with costs, commissions and expenses of said trust and accruing costs and commissions of sale. The property includes a number of mining claims in the Warren district near Bisbee, among which are the Neptune, Space, Hayes, Lookout, Surprise, Brother Jonathan and Uncle Sam, together with smelter and several mill sites.

CALIFORNIA.

NEVADA COUNTY.

NORTH STAR GOLD MINING COMPANY.—A report of this company's operations will probably be ready for publication shortly. Two dividends, each of $50,000, were paid in 1889. President James D. Hague, who was seen by an ENGINEERING AND MINING JOURNAL representative this week, says that development work is going on steadily. The 1,900-foot level is being extended, and sinking for the 2,000 foot has been commenced. The superintendent's latest reports show that 35 stamps of the company's mill are crushing quartz and five are on "stope waste." It seems that the stopes in the upper levels are gone over and the rock which in years past was thrown back as waste is now being taken out and milled at a profit. Mr. Hague says that this waste will yield on an average from $3 to $4 per ton, and it costs about $1.50 per ton to raise and mill it. Considerably over one hundred men are employed in the mine.

COLORADO.

COLORADO COAL AND IRON COMPANY.—There was another strike of the coal miners of this company at Florence on the 9th inst. for an increase of wages.

COLORADO FUEL COMPANY.—The common capital stock of the company was recently listed on the New York Stock Exchange. as already mentioned in last week's issue. From the company's application to the Exchange, we condense the following: The company was incorporated under the laws of the State of Colorado, November 13, 1883, and reorganized with increased capital April 1, 1888. Officers: J. C. Osgood, president; Dennis Sullivan, vice-president; D. C. Beaman, secretary; C. H. Parmelee, assistant secretary; S. N. Wood, treasurer. Directors: J. C. Osgood, Dennis Sullivan, S. N. Wood, H. R. Wolcott, J. V. Dexter, W. H. James, Chas. H. Toll, W. H. Male, George H. Prentiss. Capital stock authorized, $5,000,000, of which $4,195,000 has been issued and paid for in full; the par value of each share is $100; registrar, Atlantic Trust Company, New York; transfer agent, D. R. Stanford, 18 Broadway, New York. The bonded indebtedness of the company authorized is $1,200,000, of which $300,000 has been issued and sold; the remaining $900,000 is held by the trustees, and by the terms a trust deed can only be issued to pay for newly acquired property. The general office of the company is at No. 1,657 Larimer street, Denver, Colorado; New York office, 18 Broadway, New York.

The company controls 16,156.14 acres of coal lands, of which 14,880.16 acres are owned, 720 acres leased, and 555.98 acres partially paid for under contract for purchase. Total capacity of mines, 6,000 tons of coal and 150 tons coke per day. The lands have been carefully prospected, and are known to contain not less than 200,000,000 tons of merchantable coal.

HINSDALE COUNTY.

GEORGE III. MINING, MILLING AND SMELTING EXCHANGE.—The property of this company of St. Louis is composed of three full claims, the George III., Hattie, and Anna lodes. On the last two mentioned, according to local papers, but little work has been done, but on the George III. Messrs. Coffin & Pratt have a contract to run a tunnel a distance of 230 feet. Assays from this property have run as high as 139 ounces in silver and one and a quarter ounces in gold.

MIKADO.—This mine of Leadville, located on the north side of Iron Hill. and practically the western extension of the Argentine-Adelaide ore bodies, is one of the most active mines of the camp. The property is owned by a close corporation of St. Louis gentlemen, and it is impossible to ascertain the value of the output of the mine, but it is estimated, says the Denver *Mining Industry*, to exceed one-tenth of the entire yield of the Leadville district. During the month of June last the mine produced over $300,000, and as much as $100,000 has been extracted in a single week. The ore is an ochre and carbonate of lead, carrying chloride of silver.

RAVEN.—This mine is now under bond and lease and is being worked by a Texas syndicate, which has put in machinery on the property, and intends, it is said, to sink a shaft to the depth of 500 feet.

ST. JACOBS.—A new strike is reported. The mine is being worked under a lease by Messrs. Coleman, Carroll and Fitzpatrick. The lease was taken late last summer, says the Lake City *Phonograph*, but before winter settled in shipments were made to the amount of $7,500, the ore running about $400 per ton. This encouraged the lessees, so that they put in supplies and will continue work all winter. Since then the work has been going on steadily, and they have been taking out ore in fair quantities, until now they have struck this new deposit. They expect to have a good quantity of ore ready for shipment as soon as spring opens up. The character of the ore is spar, containing black and gray sulphurets and gold. Some specimens from this mine have run as high as 38 ounces in gold and $2,600 in silver.

LAKE COUNTY.

The Henriett & Maid has not closed down, as incorrectly reported in the *Mining Industry* of December 20th. The shipments are light and irregular, pending the arrangement of fresh terms for contracts with the smelters.

DINERO MINING AND MILLING COMPANY.—Work has been suspended on this property at Leadville. The chances of the mine starting up again during the winter are said to be slight.

FAIRPLAY.—It has been decided by the lessees of this mine to shut down for the winter, and, in consequence, all work on that property has been suspended.

LEE BASIN MINING COMPANY.—Leadville advices report that a suit has been brought by this company against the Compromise Mining Company for alleged trespass, the plaintiffs claiming that the defendants have, during the year 1888, entered upon ground owned by the plaintiff, a corporation, etc., and taken therefrom some $20,000 worth of ore. The case, it is stated, will be tried at an early date in the District Court in Leadville.

PITKIN COUNTY.

The sale of the Rust Sampling Works was consummated on the 10th inst., the purchasers being Messrs. Beach & Percy, owners of Aspen Public Sampling Works. Courtland E. Palmer, who has been conducting the plant since the retirement of W. R. Rust, will devote his attention to other pursuits. The sampler will still be known as the Rust Sampling Works.

COMPROMISE.—A disabled tramway has occasioned a temporary suspension of the output at this mine, which is stated by local papers to now have over 2,000 tons of ore broken and 225 in the bins ready for delivery to the market.

HUNTER PARK MINING COMPANY.—This company, it is reported, has its shaft down 540 feet on the Montgomery group in Hunter Park, and has just let a contract for another 100 feet. The shaft is still in the blue lime, but it is expected that the present contract will carry it to or very near the contact. The company is stated to be supplied with funds for prospecting its property, and work will be continued steadily until the ground is proved up.

MONTE CHRISTO.—It is stated that this property has been bonded to a syndicate, and that preparations are being made to incorporate and list its stock on the Denver Mining Exchange. The claim, which is located in Maroon district near the Sunset, says the Aspen *Times*, has produced some very fair ore in small quantities in the past. Cecil C. Morgan, who was called on for a report, advises the owners to proceed at least 75 feet further with their development work.

IDAHO.

CUSTER COUNTY.

DICKENS-CUSTER MINES, LIMITED.—London advices state that this company has sold five bars of bullion (Nos. 10 to 14) which realized the sum of £2,291 14s. 3d.

SHOSHONE COUNTY.

A corps of Northern Pacific engineers are making a permanent location for a railway on the South Fork to a point near the main working tunnel of the Bunker Hill and Sullivan mines. This line, says the Wardner *News*, is being so located that the principal mines in the vicinity of Wardner can deliver ore conveniently at points on the line.

FAY TEMPLETON.—Twenty men are kept employed day and night on this property. The mill is running uninterruptedly.

SITTING BULL.—The Portland Mining Company, with W. H. Pettit as superintendent, keep a force of men employed on this mine getting out ore, and teams are constantly employed in hauling the product to the railroad for shipment. The hoisting plant and other machinery, which arrived over two months ago, will be put up early in the spring.

STEMWINDER.—The work of putting up the wire cable of the tramway on this property has been completed. Now that connection is again made between mine and mill, the mine will once more be adding its quota to the weekly ore shipments of the district.

TIGER.—The hearing in the case of the receiver for this mine, at Burke, held in chambers at Wallace by Judge Willis Sweet, John M. Burke vs. S. S. Glidden, the receiver was temporarily dismissed and Chas. W. O'Neil was appointed referee to examine the books of the company and report to his Honor on or before January 5th, 1890, the receipts and expenditures of said mines since the opening of the same.

MICHIGAN.

COPPER MINES.

HUNGARIAN MINING COMPANY.—In answer to inquiries as to the condition of this company, the Boston *Transcript* says: The company's property is located in Keweenaw County, and it is one of the many Lake Superior copper companies organized for the purpose of striking the Calumet & Hecla's vein. It was proved by developments that that vein runs northeast and southwest, and the Hungarian Mine, which is southeast of the Calumet & Hecla, was some distance from the vein. There are only a few small veins, branches of the Calumet & Hecla's, running through the Hungarian. The company spent about $20,000 in working these small veins before the war. Nothing has been done since. The Hungarian stockholders have been assessed several times already, but the total of all assessments amounted probably to no more than one dollar per share. There are 40,000 shares. The stock has sold as high as $4.62½ and as low as five cents. It is now quoted as offered at ten cents per share. The treasurer, Mr. Frederick Beck, says that the Calumet & Hecla does not want it for its lumber. The mine may be worked again some day if anybody wants to furnish the capital, but the present stockholders do not seem disposed to do anything.

TAMARACK JUNIOR MINING COMPANY.—The No. 1 shaft at Tamarack Junior mine was sunk 100 feet, and No. 2 shaft 80 feet in December.

GOLD MINES.

MICHIGAN GOLD COMPANY.—The first level in the deep shaft on this property has been commenced, and will be pushed both east and west. The progress of the work to the east will be watched with much interest, says the Ishpeming *Iron Ore*, it being but a short distance to the ground immediately below the rich shaft, where so much rich rock has been taken out in the past, and rich developments are confidently looked for when stoping is got at here. The open cut stope, some hundred feet to the east, continues to show much free gold in the quartz. The new mill will be located quite near the shore of Gold Lake, and is expected to be in operation shortly.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, Jan. 11, 1890.

The lead and zinc mines of Jasper County have been in operation for the past 20 years, but have remained almost in the background of the mining industry up to within the past year. Since then, however, numerous capitalists from the East and West have been turning their attention to the investigation of the lead and zinc resources of this county. As a result, a number of large companies have been formed and several thousand acres of developed and undeveloped mineral lands purchased.

The City of Joplin now has a population of 14,000, and has become the central point of supply of the mining industry for the county. The city is surrounded on all sides

by producing mines. There are a number of prosperous towns at different points. Due west five miles are the old Stevens mines recently purchased by General Boyle, *et al.*, of St. Louis, for $30,000. This is a well-developed tract of land showing large deposits of lead and zinc. One and one half miles to the southwest are the Sherwood mines, which passed into the hands of a St. Louis syndicate last week.

Four miles due east is Webb City, a live town of about 5,000 inhabitants. Among the mines are those of the Center Creek Mining Company, which is capitalized for $1,000,000, and pays a regular dividend of one per cent. a month. Also the Garrison Lead and Zinc Company, Nevada Mining Company, Steelman & Co., Bradley Mining Company, Jasper County Mining Company, Webb City Lead and Zinc Company, and General Noble's mines. Adjoining this on the east is the town of Carterville, with a population of about 2,500, where one finds the North Carterville Mining and Drainage Company, Tracey Mining Company, Daugherty & Davey Company, Motley Mining Company, Steadman Mining Company, Eleventh Hour Mining Company, Troup Mining Company, and Victor Mining Company. About three miles to the north we find the oldest mining district in Jasper County, Oronogo. Here are the Granby Mining Company, Ishling Mining Company and others. Again, 4½ miles to the northeast is the Alba mining district, the only mines that have been opened up north of Spring River. Next are the Pleasant Valley and Carthage mines.

Mention of each mining company has not been made as space nor time would not permit. I only aim to show the different points where the mining industry is being carried on in Jasper county. At some future time I may take up each and show what is being done.

The output of the lead and zinc mines for the week ending January 11th was lighter than usual, but a larger amount of ore was produced, considering that many companies were not working, and the weather very unfavorable. Prices offered for ores were low, and many producers would not sell, preferring to hold over for better prices. The Joplin mines alone have not less than 375 tons of zinc ore in bins. The following were the amounts sold: Joplin mines, 454,820 pounds zinc ore, and 128,630 pounds lead; value, $6,802. Webb City mines, 546,870 pounds zinc ore and 47,060 pounds lead; value, $8,371. Carterville mines, 365,160 pounds zinc ore and 57,380 pounds lead; value, $6,236. Zincite mines, 452,530 pounds zinc ore and 3,170 pounds lead; value, $6,380. Lehigh mines, 125,000 pounds zinc ore; value, $1,750. Carthage mines, 132,000 pounds zinc ore; value, $1,526. Galena, Kan., mines, 604,220 pounds zinc ore and 45,600 pounds lead; value, $5,312.11. District's total value sold, $36,377.11.

A quarter of a mile west is found the West Hollow mines, which are steady producers. Next are the Block City mines, now constructed and operated by a Pennsylvania company; again about one mile to the north is the prosperous little town of Bellville, where are the Holden mines on a 40 acre tract of land recently sold to Chicago parties for $40,000. Here are also the Standard Mining Company, Byers, Murphy & Connor, Buckey Mining Company, and numerous others. Next, two and one-half miles to the north is the town of Lehigh, where we find the Lehigh Drainage and Mining Company, Leckie Mining Company, Johnson Mining Company, Knight Land Company.

A number of small mining sales were consumated during the past week to St. Louis parties.

DE GRUFFE.—These mines on the Holden land, at Bellville, turned in 112,020 pounds zinc ore.

HOMESTAKE.—The Homestake shaft on the Murphy land at Bellville has opened up a fine body of zinc ore during the past week.

LAMB MINING COMPANY.—This company at Carthage sold 92,000 pounds of calamine at $20 per ton, and 40,000 pounds zinc ore at $30.30 per ton.

NEIGHBORS.—Messrs. Johnson & Co., of Lehigh, are putting in a heavy plant of machinery on the Neighbors land, which will include an air compressor and a dynamo for lighting the mines.

OSMEGO.—Cook, Mittleberg & Co., have opened up a face of zinc 10 feet thick on the Osmego land, at a depth of 45 feet.

TUCKAHOE.—A new strike of lead ore was made at a depth of 60 feet at these mines.

MONTANA.

BEAVERHEAD COUNTY.

P. J. KELLY MINING COMPANY.—The financial difficulties of this company of Argenta are reported to be in a fair way to settlement. The New York stockholders, it is said, sent an expert to examine the property, who reported favorably In addition to this, there is a story that a Mr. Howe, a practical mining man, has personally examined the property, and as a result will invest $35,000 on the enterprise. The company some time ago closed down.

DEER LODGE COUNTY.

Reports are in circulation in St. Louis and Phillipsburg that the Granite Mountain and Bi-Metallic companies are to erect a large smelting plant in the spring to treat the low grade smelting ores which the latter company is said to possess in large quanties. The reports thus far lack an official confirmation.

DEER LODGE MINING AND SMELTING COMPANY.—This company has been organized with 500,000 shares of capital stock, with 250,000 shares placed in the treasury. The original owners of the company's property have shipped several carloads of ore. The character of the ore is lead, and lead carbonates running high in silver. The last three cars of ore shipped, it is stated, netted to the owners $651.50, $644.98 and $566.30 respectively. The company have a force of men working on the shaft of the Hidden Hand claim, doing development work, and will ship a carload of ore shortly, taken from the shafts. There has been considerable development work done on the five different claims owned by the company, but no ore was stoped. All the ore that bas been shipped has been taken from the shaft. The company have engaged Mr. Owen Long as manager. There will be 50,000 shares of treasury stock placed on the market to procure machinery and supplies. The balance of the treasury stock will be reserved for the purpose of erecting a reduction plant as soon as the mine is sufficiently developed. This mine is located in the Zosel district, about eight miles east of Deer Lodge. The stock is largely held by Butte parties.

LEWIS & CLARKE COUNTY.

HELENA AND LIVINGSTON MINING AND REDUCTION.—The directors of this company have elected officers for the year as follows: President, S. T. Hauser; vice-president, John T. Murphy; treasurer, A. J. Seligman; secretary, O. R. Allen.

KENNEDY.—Six miles southeast of Helena is located a group of mines owned by Geo. S. Kennedy, of Helena. Four shafts have been sunk from 100 to 250 feet in depth, and shipments of ore are being regularly made. These mines have been worked constantly for a number of years, and while the pay streak is not large, it is said the excellent quality of the ore more than compensates for this. Shipments run $150 to $300 per ton. A short distance south of Mr. Kennedy's property some Butte parties have leased several patented claims that have lain idle for the last fifteen years, and are making good money. A car-load lately shipped gave returns of $118 per ton.

SILVER BOW COUNTY.

ALICE SILVER MINING COMPANY.—The drifts in the Magna Charta mine of this company, on the 300 and 400 levels, are being put in condition to commence the stoping of ores at those points, more especially in the northeast. Ore has been taken all the way from the 700 to the surface, and as much remains in sight, says the Butte *Inter-Mountain*, as already abstracted, with considerable ground yet to prospect. The mill of the company is pounding away steadily on ores taken out of both the Alice and Magna Charta mines and is doing no custom work at all.

ANACONDA & ST. LAWRENCE.—The Anaconda shaft was opened on Tuesday night, January 7th. Some little steam and considerable gas escaped, but no indications of fire appeared, and the St. Lawrence shaft was accordingly opened on the 8th inst. A considerable quantity of steam escaped. The cages were run up and down rapidly in the shaft, and a current of air created which enabled the men to descend to the 400 and begin to open the bulkhead in the drift. This was accomplished, but the workmen were unable to advance in the drift, on account of the bad air. The bulkhead on the 100-foot level of the St. Lawrence was then also removed, and a draft created through the Anaconda shaft. The electric light was turned on in the St. Lawrence shaft, and it was discovered that water had risen to a height of 6 feet above the 600-foot level. This would be near the 800 of the Anaconda; but the water is probably not that high in the Anaconda, owing to the absence of lower connection. The work of removing the bulkheads continued all night. After a while, the workmen at the St. Lawrence began to suspect the existence of fire in the mine on account of the intense heat. This was attributed at first to the vast amount of steam which has been injected into the mine during the past six weeks, but smoke issuing from the Anaconda shaft served as a notice that the fire still existed. The bulkhead on the 400-foot level was removed and the fire could be plainly seen above the 300-foot level. It has burned down also to the 600-foot level, but can go no further on account of water. Nothing remains to do but to close the mine again, and this was done on the 9th inst. It is probable that the plan of injecting carbonic acid gas will soon be tried.

MOULTON MINING COMPANY.—Very little news concerning this company's work is forthcoming nowadays. The Butte *Inter-Mountain* vouchsafes the following rather scanty information: "The mine is not employing as many miners as when operations were resumed the last time, though quite a quantity of free-milling ore is being produced that is carefully sorted in the mine."

NEVADA.

Under the articles of incorporation of the new railroad, to be constructed to connect Salt Lake with Los Angeles, Cal., the point where the construction will begin, says the Virginia City *Chronicle*, is at Summit station, on the line of the Utah Central railway near the eastern boundary line of Nevada, where the old wagon road from Utah to Pioche crosses the Utah Central; thence the route is southeasterly across the southern portion of Nevada, traversing Lincoln County midway between 35 and 36 degrees north latitude; also a branch line connecting with Pioche; thence westerly through Lincoln County passing near the town of Bristol; thence southwesterly through Nye County to Nevada's boundary at or near Ash Meadows—this branch being 200 miles in length; also a branch line running northerly through Lincoln County into White Pine County, terminating at Steptoe Valley. This last branch will be about 100 miles in length and that of the main line will be 200, adding a total of about 500 miles to length of Nevada railroads.

ELKO COUNTY.

NAVAJO MINING COMPANY.—A telegram received in San Francisco on the 9th inst. from this mine at Tuscarora reported the shipment of eight bars of bullion valued at $18,000.

ESMERALDA COUNTY.

MT. DIABLO MINING COMPANY.—It is reported that the Mt. Diablo mine, near Candelaria, has been shut down pending repairs to the hoist plant. The company reports a cash balance of $4,861.17 on January 1st, 1890.

MOUNT CORY MINING COMPANY.—The company's mill near Hawthorne has been sold to Alex. McCone, a Virginia foundry man, and workmen are now dismantling it. This mill was erected at a large cost to the Mount Cory Company. The mine was relocated January 1st, 1890, by T. Crossman.

EUREKA COUNTY.

During the month, according to the Eureka *Sentinel*, of December, 1889, there were shipped over the Eureka & Palisade Railroad the following products from the mines and furnaces of this district: Sixty tons of Richmond lead, 180 tons of crude bullion, 534 tons of ore and 13 tons of scrap iron destined for Salt Lake and San Francisco. The ore shipments were small, as none has been hauled from the mines for two weeks previous to January 4th.

EUREKA CONSOLIDATED MINING COMPANY.—The Eureka mine which was closed down temporarily on account of a snow blockade was reopened on the 9th inst. Telegraphic advices from San Francisco to the New York office also announce that a shipment of $17,000 in silver and $6,000 in lead was received in San Francisco from the mine on the 10th inst. The monthly statement for December has not reached New York yet. On December 1st the company had on hand in cash and bullion alone about $39,000, against which there were drafts for about $24,000. As the bullion on hand at that date has probably all been shipped since then, it is expected that quite a favorable cash showing will be made. The management of the company state, however, that payments on "construction account" *i. e.*, on the cost of the rebuilding of the company's ore sheds and repairs to smelting plant occasioned by last summer's fire, which have been made during the month, will reduce the surplus somewhat.

The last report of the superintendent, A. S. Burt, dated December 31st, says that the mine is not quite as well as he could wish, but the new strikes are improving. Explorations on the 8th level of the Lawton shaft continue to show up some ore. Some of the largest stockholders in the company, however, are pretty firmly convinced that ere long the lower levels of the property must be drained and explored.

STOREY COUNTY—COMSTOCK LODE.

Virginia City advices of the 8th inst. report the freezing over of the Carson River, which furnishes the motive power for a number of the mills of the district. Already, a number of men have been temporarily withdrawn from the ore stopes in the Consolidated California & Virginia mine.

BULLION MINING COMPANY.—At the annual meeting of this company in San Francisco last

week the old directors were re-elected, with Thomas Cole as president. John E. Dixon will be vice-president, R. R. Grayson secretary, and Archie McDonell as superintendent. There was reported a balance of $23,000 in the treasury.

CROWN POINT MINING COMPANY.—This company has received a bullion shipment valued at $19,478.92, being the clean-up for December, and making total shipments of $38,616.93 for that month.

COMSTOCK TUNNEL COMPANY.—The extension of the Sutro Tunnel one mile west of its present terminus, says the Virginia City *Chronicle*, will carry it 1,000 feet west of the peak of Mount Davidson. The western slope of Mount Davidson contains a mineral belt estimated at 2,000 feet in breadth. The extension of tunnel would greatly increase the income of the company from ore royalty by developing new bodies, the presence of which are indicated by surface croppings and demonstrated by explorations conducted at a depth of several hundred feet below the surface on locations west of the croppings of the main lode. The tunnel will cut these veins, the *Chronicle* concludes, at a depth of nearly 3,000 feet below the summit of Mount Davidson.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—This company has placed on special deposit the sum of $22,836, the amount due for royalty on ore extracted from the mine since suit was brought against the Comstock Tunnel Company holders of Sutro Tunnel stock. This money will be paid over as soon as the court decides which of the litigants is entitled to receive it. The official returns of the ore worked at the Morgan and Eureka mills and bullion produced for account of this company's mines in December are as follows: Total ore worked, 12,360 tons; total bullion produced, gold, $124,043.94; silver, $125,716.04; total, $249,748.98. Average yield in bullion per ton, gold, $10.03; silver, $10.17; total, $20.20. Average assay value of the ore per ton, $25.38; additional bullion in December, 1889, from slag, ashes, sweepings and granulations, accumulated in assay office for the year 1889, gold, $5,474.10; silver, $8,537.44; total, $14,011.54. The following table, according to the San Francisco *Report*, shows the number of tons of ore worked each month in the year 1889, with the average monthly yield of the ore in bullion per ton and the average assay of the battery samples:

Date.	Tons.	Bullion.	Battery assay.
January	10,332	$25 92	$33.01
February	9,890	27.72	34.55
March	11,783	28.72	33.89
April	12,830	23.05	26.99
May	12,686	23.35	28.15
June	10,770	26.23	30.45
July	12,531	21.20	29.78
August	12,531	21 20	29.78
September	11,149	21.59	28.08
October	11,726	24.10	27.99
November	11,130	21.06	26.14
December	12,360	20.20	25.38

The mining companies that have entered into a compact to commence pumping water out of the lower levels of the Gold Hill mines have engaged W. R. Eckart, a mining and civil engineer, and Mr. Dow, manufacturer of pumping and general hydraulic machinery, of San Francisco, to draw up plans for the purpose and to produce a pump for sinking purposes. After the water is lowered it is intended, according to San Francisco advices, to double the pumping capacity by placing a stationary pump at the lowest point obtainable.

The ore yield of Comstock mines for the week ending January 4th aggregated 6,320 tons, divided as follows: Con., Cal. & Va., 2,703 tons, assay value $24.50 per ton; Savage, 435 tons, assay value $23.80; Hale & Norcross, 1,120 tons, assay value $19.89; Chollar, 440 tons, assay value, $21.50; Crown Point, 455 tons, assay value $15.46; Yellow Jacket, 500 tons, assay value, $22.50; Alta, 320 tons, assay value, $24.75; Justice, 227 tons, assay value, $23.87; Overman, 120 tons. The bullion yield of the above aggregated about $120,000.

UTAH CONSOLIDATED MINING COMPANY.—A contest for the control of this company, whose annual meeting will be held January 29th, is said to be in progress, with the present managers and J. W. Brown, of the San Francisco Stock and Exchange Board, and others as the opposing parties.

NEW MEXICO.

GRANT COUNTY.

Recently four cars of high grade ore from Georgetown, in this county, two from the Mimbres consolidated mining company's property, and two from the McNulty mine, under lease by Bragaw and Schlosser, passed through Silver City, says the *Enterprise*, for Socorro. The lowest grade ore in the shipment will average $200, while 7 tons of it will probably return $5,000. Two cars of ore were shipped from the same camp last week, and during the present month seven or eight more cars, mostly from the mines under lease by John A. Deemer, will follow. None of the ore shipped will run under $100 per ton, it is said.

SANTA FE COUNTY.

CONSOLIDATED MINING AND INVESTMENT COMPANY.—This company, an organization perfected in East Las Vegas, has filed articles with the territorial secretary. The officers are: Calvin Fisk, president; W. H. Ungles, secretary; F. A. Brush, treasurer; W. S. Fletcher, general manager; Francis Downs, of Santa Fe, attorney; J. S. Thompson, of New York City, Edward Harem, of Kansas City, Thomas A. Marshal, of Keithport, Ill., and James M. Irwin, of Quincy, Ill., as financial agents. The company's mining properties are in the Cerrillos district, adjoining the Cash Entry territory.

OREGON.

WASHINGTON COUNTY.

(From an Occasional Correspondent.)

MINERAL CITY.—In this silver producing district, the principal mines are the Black Maria, the Egan group, the Porphyrite group, Black Hawk, Little Chief, Silver Belle, etc. There are three reduction works in the district, viz., the first a silver mill of one ton daily capacity, treating the ores by roasting and amalgamating. The second is a leaching mill of five tons daily capacity, using the Russell process. The third is a smelter of 30 tons capacity, wherein the ores are concentrated into a matte. The amalgamation mill has not been in use for two years or more. The leaching mill was erected last summer by residents of Portland, Ore., and has worked some 300 or 400 tons of ore with considerable success in a technical sense.

The smelter is owned and run by the Porphyrite Company, and has proved particularly adapted to the ores of the camp, which are basic in their composition and carry a little copper. The rate of concentration practiced is, perhaps, the highest on record, being from 20 to 30 into one. The matte is consequently very rich, while the slags produced at the same time rarely reach two ounces silver per ton, with one-tenth to one-twentieth per cent. copper. Should circumstances warrant the plant will be enlarged during the coming year and a large custom business undertaken. At present the Porphyrite Company are buying for cash whatever easy smelting ores are offered, for the purpose of assisting the development of the neighboring mines and prospects. The camp accordingly enjoys the distinction of having a home market for her ores—an advantage possessed by few other mining camps west of Butte City.

PENNSYLVANIA.

COAL.

PHILADELPHIA & READING RAILROAD COMPANY.—The annual meeting of the stockholders of this company was held in Philadelphia on Monday last. As was anticipated, the meeting was far from harmonious, the stockholders opposed to the re-election of Mr. Corbin as president of the company protesting against the proceedings. Prominent among those opposed to the regular ticket were Messrs. Alfred Sully, R. K. Dow, Simon Wormser and Alfred Rice, all of New York. The protests were without avail, however, and the re-election of the old board of officers was accomplished through the vote of three members of the voting trust, who voted 786,809 shares. Thomas B. Wanamaker, a son of Postmaster-General Wanamaker, the fourth member of the voting trust, offered a proxy vote, executed by his father, in favor of the opposition ticket; but the vote was declined by the judges of election on the ground that a majority of the trust had already voted, and a minority report could not be received. The proxy was also declared to be irregular, because it was a business proxy, executed before the voting trust was created.

The meeting was called to order by William E. Lockwood, of Philadelphia, who nominated State Senator S. P. Wolverton for chairman. The nomination was unanimously ratified. President Corbin read his annual report for the year ending November 30th, 1889. The statement of the operations of the traffic of the railroad shows the following totals: Gross receipts, $19,018,613.71; gross expenses, $10,018,591.69; earnings from traffic, $8,100,022.02; profit from other sources, $769,398.26; total profit, $8,869,420.28; from which deduct, rentals, $2,842,319.25; interest account, $4,085,138.80; debtor balance, profit and loss, State taxes, etc., $728,750.23; total, $7,656,208.28; balance, $1,213,212; less interest and sinking funds of divisional mortgages of the coal and iron company, guaranteed by the railroad company, interest, $790,200; sinking funds, $354,084.14; total, $1,144,284.14; surplus, $68,927.86.

The gross receipts of the coal company were, $17,818,225.82; gross expenditures, $17,966,075.64; deficiency in operating, $147,849.82; to which add, interest for year, $826,523.34; deficiency, including fixed charges, $974,373.16. The report says that the inability of the coal company to earn the entire amount of its fixed charges for the year must be attributed to the low price received for coal, and that the expenses of mining coal were much greater in proportion than they would have been if the collieries could have been operated a greater number of days in the year. Reference is made to the efforts to extend the field for the consumption of coal, the necessity for the enlargement of the terminal facilities for handling and shipping coal at the Elizabethport docks, and the falling off in the anthracite trade for the year, and concludes with the reasons for the suppression of the monthly statements of the business of the coal company during the last year. The suppression was, the report said, due to the fact that none of the competitive coal companies furnished such statements, and that these companies used the information contained in the Reading's statements to the disadvantage of the Reading Company; and also to the fact that these statements were misleading, owing to the impossibility of distinguishing rationally, from month to month, between those disbursements which are properly chargeable to expense accounts, and those which may be legitimately carried forward to capital accounts. In reference to the business arrangements with the New Jersey Central Railroad, the report states "that no change whatever has been made by the present management in the basis of divisions of earnings from interchange of traffic with the Central Railroad Company, and that the divisions of rates now in force are the same which were established prior to the lease, and which remained in operation during the lease, while your company was in control of both systems." There have been expended for betterments, equipments, etc., on the railroad, $565,919, provided out of the means furnished by the reorganization scheme. Four new collieries and the rebuilding of others also cost $577,866 expended and charged to capital account. There have been in the past two years $1,103,720 credited to the sinking funds, and divisional and other mortgage bonds amounting to $228,000 have been paid and canceled. During the year securities of leased lines of the par value of $502,257 have been acquired by purchase at a cost of $488,083, which have been deposited with the trustee, under the terms of the general mortgage, and for which the company has received $488,000 general mortgage four per cent. bonds. The outstanding securities of the company and certain of its affiliated companies reported at the close of last year as not having been deposited, amounting to $1,195,866, have now been reduced to $966,599.

The "regular" ticket is as follows: President, Austin Corbin; Managers, A. J. Antelo, Samuel R. Shipley, Thomas Cochran, George de B. Keim, Stephen A. Caldwell, George F. Baer; Treasurer, William A. Church; Secretary, William R. Taylor. The "opposition" ticket was made up as follows: President, Thomas Dolan; Managers, Henry C. Gibson, Samuel R. Shipley, Stephen A. Caldwell, Isaac L. Rice, William Potter and Effingham B. Morris; Secretary, William R. Taylor; Treasurer, W. A. Church. Messrs. Shipley and Caldwell protested the use of their names on the opposition ticket.

Judge Hare, in the Court of Common Pleas in Philadelphia, before the meeting, read a long opinion refusing to grant the injunction asked for by Ervin & Schelmerdine against the Philadelphia & Reading Railroad Company, the immediate object of which was to postpone the annual election of officers on Monday, and the ultimate object to do away altogether with the voting trust of that company. The court did not decide any other questions of law raised by the bills filed. The court was not prepared to say that the election of Mr. Corbin as president would be valid. The trust was supposed to act in an entirely disinterested manner, and the election of one of its number was certainly not disinterested. But as this point had not been raised the court did not feel called upon to pass upon it.

The "opposition" party cast only 10 votes, but vigorous protests were made against the re-election of the old board of directors, and further litigation is talked about.

Before the adjournment of the meeting, several touching tributes to the worth of the late Franklin B. Gowen were paid by Messrs. William Lockwood and Alfred Sully.

SOUTH DAKOTA.

LAWRENCE COUNTY.

The Miller smelter has been blown in for a 15 days' run on Harmony, Tornado, Double Standard, and Ross-Hannibal ore. The smelting company, it is reported, has already nearly 200 tons of ore at the plant.

CALEDONIA MINING COMPANY.—Superintendent Skinner's reports to the New York office reveal little news concerning the condition of the mine. Development work is going on expeditiously and steadily, with about the same number of men on the pay-roll as heretofore. The ore output for the month of December was about 7,000 tons, a slight increase over the previous month. It would be rather more satisfactory, at least to the Eastern stockholders of the company, if monthly or quarterly financial statements were made. When dividends were suspended last Fall the hope was held out that they would be paid quarterly thereafter. This led to expectations of a January dividend, and in New York there is now much

speculation as to whether or not this will be forthcoming.

CALUMET MINING COMPANY.—This company, owning the North Star and Black Sulphates lodes, Ruby Basin, has passed title of its property to the Iron Hill Mining Company. The North Star and Black Sulphates claims, says the Deadwood *Pioneer*, were located years ago by the McMillan boys. Subsequently passing to the Calumet Company, they have been well developed. One tunnel has been driven 400 feet and is all in ore. Several cross-cuts made in the tunnel are likewise in ore. According to Thomas H. White's official report on the property, the average value of the ore is $36.65 per ton. The mines will now be worked systematically and the ore treated at the Iron Hill plant.

CORA MINING COMPANY.—The annual stockholders' meeting of this company was held last week in Deadwood. Directors were elected, consisting of F. M. Burroughs, C. G. Fargo, K. G. Phillips, J. B. Fairbank, A. H. Huyett. At a subsequent meeting of the board officers were elected as follows: President, K. G. Phillips; vice-president, F M. Burroughs; secretary, J. B. Fairbanks; treasurer, C. G. Fargo; superintendent, A. H. Huyett. The company is stated to be working seven men, thoroughly opening the property, and it is reported will resume shipments about January 15th, sending two carloads a month to Omaha.

DEADWOOD TERRA MINING COMPANY.—The production of this company for the month of December was 19,675 tons of ore, from which was realized $43,694, or $2.22 per ton.

HOMESTAKE MINING COMPANY.—The production of this company for the month of December was 22,890 tons of ore, from which was realized $81,563, or $3.56 per ton.

LUCILLE MINING COMPANY.—The control of the stock of this company has been bonded by Robert Graham. The property is located in Ruby district, says the Deadwood *Times*, and the principal owners of stock are residents of Lead City. Deed to the property, to be delivered upon the payment of the sum stipulated for the property, now lies in the Lead City bank.

PENNINGTON COUNTY.

GLENDALE TIN MINING COMPANY.—The Rapid City *Journal* is responsible for the following. "The company's sixty-stamp mill has been in constant operation since Christmas, and as a result a large quantity of concentrates has been accumulated, shipment of which to Chicago will be commenced immediately, and before January will have been nearly finished the first Black Hills tin will have been placed on the market. Before the year has been finished the mill will be greatly enlarged, and the force at work on the mines increased The company has made many improvements. A mill with a capacity of 60 tons a day has been erected, the mines are connected with it by a wire rope tramway; boarding houses, blacksmith shops, offices, etc., have been erected. All the company's locations have been developed to a considerable extent. On the Glendale a 32-foot vein has been tapped at a depth of 150 feet, at which depth the ore has increased in richness over that found nearer the surface. The company has in contemplation the erection of a furnace for the purpose of smelting its concentrates, which now have to be sent to Chicago to undergo that treatment.

UTAH.

HONERINE MINING EXCHANGE.—James H. Murray, the treasurer of this mining company, who has an office at 113 Devonshire street, Boston, Mass., has been arrested on a warrant containing two counts, and charging him with securing by false pretences from William W. Fay, commission broker at 7 State street, $10,000 on June 7th, 1888, and $1,500 on April 7th, 1889. Murray, at the time that the $10,000 is alleged to have been obtained, says the Boston *Transcript*, was a director of the company. Money was wanted, to be used in making a tunnel in the mine, and at a meeting of the company held in June, 1888, it was voted to raise $8,000 to be used in this way. Mr. Murray offered to loan the company the $8,000, taking as a collateral 30,000 shares of treasurer's stock. The stock was transferred to Mr. Murray and put in his name, although the word "collateral" was omitted. Murray then went to Mr. Fay, told him that he wanted $10,000, and offered to give as security the thirty thousand shares of stock. As the stock was then selling at a good price, Mr. Fay let Murray have the money. According to the books of the mining company, Murray appears to have paid in but $8,000, the amount for which the stock was given him as collateral. As the stock which was given Mr. Fay as security was treasurer's stock, it was not subject to assessment, but it is claimed that in April of the present year Murray went to Mr. Fay and told the latter if he did not pay an assessment of five cents a share on the stock the issue of this stock would be annulled. The amount ($1,500) was given to Murray, and it is alleged that he converted it to his own use. The annual meeting of the company was held in June, and it is said that then Murray went to Fay and asked that the stock be made over to him for that time, so that he would be entitled to vote. Murray was elected treasurer in place of Edward Page, who was treasurer during all the previous transactions. It is stated that Murray, as treasurer of the company, received a salary of $3,000 a year. Fay was to charge Murray two per cent a month for the use of the money, but it is alleged that the latter has failed to pay the amount as it fell due. Mr. Kilby Page went bail for Murray in the sum of $18,000.

BEAVER COUNTY.

CACTUS MINING COMPANY.—This company's property in Copper Gulch, near Frisco, is being operated to some extent by the Comet Smelting Company; also a French organization having a lease on the Cactus mines. After several months of inactivity they have put a few men at work, are paying off old claims, and it is hoped this year will witness much progress in development work.

HORN SILVER MINING COMPANY.—At Frisco the Horn Silver is making its regular shipment of about 1,000 tons of ore per month, such as net the company about $30 per ton. During the past year this mine sent out a little over 12,000 tons of ore. There is,, continues the Salt Lake *Tribune*, fully eighteen months' work of similar ore in the mine, but it is not shipped separately, it being found best to mix it with the low grade ore. The company employs about 100 men.

JUAB COUNTY.

TREASURE.—This mine, near Silver City, under lease to Shettle & Vincent, is turning out ten tons of ore per day and, according to local papers, will soon increase the product to about 500 tons per month.

PARKE COUNTY.

ALLIANCE MINING COMPANY.—This company was incorporated February 2d, 1889. The capital stock is $100,000; shares, $1 each. The company owns the Sampson, Sampson No. 2, United, Chief of the Park, Ballman, Grand Prize, Jones, Fraction and Short Line. In June work was commenced on a drain tunnel, which will be run about 4,800 feet, and will tap the ledge at a depth of 1,200 feet. Tunnel is now about 2,100 feet. It is expected it will be completed in June, 1890. The old works have been retimbered and considerable prospecting done. The shipments for the year, as furnished by Secretary Stevenson, amount to $9,250.11.

WYOMING.

According to Cheyenne advices forty oil claims, aggregating 6,400 acres, have been located in the Lander district by Messrs. A. Morrett, Parks, Wright and Kennea.

FOREIGN MINING NEWS.

CANADA.

NEW BRUNSWICK—ST. JOHN COUNTY.

BRUNSWICK MANGANESE COMPANY.—This company's stock has been admitted to the unlisted department of the Boston Stock Exchange. The property is located at St. Martins in St. John County. Shares, 40,000; capital, $100,000; transfer office, 34 Oliver street, Boston. Herbert H. D. Pierce, president; George D. Hall, Jr., treasurer, and they with James A. Tilden, W. R. Stockbridge and John A. Loring are directors.

MEETINGS.

Buffalo Chemical Works, at No. 55 Fulton street New York City, January 20th at 12 o'clock noon.

Collier White Lead and Oil Company, on the northwest corner of Clark avenue and Tenth street, January 25th, at 9 A. M.

Consolidated Gas Company, at No. 4 Irving Place, New York City, January 20th.

Crocker Mining Company, at 26 Nevada Block San Francisco, Cal., January 20th, at 1 P. M.

C. & C. Electric Motor Company, at No. 2 Wall street, New York City, January 15th, at 3:30 P. M.

Hanover Mining and Milling Company, at No. 117 Warren street, New York City, January 22d, at 5 P. M.

Martin Kalbfleisch's Sons Company, at No. 55 Fulton street, New York City, January 20th, at 12 o'clock, noon,

Ray Copper Company, at No. 34 Thomas street, New York City, January 27th, at 1 P. M.

Santa Eulalia Silver Mining Company, at No. 84 Broadway, New York City, January 20th, at 12 o'clock, noon, general meeting of creditors of said company, when the receiver (John R. Robinson) will pay a final dividend of all the moneys in his hands among the creditors entitled thereto.

Sierra Iron Company, at 431 California street, San Francisco, Cal., January 25th, at 11 A. M.

St. Louis Smelting and Refining Company, at Room 504, Bank of Commerce Building, St. Louis, Mo., January 20th, at 9 A. M.

St. Louis & Zacatecas Ore Company, at Room 504, Bank of Commerce Building, St. Louis, Mo., January 20th, at 9 A. M.

Utah Consolidated Mining Company, at Room 23, Nevada Block, San Francisco, Cal., January 29th, at 1 P. M.

DIVIDENDS.

Boston & Montana Consolidated Copper and Silver Mining Company, dividend No. 7, of $1 per share, aggregating $100,000, payable February 20th to stockholders of record January 23d. Transfer books close January 24th to January 31st, inclusive.

Colsolidated California & Virginia Mining Company, dividend No. 32, of 25 cents per share, aggregating $54,000, was paid on January 10th at the office of the company, 309 Montgomery street, San Francisco, Cal.

Daly Mining Company, dividend No. 35, twenty-five cents per share, aggregating $37,500, payable January 31st, at the office of Lounsbery & Co., Mills Building, New York. Transfer books close January 25th, and reopen February 1st.

Don Enrique Mining Company of Mexico, dividend No. 1, of three cents per share, aggregating $3,000, payable January 20th.

Homestake Mining Company, dividend No. 137, of ten cents per share, aggregating $12,500, payable January 25th at the office of Lounsbery & Co., Mills Building, New York. Transfer books close January 20th and reopen January 26th.

Little Chief Mining Company, dividend No 13, of five cents per share, aggregating $10,000, payable January 21st. Transfer books reopen January 22d.

Mammoth Mining Company, dividend No. 14, of five cents per share, aggregating $10,000, was paid January 15th to stockholders of record January 12th.

Montana Mining Company, Limited, paid on January 10th a dividend of nine cents per share, aggregating $60,666.

Quicksilver Mining Company, dividend of 1½ per cent. on the preferred stock, aggregating $21,500, payable February 3d.

Quincy Mining Company, dividend No. 43, of $3 per share, aggregating $120,000, payable February 17th to stockholders of record January 22d.

FINANCIAL STATEMENTS.

The following statement shows the financial balance of the principal mining companies having offices in San Francisco on December 1st, 1889, and on January 1st, 1890. The comparison shows what progress, if any, has been made toward a dividend paying position.

CASH ON HAND.

	Dec. 1st.	Jan. 1st.		Dec. 1st.	Jan. 1st.
Alpha.....	$13,573	$9.687	Justice....	11,080	17,200
Alta.....	a39,645	f43,187	Hale & N.	c14,3 8	h3,355
Andes.....	14,942	12,754	Ind'ence..	132	416
Benton Con.....	4,175	91,000	Julia	9,432	8,673
Best & B..	4,355	*	Loco'tive..	2,354	1,843
Bulwer....	17,518	15,741	Lady W..	20,521	19,690
Bullion ...	91,868	3.864	Navajo....	*	176
Bodie C...	12,140	21,.5	Mt.Diablo	d160	.....
Challenge.	3,119	801	Mexican..	3,479	*
Con. Cal. & Va..	b214,135	e76,993	Mono.....	432	18,204
Confid'ce..	1,741	*	Ophir.....	14,007	8,435
Con. N. Y.	826	*	Ov'man...	12,329	6,332
Crown Pt . .		4,372	Peer.....	9,074	8,071
Chollar....	.....	48,639	Peerless...	6,628	6,336
Crocker...	.....	f20,333	Potosi.....	12,126	4,754
E. Sierra Nev.....	7,508	6,957	Savage ..	*	g19,456
Exch'er. .	3,663	29	Scorpion..	8,231	7,680
Found Treas. ..	1,085	926	Sil. King..	4,452	*
Gould & Curry..	$22,065	$15,560	Sierra N...	38,542	31,280
			Utah C....	19,245	14,912
			Un. Con...	14,508	10,062
			Weldon..	4,640	4,118

* Indebtedness.

a With the proceeds of the sale of ore concentrates estimated at $25,000 to be received.

b Cash in bank and unsold bullion on hand valued at $70,246.03, with further shipments to arrive before the close of the fiscal month, and October expenses to be deducted.

c In cash, with bullion returns for November not received in full.

d With bullion shipments to arrive.

e Cash in bank and unsold bullion on hand valued at $125,573.93, with further shipments to arrive before the close of the fiscal month, and December expenses and January dividend of $54,000 to be deducted.

f With the proceeds of the sale of ore concentrates to be received.

g In cash, with bullion returns for December not received.

h In cash, with December bull'on to be deducted.

i To offset an indebtedness of $7,113.10.

ASSESSMENT.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Alliance, Utah.....		Dec. 18	Jan. 20	Feb. 10	.10
Belle Isle, Nev..	13	Dec. 4	Jan. 8	Jan. 30	.15
Bellevue - Idaho, Idaho	..	Dec. 20	Jan. 27	Feb. 15	.25
Best & Belcher. Nev	..	Jan. 6	Feb. 13	Mar. 6	.25
Bodie.....	11	Nov. 11	Dec. 7	Jan. 22	.25
Bullion, Nev.....	35	Dec. 4	Jan. 7	Jan. 24	.25
Car. Leonard, Idaho	..	Dec. 14	Jan. 23	Feb 14	.07½
Cons. New York, Nev	2	Dec. 11	Jan. 15	Feb. 5	.15
Exchequer, Nev....	28	Dec. 16	Jan. 21	Feb. 11	.25
Kentuck. Nev.....	20	Dec. 11	Jan. 14	Jan. 27	.07
May Flower, Cal...	45	Dec. 27	Feb. 3	Feb. 25	.50
Mexican, Nev	39	Dec. 21	Jan. 27	Feb. 4	.30
Mongold, Cal.....	29	Nov. 18	Dec. 23	Jan 24	.25
Mono.....	29	Nov. 18	Dec. 23	Jan. 24	.25
N. Occidental, Nev.	1	Dec. 2	Jan. 6	Jan 27	.25
Overman, Nev.....	61	Dec. 31	Feb. 5	Feb. 26	.25
Rochester, Utah...	..	Dec. 24	Jan. 25	Feb. 10	.01½
Seg. Belcher & Mides, Nev.	5	Jan. 4	Feb. 6	Feb. 26	.25
Trinity River, Cal..	2	Nov. 27	Jan. 6	Jan. 28	.50

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 101 and 102.]

New York.

FRIDAY EVENING, Jan. 17th.

We fail to see any genuine encouragement in the business of the mining share market this week. Mere manipulation of securities of doubtful value will never permanently attract the investing public, and, as experience has amply shown, will never build up the mining business in this or any other city. Under present conditions and present management, it must be acknowledged that there are comparatively few mines on the local exchange that invite the attention of honest investors. If those in charge of mining securities on the Consolidated Exchange wish a prosperous year they had better secure more properties of recognized value, and under honest and competent managements, and dispense with several of those of the "feline" species now on the exchange. We understand that the committee on mining securities has not held a meeting for some weeks; presumably, because there is no occasion for it; predictions as to an active market this year are not at all infrequent, but mere predictions will never bring about this long-desired condition of affairs. Energetic action on the part of the mining committee is needed. Properly directed efforts would doubtless result in the li ting here of many paying and promising properties. Some time ago when the committee was reorganized, it was suggested that it would be proper for it to call the attention of mining men throughout the country to New York as a financial center, and to afford them the assurance that the Consolidated Stock and Petroleum Exchange of this city would willingly list the shares of any respectable mine. The committee considered the suggestion for a while, but at length thought that such action as this would not be consistent with the dignity of the exchange. This is good as far as it goes, but the dignity of the exchange would be best protected by rigorously excluding the worthless, if not absolutely fraudulent, stocks which are there dealt in.

Upon the sales list Freeland has figured most actively this week. Large sales have been made, and the price of stock has been advanced from 58c. on Monday, to 72c. on Tuesday, closing at 74c. this afternoon. The claims of the promoters of this stock were published in our mining news column last week with our criticisms thereon, and since then nothing has developed to change the opinion we then expressed. Among the other Colorado shares during the week Little Chief has been heavy at 25@20c. No sales of Leadville Consolidated have been made. The stock is not offered below 12c. Small Hopes is quoted at $1 asked. A sale of Breece was made on Tuesday at 25c. It is expected that work on this property will be resumed actively before long. An explanatory circular which the management intends to issue to the company's stockholders, will shortly appear in our mining news columns. The company has about $17,000 in cash now on hand. Aspen has scored a decided advance, sales being made on Tuesday at $6.25 and yesterday at $7.50 The rise is attributed to the favorable showing made by the company's annual report for 1889, and the statement that dividends will be resumed next month. Lacrosse sold at 7c. to 8c.

Nothing of interest has developed in the Comstock mining business this week. Consolidated California & Virginia has shown a slightly declining tendency. On Monday a sale was made as high as $4.65, but latterly the stock has changed hands as low as $4.30. San Francisco authorities are still earnestly disagreeing among themselves as to whether or not the company will continue to pay dividends of 25c. a share during 1890; whether they will be 50c. each, as in times past, or whether the company will pay any at all. Numerous so-called official statements have been made, but nothing really definite is coming from authentic sources. On another page we present some interesting figures showing the decline in the grade of ore during the past year. Other sales of Comstock lode shares during the week included Crown Point at $1.60; Gould and Curry at $1.40 to $1.55; Andes, 65c.; Best & Belcher, $2.25; Bullion, 55 to 70c.; Exchequer, 55c.; Julia, 30c.; Lacrosse, 7 to 8c.; Mexican, $2.25; Occidental, 70 to 75c.; Overman, 85c.; Potosi, $1.75; Utah, 70c.

Common stock of the Comstock Tunnel Company sold at 19c. to 20c. The bonds are quoted at $32 to $35 and the scrip at $33. The old stock of the Sutro Tunnel Company changed hands at 6c. to 7c. The parties against whom the dissatisfied Sutro Tunnel stockholders have brought suit, have until February 5th to file answer to the complaint already made.

Among the sales of Tuscarora shares, Navajo changed hands at 25c. North Belle Isle at $1.10.

Eureka Consolidated is quoted at $5.50 asked. No sales were reported; in fact, transactions in this stock, both in San Fradcisco and New York, for a month past, have been very light.

Barcelona sold at 25 to 35c.

At the annual meeting of the stockholders of the Silver King Company in San Francisco on the 14th, according to advices subsequently received in this city, Mr. H. H. Noble, as the representative of the Eastern stockholders and others, secured the control of the board of directors. Although this is the result of the efforts that have been made during the last month, and to which reference has frequently been made in these columns, it still comes as somewhat of a surprise, as it was supposed that the former management was too strongly intrenched to be dislodged from power. It is to be hoped that the new directors will honestly endeavor to place the property upon its feet again. As was expected, the company's monthly financial statement of January 1st showed that it was some $3,000 in debt.

Phœnix of Arizona has sold at 51@55c., with a slightly firmer tendency at the close. Horn Silver steadily advanced during the week from $2.15 on Saturday to $2.12½ on Monday, to $2.50 yesterday and $2.40 to-day. Some sales of Stormont were reported at 3@4c. Ontario changed hands on Wednesday at $40.25, the highest price recorded for some time, and, in fact, probably the highest at which the shares have ever sold. The advance is attributed to the reports of improved condition of the property. Word has been received recently from the mine that the vein has been struck on the 1,300-foot level.

Holyoke sold at 3@4c.

Dakota shares have been quiet. Homestake is quoted at $9. Deadwood Terra sold at $1.50. Iron Hill is quoted at 50c. bid, 60c. asked.; Father de Smet at 35c. bid, 55c. asked; Caledonia at $1.45 bid, $1.55 asked. A few remarks of pertinent interest are published in our mining news columns, together with the latest reports as to the work at this mine. Astoria is quoted at 9@8c. Sales of Brunswick were made at 1@2c. Mr. H. R. Lounsbery states that enough stock has already been deposited with him to secure the success of the reorganization. We understand that a reorganization of the Hollywood Company, with an assessment of 5c. a share, is contemplated. No news of interest is forthcoming from the Plymouth mine. Stock is quoted at $2.50 bid.

Among the transactions in Bodies were Bodie Consolidated itself at 40@45c; Mono at 35c. The Standard Company, on the first instant, reported a cash balance of $13,820, something of an improvement of previous reports.

Alice has shown an advancing tendency at $1.15 @$1.20. No report as to what was done at the annual meeting on Tuesday last in Salt Lake City has been received. If this company would issue monthly or quarterly financial statements it would be much more satisfactory to the stockholders. We understand that President Walker has been urged to do this more than once.

El Cristo has been firmer and more active at $1.40 @$1.55. Receipts of ore have not been as large as was expected, but the officers of the company say that before long it will arrive in larger quantites and with greater regularity.

Among the sales of miscellaneous shares during the week were Rappahannock at 5c. Mutual Mining and Smelting at $1.60@$1.65; American Flag at 4c.

Reports from San Francisco as to the condition of the market in that city are not at all encouraging. The financial statements of a number of Comstock mines will be found in another column. One San Francisco publication complains particularly that "many of the managers are destroying the little confidence felt in the mines by the persistency with which they grade the ore to lower assays, and also by not making public more details regarding the assays and the work going on at the mines."

It is said that the reports of the Savage and the Hale & Norcross mines do not return more than 70 per cent. of the assay of the ore at the mill without saying anything of the loss in the assay in or at the mines, which if made public would show a much larger shrinkage and that other large bull lon producing mines are managed in the same unsatisfactory manner.

Boston. Jan. 16.

[From our Special Correspondent.]

The market has not been quite as active the past week, but prices have held up well, and we see no reason why the promised advance should not be fully realized in the near futnre. There has been some realizing by those who bought early, but the stocks are getting into strong hands and will, no doubt, be held for much higher prices than have been reached as yet.

Calumet & Hecla declined to $261 for a small lot, but a lot of 100 shares offered at $265 was quickly taken, and later sales were at $266. Tamarack advanced from $157½ to $160 on small sales. There is not much stock to be had at these prices.

Boston & Montana opened strong at $51½. Considerable stock being offered and no buying orders carried price down to $50. A dividend of $1 per share was declared to-day, and the stock is firmer at $50¾.

Quincy holds steady and strong at $51½@$72.

Osceola has been very active this week and sold up to $28 in the early dealings, but a pressure of stock for sale caused a decline to $25¾, with a subsequent rally to $27, and a further decline to $26, closing at $26¼.

Franklin has been rather heavy after selling at $18, and declined to $16½, at which price we consider it one of the cheapest stocks on the list.

Atlantic sold up to $16¼, but declined later to $15½, at which price it is steady.

Kearsarge advanced from $7¾ to $8¾, and is one of the strongest stocks on the list.

Butte declined to $14½, but rallied to $15, at which figure it holds.

Huron and National steady but dull at $4@$4¼ for the former, and $2¾ for the latter.

Santa Fe has been weak, declining from $1.60@ $1.40, with later sales at $1.45.

Pewabic, owing to the contest for control, is very strong, and sold up to $8½. We hear that $9 was bid for it to-day without bringing out any stock.

Allouez advanced to $1.95 early, but subsequently declined to $1.45, with last sale at $1.50.

The group of small stocks have been rather quiet and dull, with a tendency to lower prices. We note sales of Hanover at 20c., Humboldt at 20c., Pontiac at 25c., Washington at 22½c. and Mesnard at 50c. Ridge sold at $1¼@$1⅞.

The silver stocks continue dull. Dunkin is firm at 70c. and Napa Quicksilver at $4⅛@$4¼, ex dividend.

3 P. M.—Market closed dull but steady. Calumet & Hecla sold at $267. Tamarack $159.

Lake Superior Gold and Iron Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

The prospect for a great output from the iron mines this year is causing an active demand for iron stocks, with tendency to advance all through the list. Many of the Gogebic iron stocks are much sought for. In the boom, which raged there some two or three years ago, hundreds of mining companies were formed, who had no mines, no ore, and in many cases not even a prospect hole; stock was sold all over the country, the bubble burst, and thousands of credulous people were ruined. It is likely that many of these worthless stocks will now come to the front. Investors had better "look before they leap." At the gold mines, work is steadily progressing; the Michigan is now drifting east and west from the 80 foot shaft, and is still taking out the rich native gold. The company has just put in a plant, consisting of a Huntington quartz mill, with crusher, rolls, amalgamating plates, all complete, and will start this week; the work underground is prosecuted night and day. At the Ropes mine everything is working in a satisfactory manner; the output for December will be the largest in the history of the mine; the bullion product yielding over $9,000, with returns from concentrates yet to come in. No change in price of stocks.

GOLD MINING STOCKS.

Name of Company	Par value.	Lowest.	High.
Grayling Gold & Silver Co.....	$25.00	$0.90	$1.00
Michigan Gold Co.....	25.00	2.50	3.50
Peninsula Gold & Silver Co....	25.00	.75	.90
Ropes Gold & Silver Co...	25.00	2.25	2.50

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co.....	$25.00	.....	$65.00
Aurora Iron Co.....	25 00	.....	8.00
Champion Iron Co.....	25 00	$100.00	110.00
Chandler Iron Co.....	25.00	44.00	45.00
Chapin Iron Mining Co.....	25.00	25.00	33.00
Chicago & Minn. Ore Co.....	100.00	115.00	130.00
Cleveland Iron Co.....	25.00	19.00	20.00
Germania.....	25.00	.....	11.00
Jackson Iron Co.....	25 00	110.00	125 00
Lake Superior Iron Co.....	25 00	62.00	66.00
Milwaukee Iron Co.....	25.00	6.00	8.00
Minnesota Iron Co.....	100.00	80.00	85 00
Montreal Iron Co.....	25.00	.....	11.00
Norrie (Metropolitan).....	25.00	62.00	65.00
Odanah Iron Co	25.00	.....	15.00
Pittsburg Lake Angeline Co..	25.00	165.00	175.00
Republic Iron Co.....	25.00	48.00	49.00

PIPE LINE CERTIFICATES.

(Specially Reported by Messrs. WATSON & GIBSON.)

The oil market this week has been stronger under the publication of a diminution of certificates by about 900,000 barrels for the month of December. The total exports of mineral oils for the year 1889 were 676,090,955 gallons, against 567,797,646 gallons in 1888.

We are inclined to the expectation that prices will be higher, not on any general speculation, but by reason of the exceptionally bullish conditions surrounding this commodity.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 11.....	105⅞	106	105⅛	105⅛	147,000
13.....	104¾	104¾	104⅜	104⅜	118,000
14.....	104⅛	105¼	104⅛	104⅜	170,000
15.....	104⅜	104⅞	104⅜	104⅞	100,000
16.....	104¾	106	104¾	105¼	427,000
17.....	105	105½	105	105½	157,000

Total sales in barrels.... 1,119,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 11.....	106¼	106¼	104¾	104¾	153,000
13.....	104¾	104⅞	104½	104⅞	103,000
14.....	104½	105⅝	104⅜	104¾	229,000
15.....	104½	105⅛	104½	105	110,000
16.....	104⅞	106	104⅞	105¼	265,000
17.....	105⅝	105¾	105	105½	109,000

Total sales in barrels..... ..... 969.000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 17.

Statistics.

Mr. John H. Jones, chief of the Bureau of Anthracite Coal Statistics, furnishes us the following statement of shipments of anthracite coal (approximated) for the week ending January 11th, 1890, compared with the same period last year:

Regions.	Jan. 11, 1890.	Jan. 12, 1889.	Difference.
Wyoming Region. Tons	209,688	316,834	Dec. 107,146
Lehigh Region ... "	106,756	152,877	Dec. 46,121
Schuylkill Region. "	179,460	195,228	Dec. 15,768
Total.....	495,904	664,939	Dec. 169,035
Total for year to date..	941,806	1,042,505	Dec. 100,699

PRODUCTION OF BITUMINOUS COAL for week ended January 11th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1890. Week.	1890. Year.	1889. Year.
Tons of 2,240 lbs.			
Phila. & Erie R.R.....	2,396	3,622	3,000
Cumberland, Md.....	*107,529	107,529	105,501
Barclay, Pa.....	1,500	2,500	7,000
Broad Top, Pa.....	12,058	18.5 5	20,728
Clearfield, Pa.....	82,663	154,680	136,145
Allegheny, Pa.....	16,357	34,502	38,078
Beach Creek, Pa.....	37,879	37,879	26,790
Pocahontas Flat Top.....	36,717	54,997	53,292
Kanawha, W. Va.....	32,100	62,100	24,770
Total.....	329,199	476,374	415,304

* For period of 10 days ending January 11th.

WESTERN SHIPMENTS.

Pittsburg, Pa	15,352	32,057	23,255
Westmoreland, Pa.....	31,710	51,025	64.233
Monongahela, Pa.....	4.360	9,770	6,949
Total.....	51,422	92,852	94,437
Grand total.....	380,621	569,226	509,741

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending January 11th, and year from January 1st, in tons of 2,000 lbs.: Week, 115,168 tons; year, 177,428 tons: to corresponding date in 1889, 182,501.

Anthracite.

"Peace and poverty" is the description a well-known coal seller applies to the existing condition of affairs. The trade is certainly very quiet, and probably coal can be obtained now at a less cost than that ruling a month ago, but there is little talk of "cutting," and in fact the whole question of prices is altogether too delicate for open discussion; the etiquette of the trade rules it out at present.

Another topic of interest and of no little importance which is discussed *sub rosa* is the probable attitude of the Philadelphia & Reading Railroad Company this year. The impression still obtains in some quarters that the Reading Company took the Manhattan Elevated Railway contract at a material reduction from last year's figures, it is also pointed out that the same company took the Philadelphia Water Works contract for 66,250 tons of pea coal this week at $2.03, whereas the Lehigh Coal and Navigation Company, which had the contract last year at $2.35, bid $2.32. It is furthermore stated that Mr. Corbin's representatives or intermediaries have within the week sold 15,000 tons of stove coal at $4.15 delivered at Bridgeport, Conn., equivalent to about $3.65 f.o.b. New York.

Against these statements are arrayed the assertions that the price at which the Manhattan contract was taken was approximately the same as last year; that the capture of the Philadelphia contract, even at $2.03, was an evidence of good business judgment, and finally that it is extremely improbable that the Reading management, with the company in its present financial condition, would be so short-sighted and foolhardy as to deliberately enter upon a policy of aggresion which would inevitably depress values, bring about fierce competition, and end in disaster to the company itself.

There has also been some talk as to the attitude of the Lehigh Valley Company on account of the Manhattan contract episode. Fears have been expressed that the 200,000 tons of broken coal which the company has for several years past reserved for this elevated railway contract, if thrown on the open market this year, may cause some weakening of prices.

These are the tales with which the monotony of a dull market is enlivened. That these apprehensions of trouble may be verified by subsequent events is improbable. The interests involved in the coal trade are immense, and the losses brought on by open antagonisms and a depression of prices are altogether too large to be lightly incurred. Each year, fears of a more or less sensational character are always entertained but rarely amount to much.

No one knows when the next meeting of sales agents is to be held. Before attempting to improve the condition of trade, many doubtless believe that the task of reforming human nature must be begun. It is a waste of time to make plans which will not be adhered to. Production is being severely restricted, however. As will be seen by the official statement above, the output in all the regions last week showed a decrease.

Broken, pea, and buckwheat sizes continue scarce.

A correspondent sends us the following interesting table of prices paid by the Elevated Railroad for anthracite broken coal from 1873 to 1890, inclusive.

In 1878 the average price of Cross Creek coal sold Elevated Railroad during the year was $3.88 f.o.b. at Port Johnston.

1879 was a year of very low prices, and the Cross Creek coal ranged from $2.29 to $3.20, or an average of $2.66 f.o.b. to the Elevated Railroad.

In 1880 the price of Cross Creek ranged from $3.20 to $4.25, or an average of $4 f.o.b.

1880	Cross Creek Coal.....	$4.25 along
1881	Lehigh & Wilkesbarre took contract at..	4.25
1882	" " " ..	4.00
1883	" " " ..	4.00
1884	" " " ..	4.00
	Total, 5 years.....	$20.50
	Or an average for the five years of.....	4.10
	Less freight, wastage and insurance.....	.25 pr ton
	Total f.o.b. at Port Johnston for 5 years....	$3.85

In 1885 the Lehigh Valley got the contract at $3.06 alongside, or 94 cents less per ton than the Lehigh & W. B. Company's offer of $4 alongside.

1885	.....	$3.06 alongside.
1886	.....	3.40 (approx.)
1887	.....	3.45
1888	.....	3.45
1889	.....	3.65
		$17.01
	Or an average for the five years of....	3.40
	Less.....	.25 per ton for
	Freight, wastage and insurance, leaving.....	$3.15 f.o.b.

In January, 1890, it was currently reported that the Reading Coal and Iron Company secured the contract at about $3.50 alongside, or equal to $3.25 f.o.b. at Amboy or Port Johnston.

Mr. John H. Jones, Chief of Bureau of Anthracite Coal Statistics, furnishes the following statement of anthracite coal production for the month of December, 1889, compared with the same period of 1888, compiled from returns furnished by the mine operators:

	Dec., 1889.	Dec., 1888.	Difference.
From Wyoming Region	1,392,029	1,524,578	Dec. 132,548
From Lehigh Region...	482,664	519,174	Dec. 36,510
From Schuylkill Region	861,040	660,169	Inc. 200,871
Total tons.....	2,735,734	2,703,923	Inc. 31,811

	Year, 1889.	Year, 1888.	Difference.
From Wyoming Region	18,647,925	21,852,365	Dec. 3,204,440
From Lehigh Region...	6,285,420	5,639,236	Inc. 646,184
From Schuykill Region	10,474,364	10,654,116	Dec. 179,752
Total tons.....	35,407,710	38,145,718	Dec. 2,738,0.7

The stock of coal on hand at the tidewater shipping points December 31st, 1889, was 1,026,107 tons; on November 30th, 1889, 771,334 tons; increase, 254,773 tons. The amount on hand December 31st, 1888, was 652,156 tons. Of the total production in 1889, 52·67 per cent. was from the Wyoming region, 17·75 per cent. from the Lehigh region, and 29·58 per cent. from the Schuylkill region. Eastern competitive tonnage, including all coal which for final consumption or in transit reaches any point on Hudson River or the Bay of New York, or which passes out of the capes of the Delaware: 1888, 13,657,604 tons; 1889, 12,217,862 tons.

Bituminous.

A seasonable steadiness is noticeable in the soft coal trade. Deliveries are being made regularly on contracts, many of which do not expire until March 1st. New business outside of contracts, of course, does not amount to much, and so far as can be learned, no contracts for 1890 have been placed. Cars as a rule seem to be in better supply than they were some weeks ago.

There has also been a slight weakness in vessel freights. Quotations which have been standing for some time at $1.60 from Baltimore to Boston, and $1.40 from Philadelphia to the same port, have now been shaded about five cents in some instances during the week.

The committee in charge of the combination scheme held a meeting in Philadelphia yesterday, but as yet it has not been learned in this city that any action of importance was taken.

Boston. Jan. 16.

(From our Special Correspondent.)

The anthracite coal market at this port is in the dumps again. There is no backbone to this winter, and two consecutive cold days is the utmost limit. Everything is very quiet indeed. A jobber who has been making a tour through some of the smaller New England cities reports the trade flat and dealers dispirited. Of course the market must weaken under this sort of thing. Prices are not quotably lower as dealers get them here, but retailers can place orders at their own figures and for almost any kind of coal. F. o. b. prices are not being offered down, because it would do no good; but the man who is willing to take on a cargo and is not too anxious about it can select his sellers and name his terms, so I should call the market materially, if not quotably, easier on a basis of $4 f. o. b. at New York for stove coal. Small steam sizes of anthracite are alone reasonably well sold up.

The bituminous coal situation is unchanged. For a week or ten days soft coal came along quite freely, and it was hoped that the worst was over; but there is the old trouble at Baltimore again of no coal coming down from the mines, and vessels are subject to indefinite delay. Everyone has been so busy keeping contracts filled that there has been almost no talk about a pool for next year. Some jobbers have cast one eye over the local field, however, and in just about a month hence the early contracts for 1890-91 will begin to be heard from. There is mill-treasurer trade here in Boston, within a stone's throw of the Kilby street coal district, to the amount of 150,000 tons, and this trade is usually "sounded" early. The present state of the market is one of firmness, at say $2.60 f. o. b. The freight situation is unchanged. At New York the rate is almost nominal, there is so little to come forward, and captains quote from 80 to 85 and 90 cents, with, perhaps, a lower rate where it is desired to come East for a cargo. Philadelphia rate is still about $1.50, and Baltimore $1.60.

Retail trade is hard. Teams are not half employed. Thermometer was 52 above this morning, and the middle of January at that!

I hear that Wait & Clark have given up their agency here for Elk Garden bituminous and have taken the agency for a Clearfield coal to ship from New York and Philadelphia. It is said that their new connections will enable them to handle larger contracts to better advantage, and I imagine, also, that they will be glad to get rid of shipping from Baltimore.

Receipts for the week have been 13,932 tons anthracite and 7,012 tons bituminous against 13,488 tons antracite and 35,484 tons bituminous for same week of 1889. Since January 1st receipts have been: 33,046 tons anthracite and 13,746 tons bituminous.

Buffalo. Jan. 16.

(From our Special Correspondent.)

Parties engaged in the coal trade are hopeful that the present year's business will be good and profitable. They do not give any special reasons, except "that they feel it in their bones." There is no special news to report, and if there is one subject more than another less open to imaginative paragraphs, it is the product of the mines yclept "coal," when spoken of as a matter of trade and commerce. Strikes, discontented miners and hungry families, and the curtailing of production in the coal regions are topics of daily newspaper items, and to repeat the stories would be tiresome and unprofitable to your readers as well as to your correspondent.

Mr. Edgar Van Etten, the manager of the Car Service Association, has offices in the Coal & Iron Exchange of this city.

The Western division of the Erie Railroad consumes 400 tons of soft coal daily for its locomotives, etc.

The lake carriers, through their association, have worked well during the past year in looking after navigation interests of the great lakes. It is the intention to immediately appoint a secretary, who has not only legal knowledge, but who must be a man conversant with men and methods of reaching legislation in Washington, as well as being

familiar with all matters appertaining to navigation, and acquainted with some of the principal vessel owners and others interested at the principal ports on Lakes Erie, Huron, Michigan, Superior, etc.

The annual election of the Buffalo Coal Exchange took place a few days since. Thomas Hodgson was elected president, James Ash and Adam Schell, vice-presidents; C. M. Underhill, treasurer; C. D. R. Stowitz, secretary and executive chairman; also, J. J. McWilliams, H. M. Smith, T. Guilford Smith, J. H. Horton, Henry Zipp, Joseph E. Batcheler, James Hanrahan, H. E. Smith and R. Humphrey—a pretty good representation of the Smith's.

There are no changes to note in quotations. Business continues dull for anthracite and quiet for bituminous coal, while coke is being sold in the average steady quantity week by week.

Connellsville coke is quoted, per 2,000 pounds, in car lots at Buffalo, at $4.30 for foundry and $4.80 for crushed. These prices will continue during January.

Last Monday opened with a wind blowing 36 miles per hour; at 9 o'clock, 90 to 94 miles was reached for a few minutes; at noon the velocity had decreased to 60, and at 4 P. M. to 46 miles. How is that for a Buffalo zephyr?

Pittsburg. Jan. 16.

(From our Special Correspondent.)

Coal.—Trade dull, with more sellers than buyers. All our rivers in good navigable order, and, from present indications, will remain so for some time. We have rain fully two-thirds of the time. A portion of the miners are at work. Price of mining, 1, 2 and 3 pools, 3 cents; in fourth pool, 2½ cents. Shipments for the week, about 3,000,000 bushels.

PRICE OF COAL PER 100 BUSHELS = 7,600 LBS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.50	Railroad coal	5.00@5.50
Third pool	3.90		

Connellsville Coke.—Market firm with a good export demand. Prices remain at $175. Week's production, 120,004 tons; output about the same. Stock of coke on hand, about 63,000 tons. Active ovens, 13,636; idle, 825. A number of new ovens are being fired, amounting to 120. Shipments aggregate 6,625 cars, against 6,845 preceding month; deficiency, 220 cars.

Quoted rates are: Furnace, f. o. b., $1.75; foundry, $2.05: crushed, $2.55.

Freights.—Shipments, 70c.; Mahoning and Shenango valleys, $1.35; St. Louis, $3.65; Chicago, $2.75: Cleveland, $1.70.

FREIGHTS.

From Baltimore to: Boston, Mass., 1.60; Charleston, .80; Fall River, 1.40; Galveston, 2.75@3.00; New Bedford, 1.40; New Haven, 1.40; New London, 1.40; New York, N. Y., 1.10; Norfolk, Va., .60@.65; Portland, 1.60; Portsmouth, N. H., 1.60; Providence, 1.40; Richmond, Va., .70; Salem, Mass., 1.60; Savannah, 1.00; Somerset, 1.40; Williamsburgh, N. Y., 1.10.

* And discharging. † Alongside. ‡ And towage.

METAL MARKET.

NEW YORK, Friday Evening, Jan. 17.

Prices of silver per ounce troy.

Jan.	Sterling Exch'ge	Lond'n Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
11	4.85¾	44⅜	96¼	15	4.85⅛	44⅝	97
13	4.85¾	44⅜	96½	16	4.85⅛	44¾	97⅛
14	4.85½	44⅜	96½	17	4.85½	44⅞	97⅜

Council Bills advanced 1/10d. per rupee this week.

Silver has been very strong and steadily advancing on good demand for India and the English mint.

Rates for money continue very high in India and London, but the balance of trade remains largely in favor of India, and Indian Council Bills being overdrawn for the year, silver is needed for remittances.

Action by Congress is also closely watched in London, and would decidedly affect the silver market.

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting made no change in its minimum rate for discount, and it remains at six per cent. During the week the bank gained £513,000 bullion, and the proportion of its reserve to its liabilities was raised from 30·64 to 35·29 per cent., against an increase from 38·90 to 41·70 per cent. in the same week of last year, when its rate for discount was four per cent. The Bank on Thursday gained £9,000 bullion on balance. The weekly statement of the Bank of France shows a decrease of 3,600,000 francs gold and an increase of 975,000 francs silver.

Domestic and Foreign Coin.

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

	Bid.	Asked
Trade dollars	$ .76	$ —
Mexican dollars	.76½	.77½
Peruvian soles and Chilian pesos	.72	.73½
English silver	4.83	4.88
Five francs	.94	.95
Victoria sovereigns	4.85	4.88
Twenty francs	3.85	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.82	4.87
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

Copper.—Demand slackened somewhat during the week and the tone is quieter, but prices are fully maintained and deliveries are still going on at a much larger rate than in former years at this season. We have to report no alteration in prices, and quote Lake at 14¾@15c., Arizona copper, 13½@13¾c., and casting brands at 13@13½c.

We are cabled from London that the visible supplies for the first fortnight in January have decreased 1,800 tons.

In spite of this the market for Chili bars and G. M. B.'s has further declined and closes at the lowest point reached, namely, £50 spot and £50 5s. @£50 10s. three months. We quote English tough, £53@£56 10s.; best selected, £58@£58 10s.; strong sheets, £66@£67; India sheets, £60@£62; yellow metal, 6d. per pound.

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

To Liverpool—	Copper Matte.	Lbs.	
By S. S. City of Chicago	216 bbls.	224,081	$10,000
To Hamburg—			
By S. S. Dania	1,290 bags	140,872	10,000
By S. S. Marsala	7,598 "	908,335	33,000
By S. S. Dania	18 bars bullion	615	1,600

Tin.—The market has shown great activity and, in sympathy with London, prices have further given way, remaining steady at about ¼ to ⅜ of a cent below the parity of the foreign markets.

About 400 tons changed hands at prices ranging from 20·45 to 20·50 for spot and about 10 points higher for futures, with a decidedly firmer tendency in the last few days. The closing quotations are: Spot, 20·60; February, 20·60; March, 20·65; April, 20·65.

In London the market has been very flat on heavy shipments from the East, in the first week of the month, amounting to about 1,500 tons, in the second week about 600 tons, and it is expected that shipments will continue heavy during this and next month. Prices opened on Monday at £95@£95 5s. for spot, and five shillings higher for futures, gradually coming down to £94@£94 2s. 6d. spot, and £94 15s.@£95 for futures.

Lead continues to drag along, and very little business has taken place. There were sellers at 3·85, at which price a few hundred tons changed hands, and more can be had at the same figure. A more lively demand is expected shortly, however, as consumers have not been buying lately.

The St. Louis Market.—John Wahl & Co. telegraph us as follows: Lead, since our last report, has been in a state of dullness. Transactions were the lightest on record for several weeks past. Sellers of both common and argentiferous lead have offered the metal with reasonable freedom, and at the close values are practically lower. Common is obtainable at 3·57½c. and corroding at 3·60c.

The Chicago Market.—Messrs. Everett and Post, of Chicago, telegraph us as follows to-day: Lead has ruled active in Chicago during the week. At first, prices were very firm. Latterly, owing to weakness in St. Louis and elsewhere, values are a shade lower. Altogether, over 1,500 tons changed hands at 3·70@3·67½c. Market closes fairly at 3·67½c. asked.

Spelter holds very firm with a scarcity of metal, and we have to quote prime Western at 5·45 to 5·50 delivered in New York. No foreign spelter can be imported below 7¼@7⅜, and a continued scarcity of spot and near delivery spelter is also reported from Europe. The London quotations are: Ordinaries, £24 5s.@£24 10s.; specials, £24 10s.@£24 15s. Sheet zinc is quoted at £26 5s.@£26 10s.

Antimony.—There has been a good and steady demand throughout the week, with Hallett's selling at 20¼ to 20½, while for Cookson's 30 to 31 cents was bid, and both brands continue very scarce.

Quicksilver.—Market continues quiet at £9 15s. in London, $49.50@$50 in New York, and 67c. per pound in this city.

Nickel.—From 75@80c. per pound are still the nominal quotations. The importations of nickel at this port in 1889 aggregated 289,776 tons against 237,581 tons in 1888.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 17.

Pig Iron.—Except among those who deluded themselves with the belief that a great boon in pig iron was to be inaugurated with 1890, there is no disappointment in the quietness which is now ruling in this market and, in fact, throughout the country. Business in pig iron in November and December was unusually large and orders were booked for all the early months in this year. Thus the wants of consumers were contracted for and furnaces were supplied with orders for time ahead. The apparent lack of activity at present is, therefor, only to be expected. Consumption has not yet so largely exceeded our productive capacity that pig iron can be sold at an advance day after day or week after week, and well posted members of the trade fully realize that while the market is on a substantial basis of firmness, there is little reason to expect for the present any decided change in selling prices.

Some of those foundrymen who bought their iron a few months ago at $18 and $19, now very greatly desire an advance in crude iron to afford them a justification for raising the prices of their manufactured products.

Statistics of blast furnace production show that there were in blast on January 1st, 333 furnaces with an aggregate weekly capacity of 174,038 tons against 328 with a weekly capacity of 169,151 tons on December 1st, 1889; or, in other words, we were producing on January 1st about 5,000 per week more than on December 1st. On January 1st, 1889, there were 331 furnaces in blast.

Scotch Pig.—Glasgow cables report that speculators in pig iron warrants began to realize for a few days this week, and consequently caused a weakening of values. Cable quotations to the Metal Exchange to-day were 60s. 11d. for Glasgow warrants. Nail advices from Scotland, dated January 3d, report 87 furnaces in blast in Scotland, 103 in Middlesbrough and 56 in Cumberland, a considerable increase over the number in blast on the corresponding date in 1889. The following valuable statistics of pig iron are also furnished.

TOTAL SHIPMENTS OF YEAR TO DECEMBER 29TH.

	1889.	1888.
Scotland	432,747	420,337
Middlesbrough	958,457	932,894
Cumberland	502,267	429,620

STOCKS OF IRON IN PUBLIC STORES.

	January, 1890.	January, 1889.
Scotland	937,041	1,031,848
Cleveland	182,529	250,720
Cumberland	379,714	.....

The inquiry for Scotch pig in New York is still very limited. Quotations for Scotch brands are therefore purely nominal.

Makers of Ohio Scotch now quote $23 per ton, an advance over previous figures. Deliveries are now said to be made with greater regularity and freedom than heretofore.

Spiegeleisen and Ferro-Manganese.—There is nothing doing in spiegeleisen and ferro-manganese at present. Quotations are somewhat easier for the latter article. For spiegeleisen, 20 per cent., $37 to $38 is still quoted. Asking prices for ferro-manganese, 80 per cent., range from $95 to $100.

Steel Rails.—The new year thus far has brought very little business in steel rails, and there is not quite as firm a feeling of confidence in this market as there is in the market for crude iron, nor is there reason for it. Judging from the condition of the railway share market at present, the year is not a particulary promising one for new railway enterprises. However, the increased cost of crude material and the firmness of other branches of the trade will strengthen the rail market, and possibly when the manipulation of the money market ceases and investors recover from the losses they have encountered in dabbling in "unlisted securities," new railway projects may prove more plentiful than at present anticipated. Most of the railroads of the country have enjoyed a very prosperous year on account of the great commercial activity and pressure of freight traffic, and earnings have been large enough to permit of a liberal policy in the way of extensions and repairs.

At the moment, however, the mills naturally desire to book enough business to strengthen their position later on, and a desirable purchaser with a large contract in hand could probably obtain concessions on the ruling asking price of $35 at mill.

Structural Iron and Steel.—The Keystone Bridge Company, of Pittsburg, is reported to have secured a Chicago contract for elevated railroad work, requiring 8,000 tons of material.

The latest asking prices are as follows:

Delivered on wharf, bridge plate, 2·30c.; iron angles, 2·30c.; iron tees, 2·80@2·85c.; steel angles, 2·70c.; beams and channels on wharf, 3·1c.

Steel plates on wharf: Tank and ship, 2·75c.; shell, 3c.; flange, 3·25c.; fire-box, 4@4·1c.

Iron plates on wharf: Common tank, 2·35c.; refined, 2·45c; shell, 2·6c.; flange, 3·5@3·7c.; extra flange, 3¾@4c.

Bar iron at mill is quoted at 1·8@1·9c. for common and 1·9@2c. for refined. Deliveries from store are quoted as follows: Common, 2·1c. base; refined, 2·3c. base; "Ulster," 3c. base; Norway bars, 4c.; shapes, 5c., and Norway nail rods, 5½c.

Merchant Steel.—Prices are as follows: Best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3⅜c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.

Pipes and Tubes.—Rates of discount on wrought-iron pipe remain as follows: Butt welded, plain and tarred, 50 per cent. discount; galvanized, 42½ per cent. discount; lap-welded, plain and tarred, 62½ per cent. discount; galvan-

ized, 50 per cent. discount. A discount of 55 per cent. is allowed on boiler tubes of 2 inches and larger, and 50 per cent. on 1¾ inches and smaller.

Cast-iron pipes remain at $25@$28, according to size.

Rail Fastenings.—Asking prices are as follows; Spikes, 2·25c.; angle fish plates, 2·15@2·25c.; bolts and square nuts, 3c.; hex. nut, 3·25c.

Old Material.—A sale of old iron tee rails on board cars at Jersey City is said to have been made at $29, but the general range is not above $28@$28.50. Inquiry at present is light. There has been no increase of importance of the amount of rails on hand. It is estimated by a well-known holder of rails that the total amount available in this vicinity is about 8,000 tons of old tees, and 3,500 tons of double-heads. For No. 1 scrap iron $24 is quoted.

Louisville. Jan. 14, 1890.

(Special report by Messrs. HALL BROS. & CO.)

The same general conditions still prevail. Trades are more numerous, but not in any larger quantities. Deliveries are mainly for the near future. The demand has been about evenly divided between foundry and mill grades. Sales are reported in scattered instances at concessions; all such offerings are promptly taken. There is no quotable change in general prices.

Hot Blast Foundry Irons.

Southern Coke	No. 1	$19 00@ 19.50.
" "	No. 2	18.75@ 19.00.
" "	No. 3	18 00@ 18.75
Mahoning Valley, Lake ore mixture		20.00
Southern Charcoal	No. 1	18.50@ 19.00.
" "	No 2	18.00@ 18.50.
Missouri "	No. 1	19.50@ 20.00.
" "	No. 2	19.00@ 19.50.

Forge Irons.

Neutral Coke	17.50@ 18.00.
Cold Short	16.75@ 17.00.
Mottled	15.50@ 16.00.

Car Wheel and Malleable Irons.

Southern (standard brands)	23.50@ 24.50.
" (other brands)	15.50@ 20.50.
Lake Superior	23.00@ 23.50.

Philadelphia. Jan. 16.

(From our Special Correspondent.)

Pig Iron.—In order to understand the spirit of the eastern Pennsylvania iron market this week, it is necessary to keep in mind the fact that a very large amount of material was contracted for in December for forward delivery. It would be very interesting to know just how far the contracts now in the hands of furnace men will absorb the output for the future. The only buyers this week have been users of foundry irons, and they are purchasing in a very cautious way, and refusing to pay outside prices, if "shopping" around will enable them to obtain commoner irons at concessions. All of the good makes of No. 1 foundry are held firmly at $20, and some few at $20.50; but these outside quotations are mostly made by parties who either have no iron to sell, or who do not desire to sell any which they may be able to deliver within sixty days. No. 2 iron has showed unexpected strength, and $19.50 has been promptly paid for several round lots. Several parties are now quoting $18.50 for forge, but we do not hear of sales at that figure; $18 is given for good brands. Furnace people say there will be a heavy demand throughout the winter, and this opinion is concurred in by buyers.

Foreign Material.—Brokers are asking a good deal more money than buyers have paid or are willing to pay. Business might be done at $37 for spiegel, but some parties are asking $38.

Muck Bars.—Two or three makers are holding muck bars at $32, but the iron is first class. There are a good many buyers in the market, but none of them are likely to place contracts at this figure.

Billets and Blooms.—Some manufacturers of billets, who are pretty well oversold, have put prices up to $39, not expecting to get that figure, but merely to strengthen the market. Prices are advancing, and manufacturers show no anxiety to sell. Some makes, the best, of course, are $54@$56. Charcoal blooms are $55; anthracite are selling steadily at $44; scrap, $34 for ordinary, but some few makers are asking $1.50 more.

Merchant Iron.—The larger consumers of merchant bar are out of the market, and only the smaller users are buying, and they are looking around, as though in the expectation of concessions. The mill men all through the State talk very confidently of an advance in price, and some of them expect to be selling at 2·10 before 30 days have passed. There is no reason apparent on the surface at present why this advance should occur. All the mills are running full time, but a number of them are not as well loaded up with orders as they would like.

Skelp Iron.—Between two and three thousand tons of skelp sold this week at 1·90@1·95 for grooved and 2·1 for sheared.

Wrought Iron Pipes and Tubes.—The most active demand this week is for tubes, and several very fair sales have been made. Pipes are strong.

Nails.—Two or three nail makers have sold iron nails at $2.10, but deny that this is a concession or drop. Steel nails are strong at $2.40.

Sheet Iron.—The larger buyers of sheet iron have not been heard from as yet, and one or two parties who have made inquiries, decline to place orders, believing that, from the way in which manufacturers are rushing work, there will soon be such an accumulation of stocks as will weaken prices. At present, however, card rates are firm.

Plate and Tank Iron.—The extraordinary plate iron capacity of the mills in this State is helping manufacturers to dispose of accumulated business very rapidly. As yet, there is no change in quotations, and perhaps it would be doing an injustice to manufacturers to say that any concessions are likely to be made or offered; at the same time, certain large buyers have given it out that they will be accommodated with better terms than are openly offered at present. To-day's quotations for iron tank are 2·35; steel, 2·70; shell, 2·60 and 3c., respectively; flange, 3·25 for both iron and steel; fire box, 3·75.

Structural Iron.—The structural iron makers expect large specifications from the bridge builders within 10 days. So far as quotations have been given, they are firm at 2·35 for bridge plate, 2·30 for angles, 2·80 for tees, and 3·10 for beams and channels.

Steel Rails.—There would be no difficulty in selling large blocks of steel rails if $1 were taken from present bottom prices; but there is not much probability of a drop at present. The mills are oversold, and while so situated, the managers will not announce any weakness in the markets by cuts. Quotations, $35 to $36, according to size of order.

Old Rails.—It is impossible to get at the facts about old rails; there are so many buyers in the market and so few rails to sell, that the prices paid by those parties who think they must have supplies can hardly be regarded as legitimate. We are promised some large lots before the close of the month, but there is some uncertainty about their receipt.

Scrap Iron.—No. 1 scrap has sold as high as $26 this week, but this is an extreme figure. Machinery scrap is $15; wrought turnings, $16; cast borings, $11.

Pittsburg. Jan. 16.

(From our Special Correspondent.)

Raw Iron.—During the past week the demand was less active and prices were a shade weaker, which means that buyers evidently have the advantage; but, at the same time, sellers say they can wait and are making no attempt to force business. Their sales for months past have beat all records, and their ledger shows a balance on the right side, so that they can afford to wait their turn. The possibility of lower prices for certain descriptions is recognized in some quarters, while others contend that any decline that may occur will only be temporary, as the present rate of consumption will soon bring buyers in the market for fresh supplies. Furnacemen, as a general thing, are well supplied with orders, many of them extending far into the spring months. It will take considerable talk to convince them that prices are on the down grade. There is another element that will influence the price of iron from this time forward—we mean the coke question; the new scale presented by the coke workers asks for a very large advance all round, and is so complicated that no one, as yet, has been able to find out just what is required. The coke men insist that the scale in its present shape will never be signed. Meetings for consultation will be held, and the result will be anxiously looked for.

Coke ovens are being built in various directions, east, west, north and south. The Connellsville region has pretty much a monopoly of the coke trade; the maintenance of the same will depend on the prices of coke; the workers can retain the trade in that region, or send it away.

While the future is full of promise for an abundance of work, manufacturers are pursuing a rather conservative policy, believing that the output of the mills and furnaces, under increased activity, will protect them against anything like a speculative advance.

Foreign markets continue very strong, and business in bessemer, pig, Scotch pig, Cleveland pig, Spiegeleisen and steel rails has been very active for this season of the year.

Coal and Coke Smelted Lake Ore.

3,000 Tons Bessemer City Furnace	$24.00 cash.
2,000 Tons Bessemer	24 25 cash.
2,000 Tons Bessemer Valley Furnace, February, March, April, May	24.25 cash.
1,500 Tons Bessemer, January	24.50 cash.
1,500 Tons Bessemer	24.35 cash.
1,500 Tons Bessemer Valley Furnace, April, May	24.00 cash.
1,000 Tons No. 1 Foundry, March, April	20.50 cash.
1,000 Tons Bessemer Standard	24 50 cash.
1,000 Tons Off Bessemer	21.50 cash
1,000 Tons Bessemer	23.80 cash.
600 Tons Off Bessemer	22.00 cash.
200 Tons No. 1 Foundry	19.75 cash
200 Tons No. 2 Foundry	19.00 cash.

Coke, Native Ore.

300 Tons Gray Forge	18.50 cash.
100 Tons No. 2 Foundry	19.00 cash.
50 Tons No. 1 Foundry	20.00 cash.

Charcoal.

200 Tons No. 2 Hot Blast	22.00 cash.
100 Tons Cold Blast	29.25 cash.
50 Tons Cold Blast	26.50 cash.
50 Tons No. 1 Foundry	23.25 cash

Muck Bar.

750 Tons Neutral, January-February	30.50 cash.
500 Tons Neutral	31.00 cash.
500 Tons January	31.00 cash.

Steel Slabs and Billets.

3,000 Tons Steel Billets	37.00 cash.
1,000 Tons Steel Slabs	37.00 cash.
1,000 Tons Billets	37.00 cash.
1,000 Tons Billets	36.00 cash.
600 Tons Billets	36.00 cash.

Steel Wire Rods.

500 Tons Steel Wire Rods, Fives	51.50 cash.
300 Tons Steel Wire Rods, Fives	51.50 cash.

New Steel Rails.

5,000 Tons, February	35 00 cash.

Spiegel.

150 Tons 10 to 12 per cent	35.00 cash.
50 Tons 20 per cent	41.00 cash.

Bloom Ends.

1,000 Tons Bloom Ends	26.00 cash.
300 Tons Bloom Ends	26.00 cash

Skelp Iron.

300 Tons Sheared Iron	2.20	4 mo.
200 Tons Wide Grooved	1.90	4 mo.
150 Tons Narrow Grooved	1.87½	4 mo.

Ferro-Manganese.

200 Tons 80 per cent	101.00 cash.
200 Tons 80 per cent	101.00 cash.
100 Tons 80 per cent	105.00 cash.

Old Iron and Steel Rails.

1,000 Tons American Ts	29.00 cash.
800 Tons American Ts	28.00 cash.
600 Tons Old Steel Rails	24.00 cash.

Prices.

Coke or Bituminous Pig—		20% Spiegel at seaboard	36.00@38.00
Foundry No. 1	$20.00@20.25	Muck-Bar	30.00@31.00
Foundry No. 2	19.00@19.25	Steel Blooms	36.00@37.00
Gray F. No. 3	18.00@18.50	Steel Slabs	36.00@37.00
" No. 4	@17.50	Steel Cr'p Ends	25.00@26.00
White	17.00@17.25	Steel Bl. Ends	25.00@26.00
Mottled	17.00@17.25	Ferro-Man., 80%	101.00@105.00
Silvery	18.25@21.00	Steel Billets	36.50@37.00
Bessemer	24.00@24.50	Old Iron Rails	28.00@28.50
Low Phos	@28.00	Old Steel Rails	23.00@24.00
Charcoal Pig—		No. 1 W. Scrap	22.00@23.00
Foundry No. 1	23.50@24.50	No. 2 W. Scrap	@19.00
Foundry No. 2	22.00@22.25	Steel Rails	@35.00
Cold-Blast	25.00@28.00	" light sec	35.00@38.00
Warm Blast	24.00@25.00	Bar Iron, nom	1.90@ 1.95
10 + 12% Spiegel at seaboard	30.00@32.00	Iron Nails	2.50@ 2.30
		Steel Nails	2.50@ 2.30
		Wire Nails	2.90@3.00

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 17.

Heavy Chemicals.—Caustic soda has been strong in the heavy chemical market this week. The fact has been developed that stocks in Liverpool as well as here are very light. One firm here was able to secure all the supply available for New York delivery within the next ten days. It seems that a number of the English makers, taking a rather pessimistic view of the future, and realizing the necessity of prompt and vigorous action, have restricted production temporarily. This has brought about a scarcity of supplies. On the other hand, consumers on this side of the water have bought it only from hand to month, counting upon a continued weakness in the market. At the first signs of an advance this week they rushed in to secure supplies, thus affording another demonstration of the fact that a rising market will always stimulate demand. The higher tests have advanced proportionately more than has 60 per cent., for which $2.60 to $2.65 is now quoted, an advance of 5½c. per 100 pounds over last week. Asking prices for the higher tests, 70 and 74 per cent., have risen about 5c. to 10c. per 100 pounds or to $2.50@$2.55.

The alkali market continues very firm. All interest now hinges upon the bottle-makers' strike. A convention of the employers was held in Washington this week, in consequence of which a request was forwarded to the Western Association of makers asking them to suspend operations for awhile. This, it is thought, will be a decisive blow to the striking employés in the East, who have been receiving support during the long strike from the earnings of their brethren in the West, where there has been less interruption of work. When support from this quarter is cut off, it is supposed that the strike will come to a speedy end, and work will be resumed in both sections of the country. This will probably occasion a large demand for alkali and soda ash and will probably have the effect of still further advancing the market. Carbonated soda ash, 48 per cent., is quoted at $1.40@$1.50, and refined alkali, 58 per cent., $1.27½@$1.37½. The supply of both articles on the spot is light.

Bleaching powder still continues weak in this market, but the tenor of foreign advices is strong. Makers from sheer desperation have evidently come to the conclusion that prices must be advanced, and on the theory of "where there is a will, there is a way," local importers are expecting that higher prices will prevail. In the absence of any actual business during the week it is impossible to give exact quotations, but nominally $1.50 is still asked.

Hyposulphite of soda is quoted at $1.50 per 100 in casks and $1.60 in kegs.

Acids.—The principal topic of interest in the acid trade at present is the question of levying a duty on all importations of acid into this country. There are acid works located in Canada that for some time past have been growing in importance as competitors to Eastern acid works. It is said that owing to a discrimination in freight rates, acid can be delivered from these Canadian works to Providence consumers as cheaply as from Con-

necticut factories. Other advantages which the Canadian manufacturers are said to possess in the way of less cost of manufacture, arising from having pyrites deposits of their own, cheaper labor, fuel, etc., are claimed to place them on a very advantageous basis. Last spring it was foreseen by some of the clearer heads in the local trade that these works would eventually affect seriously the Eastern and Northern markets for acid, and an effort was made then to have Congress levy a duty upon acids. As will be remembered, we discussed the matter quite fully at that time in these columns. Congress, however, adjourned before any definite action could be taken, and, in fact, many of the local manufacturers were rather indifferent, believing that the importations of acid were very light, and would be, and that the tariff committee of the National Association of the Manufacturing Chemists was, at all events, the proper channel through which to direct any efforts toward tariff legislation. Since last spring, however, the competition, which was apprehended then by some, has made itself felt, and it has also been demonstrated that the tariff committee of the National Association has not been fully alive to the interests of the acid trade in this section of the country. When the Ways and Means Committee of Congress resumed its hearings on the tariff question in Washington a few weeks ago, a representative of the National Association appeared before the Congressional committee; and, it is said, asked that no changes be made in the present tariff on acids. This, of course, stirred the local manufacturers to action, and immediately one of the members of the New York Chemical Club went to Washington, and on Friday last obtained a hearing, which it is thought will result in a levying of a duty as the trade desires. Inasmuch as there is a duty at present on all acid imported into Canada of half a cent a pound, including a duty also on package, and as American manufacturers are thus shut out from all Canadian trade which previously they had enjoyed to a large extent, it seems only fair that a similar protection should be afforded to American manufacturers.

Business offices for the Knickerbocker Chemical Company have not been selected as yet, but such matters of detail as this will probably be perfected before long. It has been suggested that the Knickerbocker Chemical Company engage in the purchasing of raw material and deliver it at very nearly cost to the manufacturers who are interested in the combination. This will enable them to take advantage of the occasional depressions in the brimstone and other raw material markets, and will also save brokerage and intermediary profits.

The usual January quietness now prevails in the trade, but a feeling of confidence is generally noticeable.

Fertilizing Chemicals.—The annual meeting of the New York Fertilizer Exchange, which was to have been held at the office of the president on Monday, was postponed owing to the illness and absence from town of a number of prominent members.

Trade has been very dull during the week. The unseasonableness of the weather does not increase the confidence of fertilizer manufacturers as to the outlook for the spring season, and this, together with the uncertainty as to whether ammoniacal material has really touched bottom or not, creates a feeling of reluctance to close such business at present. Ruling prices are as follows: Azotine, $2.05; dried blood, low grade, $2.00; high grade, $2.15. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $20.50@$21 per ton, and low grade, 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $20@$20.50. Fish scrap, $21.50@$22 per ton, f.o.b. factory. Sulphate of ammonia at $3.15@$3.20 per cwt. Concentrated tankage, $2@$2.05. Refuse bone black, guaranteed 70 per cent. phosphate, $20 per ton. Dissolved bone-black is 90@92½c. per unit for available phosphoric acid, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $5.75 per ton; kiln dried, $6.75@$7 per ton, both f.o.b. vessels at the mines. Freights by sail from Charleston to New York, $3@$3.25 per ton. Charleston rock, ground, $11.50@$12, ex-vessel at New York.

Double manure salts, 48 to 51 per cent. sulphate of potash, for 1890 shipment, $1.12½ per 100 pounds; high grade manure salts, basis 90 per cent. sulphate of potash, $2.37½ per 100 pounds. These prices are for invoices of 50 tons, based on foreign analyses and foreign invoice weights, exship, New York.

Muriate of Potash.—Very little is doing in this line. Consumers have probably supplied the bulk of their wants for the present, and not much business is counted upon for some time to come. There have recently been quite large arrivals aggregating 2,000 tons at all ports; all of which according to the syndicate's sales agents was taken from first hands.

Kainit.—There are about 50 tons in store in first hands. For the spring trade consumers seem to have about all the kainit they need, and for April or May shipment for fall consumption, the inquiry is as yet very light and quotations cannot be given as they have not been forwarded from the other side. From the stock in store $11 per ton is asked.

Brimstone is in light demand at $19 for best unmixed seconds on the spot and $18.50 for the same to arrive. There are no thirds on the spot. Thirds to arrive are quoted at $18.

Nitrate of soda is quoted at $1.90@$1.92½ on the spot and $1.80 for futures.

Concerning nitrate of soda, a foreign correspondent writes: It is reported that at a recent meeting of the English Producing Companies' Committee, it was unanimously agreed to form a combination to reduce production over 1890, and that cable advices indicated the probability of all other producers joining in this agreement.

NOTES OF THE WEEK.

The president of the Fertilizer Exchange went to Washington last week to aid in the presentation of New York's claims for the World's Fair of 1892.

Mr. George B. Forrester, the well-known fertilizer manufacturer and a prominent authority on fertilizer legislation, has been confined to his home by sickness for a number of days.

The fifteenth annual meeting of the Menhaden Oil and Guano Association of the United States was held January 8th in the United States Hotel, this city. The old board of officers were re-elected. It is composed as follows: President, D. T. Church; vice-presidents, Thomas F. Price and L. E. Dennis; secretary and treasurer, Jasper Pryer; executive committee, D. T. Church, A. J. Morse, George F. Tuthill and T. F. Price; committee on statistics, Luther Maddox for Maine, Isaac Brown for Rhode Island, John Luce, Rhode Island to Connecticut River; James H. Bishop, Connecticut River to New York; T. F. Price, for East End, Long Island; S. Hawkins, Barren and Fire islands; James E. Otis, Sandy Hook to capes of Delaware; Wm. J. Carroll, Chesapeake Bay east; E. T. Foote, for Chincoteague to capes of Virginia.

Among the subjects of interest discussed was the imposition of a duty on degras and the question as to whether or not the United States Government has jurisdiction on fishing grounds within three miles of the shore. The last question was brought up by the recent seizure of the vessel, "A. J. Searle," in Buzzard's Bay, by the officers of the State of Massachussetts. The owners of the fishing vessel were found guilty, but the case was appealed. As it is intended to make it a test case, it will be brought before the United States Supreme Court if necessary. Secretary Pryer furnishes us the following interesting statistics:

	1889.	1888.
Number factories	29	24
Men employed	4,700	4,568
Total number of fish caught	555,319,800	404,788,950
Gallons oil made	3,327,624	2,052,128
Tons crude scrap made	25,859	11,436
Tons dried scrap made	24,359	15,030
Gallons oil on hand	341,200	288,640
Tons crude scrap on hand	7,475	3,385
Tons dried scrap on hand	3,265	4,355
Capital invested	$2,500,000	$3,000,000

Among the recent petitions before the Ways and Means Committee of the House of Representatives was one of the imposition of a specific duty of $7 per ton on mica; an increase in the duty on barytes, and also a duty of half a cent a pound on sulphuric acid to which reference is made in our report of the acid market above.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Jan. 17.

Brick.—There is very little of interest to report in this line at present. Arrivals of brick are coming forward from Hudson River yards with unfailing regularity, and, as a rule, about three or four cargoes are carried over from day to day. The demand is moderate, but of course can not be expected to amount to much at this time. The weather is of such a character that, while it permits shipments of brick, it hampers building operations. It thus becomes doubly undesirable and disadvantageous to building material dealers.

Some weeks ago, as reported in this column, efforts were being made to turn the yards now owned by Mr. James D. Avery into the hands of a stock company, to be known as the Star Brick Company. The effort, it appears, was not entirely successful. The company was incorporated, but an amended certificate of incorporation will probably be filed and the company started on a smaller scale than at first intended. The trust mania, which became apparent in the brick trade for a few weeks last summer, as the ENGINEERING AND MINING JOURNAL noted at the time, has apparently not wholly subsided as yet. A certain promotor of industrial enterprises is said to be in communication with brick dealers and makers with a view of securing options upon their properties. The objections that we urged, however, when the scheme was first broached, still hold good, and it is doubtful if it could be successfully maintained for any length of time. The business does not offer that one essential feature to a successful trust—viz., the entire control of all the sources of supplies. At any rate, if it is hoped to make any progress toward the formation of a trust the effort must be made by those who are well acquainted with the trade and possess the confidence of brick makers, who are naturally a conservative class of men and would possibly view with suspicion any proposition of outsiders savoring of a trust idea.

Cement.—As might be expected, prices for imported grades of standard Portland cement show a seasonable weakening, the latest quotation being about $2.25 per barrel, ex-ship at this port.

In reviewing the year 1889, importers of cement complain a great deal about the inferior grades of cement that have been sold under Portland labels during the year, at low figures, of course. The introduction of inferior articles of this character not only is liable to hurt the reputation of standard brands, but causes a generally depressing effect upon prices. Such, at any ate, was the experience of 1889. The outlook for 1890 is considered encouraging. A careful and conservative authority informs us that the stocks of Portland cement throughout the country this year are much lighter than they have been for years past, and certainly show a large decrease as compared with the opening month of 1889. For instance, it is said that at one point where 80,000 barrels were held in January, 1889, there are only 10,000 barrels now. It is, of course, improbable that this percentage of reduction is general.

It is expected that fully as much cement will be imported in 1890 as in 1889. Every year importers protest that they will all reduce importations, so as to more easily secure a higher range of values, but no one is willing to begin this restriction, and the natural consequence is that everybody contracts in advance for an undiminished quantity of cement. On the other hand, of course, the consumption is undoubtedly increasing throughout the country, and if no more cement is imported than has been for some years past, it is possible that some improvement in prices will be obtainable. The cost of cement, on the other side, will at all events be higher. Contracts that have been placed for 1890 deliveries at foreign points of manufacture have been at 6d. per cask higher than last year, equal to 12 cents per barrel on the cost abroad.

Standard grades of American Portland cement are quoted at $2.20 per barrel.

IMPORTS AND EXPORTS OF METALS AT NEW YORK JANUARY 1 TO JANUARY 6 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Meyer, G. A. & E.	9	9
Muller, Schall & Co.	69	69
Total	78	78
Corres. date, 1889	.....	.....

Pig Lead.	Lbs.	Lbs.
Schultz & Co., A.	98	98
Total	98	98
Corres. date, 1889	.....	.....

Tin Plates.	Boxes.	Boxes.
Cruce & Cook	3,886	3,886
Central Stamp. Co.	10,567	10,567
Coddington & Co.	5,710	5,710
Cohn & Co	236	236
Con. Fruit Jar Co.	120	120
Cornere F. & Co.	380	380
Cort & Co.	9,040	9,040
Crooks & Co.	1,587	1,587
Dickerson, V. D. & Co	14,598	14,598
Iron Clad Mfg. Co.	160	160
Lalance & G. M. Co.	888	888
Merchant & Co.	3,012	3,012
Mersick & Co.	629	629
Morewood & Co.	4,892	4,892
Pratt Mfg. Co.	3,134	3,134
Phelps, Dodge & Co	13,516	13,516
Shepard & Co.	789	789
Thomson & Co., A. A	3,766	3,766
Wheeler & Co.	1,209	1,209
Wolff & Reesing	625	625
Total	77,644	77,644
Corres. date, 1889	4,734	4,734

Pig Iron.	Tons.	Tons.
Crocker Bros.	200	200
Total	200	200
Corres. date, 1889	700	700

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Dana & Co	254	254
Pope, Jas. E., Jr.	61	61
Roebling's Sons, J. A.	55	55
Wolff, & Co., R. H.	60	60
Total	430	430
Corres. date, 1889	148	148

Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.	3	3
Bacon & Co	45	45
Crocker Bros.	77	77
Lillienberg, N.	100	100
Milne & Co.	34	34
Page, Newell & Co.	143	143
Wilson, J. G.	2	2
Total	404	404
Corres. date, 1883	15	15

Scrap Iron.	Tons.	Tons.
Samper & Co., S.	186	186
Total	186	186
Corres. date, 1889	334	334

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co.	255	255
American S. Co.	50	50
Downing & Co.	25	25
Galvin, S. A.	174	174
Greely & Co., C. S.	30	30
Lundberg, G.	110	110
Milne & Co.	50	50
Roebling's Sons, J. A	180	180
Wood & Niebuhr	25	25
Wolf & Co., R. H.	664	664
Total	1,563	1,563
Corres. date, 1889	269	269

Old Rails.	Tons.	Tons.
Frankfort, M.	408	408
Total	408	408
Corres. date, 1889	510	510

Spiegeleisen.	Tons.	Tons.
Blakely & McLellan	1,350	1,350
Crocker Bros.	951	951
Dana & Co.	1,146	1,146
Foley, F.	50	50
Hernshive, L.	1,000	1,000
Naylor & Co.	1,223	1,223
Perkins, C. L.	400	400
Total	6,120	6,120
Corres. date, 1889	158	158

Iron Ore.	Tons.	Tons.
Baiz, Jacob	67	67
Earnshaw, A.	742	742
Total	809	809
Corres. date, 1889	225	226

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere.	8,750	8,750
Amer. Met. Co., Lt.	82,760	82,760
Total	91,510	91,510
Corre. date, 1889	.....	.....

Copper Matte.		
Lewisohn Bros.	454,290	454,290
Nichols & Co., G. H	224,081	224,081
Paulsen, Wm.	130,000	130,000
Wil'ms & T'hune	953,768	953,768
Total	1,762,139	1,762,139
Corres. date, 1889	.....	.....

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	*				82,000	Dec.	1889	.06¼
3	Alma Cons., G	Idah.	300,000	30,000	10	*				45,000	Dec.		.50
4	Amy & Silversmith, s.	Mon.		341,419						247,530	Aug.	1887	12½
5	Atlantic, C	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	520,000	Feb.	1889	2.00
6	Argenta, s	Nev.	10,000,000	100,000	100	335,000	July	1889	.10	40,000	Feb.	1880	.20
7	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*				360,000	July	1889	.20
8	Aurora, I	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
9	Badger, s	O. t	200,000	50,000	5					25,000	Jan.	1890	.25
10	Bassick, G. s.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
11	Belle Isle, s.	Nev.	10,000,000	100,000	100	155,000	Apl.	1889	.10	300,000	Dec		25
12	Belcher, G. s.	Nev.	10,400,000	104,000	100	2,822,000	Feb.	1889	.50	15,397,200	Apl.	1876	1.00
13	Bellevue Idaho, s. L.	Idah.	1,250,000	125,000	10	120,000	Dec.	1889	25	187,500	Jan.	1887	10
14	Bodie Con., G. s.	Cal.	10,000,000	100,000	100	575,000	Nov	1889	2	1,295,000	Apl.	1885	50
15	Boston & Mont, G	Mon	2,500,000	250,000	10	*				520,000	Jun	1888	.15
16	Boston & Mont., C. s.	Mon	2,500,000	100,000	25	*				1,400,000	Jan.	1890	1.00
17	Breece, s.	Colo	5,000,000	200,000	25	*				2,000	Feb.	1880	.01
18	Brooklyn Lead, L. s.	Utah	500,000	50,000	10					127,000	July	1887	.05
19	Bulwer, G	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175,000	Jan.	1884	.10
20	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*				150,000	Oct.	1883	.06⅔
21	Caledonia, G	Dak	10,000,000	100,000	100	505,000	May	1885	.15	136,000	Oct.	1889	.08
22	Calliope, s	Colo.	1,000,000	¶	1	*				50,000	Dec.	1889	.01
23	Calumet & Hecla, C	Mich	2,500,000	100,000	25	1,200,000				33,350,000	Feb.	1890	5.00
24	Carbonate Hill s. L.	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	.05
25	Carlisle, G	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
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	1,930,000	Feb.	1889	2.00
29	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
30	Colorado Central, s.	Colo.	2,750,000	275,000	10	*				406,000	July	1889	.05
31	Confidence, s. L	Nev.		24,960		287,440	Apl.	1887	.50	199,680	Apl.	1889	1.00
32	Cons. Cal. & Va., G s	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,358,800	Jan.	1890	.50
33	Contention, s	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
34	**Cop. Queen Cons, C	Ariz	1,400,000	140,000	10					140,000	Oct.	1888	.50
35	Crescent, s. L. G.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888	.03
36	Crown Point, G. s.	Nev.	10,000,000	100,000	100	2,850,000	Sept	1889	.50	11,588,000	Jan.	1875	2.00
37	Daly, s. L.	Utah	3,000,000	150,000	20					1,312,500	Dec.	1889	.25
38	Deer Creek, s. G	Idah.	1,000,000	200,000	5	*				20,000	Jun.	1889	.05
39	Deadwood-Terra, G	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
40	Derbec B. Grav., G. s.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	210,000	Oct	1889	.10
41	Dunkin, s. L	Colo.	5,000,000	200,000	25	*				390,000	Sept	1889	.05
42	Dunstone, G. s. L.	Mon.	1,000,000	200,000	5	*				6,000	Nov	1888	.03
43	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
44	Elkhorn, G. s	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
45	Empire Lt., G	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
46	Eureka Con., G. s. L	Nev.	5,000,000	50,000	100	550,000	Jun.	1889	.50	4,955,000	July	1888	.25
47	Evening Star, s. L.	Colo.	500,000	50,000	10	*				1,437,500	Dec.	1889	.25
48	Excelsior, G	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1888	.25
49	Father de Smet, G	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
50	Franklin, C	Mich	1,000,000	40,000	25	220,000	Jun.	1871		1,600,000	Jan.	1889	2.00
51	Freeland, G. s. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
52	Garfield Lt., G. s.	Nev.	500,000	100,000	5					85,000	Apl.	1888	.12½
53	Gould & Curry, G. s.	Nev.	10,800,000	108,000	100	4,434,600	Oct.	1889	.30	3,826,800	Oct.	1870	10.00
54	Grand Prize, s	Nev.	10,000,000	100,000	100	715,000	Nov.	1889	.30	49[illegible]	Mar	1884	.25
55	Granite, s. L.	Idah.	500,000	500,000	1	*				30,000	Oct.	1889	.02
56	Granite Mountain, s.	Mont	10,000,000	400,000	25					7,600,000	Nov.	1889	.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	1,162,000	July	1888	.50
59	Hecla Con., s. G. L. C.	Mont	1,500,000	30,000	50					1,437,500	Dec.	1889	.50
60	Hel'a Mg & Red, G. s. L	Mont	3,315,000	663,000	5	*				197,979	July	1886	.06
61	Holmes, s.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	10	75,000	Apl.	1886	.25
62	Holyoke, G	Idah	200,000	200,000	1					27,000	Feb.	1883	.10
63	Homestake, G	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,491,750	Jan.	1890	.10
64	Honorine, s. L.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125,000	Sept	1887	.05
65	Hope, s.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
66	Horn-Silver, s. L.	Utah	10,000,000	400,000	25	*				4,050,000	Dec.	1889	.12½
67	Hubert, G	Colo.	1,000,000	1 mil'n	1	*				247,000	Dec.	1889	.00½
68	Idaho, G	Cal.	310,000	3,100	100					5,250,500	Dec.	1889	5.00
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	*				45,000	Apl.	1889	.20
71	Independence, s	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
72	Iron Hill, s.	Dak.	2,500,000	250,000	10	134,000	July	1889	.03	156,250	Nov	1887	.07½
73	Iron-Silver, s. L	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
74	Jackson, G. s	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.20	55,000	Jun	1889	.10
75	Jay Gould	Mont	2,000,000	40,000	5	*				365,000	Apl.	1889	.04
76	Jocuistita, ‡	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
77	Jumbo, G	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
78	Kearsarge, C	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00	100,000	Jan.	1890	2.00
79	Kentuck	Nev.	3,000,000	30,000	100	369,000	Dec.	1889	.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.	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.	10,000,00	200,000	50	*				810,000	Jan.	1890	.15
84	Little Pittsburg, s. L	Colo.	20,000,000	200,000	100	*				11,050,000	Mch.	1880	.50
85	Martin White, s.	Nev.	10,000,000	100,000	100	1,175,000	Jan.	1889	.25	140,000	Dec.	1886	.25
86	Mary Murphy, G. s.	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
87	Matchless, s.	Colo.	500,000	500,000	1	*				12,500	Dec.	1889	.01½
88	Minnesota, C	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	......
89	Mono, G	Cal.	5,000,000	50,000	100	102,850	Nov.	1889	.25	12,500	Mar.	1886	.25
90	Montana, Lt., G. s.	Mont	3,300,000	660,000	5	*				2,415,951	Jan	1890	.09
91	Morning Star, s. L.	Colo.	1,000,000	100,000	10					795,000	Dec.	1889	.20
92	Moulton, s. G	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
93	Mount Pleasant, G	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
94	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	150,000	Oct	1889	.20
95	Napa, Q	Cal.	700,000	100,000	7					350,000	Jan	1890	.20
96	Navajo, G. s	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
97	New Guston, s.	Colo.	500,000	100,000	5					287,500	Dec	1889	.87½
98	N. Hoover Hill, G. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
99	Northern Belle, s	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	50
100	North Belle Isle, s.	Nev.	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1888	.50
101	North Star, G	Cal.	1,000,000	100,000	10					250,000	Dec.	1889	.50
102	Ontario, s. L.	Utah	15,000,000	150,000	100					10,625,000	Dec.	1889	.50
103	Ophir, G. s	Nev.	10,000,000	100,000	100	4,159,440	May	1889	.50	1,595,800	July	1882	1.00
104	Original, s. C	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
105	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,222,500	Mar.	1889	1.00
106	Oxford, G	N. S.	125,000	125,000	1	*				73,500	Sept	1888	.02
107	Paradise Valley, G. s	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
108	Parrot, C	Mont	1,800,000	180,000	10					430,000	Oct.	1889	.05
109	Peacock, s. G. C	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	......
110	Plumas Eureka, G	Cal.	1,406,250	140,625	10					2,548,046	Oct.	1889	.37½
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.	1883	40
113	Quicksilver, pref., Q	Cal.	4,300,000	43,000	100					1,792,962	Feb.	1890	1.50
114	" com., Q	Cal.	5,700,000	57,000	100					643,867	July	1882	.40
115	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,250,000	Aug.	1889	2.00
116	Richmond, s. L.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
117	Ridge, C	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
118	Robinson Con., s. L.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
119	Robert E. Lee, s. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
120	Savage, s.	Nev.	11,200,000	112,000	100	6,542,000	July	1889	.50	4,460,000	July	1869	3.00
121	Shoshone, G	Idah.	150,000	150,000	1					7,500	Apl.	1888	.01
122	Sierra Buttes, G	Cal.	2,225,000	122,500	10					1,568,145	Apl.	1888	.12½
123	Sierra Nevada, G. s.	Nev.	10,000,000	100,000	100	6,250,000	Oct.	1889	.50	102,000	Jan.	1871	1.00
124	Sierra Nevada, s. L.	Idaho	1,000,000	¶	1	*				40,000	May	1889	.02
125	Silver Cord, G. s. L.	Colo.	4,500,000	150,000	10					270,000	Apl.	1889	.10
126	Silver King, s.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
127	Silver Mg. of L. V.	N. M.	500,000	500,000	1					50,000	June	1889	.05
128	Silverton, G. s. L.	Colo.	2,000,000	200,000	10	*				50,000	Nov.	1886	.02
129	Small Hopes Cons., s	Colo.	5,000,000	250,000	20	*				3,137,500	Jun.	1889	.10
130	Spring Valley, G	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	25
131	Standard, G. s	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
132	Stormont, s	Utah	500,000	500,000	1	*				155,000	Nov.	1881	.05
133	St. Joseph, L	Mo.	1,500,000	150,000	10	*				844,000	Dec.	1887	.20
134	Swansea, G	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
135	Tamarack, C	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,200,000	Jan.	1890	3.00
136	Tip Top, s	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov	1881	.20
137	Tombstone, G. s. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
138	United Verde, C	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
139	Valencia, M	N. H.	150,000	1,500	100					37,500	Apl	1886	2.50
140	Viola Lt, s. L.	Idah	750,000	150,000	5	*				272,500	Oct.	1888	.37½
141	Ward Cons., s. L.	Colo.	2,000,000	200,000	10					21,000	Dec.	1889	.05
142	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
143	Yellow Jacket, G. s.	Nev.	12,000,000	120,000	100	5,506,000	Mar	1889	.50	2,184,000	Aug	1871	1.50
144	Webb City, L. Z.	Mo.	55,000	11,000	5					3,300	Jun	1889	.10
145													

NON-DIVIDEND PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares No.	Par Value	Assessments. Total levied	Date & am't of last.		
1	Agassiz Cons., s. L.	Colo	$2,500,000	50,000	$50	*			
2	Alleghany, s	Colo.	5,000,000	50,000	10				
3	Allouez, C	Mich	2,000,000	80,000	25	$697,000	Mar.	1889	.50
4	Alpha Con., G. s.	Nev.	3,000,000	30,000	100	588,750	July	1889	.37½
5	Alta, s.	Nev.	10,080,000	100,800	100	2,248,800	Sept	1888	.50
6	Amador, G	Cal.	400,000	200,000	2	*			
7	American Flag, s.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.10
8	Amity, s	Colo.	250,000	250,000	1				
9	Anglo-Montana, Lt	Mon.	600,000	120,000	5				
10	Astoria, G	Cal.	200,000	100,000	2				
11	Barcelona, G	Nev.	5,000,000	200,000	25	*			
12	Bechtel Con., G	Cal.	10,000,000	100,000	100	173,500	Jan	1889	.10
13	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	Apl	1886	.10
14	Best & Belcher, G. s.	Nev.	10,080,000	100,800	100	2,180,590	Jan.	1890	.25
15	Big Pittsburg, s. L.	Colo.	20,000,000	200,000	100	*			
16	Bi-Metallic, s.	Mon.	5,000,000	200,000	25	*			
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	1889	.25
19	Bremen, s.	N. M	5,000,000	500,000	10	*			
20	Brownlow, s	Colo	250,000	250,000	1				
21	Brunswick, G	Cal.	2,000,000	400,000	5	*			
22	Bullion, G. s.	Nev.	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
23	Calaveras, G	Cal.	500,000	500,000	1	*			
24	Carisa, G	Wy.	500,000	100,000	5	*			
25	Carupano, G. s. L. C.	Ven.	200,000	100,000	2	*			
26	Cashier, G. s.	Colo.	500,000	250,000	2	*			
27	Charles Dickens, G. s.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, G	Cal.	1,500,000	150,000	10				
29	Chollar, s.	Nev.	11,200,000	112,000	100	1,484,000	July	1889	.50
30	Cleveland, T	Dak.	1,000,000	500,000	2	*			
31	Colchis	N. M.	500,000	50,000	10				
32	Commonwealth, s.	Nev.	10,000,000	100,000	100	170,000	Nov	1889	.50
33	Comstock, G. s	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	15
34	Con. Imperial, G. s.	Nev.	5,000,000	50,000	100	1,802,500	Nov	1889	.05
35	Con. Pacific, G	Cal.	6,000,000	60,000	100	192,000	Oct.	1889	.10
36	Cons. Silver, s.	Mo.	2,500,000	250,000	10				
37	Crescent, s. L	Colo.	3,000,000	300,000	10	*			
38	Crocker, s.	Ariz.	10,000,000	100,000	100	125,000	Jun.	1889	.10
39	Crowell, G	N. C.	500,000	500,000	1				
40	Dahlonega, G	Ga.	250,000	250,000	1	*			
41	Dandy, s.	Colo.	5,000,000	500,000	10				
42	Decatur, s.	Colo.	1,500,000	300,000	5	*			
43	Denver City, s. L	Colo.	5,000,000	500,000	10	*			
44	Denver Gold, G	Colo.	300,000	60,000	5				
45	Durango, G	Colo.	500,000	500,000	1	*			
46	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1889	1.00
47	El Cristo, G. s	U.S.C	1,000,000	500,000	2				
48	El Dorado, G	Cal.	1,000,000	250,000	4	*			
49	El Talento, G	U.S.C	1,000,000	500,000	2				
50	Empire, s	Utah	10,000,000	100,000	100				
51	Eureka Tunnel, s. L.	Nev.	10,000,000	100,000	100	*			
52	Exchequer	Nev.	10,000,000	100,000	100	815,000	Apl.	1888	.25
53	Found Treasure, G. s.	Nev.	10,000,000	100,000	100	30,500	Apl.	1889	12½
54	Gogebic I. Syn., I	Wis.	5,600,000	200,000	25				
55	Gold Cup, s.	Colo.	500,000	500,000	1	*			
56	Golden Era, s.	Mon.	2,000,000	200,000	10	*			
57	Gold Placer, G	Colo.	5,000,000	200,000	25	229,314	Dec.	1888	.25
58	Gold Rock, G	Cal.	1,000,000	500,000	2	*			
59	Goodshaw, G	Cal.	10,000,000	100,000	100	*			
60	Grand Belt, C	Tex.	12,000,000	120,000	100				
61	Grand Duke	Colo.	800,000	80,000	10				
62	Great Remance, G	U.S.C	1,000,000	500,000	2	*			
63	Gregory-Bobtail, G	Colo.	550,000	550,000	1	*			
64	Gregory Con., G	Mon.	3,000,000	300,000	10				
65	Harlem M. & M. Co, G.	Cal.	1,000,000	200,000	5				
66	Head Cent. & Tr. s. G	Ariz.	10,000,000	100,000	100				
67	Hector, G	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
68	Highland, C	Mich	500,000	25,000	20				
69	Hollywood	Cal.	200,000	100,000	2				
70	Hortense, s.	Colo.	2,000,000	200,000	10				
71	Huron, C	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
72	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	*			
73	Ironton, I	Wis.	1,000,000	40,000	25				
74	Iroquois, C	Mich	1,250,000	50,000	25				
75	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
76	Julia Cons., G. s.	Nev.	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
77	Lacrosse, G	Colo.	1,000,000	100,000	10	*			
78	Lee Basin, s. L.	Colo.	5,000,000	500,000	10	*			
79	Mammoth Bar., G.	Cal.	10,000,000	100,000	100	50,000	Dec.	1880	
80	May Belle, G	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
81	Mayflower Gravel	Cal.	1,000,000	100,000	10	535,000	Jan	1890	.50
82	May Mazeppa, s.	Colo	500,000	500,000	1				
83	Medora, G	Dak	250,000	250,000	1				
84	Mexican, G. s	Nev.	10,000,000	100,000	100	2,800,760	Dec.	1889	.25
85	Middle Bar G	Cal.	400,000	200,000	2	*			
86	Mike & Starr, s. L.	Colo.	1,000,000	200,000	5	*			
87	Mollie Gibson	Colo.	2,000,000	100,000	2				
88	Monitor, G	Colo.	100,000	1,000,000	1	*			
89	Mutual Mg. & Sm.	W'sh	100,000	1,100,000	1	*			
90	Native, C	Mich	1,000,000	40,000	25				
91	Neath, G	Colo.	1,000,000	100,000	10				
92	Nevada Queen, s.	Nev	10,000,000	100,000	100	250,000	Oct.	1889	.2
93	New Germany, G	N. S.	100,000	100,000	1	*			
94	New Pittsburg, s L	Colo.	2,000,000	200,000	10	*			
95	N. Commonw'h, s.	Nev.	10,000,000	100,000	100	60,000	Apl	1889	
96	North Standard, G	Cal.	10,000,000	100,000	100	20,000	Nov		.30
97	Noonday	Cal.	600,000	60,000	10	208,000	Dec	1881	
98	Oneida Chief, G	Cal.	500,000	125,000	100	*			.10
99	Oriental & Miller, s.	Nev.	10,000,000	400,000	25				
100	Osceola, G	Nev.	5,000,000	500,000	10	*			
101	Overman, G. s.	Nev.	11,520,000	115,200	100	3,823,400	Dec	1889	
102	Park, s.	Utah	2,000,000	200,000	10				.25
103	Peer, s.	Ariz.	10,000,000	100,000	100	155,000	Sept	1889	
104	Peerless, s	Ariz.	10,000,000	100,000	100	370,000	Mar	1889	.10
105	Phoenix	Ariz.	500,000	500,000	1	*			.25
106	Phoenix, G. s.	Ark.	5,000,000	200,000	25	*			
107	Phoenix Lead, s. L.	Colo.	100,000	100,000	1	*			
108	Pilgrim, G	Cal.	600,000	300,000	2	*			
109	Potosi, s	Nev.	11,200,000	112,000	100	1,461,600	Sept	1889	
110	Proustite, s.	Idah	250,000	250,000	1	*			.50
111	Puritan s. G	Colo.	1,500,000	150,000	10	*			
112	Quincy	Colo.	3,000,000	300,000	10				
113	Rappahannock, G. s.	Va.	250,000	250,000	1	*			
114	Red Elephant, s.	Colo.	500,000	500,000	1	*			
115	Ropes, G. s.	Mich	2,000,000	80,000	25	147,200	July	1887	
116	Russell, G	N. C.	1,500,000	300,000	5				.50
117	Sampson, G. s. L.	Utah	10,000,000	100,000	100	288,157	July	1888	
118	San Sebastian, G	San S	1,600,000	320,000	5	*			.06
119	Santa Fe, C	N. M.	5,000,000	500,000	10				
120	Santiago, G	U.S.C	400,000	200,000	2	*			
121	Security, s.	Colo.	10,000,000	1,000,000	10				
122	Sheridan	N. M.	2,000,000	200,000	10				
123	Silver Queen, C	Ariz.	5,000,000	200,000	25	*			
124	South Bulwer, G	Cal.	10,000,000	100,000	100	100,000	May	1881	
125	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1888	.25
126	South Pacific	Cal.	500,000	100,000	5				.05
127	Stanislaus, G	Cal.	2,000,000	200,000	10				
128	St. Kevin, G. s	Colo.	100,000	100,000	1	*			
129	St. Louis & Mex., s.	Mex.	5,000,000	500,000	10	*			
130	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
131	St. L. & St. Felipe, G s.	Mex.	1,500,000	150,000	10				
132	St L. & Sonora, G. s.	Mex.	1,500,000	150,000	10				
133	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
134	Sunday Lake, I	Mich	1,250,000	50,000	25				
135	Sullivan Cons. G.	Dak.	600,000	200,000	3	*			
136	Sutter Creek, G	Cal.	500,000	100,000	5				
137	Sutro Tunnel	Nev.	20,000,000	2,000,000	10	*			
138	Sylvanite, s	Colo.	5,000,000	500,000	10	*			
139	Taylor-Plumas, G	Cal.	1,000,000	200,000	5	10,000	Feb	1888	.10
140	Tioga Cons., G	Cal.	10,000,000	100,000	10	295,000	May	1888	.25
141	Tornado Cons. G s.	Nev.	100,000	100,000	1	*			.25
142	Tortilita, G. s	Ariz.	1,000,000	100,000	10	*			
143	Tuscarora, s	Nev.	10,000,000	500,000	20	160,000	Oct	1889	
144	Union Con., G s.	Nev.	10,000,000	100,000	100	3,260,000	Oct	1889	
145	Utah, s.	Nev.	10,000,000	100,000	100	170,000	July	1889	
146	Whale, s	Colo.	500,000	500,000	1				
147	Washington, C	Mich	1,000,000	40,000	25				
148	West Granite Mt., s.	Mon.	5,000,000	500,000	10	*			
149	Yuma, C. s. G	Ariz.	10,000,000	400,000	25				
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, $24,000,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350,000 in dividends. ¶ 1,000,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 11. H.	Jan. 11. L.	Jan. 13. H.	Jan. 13. L.	Jan. 14. H.	Jan. 14. L.	Jan. 15. H.	Jan. 15. L.	Jan. 16. H.	Jan. 16. L.	Jan. 17. H.	Jan. 17. L.	SALES.
Alice, Mont.	....	....	....	....	1.20	1.15	1.20	....	....	....	....	....	300
Aspen, Colo	....	....	....	....	6.25	....	7.00	....	7 50	7 25	7.50	....	620
Atlantic, Mich	....	....	....	....	....	....	....	....	....	....	....	....	....
Basic, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Belcher	....	....	....	....	....	....	....	....	....	....	....	....	....
Belle Isle, Nev	....	....	....	....	....	....	....	....	....	....	....	....	950
Bodie Cons., Cal	.44	....	.46	....	....	....	.40	....	....	....	....	....	600
Bes. & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	....	....
Breece, Colo	....	....	....	....	.25	....	....	....	....	....	....	....	100
Bulwer, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Caledonia, Dak	....	....	....	....	....	....	....	....	1.50	....	1 50	....	150
Calumet & Hecla	....	....	....	....	....	....	....	....	....	....	....	....	....
Colorado Central	....	....	....	....	....	....	....	....	....	....	....	....	....
Con. Cal. & Va., Nev.	4 55	....	4.65	4 60	4 60	....	4 53	4.30	....	....	....	....	525
Crown Point, Nev	1.60	....	....	....	....	....	....	....	....	....	....	....	100
Deadwood, Dak	1.50	....	....	....	....	....	....	....	....	....	....	....	700
Eureka Con, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Father de Smet, Dak	....	....	....	....	....	....	....	....	....	....	....	....	....
Franklin, Mich	....	....	....	....	....	....	....	....	....	....	....	....	....
Freeland, Colo	.68	.64	.68	.58	.69	.61	.72	.64	.74	.63	.75	.70	52,8 0
Gould & Curry, Nev.	1.40	....	1 65	....	....	....	....	....	....	....	1 45	....	300
Hale & Norcross, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Holyoke, Id.	....	....	.04	.03	....	....	.03	....	....	....	....	....	1,400
Homestake, Dak	....	....	....	....	....	....	....	....	9.00	....	....	....	125
Horn-Silver, Ut.	2.2	2.16	2 40	2.13	2 30	2.20	2.25	....	2.60	2.40	2 45	2.35	2,527
Iron Hill, Dak	....	....	....	....	....	....	....	....	....	....	....	....	....
Iron Silver, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Leadville C., Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Little Chief, Colo	.26	.25	....	....	.25	....	.24	.23	.20	....	.20	....	5,000
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Mono, Cal	.35	....	....	....	2.20	....	....	....	....	....	....	....	200
Mt. Diablo, Nev	....	....	....	....	....	....	....	....	....	....	....	....	100
Navajo, Nev	.35	....	....	....	....	....	....	....	....	....	....	....	50
North Belle Isle, Nev	....	....	....	....	....	....	1.10	....	....	....	....	....	100
North Star, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Ontario, Ut.	....	....	....	....	....	....	40 25	....	....	....	....	....	15
Opair, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Osceola, Mich	....	....	....	....	....	....	....	....	....	....	....	....	....
Plutus, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Plymouth, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Quicksilver, Pref	....	....	....	....	....	....	....	....	37.50	....	....	....	200
Com.	....	....	....	....	....	....	....	....	....	....	....	....	....
Robinson Cons. Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Savage, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Sierra Nevada, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Cord	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver King	....	....	....	....	.35	....	....	....	....	....	.40	.34	1,3 0
Silver Mg. of L. V.	....	....	....	....	....	....	....	....	....	....	....	....	....
Standard, Cal	....	....	....	....	....	....	....	....	.30	....	....	....	30
Stormont, Utah	.01	.03	....	....	.04	....	....	....	....	....	....	....	1.200
Tamarack, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Ward Con.	....	....	....	....	....	....	....	....	....	....	....	....	....
Yellow Jacket	....	....	....	....	....	....	....	....	....	....	....	....	....

NON-DIVIDEND-PAYING MINES

NAME AND LOCATION OF COMPANY.	Jan. 11. H.	Jan. 11. L.	Jan. 13. H.	Jan. 13. L.	Jan. 14. H.	Jan. 14. L.	Jan. 15. H.	Jan. 15. L.	Jan. 16. H.	Jan. 16. L.	Jan. 17. H.	Jan. 17. L.	SALES.
Alpha	....	....	....	....	....	....	....	....	....	....	....	....	....
Alta, Nev	....	....	....	....	....	....	....	....	....	....	1.45	....	100
Andes, Nev	.65	....	....	....	....	....	....	....	....	....	....	....	300
Amador, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
American Flag, Colo	.04	....	....	....	.04	....	....	....	....	....	....	....	950
Astoria, Cal	.09	.09	....	....	.09	.08	.08	....	.09	.08	.08	.07	29,3 0
Barcelona, Nev	....	....	....	....	.25	....	.3	.32	.33	....	.32	.31	900
Bechtel, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Best & Belcher, Nev.	2.25	....	....	....	....	....	....	....	....	....	....	....	100
Brunswick, Cal	.01	....	.02	....	.01	....	....	....	....	....	....	....	7,00
Bullion, Nev	.55	....	....	....	.70	....	....	....	....	....	....	....	500
Cashier, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Castle Creek, Id.	....	....	....	....	....	....	....	....	....	....	....	....	....
Chollar, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Col. & Beaver, Id.	....	....	....	....	....	....	....	....	....	....	....	....	....
Commonw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Comstock T., Nev.	.20	....	.19	....	....	....	....	....	....	....	....	....	....
" bonds.	35.00	....	....	....	35 0	....	33.00	32.00	35.00	34.0	33.00	....	6,6 0
" scrip	....	....	....	....	.33	....	....	....	....	....	....	....	1,50
Con. Pacific, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	100
ElCristo, Rep of Col.	1.45	....	1 45	1.40	....	....	1.45	1.40	1 5	1 40	1.55	1 45	3,50
Excelsior, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Exchequer Nev.	.55	....	....	....	....	....	....	....	....	....	....	....	400
Gold S ripe, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Julia, Nev	.30	....	....	....	....	....	....	....	....	....	....	....	500
Kingst'n & Pemb'ke	....	....	....	....	....	....	....	....	....	....	....	....	100
Kossuth, Nev	....	....	....	....	....	....	....	....	....	....	.65	....	....
Lacrosse, Colo	.07	....	....	....	.07	....	.08	....	....	....	....	....	5,000
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	.06	....	....
Mexican, Nev	2.25	....	....	....	....	....	2.25	....	....	....	....	....	300
Middle Bar, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Monitor, Colo	....	....	....	....	.02	....	....	....	....	....	....	....	100
Mutual Sm. & M. Co	1.05	....	1 65	....	1.60	....	....	....	1.65	....	1.45	....	900
NevadaQueen, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
N. Com'nw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Occidental, Nev.	.75	....	.70	....	.75	....	....	....	....	....	....	....	400
Oriental & Mil., Nev	....	....	....	....	....	....	.05	....	....	....	....	....	....
Overman, Nev	.85	....	....	....	....	....	....	....	.06	.05	....	....	2,000
Phœnix of Ariz.	.53	....	.54	.51	....	....	....	....	.56	.51	.54	.52	5 0
Potosi, Nev	1.75	....	....	....	....	....	....	....	....	....	....	....	2,8 0
Rappahann'k, Va	.05	....	....	....	....	....	....	....	.03	....	....	....	200
S. Sebastian, San S	....	....	....	....	....	....	....	....	....	....	.05	.03	1,100
Scorpion, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Shoshone Idaho	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Hill, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Queen	....	....	....	....	....	....	....	....	....	....	....	....	....
Stanislaus, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Sutro Tunnel, Nev.	.06	....	.07	....	....	....	....	....	....	....	....	....	....
" Trust Cert.	....	....	....	....	....	....	....	....	....	....	....	....	2,000
Sutter Creek, Cal.	.61	....	....	....	.61	....	.61	....	.61	....	.61	....	5,400
Union Cons., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
United Copper	....	....	....	....	....	....	....	....	....	....	....	....	....
Utah, Nev	.70	....	.7	....	....	....	....	....	....	....	.70	....	500

*Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted securities ‡Assessment unpaid. Dividend shares sold, 68,442 Non-dividend shares sold 73,550 Total, New York, 141 992.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 10.	Jan. 10.	Jan. 11.	Jan. 11.	Jan. 13.	Jan. 13.	Jan. 14.	Jan. 14.	Jan. 15.	Jan. 15.	Jan. 16.	Jan. 16.	SALES.
Atlantic, Mich.	16 00	15.50	16 13	16 00	16 13	16.00	15.50	....	15.50	....	.. ..	....	2,045
Bodie, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Bonanza Developm't	....	....	....	....	.90	....	....	....	....	....	....	....	200
Bost. & Mont., Mont.	51.50	50 63	50.75	50 50	51 00	50.50	50.50	50.00	50 75	50.38	50.6	50.25	4,882
Breece, Colo.	....	....	....	....	.31	....	....	....	....	....	....	....	200
Calumet & Hecla, Mich.	263	....	261	....	265	....	....	....	266	265	267	266	170
Catalpa, Colo.	....	....	....	....	.18	....	....	....	....	....	....	....	200
Central, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Con. Cal. & Va., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	200
Dunkin, Colo.	....	....	.70	....	.70	....	.70	....	....	....	.70	....	720
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	....
Franklin, Mich.	18.00	17 50	18.00	17.50	17 50	17 25	17.13	16.88	17.00	16 50	16 50	....	1,299
Hale & Norcross, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	....
Little Chief	....	....	....	....	.25	....	....	....	....	....	....	....	400
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Moulton.	....	....	....	....	....	....	....	....	....	....	....	....	....
Napa, Cal.	....	....	....	....	4.13	....	4 25	4 13	....	....	....	....	450
Ontario, Utah	....	....	....	....	....	....	....	....	....	....	....	....	....
Osceola, Mich.	28 00	27.00	27.88	27 25	27.75	26.50	27 50	25 75	27 00	26.00	26 25	26.00	5,113
Pewabic, Mich.	8 00	....	....	....	....	....	8 50	7 75	8 50	....	....	....	1,155
Quincy, Mich.	72 00	71 00	....	....	72 50	72.00	72.00	71.5	72.00	71.50	....	....	254
Ridge, Mich.	1.25	1.19	....	....	....	....	....	....	....	....	....	....	400
Sierra Nev., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver King, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	....
Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Tamarack, Mich.	159	158	....	....	160	150	160	....	179	....	160	159	215

NAME OF COMPANY.	Jan. 10.	Jan. 10.	Jan. 11.	Jan. 11.	Jan. 13.	Jan. 13.	Jan. 14.	Jan. 14.	Jan. 15.	Jan. 15.	Jan. 16.	Jan. 16.	SALES.
Allouez, Mich.	....	....	1 65	1.60	1.95	1.50	....	....	1.50	1.45	....	....	1,660
Arnold, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Aztec, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Bowman	....	....	....	....	....	....	....	....	....	....	....	....	....
Butte & Bost., Mont.	15.00	....	15.00	....	15.00	....	15.00	14 50	15.00	14 88	15 00	....	2,332
Canada	....	....	....	....	....	....	....	....	....	....	....	....	....
Cashier, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Crescent, Colo.	....	....	....	....	.09	....	....	....	....	....	....	....	200
Dana	....	....	....	....	....	....	....	....	....	....	....	....	....
Don Enrique, N M	....	....	....	....	.38	....	....	....	....	....	....	....	100
Everett, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Hanover, Mich.	.20	....	....	....	....	....	....	....	....	....	....	....	400
Humboldt, Mich.	.20	....	....	....	....	....	....	....	....	....	....	....	100
Hungarian	....	....	....	....	....	....	....	....	....	....	....	....	....
Huron, Mich.	4.25	....	4.25	....	....	....	4 25	4.00	....	....	....	....	600
Kearsarge	8.25	8.00	8.25	8 19	8.50	8.00	8 25	8.13	8.50	8.00	8.88	8.75	4,545
Mesnard, Mich.	....	....	....	....	....	....	.50	....	.50	....	....	....	300
National, Mich.	2.75	....	....	....	2 75	....	....	....	....	....	....	....	400
Orien & Miller, Nev	....	....	.07	....	....	....	....	....	....	....	....	....	500
Phœnix, Ariz	....	....	....	....	....	....	....	....	....	....	....	....	....
Pontiac, Mich.	.25	....	.28	....	.28	....	....	....	.25	....	....	....	1,100
Rappahannock, Va.	....	....	....	....	....	....	....	....	....	....	....	....	....
Rockland	....	....	....	....	....	....	....	....	....	....	....	....	....
Santa Fe, N. Mex.	1.55	1.50	1.45	....	1.45	1 40	1 42	....	1.45	1.43	1.45	1 43	7,465
Security, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Shoshone, Idaho	....	....	....	....	....	....	....	....	....	....	....	....	....
South Side, Mich.	....	....	....	....	.32	....	....	....	....	....	....	....	....
Star	....	....	....	....	....	....	....	....	....	....	....	....	100
Washington, Mich	.22½	....	....	....	....	....	....	....	....	....	....	....	100

Boston: Dividend shares sold, 18,523. Non-dividend shares sold, 19,802. Total Boston, 38,335.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Jan. 11. H.	Jan. 11. L.	Jan. 13. H.	Jan. 13. L.	Jan. 14. H.	Jan. 14. L.	Jan. 15. H.	Jan. 15. L.	Jan. 16. H.	Jan. 16. L.	Jan. 17. H.	Jan. 17. L.	Sales.
American Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cambria Iron	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cameron Coal & Iron Co	....	....	....	....	....	....	....	....	4¼	4	4⅛	3	2¾	1,700
Ches. & O. RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Chic. & Ind. Coal RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Col. & Hocking Coal	100	....	....	....	....	....	....	....	....	16	15	....	....	225
Col., C. & I	100	45	44⅛	44⅝	43¾	44⅛	44	45	44	44⅞	44⅛	44⅛	44⅜	12,078
Colorado Fuel Co.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Del. & H. C.	100	152⅜	151	151	150¼	151	150	150	149⅜	150	149⅛	150	....	3,229
D., L. & W. RR.	50	137⅜	137¼	137	136	136¼	135½	135¾	134¾	136	135⅜	136¼	135⅞	149,820
Hocking Valley	100	19	....	19	18½	19	18	....	....	19⅛	19¼	20	19⅞	2,025
Hunt. & Broad Top	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	....	....	....	....	....	....	....	....	....	45½	....	....	....	264
Lehigh C. & N.	50	52	....	52¼	52	52¼	52	52⅛	52	52	....	....	....	766
Lehigh & W. B. Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lehigh Valley RR.	50	53	52⅞	53	52⅞	53	52⅞	52⅞	....	52¾	52½	....	....	207
Marshall Con. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Mahoning Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Morris & Essex	100	....	....	....	....	....	....	....	....	....	....	....	....	....
New Central Coal	50	....	....	....	....	....	....	10¾	....	....	....	....	....	100
N. J. C. RR.	100	....	....	125	123½	124¾	122	122½	120¾	123	120¾	122	120½	8,595
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	....
N. Y., Susq. & Western	100	....	....	....	....	7½	....	....	....	....	....	7½	....	210
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	30	....	110
N. Y. & Perry C. & I.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Norfolk & Western R.R.	50	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	50	61½	....	....	....	62⅛	61⅝	61⅛	....	....	....	....	....	810
Penn. Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	....
Penn. RR.	50	53⅜	....	53¼	53⅜	53⅛	52¼	53¼	....	53⅜	53¼	....	....	1,870
*Ph. & R. RR.	....	37⅛	36¾	36¾	35½	36¾	35¾	36¼	35¾	36⅜	36¼	36¾	36¼	299,465
Sunday Creek Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Tennessee C. & I. Co.	....	85⅞	85½	85½	84¾	84¾	83¼	84⅛	84	85½	84⅛	86¼	85	9,150
Do. pref.	....	....	....	....	....	....	....	....	....	105	104	105	....	665
Westmoreland Coal	....	....	....	....	....	....	....	....	....	72½	....	....	....	3

*Sold in New York, 190,300; in Philadelphia, 109,165. Total sales 491,292.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. Jan. 10.	Jan. 11	Jan. 13.	Jan. 14.	Jan. 15.	Jan. 16.
Alpha	....	....	....	....	....	....
Alta	....	1.25	....	1.25	....	1 30
Belcher	....	....	....	....	....	....
Belle Isle	....	....	....	.30	.30	....
Best & Bel.	2.15	2.25	....	2.25	2.30	....
Bodie	....	.40	....	.45	....	....
Bulwer	....	....	....	....	....	....
Chollar	2.25	2.30	....	2.20	2.30	2.30
C'm'weal'h	3.70	3.60	....	3.75	3.75	3 80
Con. C. & V	4 30	4.35	....	4.30	4.40	4.45
Con. Pac.	....	....	....	....	....	....
Crown Pt.	1.50	1.50	....	1.50	1.55	1.60
Eureka C.	....	....	....	....	....	....
Gould & C.	1.30	1 30	....	1 30	1.30	1 35
Grd. Prize.	....	....	....	....	....	....
Hale & N.	2 60	....	....	2.50	2.65	2.65
M. White.	....	....	....	....	....	....
Mexican	2.15	....	....	....	2.25	2 35
Mono.	.30	....	....	....	....	....
Mt. Diablo	....	....	....	....	....	....
Navajo	.40	....	....	....	....	....
Nev. Queen	....	....	....	....	....	....
N. Belle I	....	....	....	1.05	....	1.09
Occidental.	....	....	....	....	....	....
Ophir.	3.10	3.15	....	3 20	3.20	3.40
Potosi.	1 65	1.65	....	1.60	1.55	....
Savage	1.40	1.50	....	1.45	....	1.55
Sierra Nev	1.75	1.80	....	1.80	1.80	1 90
Union Con	2.20	2.15	....	2.20	2.20	2.30
Utah	....	.63	....	.65	.60	60
Yellow Jkt.	1.80	1.80	....	1.95	....	2.05

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal	1.00	1.10
Balt. & N. C.	.09@.10	.12@.15
Big Vein Coal	...	...
Conrad Hill	.08@.09	.10
Cons. Coal	....	.
Diamond Tunnel	.23@.35	.27
George's Crk. C.	....	1.12
Lake Chrome	.15	.25
North State (Balt.)	. .	....
Ore Knob	.10	.11@.15
Silver Valley	.25@.35	....

Prices bid and asked during the week ending, Jan. 16th, 1890.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Con. C. & C. Co.	...	$20
Ala. R. Mill Co.	$100	$60
*Alice Furnace.	$104½	....
Anna Howe G. Mg. Co	$½	....
Bir. Mg.& M g.	$80	..
Broken Arrow.	....	$3¾
Cahaba Coal Mg. Co	....	$63
Camille Gold Mg. Co	$⅝	$1
De Bardeleben C. & I. Co.	$77½	$80
Decat. L. Imp.	$1 ½	...
Decatur Min. L.	$.1	$22¼@$23
*Eureka	$101	....
Florence L. & Mg. Co.	$23	$25@$27
Hecla Co I. Co.	$30	....
Hen. S. & M. Co	$80@$85	$100@$101
Jagger Bowley C. & C	$10	$13
Mag-Ellen.	$98	....
Mary Lee C. & R. Co	$36½	....
Sheffield C & I. Co	$56	$60
Sloss I. & S.	$61	...
†Sloss I. & S.	$96¼	$97
††Sloss I & S.	$74	$76
Tuscaloose C. I. & L. Co	$21½	....
Tenn. C. & I. Co.	$85	....
" pref.	$150	$151
Woodstock I Co	$59¾@$60	$30⅜

Prices bid and asked during week ending Jan. 14th, 1890.

* Bonds. † First mortgage. †† Second mortgage.

Denver, Colo.

COMPANY.	H.	L.	Sales.
Allegheny, Colo	.32	.29	6,100
Amity "	.26	.22	63,400
Aspen United "	.33	.27½	29,500
Big Indian "	41	.31	35,000
Big Six "	.15	.10	79,400
Brownlow "	.45	.37	7,700
Calliope "	.50	.47½	3,000
Claudia, J., "	.17	.14	10,300
Clay County "	.67½	.60	1,100
Hard Money "	.19	.07½	43,300
Legal Tender "	.13	.07	139,800
Matchless "	1.35	1.00	...
May-Mazeppa "	.90	.80	41,000
Mollie Gibson "	.50	.40	.....
Morning Glim "	.13	.10½	155,100
Pay Rock "	.30	.23	31,400
Puzzler "	.28	.21	48,800
Silver Cord "	.75	.....	600
Whale "	.37	.34	11,200
Total		...	710,000

Prices during the week ending Jan. 11th, 1890.

Kansas City, Mo. Jan. 12th, 1890.

COMPANY.	Par value.	Bid.	Asked.
Ben Harrison	..	$25.00	$35.00
Burch, L. & Z., Mo.	1	.20	.30
Express Group	...	.75	1 00
Hillsboro Gold		..	...
Farmers' Coal Co	...	50.00	75.00
Ida Hill, S., N. Mex	100	...	100
Kansas City L. & Z.	...	.60	....
Kan. City M. & M. Co.	...	2.60	3.00
K. C., Colo		....	....
Kentuck, Z., Mo	1	....	....
La Motte, Mo	100	....	100.00
Leona		....	125
Maverick, S., Colo	10	....	1.00
Minnequa Zinc	...	.25	.45
Quartz Mt	..	.67	...
Ruby Silver	...	1.12	1.25
Sonora, G. & S., Mex.	10	....	1.00
Standard, S. S., Colo		....	....
Silver Monument	..	....	3.00
Templar, N. Mex	1	....	1.00
The Sylph	..		2.50
Webb City, L. Z., Mo.	5	5.65	....
Wichita, L. Z., Kan.	100	....	.40

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas Co.	$39.00	....	$39.00
Bridgewater Gas Co.	32.00	29.00	32.00
Chartiers Val. Gas	46.00	.....	46.00
Columbia Oil Co	2.75	....	2.75
Consolidated Gas Co.	38.00	.....	38.00
Forest Oil	108.00	.....	108.00
Hazlewood Oil Co.	50.00	....	50.00
La Noria Mining	.88	.....	.88
Luster Mg. Co.	45.00	30.00	40 00
Manuf'turers Gas Co.	25.00	16.00	25.00
Nat. Gas Co. of W. Va	75.00	65.00	75 00
N.Y.& Clev. Gas Coal.	37 00	....	37.00
Ohio Valley Gas	35.00	31.00	31.50
Pennsylvania Gas	13.25	12.75	13.12½
People's N. G. & P. Co.	15.50	14.75	15.37
Philadelphia Co.	30.25	30 00	30.13
Pine Run Gas Co.	.....	.....	.....
Pittsburg Gas	80.00	66.00	80.00
South Side Gas.	.....	.....	....
Tuna Oil Co.	70.00	69.00	70.00
Union Gas	.....	.....	.....
Washington Oil Co.	90.00	75.00	80.00
W'house Brake Co.	62.75	.	62.75
W'house A. B. Co.	111.00	110.50	111.00
W'house E. Light.	47.50	.....	47.50
Wheeling Gas	22.00	19.00	20.00
Yankee Girl Mg.	3.75	3 50	3.50

* Actual selling price.

Sales during the week ending Jan. 14, 1890:

St. Louis. Jan. 15.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo	$ .28¾	$ .32½
American & Nettie	.92½	.97½
Anderson	....	.....
Aztec, N. Mex.	.10	....
Black Oak, Cal	.....	.....
Black Spar	.	.....
Buckskin	.03	.....
Carriboo, Idaho	.....	. .
Central Silver	.15	.16¼
Cleveland, Colo	.01½	.02½
Cleveland, Idaho	.28¾	.35
Cœur d'Alene	.60	.85
Dinero, Colo	.....	.05
Golden Era, Mont	....	.....
Golden King	.05	.06½
Gold Run	.00½	.02
Granite Mountain, Mont.	44.50	45.75
Hope, Mont	2.35	2.60
Ingram	.40	.65
Iron Clad	.....	.. ..
Ivanhoe, Colo	.15	.25
I. X. L., Colo	.03½	.04
Jumbo, Colo	.....	.....
Keystone	.02½	.03
La Union	.04	.01½
Little Giant	.03	.03½
Major Budd, Mont	.....	.....
Mexican Imp., Mex	.	.....
Michael Breen	.52½	.
Montrose Placer, Colo.	....	.45
Mountain Key	.57½	.60
Mountain Lion	.09	.10
Neath, Colo	....	....
Old Colony	....	....
Old Jesuit	.....	.....
Pat Murphy, Colo	.04½	.05
Phillips, Colo	.10	....
Pine Grove, Idaho	.01½	.02
Queen of the West, Idaho	.05	.....
Raspberry, Mont	.05	.30
Rosalis	....	.....
San Francisco, Mont	.01	.01½
San Pedro	.01½	.02
Silver Age, Colo	1.40	1.42½
Silver Bell	....	.....
Small Hopes, Colo	.80	.....
Tourtelotte, Colo	.07½	.09
West Granite, Mont	.80	.82½
Wire Patch	.10	.....
Yuma, Ariz	.40	.43¾

Auction Sales of Stocks.

The following securities were sold at public auction in New York this week:

200 shares New Central Coal Co., 10⅛.

$10,000 Sheppard Coal and Coke Co. sinking fund bonds, 20.

Trust Stocks. Jan. 17.

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

CERTIFICATES.

American Cotton Oil	$35 @$35½
Cattle Trust	11 @ 15
Distillers' & Cattle Feeders'.	39½@ 13
Linseed Oil	42½@ 44
National Lead	20½@ 20⅝
Natural Gas	125 @130
Standard Oil	163 @165
Sugar Refineries.	56 @ 56¼

Sales at the New York Stock Exchange week ending Jan. 17:

	Sales.	Price H.	Price L.
American Cotton Oil	905	37	35
National Lead	30,873	21	19¾
Sugar	87,837	57¼	50⅞

Foreign Quotations.

London. Jan 4.

COMPANY.	Highest.	Lowest.
Almada, Mex	1s. 6d.	1s.
Alturas Gold, Idaho	.	....
Amador, Cal	22s. 6d.	17s. 6d.
Appalachian, N. C	1s. 6d.	1s.
Arizona Copper, Ariz.	....	....
California Gold, Colo.	....	....
Callao Bis., Venz	....	....
Canadian Phos. Canada.	£⅜	£⅛
Carlisle, N. Mex	4s. 3d	3s. 9d.
Colorado, Colo	4s.	3s.
Comstock, Utah		...
Concova	1s.	6d.
Cons. Esmeralda, Nev.	4s. 3d.	3s. 9d.
Denver Gold, Colo.	1s. 3d.	9d.
Dickens Custer, Idaho.	3s. 9d.	3s. 3d.
East Arevalo, Idaho.	3s. 6d.	2s. 6d.
Eberhardt, Nev	...	...
El Callao, Venezuela	...	...
Elmore, Idaho	4s. 3d.	3s. 9d.
Empire, Mont	1s. 6d.	1s.
Flagstaff, Utah	....	....
Garfield, Nev	6s.	5s.
Hambley Freehold N.C.	...	....
Ilex, Cal	...	....
Jay Hawk Mont	4s.	3s.
Josephine, Cal	6s.	4s
Kohinoor, Colo	2s 3d.	1s. 9d.
La Luz, Mex	2s. 9d.	2s 3d.
La Trinidad, Mex	3s. 6d.	2s. 6d.
La Valera, Mexico	1½s.	1¼s.
Montana Lt., Mont	£1 3-16	£1 3-16
New California, Colo.	11s.	10s.
New Consolidated	1s.	6d.
New Eberhardt, Nev.	1s. 3d.	9d.
New Emma, S. Utah	3s. 6d.	2s 6d.
New Flagstaff Utah	2s. 3d.	1s. 9d.
Newfoundland, N. F	3s.	2s.
N. Gold Hill, N. C.	1s. 3d.	9d.
New Hoover Hill, N. C.	1s. 9d.	1s. 3d.
Old Lout, Colo	£⅞	£¾
Palmarejo, Mex	22s. 6d.	21s. 6d.
Pinos Altos, Mex	13-16	11-16
Pittsburg Orig., Cal	....	....
Pittsburg Cons., Nev.	£⅜	£¼
Quebrada, Venezuela.		...
Richmond Con., Nev.	1⅞s.	1⅝s.
Ruby & Dunderberg, Nev	1s.	6d.
Sam Christian, N. C.	3s. 6d.	3s.
Sierra Buttes, Cal	£⅜	£¼
Sonora, Mex	1s.	6d.
Stanly, N. C	6s.	5s.
United Mexican, Mex.	7s. 6d.	5s.
U. S. Placer, Colo	5s.	4s.
Viola Lt., Idaho	3s.	2s.

Paris.* Jan. 2.

Belmez, Spain	550.00	550.00
Callao, Venez	93 75	93.75
Callao Bis, Venez	4.00	4 00
East Oregon, Ore	19.00	19 00
Forest Hill Divide, Cal.	.....	.....
Golden River, Cal	390.00	390.00
" " parts	65.00	65 00
Lexington, Mont.	125.00	125.00
" parts	4.00	4.00
Ouray, Colo	......	......
Rio Tinto, Spain	396.25	396.25
Tharsis, Spain	119 50	119.50

* Francs.

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs	$1.75@$2.00
Muriatic, 18°, ℔ 100 lbs	1 00@1.50
Muriatic, 20°, ℔ 100 lbs	1.12½@1 75
Muriatic, 22° ℔ 100 lbs	1.37½@2.00
Nitric, 36°, ℔ 100 lbs	4 00@4.25
Nitric, 42°, ℔ 100 lbs	6.00@6.25
Oxalic, ℔ 100 lbs	6.50@10.50
Sulphuric, 60°, ℔ 100 lbs	80@1.25
Sulphuric, 66°, ℔ 100 lbs	1.00@1.75
Alkali—	
Refined, 48 p. c	1.50@1 55
Refined, 58°	1.40@1.45
Alum—Lump, ℔ lb	1¾
Ground, ℔ lb	1⅞@2
Lump ℔ ton, Liverpool	£4 17 6
Sulphate of Alumina, ℔ ton	£4 10
Aqua Ammonia—18°, ℔ lb	4¾
20°, ℔ lb	6
22°, ℔ lb	6@7
26°, ℔ lb	10@11
Ammonia—Sul., ℔ 100 lbs	3 5
Carb., per lb	7½@8½
Arsenic—White, powdered, ℔ lb.	3¼@3½
Red. ℔ lb	5¾@6¾
White, at Plymouth, ℔ ton.	£12 2 6d
Asbestos—Am., p. ton	$50@$300
Italian, p. ton. c. i. f. L'pool	£18@£60
Asphaltum—P. ton	13.00
Prime Cuban, ℔ lb	4½@5½c
Hard Cuban, ℔ ton	$28.00
Trinidad, refined, ℔ ton	$30.00
Barytes—Sulph., Am. prime white	17@20
Sulph., foreign, floated, p. ton	19½@21.50
Sulph., off color, p. ton	11.50@14.00
Carb., lump, f.o.b. L'pool, ton	£6
No. 1, casks, Runcorn " "	£4 10 0
No 2, bags, Runcorn " "	3 15 0
Bleach—Over 35 p.c., ℔ lb	1.70@1.75
Borax—Refined, ℔ lb.	9⅛@9⅝
Concentrated	7¾@8⅜
Refined at Liverpool, ℔ ton	£29
Brimstone—See Sulphur.	
Bromine—℔ lb	37@38
Chalk—℔ ton	.75
Precipitated, ℔ lb.	4¾@5
China Clay—English, ℔ ton	13.50@18.50
Southern, ℔ ton	13.50
Chrome Yellow—℔ lb	10@25
Cobalt—Oxide, ℔ lb	2.60@2.90
Copper—Sulph. English Wks, ton	£20@£21
Copperas—Common, ℔ 100 lbs	70
Best, ℔ 100 lbs	75@1.00
Liverpool, ℔ ton, in casks	£1 15s.
Cream of Tartar—Am. 99%	22½
Powdered, 99 p c	23
Emery—Grain, ℔ lb	4½@5
Flour, ℔ lb	2¾@3½
Feldspar—Ground, ℔ ton	15.00
Fuller's Earth—Lump, ℔ bbl.	.90@95
Powdered, ℔ lb	1⅞@2
Gypsum—Calcined, ℔ bbl.	1.25@1.50
Iodine—Resublimed	2.75
Kainit—℔ ton	10.00
Kaolin—*See China Clay.*	
Lead—Red, ℔ lb.	6¾@9
White, American, in oil, ℔ lb	6¾@7¼
White, English, ℔ lb	8½@8¾
Acetate, or sugar of, white	12@13
Lime Acetate—Amer. Brown.	.95@1.00
" Gray	1.75@1.87½
Litharge—Powdered, ℔ lb.	6½@6¾
English flake, ℔ lb	9@9½
Magnesite—Greek, ℔ ton	20.00
Manganese—Crude, per unit	.23@.28
Oxide, ground, per lb	2½@6½
Mercuric-Chloride—(*Corrosive Sublimate*) ℔ lb.	70@72
Mineral Wool—℔ lb.	2
Mica—In sheets according to size, 1st quality, ℔ lb	25@$6 00
Ochre—Yellow, "B. F.," ℔ ton, f.o.b. mill	30.00
" "J. F. L. S.," ℔ lb. ex dock	2⅛
Phosphate Rock—S Carolina, per ton f. o. b. Charleston.	5.75@7.00
Ground, ex vessel New York.	11.00
Canadian Apatite, lump, f. o. b. at Montreal. ℔ ton	16.00
Phosphorus—℔ lb	70@75
Plumbago—Ceylon, ℔ lb.	4@5
American, ℔ lb	5@7
Potassium—Cyanide, ℔ lb	39@40
Bromide, ℔ lb	33
Chlorate, ℔ lb.	13@14
Carb. ℔ lb	4.70@5.50
Caustic, ℔ lb	7½@8
Iodide	2.65@2.70
Muriate, ℔ 100 lbs	1.80
Nitrate, refined, ℔ lb	6@8
Bichromate, ℔ lb	10½@11
Sulphate, ℔ 100 lbs	2.30@2 35
Yellow Prussiate, ℔ lb	17½@18
Red Prussiate, ℔ lb	42@45
Pumice Stone—Select lumps, lb.	3¼
Original cks., ℔ lb	1¾@2
Powdered, pure, ℔ lb	2¼@2½
Pyrites—Non-cupreous, p. units	10d
Quartz—Ground, ℔ ton.	14 00@16.00
Rotten Stone—Powdered, ℔ lb.	3¼@3½
Lump, ℔ lb	6@10
Salt—Liverpool, ground ℔ sack	75@80
Turk's Island, ℔ bush	27@2
Salt Cake—℔ lb	60@62½
Saltpeter—Crude, ℔ lb.	5¼@5½
Refined, ℔ lb.	6@8
Soda Ash—Carb., 48% 100 lb	1.45
Caustic, 48%	1.30
Soda Caustic, 60%	2.50
" " 70%	2.27½@2.35
" " 74-6%	2.27½@2.35
Sal, English, ℔ 100 lbs	1.00
Sal, American, ℔ 100 lbs	.90
Nitrate, 100 lbs	1.90@1.95
Strontium—Nitrate ℔ lb.	9@9½
Sulphur—Roll, ℔ lb	1¾
Flour, ℔ lb	2
Crude Brimstone, 2s., ℔ ton	19 50
Crude Brimstone, 3ds, ℔ ton.	19 00
Talc—Ground French, ℔ lb	1¼@1½
Domestic, ℔ ton	$18@$20
c. i. f. Liverpool, ℔ ton	£4 5
Vermillion—American, ℔ lb.	61
English, ℔ lb	82@85
Vitriol—(Blue), Ordinary, ℔ lb.	5½@5⅝
Extra, ℔ lb.	7
Zinc Oxide—Am., Dry, ℔ lb.	4½
Antwerp, Red Seal, ℔ lb	6@6½
Paris, Red Seal, ℔ lb.	6½@7

* Spot

THE RARER METALS.

Aluminum—(Metallic), ℔ lb.	$2.@$2.50
Sheet, per lb	2.50
Arsenic—(Metallic) per lb	.40
Barium—(Metallic), per gram	$4.00
Bismuth—(Metallic), per lb	2.75
Cadmium—(Metallic), per lb	1.00
Calcium—(Metallic), per gram	10.00
Cerium—(Metallic), per gram	7.50
Chromium—(Metallic), per gram	1.00
Cobalt—(Metallic), per lb	6.00
Didymium—(Metallic), per gram	9 00
Erbium—(Metallic), per gram	7.50
Gallium—(Metallic), per gram	140.00
Glucinum—(Metallic) per gram	12.00
Indium—(Metallic), per gram	9.00
Iridium—(Metallic), per oz.	7.00
Lanthanum—(Metallic), per gr.	10.00
Lithium—(Metallic), per gram	10.00
Magnesium—Per lb	4.50
Manganese—Metallic, per lb	1.10
Chem. pure, per oz.	10.00
Molybdenum—(Metallic), per gm.	.50
Niobium—(Metallic), per gram	5.00
Osmium—(Metallic), per oz	65.00
Palladium—(Metallic), per oz.	35.00
Platinum—(Metallic), per oz.	9.00
Potassium—Metallic, per lb	28.00
Rhodium—(Metallic), per gram.	5.00
Ruthenium—(Metallic), per gm.	5.50
Rubidium—(Metallic), per gram	2.00
Selenium—(Metallic), per oz.	1.80
Sodium—(Metallic) per lb.	2.50
Strontium—(Metallic), per gm.	.60
Tantalum—(Metallic) per gram	9.00
Telurium—(Metallic) per lb.	5 00
Thallium—(Metallic) per gram.	.25
Titanium—(Metallic) per gram.	2.25
Thorium—(Metallic) per gram	17.00
Tungsten—(Metallic) per oz	2.25
Uranium—(Metallic), per lb	5 00
Vanadium—(Metallic), per gm.	22.00
Yttrium—(Metallic), per gram	9.00
Zirconium—(Metallic), per oz.	65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000	3 25@3 50
Jerseys, ℔ 1,000	5.50@6 50
Up Rivers, ℔ 1000	6 00@6.50
Haverstraw seconds, ℔ 1000	6.25@6 50
Haverstraw firsts ℔ 1,000	6.50@7.00
Fronts, nominal, ℔ 1000.	
Croton	14.00@16.00
Wilmington	20.00@21.00
Philadelphia	@22.00
Trenton	@22.00
Baltimore	....
Building Stone—Amherst freestone, ℔ cu. ft.	95@1.00
Brownstone, ℔ cu. ft.	1.00@1.35
Granite, rough, ℔ cu. ft	45@1.25
Granite, Scotch ℔ cu ft.	1.00@1.15
Cement—Rosendale, ℔ bbl	.85@1.10
Portland, American, ℔ bbl	2 15@2.45
Portland, foreign, ℔ bbl	2 30@2.40
Portland, " special brands.	2.45@2.75
Roman, ℔ bbl.	2.65@2.85
Keene's coarse, ℔ bbl.	4 50@5.50
Keene's fine, ℔ bbl	7.00@8.25
Slate—Purple and green roofing ℔ 100 ft	7.00@7.50
Red roofing, ℔ 100 sq. ft	12.00
Black, roofing, ℔ 100 sq. ft.	4.25@5.00
Lime—Rockland, common ℔ bbl	1 00
Rockland, finishing, ℔ bbl	1.20
St. John, com. and finish, ℔ bbl.	.90@.95
Glens Falls, com. and fin., ℔ bbl	.85@1.10
Labor—Ordinary, ℔ day	1.50@2 00
Masons, ℔ day	4.00
Plasterers, ℔ day	4.00
Carpenters, ℔ day	3.50
Plumbers, ℔ day	3.50
Painters, ℔ day	2.50@3.50
Stonesetters, ℔ day	3.50@4 00
Tilelayers, ℔ day	3.50@4.50
Bricklayers, ℔ day	4 00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.