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The Table of Contents will be found at the end of the reading matter, page 513.

AN illustrated price list of goods for export, giving export discounts is mailed with this issue of the ENGINEERING AND MINING JOURNAL.

WE give in this issue a paper on the Return of Power in Electric and Cable Traction, by Mr. ANDREW BRYSON, Jr., who makes out a good case for cable roads. It is worth the attention and study of those interested in either of the systems named, and we only regret that comparison is not made also with the storage battery system, which is claimed by the Julien Company to cost in New York 3·5 cents per car mile net, including depreciation of battery.

EXPRESS TRANSATLANTIC STEAMSHIPS.

At various times Mr. AUSTIN CORBIN and others have been credited with the idea of establishing a line of transatlantic steamships built expressly for first-class passengers and mails, and therefore more expressly adapted for high speed and quick passages than even the "City of Paris" and similar vessels. The idea has gone further, and we have this week seen plans and carefully calculated working drawings of an express Atlantic steamship which exceeds in theoretical performance anything even hinted at by Mr. CORBIN. The basis of the proposed accelerated speed is rational, and the argument is taken for granted from an economic point of view that if steamships are put on the transatlantic route, which can make the passage between Sandy Hook and Queenstown (better still, between Montauk Point and Milford Haven) in four days and twelve hours, they could command 400 passengers a trip who would gladly pay an average passage money of $100 per head.

The argument of the naval constructor is, that it is as essential, to obtain appropriate and economic service by sea, to divide steamships into classes, as it has long been found necessary to do on land in train service. That even in the case of the "City of Paris" and similar vessels the efforts have all been in the wrong direction, and that it would be an equally sensible policy to attach a few Pullman and ordinary coaches to every freight train, and by enormously increasing the locomotive power of a few of them, run these at express speed, and look upon the result as a wonderful achievement and the perfection of railroading.

If what one hears from some of the steamship people themselves be correct, as no doubt it is, the White Star steamship "Cufic" is a much more profitable investment than the "Teutonic," simply for the reason that she was built expressly for the service she has to perform, viz.: freight carrying with economy. The "Teutonic," on the other hand, is trying to serve two purposes, passenger business at highest speed possible, almost regardless, it may be said, of economy; while at the same time the bulk of what is conveyed by her is freight at exactly the same rate per ton as that carried by the "Cufic."

In regard to the proposed vessel, no matter what size she is, the displacement is reduced to a minimum in proportion to her size by the abandonment of freight; 400 passengers and their effects, and everything connected with provisioning them for five days, together with the weight of mails carried, would not exceed 150 tons, so that, in the case of a steamship 400 feet long, as called for by the plans above referred to, the carrying capacity demanded is a mere trifle in comparison to the total, and in effect the proportions of weight and speed resolve themselves into those governing the construction of a torpedo boat.

The designer of this vessel claims that it can perform the passage between land and land in four days and 12 hours, or less. He starts with a reference to the Thorneycroft torpedo boats, several of which have been constructed and delivered with a recorded performence exceeding 27 knots an hour, and which have attained that speed spite of the disadvantage of their comparative smallness, simply by devoting every effort to *saving weight;* and it is true that in a steamship of proper size, for transatlantic service, there is far greater opportunity for saving weight than in a torpedo boat. Many of the French torpedo boats, such as have been built by the dozen in the last two or three years (pattern 60), have a length of 33 meters, with a total displacement of 45 tons, carrying a supply of coal for 24 hours at a speed of 20 knots. The weight of the armament is 3·1 tons, or about 7 per cent of displacement. The other weights, in proportion of the whole, are as follows: hull, 35 per cent.; power, 35 per cent.; coal, 15 per cent.; crew, provisions, water, etc., 8 per cent.

Multiplying all linear dimensions in the French boat by 4, and consequently all surfaces by 16, and volumes and weights by 64, we should then have a vessel of precisely the same shape as the French torpedo boat, but about 434 feet long, and with a total displacement of about 2,880 tons. According to the calculations made of the duty to be expected from her, this vessel should run 24 hours at a speed of 35 knots an hour without undue strain or forcing. If the requirements of speed are reduced to 28 knots an hour the saving in consumption of fuel and in weight of power would enable a five days' supply of coal to be carried, and with a consumption of 206 tons of coal a day it is estimated the before-named speed would be attained, and the voyage from land to land would be made in four days and 12 hours. Having nothing but mail and passengers to land and embark, her stay in port on each alternate trip need not exceed 24 hours; with ample time allowed for overhauling at the other terminal port she might still make five trips a month, and in this way possibly be a much greater financial success than the larger steamships.

THE SILVER SCHEME PROPOSED BY SECRETARY WINDOM.

Secretary WINDOM'S silver scheme, which we publish on another page, calls for a more extended review than we can now give it, but it is necessary, nevertheless, to point out some features which are not fully covered in the "advantages and objections" suggested by the Secretary.

We show, in a letter from Mr. E. A. CASWELL, the well-known metal broker, that the credit for this plan is due to Mr. CASWELL, who proposed it in the ENGINEERING AND MINING JOURNAL, January 30th, 1886, and not to Secretary WINDOM at this late day. We think, moreover, that Mr. CASWELL'S scheme presents a decided advantage in limiting the amount of silver to be purchased.

As we have pointed out elsewhere, it is not capital to purchase and store silver that is needed, but a more extended use for the metal—not a strong "corner," but increased consumption—and any scheme which simply proposes to purchase and store it, though issuing "limited legal tender" warehouse receipts that will circulate as money, is not a solution of the problem, but a temporary expedient to boom prices. There is, in fact, no logical stopping place in a policy that makes of silver a mere commercial commodity and uses it as a basis for "certificates" that are safe only because the government's promises are good. Precisely the same arguments may be used for the purchase of copper, nickel, lead or iron and the issue of certificates based upon the market values of the same, the government assuming the risk of fluctuations in the market. The taxpayers may well object to providing the money for the unlimited purchase of silver bullion for such a purpose as this.

The purchase of silver, and the holding of it as security for certificates to pay off some obligation of the government, is a legitimate use of the metal, though one which may very easily entail a heavy loss on the government should it ever have to realize on its store of silver; but the unlimited purchase of bullion, merely with the object of relieving an overstocked market and advancing the price of metal, is an object that will scarcely meet with the approval of the taxpayers. But perhaps this scheme is intended merely as a means to bring about such an advance in the price of silver as will remove some of the objections made to free coinage, and in this view the anticipated results would, no doubt, be in a measure realized.

There can be little doubt that if this proposed plan were adopted we would receive a large amount of foreign silver at prices practically above the market. Even now the government is buying silver at ½ cent an ounce above the open market, because the offers made to it are above those that could be obtained for large amounts from the usual purchasers. Germany some years ago had a very large amount of silver to sell, and, though the utmost precautions were taken in marketing a small part of it, even this broke the market.

What would happen if the United States Government should announce to the world, "We will buy all the silver offered us at the cur-

rent market price, and pay for it in gold, or certificates equal to gold?" So little silver would be offered in the open market—whether as the result of a combination of the small number of important silver producers or from a concordance of interests of individuals, is not material—that the outside price would advance, and our government would before long become the owner of Germany's and other countries' embarrassing stock, and the vendors would quickly purchase our gold with the certificates received. We would thus simply exchange our gold for the world's silver, as long as the supply of gold lasted.

No one, of course, would depress the London silver market by offering silver there, when, by devices easy of execution, he could unload it on us without fear of breaking the price. On the contrary, combinations would quickly be organized to advance the market. No stipulation that we would buy only bullion of domestic origin would be effective unless we limit our purchases to less than our known production of the metal.

Let us assume that we have acquired all the surplus silver of the world and that the greater part, if not all, of our gold has been taken away by those who sold the silver to us, and that a war should take place in which our government needed all the resources at its command, where would the price of silver go should the government then endeavor to realize on its vast store of the metal?

If, on the other hand, consumers of silver should buy from the government by withdrawing silver on the presentation of certificates, as a means of preventing a rise in the market, then the price of silver might be kept absolutely stationary, unless the Secretary of the Treasury should develop into a kind of "OLD HUTCH" of the silver market, and amuse himself by putting "life" in the metal by arbitrarily creating fluctuations in its value, and doing a little "gambling" with Uncle Sam's money. No power to regulate or run such a "corner" should be given to any officer of the government. As we see it, the functions of the government in regard to the issuing of money in any form are limited to supplying an ascertained and evident want. If the currency of the country be insufficient for the needs of commerce and industry, the government has the right to use the people's money to provide additional circulating medium, and in that case the purchase of silver bullion as the foundation on which to issue certificates at the market price of silver, as proposed by Secretary Windom, is certainly a safe scheme and offers a permanent market for the metal. The Secretary does not urge this as the foundation for his proposition, but on the contrary commends it because it would provide a market for the surplus product of silver, and prepare the way to free coinage of silver. Every country that has free coinage of silver has rapidly banished its gold. Does the Secretary of the Treasury wish to bring us to this, or is what he says merely intended to appease, with empty words, those who want free coinage?

We do not think the proposed measure will be adopted, but it certainly contains some valuable suggestions, and on the whole the Secretary's report is an able document worthy of the statesman who has devoted so much attention to the subjects of finance and political economy.

THE ST. LOUIS SILVER CONVENTION.

As might indeed have been expected, this convention proved a complete failure. The Hon. WILLIAM H. WEST, who headed the Ohio delegation, in his report to the Governor of Ohio, makes the following statments, which describe the matter fully:

"I expected to meet with the 2,000 delegates. Instead, in the great Exposition Hall, ample to accommodate 4,000 to 5,000, not exceeding 150 delegates and a like number of spectators were welcomed by the Governor of Missouri. Of these delegates, but four responded from east of the Ohio River, and not to exceed thirty from the east and south of the Mississippi River. In the opening address by the chairman of the committee it was disclosed that the movement had its origin with, and was carried out under, the management of the Mining Stock Exchange of St. Louis and the holders of mining investments."

The temporary chairman of the meeting explained the origin of the convention as follows:

"The gentlemen of the St. Louis Mining Stock Exchange at the instance of Mr. E A. Elliott, chairman of our press committee, concluded to test the sentiment of the country on the question of free coinage and the rehabilitation of silver."

If the attendance of delegates, which as counted amounted to 167, instead of 1,000 or more expected, is to be taken as a measure of the sentiment of the country on the free coinage question, then the proposition certainly meets with no favor, and as there is not the least probability of a free silver coinage law being enacted, we need not now discuss it.

Among the prominent speakers at the convention was the Hon. R. P. BLAND, who was charged full of statistics that played the mischief with the "call" for the convention. Mr. BLAND asserted that, notwithstanding the suspension of silver coinage by Germany, France and the United States, silver has *not* depreciated in value, since "it will purchase more now than in 1873, and will now purchase more of the necessaries of life than at any time for a generation past."

MR. BLAND'S address covered his well-known views. MR. SYMMES read a paper on the question "has gold appreciated or silver depreciated in value?" Senator STEWART, of Nevada, expressed his opinions and cited statistics that appear to be quite independent of facts. Throughout the meeting a considerable number of the delegates appeared to take the whole matter as a farce, and acted accordingly, and in very fact there was much that was ludicrous in the proceedings. The Hon. THOS. W. FITCH made a brilliant speech which drew down the house with the wildest kind of demagogism. Nothing was permitted to come before the meeting but what was favorable to "unlimited free coinage of silver." There was no discussion, but simply "mutual admiration" of the free coinage scheme—anything that would enable a person or company producing silver to get $1.29 an ounce for it instead of 95 cents, though at this price Mr BLAND asserts it will buy more than it could when its market price was the higher figure.

It must be assumed that not a few persons at the meeting or writing to it entertained other views than these, but they were not given a hearing. We are in a position to supplement one of these omissions for having been invited to the meeting, and being unable to attend, we addressed the chairman of the convention a letter dated November 25th, from which we make the following extracts:

"The United States, far more than any other country, is interested in the appreciation of silver, for it is much the heaviest producer of the metal; but this preponderance of interest is lessened year by year, for, while a short time ago we produced about one-half of the annual silver output of the world, our proportion is now but little over one-third, and even this proportion is certain to be less before the lapse of many years. Australasia, which is only commencing to make its mining districts accessible by railroad, will, this year, turn out nearly 10,000,000 ounces of silver, or more than one-fifth as much as this country, while Mexico, Bolivia, the Argentine Republic, Chili, Peru and some other countries, the richness of whose mines has long been known, are extending railroads and will steadily and rapidly increase their silver and gold production. Thus while our own production of both gold and silver will unquestionably increase, it is certain that our proportion in the whole production of the precious metals will decline, though we shall, nevertheless, continue to hold the first place among producers for years to come.

"All other nations have a right to look to us for a rational solution of the perplexing silver question, and I trust the deliberations of your convention may justify their expectations.

"It seems to me quite impossible that any legislation can maintain a steady ratio between the values of gold and silver without controlling the market for these metals, for it is not practicable to control the supply, and no mere dictum or sentiment can control markets. If our government, or any other solvent purchaser, will offer to buy more silver than the market can supply, the price will be advanced until finally it would get beyond the coining value, when coins would be remelted to supply it. It becomes therefore important to ascertain, as nearly as may be, the amount by which the silver production exceeds the demand, and then to regulate the demand in such a flexible manner that, while it absorbs at any time the surplus which might depress the market, it will not create sudden expansions in price which would simply lead to over production and reaction. No one government can undertake to purchase all the surplus silver that would be produced were the price fixed absolutely at $1.2929 per fine ounce, and there are very many of our people who believe that the government has no right to use the taxpayers' money to purchase silver or any other commodity in quantity more than is actually needed. Any effort to induce the government to create a great "corner" in silver while the metal would remain unused in the Treasury vaults would certainly bring about an opposition on the part of the general body of taxpayers that would result in a reaction injurious to the cause which every friend of the silver industry desires to advance. An actual use for the metal must be found, and not merely the capital to purchase and store it.

"For some time past it has been very apparent that the low price of silver had stimulated its consumption in the arts, and that the surplus which had depressed the market has practically been absorbed, production and consumption having been equalized, while the latter is increasing more rapidly than the former and a substantial advance in price has already taken place. There is, therefore, practically no surplus production to take care of at the present time and a very moderate increase in legitimate demand would bring about a considerable rise in the price of bullion.

"If the Secretary of the Treasury be authorized to substitute silver certificates for the national bank bills that are now in circulation, and to exercise his discretion, as now, in making purchases of bullion within the limits of $4 000,000 a month now imposed on him—somewhat in the manner suggested by Mr. William P. St. John—he would be able to use the metal, so purchased, in a manner that would release the bonds now held as security for the national bank notes, and would, with a very moderate increase in purchases, bring about a steady increase in the value of silver, without any of the risks and violent fluctuations which might follow the adoption of any such experimental policy as a 'free coinage' scheme would involve. Probably the purchase of 30,000,000 to 35,000,000 ounces a year would suffice to bring about a natural and legitimate increase in the value of the metal, while the actual use of the certificates representing this metal would remove the objection made by so-many of our people to the use of the taxpayer's money in making unnecessary purchases.'

"It is usually unwise to try experiments in finance or business to which a large part of the community is opposed, and the friends of silver are not now called upon to take this risk. The price of silver is advancing, and will continue to advance for some time, under the influence of the natural law of supply and demand. The amounts of silver to be purchased should, however, be left to the discretion of the Secretary of the Treasury, within the present limits of $4,000,000 a month; the authorization to replace national bank notes by silver certificates being quite sufficient to create the actual consumptive demand which is needed to regulate the market. It would then be better, for obvious reasons, to allow the silver to remain as bullion bars until a demand came for coined silver, the government buying the silver as now at its market price, and the certificates having the same legal tender quality as the notes they replace."

Some of the speakers were very eloquent in denouncing the "contraction" of the money supply occasioned by the legislation to which they object. As a matter of fact, the Secretary of the Treasury, in his recent report, shows that—

"Since March 1, 1878, there has been no contraction, but, on the contrary, a very large expansion of our currency, as will appear from the following statement taken from the books of the Treasury:

Total increase of circulation of all kinds has been	$713,976 403
Total decrease	114,752,210
Net increase	$599.224.193

The net expansion since March 1, 1878, has, therefore, been $599,224,193. The average net increase per month has been $4,342,204; $52,106.451 per annum. The total net increase has been a little over 74 per cent., while the increase in population has been about 33 per cent. In 1878 the circulation was about $16.50 per capita, and in 1889 it was about $21.75 per capita."

Agricultural Machinery in South Russia.—The British Consul-General at Odessa states that a marked impulse was given to this branch of trade through the magnificent crops of last year, all the depots having been cleared out, even of old machines which had been encumbering them for years. A clearance having thus been effected at unexpectedly remunerative prices, large consignments of machines from England and America arrived there in the spring, the greater number of which, owing to the unpropitious season, remain unsold. In reapers and mowers the Americans have no competitors; in portable steam engines and steam thrashers, English houses may be said to have a monopoly; all other agricultural implements, such as horse thrashing machines, harrows, ploughs, etc., being more and more made in the country, though the Germans do a large business in the latter. Custom-house charges press very heavily on the foreign maker, a portable steam engine of 8 horse power paying in duty £70 16s., and one of 12 horse power £92 16s.

NEW PUBLICATIONS.

MINING ACCIDENTS AND THEIR PREVENTION. By Sir FREDERICK AUGUSTUS ABEL. With Discussion by Leading Experts. Also, the United States, British and Prussian Laws Relating to the Working of Coal Mines. Published by the Scientific Publishing Company, 27 Park Place, New York, 1889. Cloth, 8vo, iv. + 421 pp., with Index. Price, $4.

The very high professional standing of Sir Frederick Abel, and his world-wide fame as a practical scientific discoverer and investigator, would alone command earnest attention to anything he might have to say. When he attacks a problem so intricate, so imminent in its importance, so pressingly serious, and yet heretofore so imperfectly met, it goes without saying that his treatment of the subject will be fully commensurate with its gravity, and that he brings to its study all the advantages of a highly disciplined mind and a long and successful experience in the investigation of just such problems. One is, therefore, prepared to accept his results with a deference which few could hope to secure. Sir Frederick, while not professedly a mining engineer as a specialist, has long devoted attention, in connection with his study of explosives, to the phenomena of explosions in general, and has made extended experiments in that class of explosions so frequent in coal mines. But he has by no means limited his investigation to the explosions of gaseous and dust mixtures. There are numerous other sources of accidents in mines, such as falls of roof, fire, failure of machinery, etc., and to these a fair degree of attention has been given. The author's connection with the Royal Commission on Accidents in Mines, dating from 1879, gave him unusual facilities for observation, and, with his distinguished colleagues, he made a most exhaustive study of the whole question. The results of this detailed and painstaking investigation into the causes of mining accidents, and the conclusions arrived at as to the best means of prevention, are embodied in this monograph. They are not only impressive, but also of extreme practical value, as has been justly recognized by all mining men and by the officials charged with the supervision of the industry.

Probably no work yet done by Sir Frederick Abel in his many public-spirited researches has such a direct bearing upon the safety and welfare of so large a class of persons, to say nothing of the merely economic side of the question; and it may be safely assumed that none of his many achievements will more redound to his future fame as a scientist and a public benefactor. His work in the present case is a classic of its kind—keen, far-sighted, judicial and sound. It certainly would be difficult to pick a flaw in it, and on reading carefully the interesting discussion and correspondence following upon the essay, it will be found that the many leading experts who have contributed to the subject unite in corroborating the statements and deductions of the principal author.

It would be impossible to present a fair digest of the book in our limited space, and this will not be attempted here. Every one interested in the matter—and this would include all our readers—should read the book for himself. If he is a mine owner, a superintendent, foreman or working miner, he should not only read it once thoughtfully, but keep it for constant reference. The text is too concise and clear to be susceptible of further condensation without loss, and in this respect the monograph is a model of its class. It is also destined to stand as the acknowledged authority for a long term of years; for, unlike many engineering books, which, while bringing their subjects up to, or nearly to, the date of publication, soon become obsolete by the rapid progress of the industry, this treats of conditions which for the most part are constant and will have to be faced in the future as in the past and at present. Again, comparing this work with all the past and current literature of the subject, it must be admitted to be head and shoulders above all similar efforts.

These considerations have led the publishers to offer "Mining Accidents" to American and foreign readers in the present complete and acceptable form. Besides the original monograph of Sir Frederick Abel, the entire discussion and correspondence concerning it have been preserved. The thirty-seven eminent engineers whose contributions are thus incorporated offer many practical suggestions which are full of interest.

The only collection of laws regulating the working of coal mines which has yet been compiled with any degree of thoroughness is appended. This feature alone makes the work an extremely valuable one in framing future legislation, and for the guidance of miners whose special dangers may not be adequately provided against by the laws and systems of inspection in the State where they are working. All of the laws of the United States are given from the official codes, with the latest amendments and additions; also those of Great Britain and Prussia.

The typography and binding of the book are handsome and appropriate. The arrangement of the text is simple, and a detailed index facilitates reference.

This standard work will undoubtedly find immediate favor with the mining community. It will naturally be of greatest benefit to coal miners, and especially those operating known or possibly fiery mines; but its value is not confined to the coal-mining industry alone, since a great part of its contents relates to such accidents as are likely to, and do, occur in metalliferous mines, and all mines other than those of coal. Copies should certainly be in all mining offices, and at the mines the superintendent's offices should be provided with several numbers, so that they could be served out for the instruction of the employés. This would be an economical form of insurance against accident, and a matter of simple business policy for the companies or operators. A close study of the conditions leading to mine disasters and a rigid adherence to the suggestions offered in this comprehensive manual would do much to lessen or obviate danger. First is necessary an intelligent understanding of the causes of accidents, regarding some of which very confused ideas are prevalent even among men who are otherwise good miners; then of the circumstances liable to precipitate a catastrophe or aggravate its effects; finally of the best means of prevention and of meeting emergencies. In these points every effort should be made to instruct the men; and there is no shorter or better way than to have them study the matter as clearly presented in the pages of "Mining Accidents." Most managing officers, too, will find in the book a fund of suggestive information which might be utilized in drafting or revising their working regulations. It is almost invariably the case that after a great mine calamity it is explained that that particular form of danger was not apprehended at that particular mine. It had never happened there before nor in the neighborhood. It was therefore not provided against. But a work of this kind, which takes in its wide scope the whole range of probabilities, will warn against not only the probable but also the possible contingencies as learned by experience elsewhere, and hence insufficient regulations may be added to and corrected, and certain forms of carelessness not considered culpable, but really serious, might be guarded against. A knowledge of safety appliances and methods in vogue in other districts and countries than those with which the miner is personally familiar would also be gained. These are some of the reasons why the book is a great one.

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 Bears' Nest, Alaska, Swindle, and Who Profited by it.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: My attention has been directed to an article in your issue of the 2d of November under the above heading. At a meeting of subscribers to the securities of the Alaska Gold Company recently held in London, a committee was appointed to represent their interests, and the committee were placed in funds for the purpose of pursuing such course as they thought proper in the interests of those they represent. As secretary of that committee, I was directed, in the first instance, to write and thank you for the article above referred to, and for the interest you have manifested in the matter. The committee feel convinced that all interested in legitimate mining in the United States, and indeed elsewhere, will be glad to see a fraud of the character alleged here thoroughly investigated and conviction brought home to the evil doers. The committee feel that they must rely upon their own exertions to a great extent to bring about this result. At the same time they are fortified by the sense of having on their side the advocacy of the leading organ of the engineering and mining world in America and grateful for its timely interposition. Yours faithfully, JAS. STEUART,

Secretary of the Committee.

2 Suffolk Lane, Cannon Street,
London, E. C., Nov. 22.

Libraries, Etc., for Workingmen.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: My attention has been called to the letter signed "Manufacturer," and to your editorial, in the issue of the ENGINEERING AND MINING JOURNAL for November 9th, 1889, asking for information concerning libraries, gymnasiums, etc., for workingmen.

In October, 1875, a reading room was opened in the basement of the Grand Central Station for the benefit of the employés of the railroads entering that station, and it was placed under the direction of the Railroad Branch of the Young Men's Christian Association. Up to October, 1887, that room was thoroughly appreciated by those for whom it was maintained. At that time the Railroad Branch of the Young Men's Christian Association transferred its headquarters to the Railroad Men's Building, which Mr. Cornelius Vanderbilt had erected and furnished for the benefit of the men. This building contains a well-supplied reading room, a carefully selected library of about 5,600 volumes, wash-rooms, shower, tub and plunge baths, a gymnasium and bowling alleys, a large hall for concerts and entertainments, and sleeping rooms for the occasional use of the men in the train service whose homes are at the other end of the road.

The efforts of the railway managers to provide for the comfort and improvement of the men are heartily appreciated by the men themselves. The average daily attendance is nearly 400. There are now 1,115 members. The building is fitted up in the best style, and is maintained chiefly by the railroad companies and the personal contributions of the donor. A unique plan of membership has been devised, by which a man is allowed to pay quarterly, semi-annually or annually, any sum he can spare, from $1.20 upward. These small voluntary contributions toward the current expenses of the institution serve to develop in the men a sense of proprietorship, and provide against the feeling so detestable to every true man—that of dependence upon the charity of others.

The religious sentiment which pervades all that is done acts as a conservative force, so that the moral atmosphere of the place is very high.

While the Railroad Men's Building is the largest and best appointed institution of the kind, there are at nearly eighty other railway terminal points similar conveniences provided by the companies for their employés, where kindred organizations are successfully prosecuting their work, the manager and the men co-operating for their mutual improvement.

NEW YORK, November 30. G. A. WARBURTON, Secretary.

Price of Cœur d'Alene Concentrates—Freights and Smelters' Charges.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have been absent in Northern California for the past two weeks, hence delay in replying to the charge of inaccuracy brought against me.

The information I wrote to you for the ENGINEERING AND MINING JOURNAL was furnished me by Mr. G. B. McAuley, who is superintendent of the Sierra Nevada Consolidated Mining Company, the Granite Mining Company, the Inez Mining Company, and the Stemwinder Mining Company, and several others, but these are the principal of the silver-lead producing properties which are affected in the manner I wrote of to the ENGINEERING AND MINING JOURNAL. These four mines, with the Poorman, are the principal shippers of silver-lead ores in the Cœur d'Aléne, the Bunker Hill and Sulivan having been shut down for the past few months.

It is a well-known fact that some of the head Northern Pacific Railroad officials are interested in the smelting works at Helena. There is no way of furnishing proof on this point, but they don't deny it when flatly accused of it, and this was demonstrated in the action the Northern Pacific Railroad Company took toward the Portland Smelting and Refining Company, whose works are now being erected at Linnton, seven miles north of Portland, on the Tacoma Portland branch of the Northern Pacific Railroad, in the way of which they placed numerous obstructions, until

its conduct became too flagrant. There is no ore going to Helena from the above mines; it is now going to Denver, Kansas City and Omaha.

The following facts I have from one of the principal owners of the above mentioned mines, and there can be no question of their accuracy. On or before September 17th of this year, the Helena Smelting Company gave notice to the principal mines in the Cœur d'Aléne district that the charges (freight and smelting) would be raised, conveying at the same time the idea that the raise was general, and included the Omaha & Grant and Kansas City works. The matter was investigated, and it was found that the raise was only on the part of the Helena Company. On that date the "Stemwinder," "Granite" and "Sierra Nevada" stopped shipping ore to Helena. The raise was $3 per ton on concentrates, and about $5 per ton on "Sierra Nevada" undressed ore. The freight and smelting charges were in a lump sum, and the contracts with the Smelting Company were on a freight and treatment basis, which I believe is the universal custom with that company.— I am, yours, etc.,

Portland, Ore, Nov. 27. CORRESPONDENT.

The Silver Question.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: It is evident that the silver question is to be dominant during the next few months, and the followers of Mr. Knox and the followers of Mr. St. John will doubtless present the arguments on both sides. It is a question whether the matter cannot be compromised. In your issue of January 30th, 1886, you published the following letter from me:

THE SILVER QUESTION—SINGLE STANDARD BI-METALISM.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: There is certainly an immense amount of oratory published just now on the silver question, while the facts and necessities of the case may be shortly summed up. They are these:

I. To every 1,000 people in the community, a certain sum of money—or representation of a value—is needed for the facilitation of business. That amount is known and agreed to.

II. The gold of this and other countries is not sufficient to meet those demands.

III. It is eminently advisable to have in any money four qualities: 1. A very close proportion between the rate of its production and the increasing demand for it, or, in other words, a steady value. 2. A value not made by legislation, but by intrinsic worth. 3. A value that is universal. 4. Portability.

IV. It is impossible to have two different *standards*.

V. What is clearly needed, therefore, is bi-metalism and *mono*-standardism, and naught else is possible.

VI. It is clear that the continuous enforcement of a double standard in bi-metalism is quite dependent on the caprice of production. If, for example, in 1886-1890, silver *should* be so freely produced as to drop the price to 50 cents gold an ounce, all the legislation under the canopy could not make them equal; or if production should decrease and so make silver worth $1.50 an ounce, no Congress could prevent financiers from making a premium on silver.

VII. Whatever legislation may decree, the fact remains that all profit and all loss in coinage are primarily a profit or loss to the government, which means to the people. It may fall more heavily on capitalists, banks, etc., and through them on the community; but first, middle, and last, it falls on the people.

To meet all these problems, we would suggest that the government have ample vaults built and continue to buy silver in reasonable amounts, and then issue bills of various denominations from $1 to $50, reading as follows:

"The United States government promises to pay on demand —— gold dollars' worth of silver, secured by metal in the Treasury vaults."

This would offer a money that would present the following advantages:

1. The practical use of both metals.
2. A single standard.
3. A world standard.
4. A currency of inherent value (not credit).
5. A currency good all over the world.
6. Portability.

After five centuries, probably the relative difference between gold and silver would be about what it is now, and meanwhile the goverment has acted as a balance-wheel and stood the nominal profit and loss. And should the values of the two metals become so wide apart as to render a new valuation and standard a necessity, why, then the people stand the loss, just as they must in any case except that thus it falls on every citizen *pro rata*, and *not* on the capitalist. We have yet to hear of a single objection to this scheme other than that powerful syndicates might speculate on the government; but that, first, would be full of risk for any body of men; secondly, could be easily guarded against by legislation. Why will not the ENGINEERING AND MINING JOURNAL proclaim and urge this plan? Yours truly,

NEW YORK, Jan. 22. E. A. CASWELL.

"The situation has not changed since then, except in proportion. The population is larger, and consequently more money is needed. Frequent stringency in Wall street shows that the bank-note currency cannot be withdrawn unless some substitute is presented, and if silver can become a currency, either in the shape of the absolute token or its representation, the matter can be readily solved. We can all remember distinctly how the buzzard dollar, worth ten cents or twelve cents less than the trade dollar, has circulated, and yet the trade dollar was refused in trade on account of not being a legal tender. If, then, the government will hold the silver and issue notes against it, and make them a legal tender, the only practical question will be to frame regulations that will establish the market price of silver or, in other words, the quantity which is to be delivered against $100 or one hundred gold dollars, in such a way as to avoid the snares of speculators. Outside of that body the people of the country would take most cheerfully a certificate representing a gold value, backed by silver, and the silver would not be called for once in a thousand times. Yours, etc., E. A. CASWELL.

NEW YORK, Dec. 2.

Smokeless Powder.—The powders which Secretary Tracy has been instrumental in arranging to have manufactured in this country for use of the navy are the brown prismatic powder and a smokeless powder, the patents and processes of which are controlled by the Rottwell Company, of Germany. An arrangement has been made with the contractor now furnishing powder to the United States Navy to manufacture them in the United States, and as soon as certain necessary changes in the plant shall have been effected the contractor will be enabled to furnish the powders named to this government.

General S. V. Benet, Chief of Ordnance, says that within the past few weeks five or six varieties of smokeless powder have been brought to his official notice by their respective inventors with a request to try them. The General says the department is willing to do its part toward finding a suitable powder for use by the army—it will furnish the arms and cartridges, and provide suitable ranges and proving grounds whenever the powder makers show a willingness to provide the powder and go to the expense of packing the cartridges. So far none of them have done this, and therefore no tests have been made.

THE CHOCTAW COALFIELD.

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

The coalfields of the Indian Territory extend beyond the limits of the Choctaw Nation, but as the largest and best areas of workable coal are found in the Choctaw country, and as this field, while in reality continuous with the Arkansas field, furnishes coal of very different character, it may be proper to adopt the above name to designate that part of the coal measures lying west of Arkansas in the Indian Territory.

Coal was first mined on a commercial scale in the Choctaw country shortly after the construction of the Missouri, Kansas & Texas Railroad, some 15 or 16 years ago, but the output was comparatively small until about 1878-1880, since which it has been steadily increasing.

The best coal, and that most largely worked, is found at McAlester, where the Osage Coal Company has developed and worked an area of several square miles lying immediately east of the Missouri, Kansas & Texas Railroad.

A considerable output has also been attained at Lehigh by the Atoka Coal Company. The Lehigh mines are located west of the Missouri, Kansas & Texas Railroad, and are reached by a branch railroad ten miles long, connecting with the main line at Atoka.

Two or three mines were opened at Savanna (between McAlester and Atoka), but, owing to the steep dip of the coal, were shortly abandoned.

At Bryan, on the St. Louis & San Francisco Railroad (60 miles east of McAlester), a slope has been sunk on a four-foot bed of coal, pitching at a steep angle—38 to 42 degrees—and is being worked in a small way. The coal is rather soft and sulphurous. Another small mine has been opened on the same railroad between Poteau Switch and Fort Smith.

The Choctaw Coal and Railway Company is now building a railroad to develop territory lying directly east of the McAlester workings, and will soon have two or three mines in operation.

The Denison and Washita Valley Railroad Company has recently constructed about ten miles of railroad to reach their coal property in the Lehigh District.

These are the principal operations yet inaugurated in the Choctaw Nation.

Throughout Texas, Southern Kansas and Missouri, the mines of the Osage Coal Company at McAlester have become celebrated for the excellent quality of the coal produced there. McAlester coal is recognized as a standard of superior excellence throughout this southwest country, holding a position there comparable to that of Clearfield or Pittsburg coal in the East, or of Briar Hill coal in Ohio and Indiana.

McAlester coal shows by analysis about as follows:

Water	1·700 to 1·800
Volatile matter	37·000 to 40·000
Fixed carbon	51·000 to 54·000
Sulphur	·700 to 1·000
Ash	5·000 to 8·000

Throughout the area developed by workings the dip ranges from 4 to 12 or 14 degrees. The coal is opened by shafts and slopes and worked by the ordinary "room and pillar" system, the mine cars always being taken in to the face. Unsuccessful attempts have been made to work by the "long-wall" system.

Machines have not yet been used in the McAlester field, all the coal being mined by hand. The practice has been to "mine" (undercut) about two feet and "shoot" three or four feet. The coal is hard, tough and difficult to mine. Miners have been paid 4 to 4½ cents per bushel (80 pounds) for lump coal screened over about 1¼-inch screen, nothing being paid for nut or slack. For "run of mine" coal the price has been about 3½ cents per bushel.

Neglecting the value of nut and slack coal, it probably costs $1.45 per ton to put lump coal on the cars. About $1.10 or $1.20 ought to cover the cost of "run-of-mine" coal on the cars. To this must be added the royalty, which ranges from about 20 to 25 cents per ton. In the case of lump coal, the value of the nut and slack coal, for which the miner is not paid, may be considered as an offset to the royalty. A considerable reduction in the cost of mining will doubtless soon be effected by the use of electric coal-cutting machinery.

The coal ranges from 3 feet 6 inches to 4 feet 2 inches (with occasional wider variations) in thickness, without persistent partings of any description.

Excellent coke has been made from the slack coal, and the Osage Company now has a small bank of bee-hive ovens in operation. For some reason not easily apparent only a very small part of the slack coal has heretofore been utilized, enormous quantities (probably several hundred thousand tons) having been given to the railroad and "wasted" on the roadbed as ballast or used to fill in washed embankments.

The Lehigh district furnishes coal similar to McAlester coal, but with an objectionably high percentage of sulphur. As might be anticipated, it clinkers badly.

While the coal measures in the Choctaw field attain a thickness of more than 5,000 feet,* I have found only three coalbeds exceeding 3 feet 4 inches in thickness, two beds ranging from 2 feet 6 inches to 3 feet 4 inches, possibly three beds ranging from 2 feet to 2 feet 9 inches, and quite a number of small beds less than 2 feet thick.

A discussion of the geology of this coalfield—structural and stratigraphical—is beyond the limits of this present article and must be reserved for the future

Of the three large beds, two are low down in the coal measures and one lies in the higher or upper measures and is found only in the deep basin adjoining the Arkansas line. The two lower beds are the ones now worked in the McAlester and Lehigh districts, and are the beds now being opened by the Choctaw Coal and Railway Company. They lie 1,000 to 1,300 feet apart—probably about 1,200 feet—the McAlester bed being the upper one of the two.

The McAlester bed is of remarkably uniform quality over large areas; whether thick or thin, it is usually of good quality. The Grady bed (lower bed) generally deteriorates in quality as it becomes thin, being either slaty or sulphurous; but when the bed has its normal thickness of four

* The actual thickness of the coal-bearing formation is considerably in excess o 5,000 feet—possibly more than 7,000 feet. A paper describing the formation in d e tail, with vertical sections of the measures, will shortly be published by the writer

feet or more, it is nearly always a clean, bright, black coal of unusual hardness, and running very low in both ash and sulphur. The Choctaw Coal and Railway Company has a large underlaid area by this bed in the Grady basin, 15 miles east of McAlester. By analysis the coal shows as follows (the average of seven samples analyzed by Mr. A. S. McCreath):

Water	1·800
Volatile matter	40·340
Fixed carbon	51·640
Sulphur	1·330
Ash	4·890
Total	100·000

Going east from the Missouri, Kansas & Texas Railroad toward the Arkansas line, we find the coals begin to lose their gaseous, highly bituminous character, and more closely resemble the Arkansas type, which is one of semi-bituminous or semi-anthracitic nature, yielding only 15 or 16 per cent. of volatile matter, and running as high as 75 to 78 per cent. in fixed carbon. Accompanying this change in chemical composition is an important one in the physical structure of the coal. The Arkansas coals and those in the Choctaw country near the Arkansas line have a well-developed columnar structure, are soft, friable and non-coking, while the Choctaw type, as seen in the McAlester district, is that of a hard, tough, true bituminous coal, with semi-cubical fracture and excellent coking properties.

Coal mining in the Choctaw coalfield is doubtless yet in its infancy. Nearly all of that immense territory included within the boundaries of Texas, all of the present Indian Territory, a goodly portion of Kansas, and possibly the eastern part of New Mexico, and parts of Missouri and Arkansas, will eventually draw their fuel supply largely from this coalfield.

All coal mined in the Choctaw Nation is worked under lease from the Choctaw citizen owning the claim. The Choctaw mining law provides that any citizen (Choctaw) discovering any valuable mineral (coal or what not) shall be entitled to the exclusive privilege of mining the same within one mile in any direction from the point of discovery! The law also provides that a royalty of 12½ cents per ton shall be paid into the national (Choctaw) treasury on every ton of coal mined. In addition to this royalty of 12½ cents per ton the operator pays the owner of the coal claim such additional royalty as may be fixed upon and embodied in the terms of the lease.

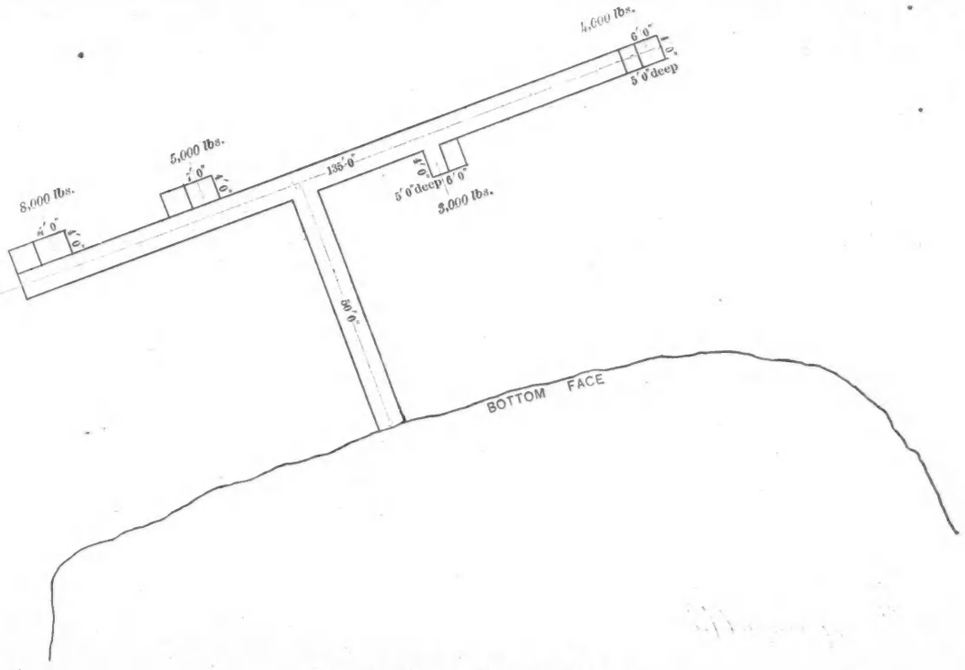
A LARGE BLAST.

The Glendon Iron Company, of Easton, Pa., operating one of the largest blast furnaces on the Atlantic Coast, have for a number of years followed a somewhat novel plan of getting out their limestone for furnace purposes.

Their quarry, located at Glendon, Pa., has a perpendicular face, varying from 120 to 160 feet in height, and instead of drilling down a few feet back from the face of the quarry at the top and taking the stone off in benches, as is done in other quarries in the East, they drive a tunnel back at the foot of the quarry and from that horizontally in both directions on a parallel line with the base. The powder is loaded in chambers located in this latter tunnel and sunk a few feet below the base level. The tunnels are then filled up to the opening and the explosives fired by electricity. Such a blast as this was fired with most successful results on the 27th of September last, and, as may be seen by the sketch, the tunnel from the face line was driven directly back 50 feet, the length of the horizontal tunnel being 135 feet. Four chambers were located on this tunnel 5 feet deep, the diameters being from 4 × 6 to 4 × 7 feet. In these was loaded Judson R. R. P. powder, divided respectively into lots of 8,000, 5,000, 3,000, and 4,000 pounds. The blast was fired by the superintendent of the Glendon Iron Company, Mr. M. P. Janney, and it was estimated that 60,000 tons of limestone were dislodged. About once each year this company fire one of these blasts, having always met with uniform success. The powder used is known as Judson R. R. P. powder, manufactured by the Atlantic Dynamite Company, of 245 Broadway, New York.

While the cost of Judson powder is somewhat higher than that of black powder, the smaller quantity required, and the fact that it breaks the stone up finer, making it easier to handle, and requiring less drilling for block-holing, shows a decided economy in its favor.

On the Pacific Coast this method of tunneling beneath the burden and firing in large charges is generally adopted by railroad contractors and others where large quantities of earth or rock are to be removed, but with the exception of the Glendon Quarry we do not know that the plan has come into vogue in the East.



PLAN OF MINE AT GLENDON QUARRY.

THE SOUTHERN GOLDFIELDS.

Written for the Engineering and Mining Journal, by F. C. Hand, M. E.

In looking over some old pamphlets a short time ago I came across one written in 1854 by a Mr. Brown, in which this language occurs: "I have no faith in either the value or the permanency of the Californian goldfields, and confidently look forward to the return of all our miners to North Carolina and Georgia, whose veins show a degree of stability and permanency unequaled by any in the world."

While the lapse of years has shown that the writer quoted above was mistaken in his views of California, the recent discoveries in Montgomery County, North Carolina, seem to indicate that his abiding faith in the southern field was well founded.

It is an undoubted fact that there are numbers of properties more or less developed in all this region, that, were they in New Mexico, Arizona, or some other equally inaccessible locality, badly situated with regard to fuel, water, timber, and remote from transportation, yet would be eagerly sought after and highly prized, while here with fuel at $1 or less per cord for wood, timber at $6 to $10 per 1,000, common labor at $1 per day, and plentiful, an abundance of water—sometimes, no doubt, too much—these properties lie unknown and unnoticed for the most part.

It is true that spasmodic efforts are made from time to time, but they are usually in a half-hearted sort of way, as if the projectors were themselves doubtful if any good could come "out of Nazareth."

Considerable, however, is being done in Hall and Lumpkin Counties about Dahlonega, which has been the scene of a great deal of activity in the past, and where several mines are steadily turning out dividends to the stockholders. The Camille, near Tallapoosa, has been constantly running for a considerable time under the able management of Colonel Moore, but I believe that they have now shut down, pending a reorganization of the company.

At Arbacoochee things seem to be in a very satisfactory condition; the Anna Howe, under a new management, promises to realize the most sanguine expectations of the stockholders, and will no doubt soon take rank with the dividend payers. It is understood here that the Anna Howe extension is soon to put up a large mill. They have been exploring their mine for a considerable time now and have fully demonstrated its extent and value. They have a considerable amount of ore on the dump waiting for the erection of the mill.

The Amie, a hydraulic property, has been lying idle for a few weeks, but has been leased, I believe, and will soon start up now. They have an excellent property, which ought to yield handsome returns.

At the Mossback things are going on swimmingly. The new management have taken out the rotary concentrator—Cook, I think—and put in plates, as ought to have been done at first, and I believe that the mine will soon be producing considerable quantities of bullion.

The Pritchard, a large sandstone vein of free milling ore near the Mossback, is soon to be developed.

The Pinetucks mine, after having been thoroughly explored for over a year, is now getting ready to begin work in earnest.

Five or six carloads of machinery have arrived at Heflin, the railroad point, and the work of putting it in place will go forward as rapidly as possible. Taken as a whole, the outlook for this section is highly encouraging, and with the introduction of a little more capital and improved methods of working this section could very easily get on a "boom."

THE SILVER SCHEME OF THE SECRETARY OF THE TREASURY.

Secretary Windom has made a very interesting report. While there are several parts of this document that call for comment and will receive it at a later date, we shall now confine our remarks to the proposed silver scheme, which is made in the following language:

"Issue treasury notes against deposits of silver bullion at the market price of silver when deposited, payable on demand in such quantities of silver bullion as will equal in value, at the date of presentation, the number of dollars expressed on the face of the notes at the market price of silver, or in gold, at the option of the government; or in silver dollars at the option of the holder. Repeal the compulsory feature of the present coinage act."

Secretary Windom summarizes the advantages and disadvantages of this proposed measure as follows:

ADVANTAGES OF THE PROPOSED MEASURE.

First—It would establish and maintain through the operations of trade a convenient and economical use of all the money metal in the country.

Second—It would give us a paper currency not subject to undue or arbitrary inflation or contraction, nor to fluctuating values, but based dollar for dollar, on bullion at its market price, and having behind it the pledge of the government to maintain its value at par, it would be as good as gold, and would remain in circulation, as there could be no motive for demanding redemption for the purposes of ordinary business transactions.

Third—By the utilization of silver in this way a market would be provided for the surplus product. This would tend to the rapid enhancement of its value until a point be reached where we can with safety open our mints to the free coinage of silver.

Fourth—The volume of absolutely sound and perfectly convenient currency thus introduced into the channels of trade would also relieve gold of a part of the work which it would otherwise be required to perform. Both of the causes last mentioned, it is confidently believed, would tend to reduce the difference in value between the two metals and to restore the equilibrium so much desired. It would furnish a perfectly sound currency to take the place of retired national bank notes, and thus prevent the contraction feared from that source.

Fifth—It would meet the wants of those who desire a larger volume of circulation, by the introduction of a currency which, being at all times the equivalent of gold, would freely circulate with it, and thus avoid the danger of contraction which lurks in the policy of increased or free coinage of silver, by reason of the hoarding or exportation of gold.

Sixth—It should not encounter the opposition of those who deprecate inflation, for, though the volume of currency may be somewhat increased, the notes would be limited to the surplus product of silver, and each dollar thus issued would be absolutely sound, and would represent an amount of bullion worth a dollar in gold.

Seventh—It would be far more advantageous to silver producers than increased coinage under existing law, for in both cases bullion would be paid for at its market value, and under the plan proposed a much larger amount could be used with safety, and while increased coinage would arouse the fears and encounter the opposition of a very large and powerful class of people, it is believed that this measure would meet with their acquiescence.

Eighth—There would be no possibility of loss to the holders of these notes, because in addition to their full face value in bullion they would have behind them the pledged faith of the government to redeem them in gold, or its equivalent in silver bullion.

Ninth—The adoption of this policy and the repeal of the Compulsory Coinage act would quiet public apprehension in regard to the overissue of standard silver dollars, and the present stock could therefore be safely maintained at par.

Tenth—This plan could be tried with perfect safety, and, it is believed, with advantage to all our interests. Should it prove a successful and satisfactory plan for utilizing silver as money, other nations might find it to their interest to adopt it, without waiting for an international agreement, and should concerted action be deemed desirable it could then be more readily secured.

By this method it is believed that the way would be paved for the opening of the mints of the world to the free coinage of silver and the restoration of the former equilibrium of the money metals.

POSSIBLE OBJECTIONS AND CRITICISMS.

I may here conveniently note and answer in brief some of the objections which may be made to this proposition:

(1) Possibility of loss to the government by a further depreciation in the value of silver bullion.

This danger is exceedingly remote. On the other hand, there is every reason to believe that a profit to the government would be realized by the adoption of this measure. First, from the almost certain rise in the value of the silver on deposit, which would inure to its advantage; and second, from the destruction and permanent loss of notes, which would never be presented for redemption, the bullion represented by them then becoming the property of the government.

But even if a loss arise by reason of a further decline in the value of silver, this would not be a valid objection to the measure proposed, for the reason that the government, having assumed control of the currency of the country, is bound, at whatever cost, to supply a circulating medium which is absolutely sound. This duty has been fully recognized, in the case of our legal-tender notes, by the sale of $100,000,000 of four per cent. bonds in order to provide that amount of gold, which now lies in the Treasury, as a reserve for their redemption. We have already paid out $40,000,000 interest on these bonds, as a portion of the cost of maintaining the outstanding $346,000,000 of United States notes, and we are still paying $4,000,000 a year for that purpose.

(2) It might be suggested that to issue Treasury notes on unlimited deposits of bullion would place the government at the mercy of combinations organized to arbitrarily put up the price of silver for the purpose of unloading on the Treasury at a fictitious value.

This danger may be averted by giving the Secretary of the Treasury discretion to suspend temporarily the receipt of silver and issue of notes in the event of such a combination, and he might be authorized, under proper restrictions, to sell silver, if necessary, retaining the gold proceeds for the redemption of the notes.

The existence of such authority, even if never exercised, would prevent the formation of any effectual combination of this kind, for the reason that a combination to control the silver product of the world would be very expensive, requiring immense capital, and could not be successfully undertaken in the face of the power lodged with the Secretary to defeat it.

This method of guarding against combinations and corners would be far better than the proposition to fix the price at which notes should be issued, at the average price of silver during any considerable antecedent period of time, as the latter would tend to prevent the normal rise in value, which is desired and anticipated from the adoption of this method.

(3) If it be objected to on the ground that it would degrade silver from its position as money, and reduce it to the level of a mere commodity, the reply is that silver bullion is now a mere commodity.

This policy would at once give to silver, through its paper representative, the rank and dignity of money in the most convenient and least expensive way in which it can possibly be utilized. The issue of notes based on bullion, as proposed, would have the effect of crowning it with the dignity of money as effectually as could the dies and stamps of a United States mint. Instead of degrading silver, this plan would tend to restore it to its former ratio with gold

(4) It might be urged against this plan that it would open a tempting field for speculation by offering to speculators an opportunity, when silver had temporarily fallen but was likely to advance, to withdraw from the Treasury and hold for a rise the silver bullion covered by notes; or when there might be a possibility of a depression, to deposit it, wait for a fall in price, and then have their notes redeemed in an increased quantity of silver.

The answer to this objection is that the danger is by no means great, but should it prove so, the judicious exercise by the Secretary of the Treasury of his option to redeem in gold (either coin, bullion, or certificates), would effectually prevent the successful culmination of such speculative operations.

(5) Unless the amount of silver bullion be limited, may not this policy result in an undue and dangerous increase in the volume of our currency? May we not be flooded with the world's excess of silver?

Fears of too large a volume of absolutely sound currency are not entertained to any considerable extent by our people. The dangers from such an expansion are not apparent, nor are they serious. It is only inflation from overissue of doubtful or depreciated dollars that affords substantial grounds for apprehension.

As to the objection that we may be flooded with the world's silver, the proposed law itself, and the statistics in regard to the present product and the uses of silver, furnish a complete reply. Treasury notes would only be issued at the average price of silver in the leading financial centres of Europe and the United States, so that there could be no possible motive for shipping it from abroad. Why should any one pay the cost of transporting silver from Europe to exchange for our Treasury notes at the same price it would command in gold at home? Probably we should receive some of the surplus product of Mexico; but, as will be presently shown, the amount would not be dangerously large. It would not come from South America, because it would command the same price in gold in London that it would in notes in New York, and nearly all the product of South America goes, in the shape of miscellaneous ores and base bars, to Europe for economical refining.

In view of these facts, there would seem to be no sufficient reason for limiting the amount of silver bullion, which may be deposited for treasury notes, and there are strong reasons against such limitation.

If deposits were limited to $4,000,000 worth per month, the amount of silver received might be somewhat smaller than under the proposed measure, which fixes no limit, but the difference in the quantity deposited would hardly compensate, in my judgment, for the effect which the restriction would have on the silver market.

Such a restriction would have a decided tendency to prevent the normal rise in price, because it might leave a surplus even of our own product, counting that which comes from Mexico to this country, and the mere fact of there being a limit to the amount that the United States would receive and issue notes upon would be a constant menace to the price of silver. Moreover, the limitation to $4,000,000 worth a month would necessitate a distribution of the amount which would be received at the different mints of the United States each month, so that when the full amount of the quota fixed for any one institution was full, no further deposits could be received that month, and the result might be to throw a large stock on the market in such localities, which of itself would have a tendency to depress the price.

If, however, any limitation be thought necessary, it would seem preferable to restrict deposits to the product of our own mines, or the mines of this continent, or to deposits of new bullion, as distinguished from foreign coin and foreign melted coin, rather than to limit the amount to be received to a specific quantity or value.

Population of China.—The *Shen Pao* published lately the statistics of the population of China for the year 1887 from the returns of the Board of Revenue, giving the population as 308,241,969, showing an increase of population over the previous year of 1,153,855. It is needless to observe that the above is not the population of China, but only of some thirteen provinces.

THE HALL DUPLEX STEAM PUMP.

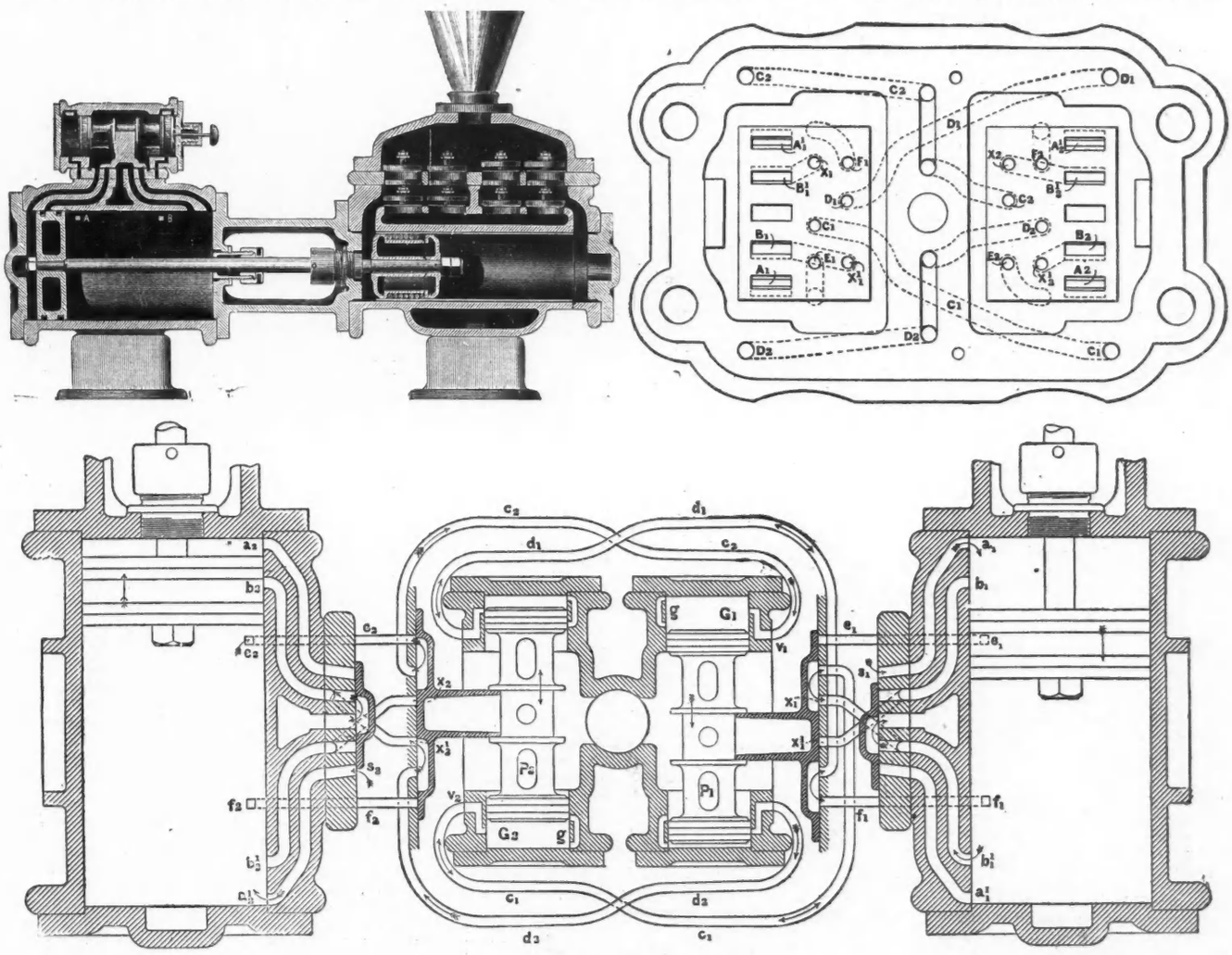
The chief features of interest about the Hall pump consist in the construction and arrangement of the steam valves and the manner in which they are operated. In the first place it should be stated that there is no mechanical connection between the piston rods and the valves, the latter being entirely worked by steam. The method in which this is performed will be best understood by reference to Fig. 1, which is not intended to show the actual constructive details, but merely to serve as an illustrative diagram, by means of which the course of the steam passages and action of the valves may be followed. The main steam cylinders *I* and *II* are served by the slide valves s_1 and s_2 of the ordinary shape; but there are separate passages for the steam and for the exhaust communicating with the cylinders at a_1 $a^1{}_1$ a_2 $a^1{}_2$ and b_1 $b^1{}_1$ b_2 $b^1{}_2$ respectively, the exhaust ports b being further from the end of the cylinder than the steam ports a. Forming parts of the same castings as the valves s_1 and s_2 respectively, are the double slide valves v_1 and v_2, which in reality work upon the same faces as the former; but instead of being placed as in the diagram, they are ranged side by side, as shown in Fig. 4.

The valves s_1 v_1 and s_2 v_2 are controlled by the auxiliary steam plungers p_1 and p_2, respectively, working in the cylinders G_1 and G_2. The valve v_1 regulates the admission of steam to the passages e_1, c_1, f_1, d_1, x_1, and $x^1{}_1$. The passages e_1 and f_1 connect the cylinder *II* with the interior of the valve v_1, while c_1 and d_1 communicate with the ends of the auxiliary cylinder G_2. The ports x_1 and $x^1{}_1$ open into the main exhaust passages of the cylinder *II*. It will be evident from the diagram that the valve v_1 connects the spaces behind the pistons of the plunger p_2 in the auxiliary cylinder G_2 alternately with the main steam cylinder *II* and the exhaust passages of the latter. In an exactly similar manner the double valve v_2 controls the passages e_2, c_2, f_2, d_2, x_2, and $x^1{}_2$, and admits steam through e_2 and c_2 or f_2 and d_2 from the main cylinder I to either end of the auxiliary cylinder G_1 and exhausts it from the latter by c_2 x_2 or d_2 $x^1{}_2$. Thus, the double valve v_1, operated by the plunger p_1, regulates the motion of the plunger p_2, while the double valve v_2 operated by the p_2 regulates the motion of p_1. As the main slides s_1 and s_2 are rigidly connected with v_1 and v_2, they of course move with the latter. To make the action of these valves clear, let us suppose that the piston of cylinder *I* has nearly completed its stroke to the left, and uncovered the passage e_2, the valves v_2 and s_2 being in the position shown in the diagram. In that case, the live steam entering the cylinder through a_2 flows out through e_2, under the valve v_2, by the passage c_2, to the back of the left hand piston of the plunger p_1, and forces the latter over to the right into the position shown, and with it the valves s_1 and v_1. This opens the admission port a_1 to the left of the piston in cylinder *II*, and connects the space to the right through b_1 with the main exhaust passage. At the same time the team at the opposite end of the plunger p_1 escapes through d_2 and $x^1{}_2$ into the main exhaust of cylinder *I*. By the opening of port a_1 steam is admitted on the left of the piston of *II*, which had previously been at rest, and starts it on its stroke to the right. When this piston uncovers ports b_1 and e_1, no effect is produced, because these ports are closed by the valves s^1 and v_1; but when it uncovers f_1 live steam will pass through this port and through d_1 to the left end of the auxiliary cylinder G_2, forcing over the plunger p_2 to the right, and with it the valves v_2 and s_2. In the meantime, the steam to the right of plunger p_2 escapes through c_1 and x_1 into the exhaust passage of cylinder *II*. The movement of the valve s_2 starts the piston of cylinder *I* to the right, and the same cycle of operations is repeated.

The passages d_1 c_1 and d_2 c_2 enter the auxiliary cylinders at a little distance from the ends, and thus leave spaces beyond them for cushioning the plungers p_1 and p_2. This cushioning action is increased by the following device: A small passage g is formed in the wall of each auxilliary cylinder at either end, and communicates by two apertures with the latter. When the valve piston passes over, live steam flows from the steam chest through the passage g to the back of the piston, thus stopping its motion by filling the cushioning space. The plunger is then balanced, having live steam at both ends. Assuming the plunger p_1 to be at the right end of its stroke, as shown in the diagram, then as soon as the valve v_2 moves to the right sufficient to uncover the exhaust port x_2, the space at the left end of G_1 is opened to the exhaust, and the greater pressure of the live steam at the opposite end will drive the plunger p_1 a short distance to the left, sufficient to close g and uncover the opening to d_2, so that steam from the cylinder I may be freely admitted and drive p_1 completely over when the valve v_2 has arrived at the end of its stroke.

It will be seen from the preceding description that the valves of one main cylinder are worked by the steam from the other, and that before one piston comes to rest the other starts, so that there is always a continuous flow of water delivered by the pump. The pump can be started at any point of the stroke.

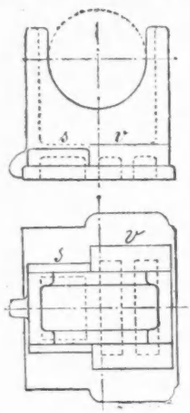
Coming now to the actual construction, as distinguished from the arrangement shown in the diagram, the valve chest and auxiliary, or valve cylinders, which form one casting, are bolted to the top of the main cylinder casting. Between the latter and the former is, however, a separate piece, Fig. 3, which the makers term the "steam plate." This has parallel



THE HALL DUPLEX STEAM PUMP.

faces fitting accurately against corresponding surfaces on the steam chest and cylinder casting, and forms, so to speak, a packing piece. On the upper face of the steam plate work the slide valves S_1 V_1 and S_2 V_2, shown in Fig. 4; the ports controlled by V_1 lie on two parallel lines e_1 c_1 and x_1 in one line, and f_1 d $x^1{}_1$ in the other. The valve V_1 consists practically of two similar valves, side by side, with a partition between one side corresponding to the ports e_1 c_1 x_1, the other to f_1 d_1 $x^1{}_1$.

In Fig. 3 the ports in the face of the steam plate are denoted by the same letters of reference as the corresponding passages in Fig. 1. The valve v_2 is exactly like v_1 in construction, except that one is right and the other left handed; it controls the ports e_2 c_2 x_2 and f_2 d_2 $x^1{}_2$. The cross connections between the various passages, which are of rather a complicated character, are formed by grooves in the lower surface of the steam plate,



as shown in Fig. 3. This explains the necessity for the use of the plate; its position is clearly seen in our perspective view of the pumps and in the longitudinal section Fig. 2. The attachment between the valve and the plungers is indicated in Fig. 1. On the back of each valve—or, rather, set of valves—is a projection with a semi-circular recess which embraces the plunger, and against which fit flanges formed on the latter. The admisson of live steam to either end of each plunger, for the purpose of cushioning, is a special feature in the valve arrangements, on which the makers lay great stress; it obviates the difficulty which has frequently been experienced with steam worked valves, that the plungers or valve pistons are prematurely shifted by back pressure in the cylinders.

THE RETURN OF POWER IN ELECTRIC AND CABLE TRACTION.

By Andrew Bryson, Jr., Mem. Am. Soc. C. E.

To move a given weight, say one ton, over a given space in a given time requires the expenditure of a certain force, which is the same whether it be produced by animal, mechanical, or any other possible means. To get the required force applied at the desired place and time, with the least possible loss, is the problem; and some method of transmission from a fixed central station is clearly the most economical and best for such work as the propulsion of street cars.

The application of electricity to this character of service has made remarkable progress within the past two years, and it is without doubt the *best* power, or rather means of transmission of power, for such work *under certain conditions and in certain localities*. But there are other conditions and other localities where the cable *must* hold superiority, if economy and certainty of operation are to govern the selection of the power to be used, for, unlike electricity, which, being dependent upon adhesion of the wheels to rails, is not well adapted to grades, the cable is independent of them, and its *economy increases* with the increase of traffic; or, in other words, the quantity of coal consumed per ton per mile *decreases* with every ton-mile added to the traffic. There is a certain amount of power required to move the engine and idle cable which is a constant charge, becoming less per ton-mile as the number of ton miles increases: it is *practically* the only loss, every additional ton moved requiring but a very small increment to the net power necessary to move it; on grades, cars moving down assist the engine to haul those bound in the opposite direction, and therefore a cable road where there are grades of any degree is, by properly adjusting the traffic, reduced, to all intents and purposes, to a level line.

With electricity, on the contrary, the result is diametrically opposite; its greatest economy is obtained when the work to be done is the lightest, and that this is in accordance with the unchangeable law governing the science and application of electricity cannot be successfully controverted, nor can the law be changed by assertions of interested electricians.

The movement of an electric current is analogous to that of water through a pipe. The "volt" represents the unit of static force or pressure. The "ampère" is the unit of current per second, and from these the horse power is derived.

The energy expended in passing an electric current through a circuit is similar to mechanical friction, and, like it, varies as the *square of the current*. Now, the higher the voltage—that is, the greater the pressure—the less will be the current needed for a certain amount of work; just as with water a small quantity under a high pressure or "head" will do as much work as a greater quantity under a less head. But the high voltage is exceedingly dangerous, and the difficulties of insulation are very great, just as the water under too great a head or pressure will burst the pipe.

It is stated by electricians that 300 to 500 volts is about the safety limit; and assuming this to be the case, the necessary horse power for a given duty must be regulated by the ampères of current delivered. As these increase, so must the size of conductors and wires in motors, and quantities of copper in commutator brushes, etc., increase, because heat is developed by the current and it increases as the *square of the ampères*, or really rather more than that, for as the heat in a conductor increases, the *loss of energy* in transmission increases also, while as the size of a *conductor* increases its "specific" capacity lowers: so that we have the choice of two evils; either the exceedingly dangerous high voltage with the accompanying difficulties of insulation, or greater current with corresponding increase of temperature and size of conductors, and *decreased* conductivity.

Authorities do not agree as to the safe value for currents, but vary from 500 to 2,000 ampères per square inch, 1,350 being, however, an average of eight. Taking which we find for wire

One-quarter inch diameter	66.27	ampères allowable.
Three-eighths " "	149	" "
One-half " "	265	" "

And comparing this with the figures in Table I., the result is that with 500 volts as maximum, the first wire will carry about 42 horse power, the second about 100 and the third 178; but with 600 volts, the first will carry about 50, the second 120 and the third 214 horse power. All of which goes to show the temptation there is presented to use high and more dangerous voltage with

TABLE I.

Volts E.	Amperes C.	Ohms. $R = \frac{E}{C}$	Horse power H. P. $= \frac{W}{746}$	Heat per second (Fahr.°) developed in copper wire. ¼″ diam.	⅜″ diam.	½″ diam.	
500	20	25·0	13·4	498·5	221·6	124·7	"1 H. P. expended wholly in producing electric current would generate 1 ampère current in 746 ohms resis."
"	40	12·5	26·8	997	443	249	
"	60	8·33	40·2	1495	665	374	
"	80	6·25	53·6	1994	886	499	
"	100	5·00	67·0	2492	1108	623	
"	120	4·16	80·4	2991	1329	748	
"	140	3·57	93·8	3489	1551	873	
"	160	3·13	107·2	3972	1773	997	Formulæ for heat developed in copper wire per second in degrees Fahr.
"	180	2·78	120·6	4487	1994	1122	
"	200	2·5	134·0	4985	2216	1247	
600	20	30·0	16·1	599	266	150	
"	40	15·0	32·2	1198	532	299	
"	60	10·0	48·3	1797	798	449	
"	80	7·5	64·4	2397	1064	598	$F.° = \frac{65{\cdot}99(^{\circ})R}{\text{wt. in gr.}}$
"	100	6·0	80·4	2996	1330	749	
"	120	5·0	96·5	3595	1595	898	
"	140	4·29	112·6	4194	1861	1047	
"	160	3·75	128·7	4793	2127	1197	Weight in grs. per ft. $= d^2 \times .0211761$.
"	180	3·33	144·8	5392	2393	1346	
"	200	3·00	160·9	5993	2659	1496	
700	20	35·00	18·8	....	310	175	
"	40	17·50	37·5	....	620	349	$d^2 = 250^2$ for ¼″ wire.
"	60	11·67	56·3	....	931	524	
"	80	8·37	75·1	....	1241	698	
"	100	7·00	93·8	....	1551	873	$d^2 = 375^2$ for ⅜″ wire.
"	120	5·83	112·6	....	1861	1047	
"	140	5·00	131·4	....	2172	1232	
"	160	4·38	150·1	....	2482	1396	$d^2 = 500^2$ for ½″ wire.
"	180	3·89	168·9	....	2792	1571	
"	200	3·5	187·7	....	3102	1745	
800	20	40·0	21·4	....	354	199	Copper fuses at 2160°.
"	40	20·0	42·9	....	709	399	
"	60	13·33	64·3	....	1064	598	
"	80	10·00	85·8	....	1418	798	$W. = \frac{E^2}{R}$
"	100	8·00	107·2	....	1772	997	
"	120	6·66	128·7	....	2127	1197	
"	140	5·71	150·1	....	2482	1396	
"	160	5·00	171·6	....	2836	1596	
"	180	4·44	193·0	....	3191	1795	$\text{H. P.} = \frac{W}{746}$
"	200	4·00	214·5	....	3545	1994	

low current; in fact, not only the temptation, but the absolute necessity of doing so when the demands of traffic exceed the normal amount for which the conductors are proportioned.

It also demonstrates that about 1,500 degrees to 1,800 degrees Fahrenheit is considered the limit of safe temperature, as it well may be when copper fuses at 2,160 degrees, and it only leaves a margin of about 10 horse power to draw on before something begins to burn out.

The next item of loss in transmission is leakage. Even with the most perfectly insulated conductors there is *some* loss, although small; but when we come to the naked wire which must be used for traction purposes, this loss is variable and often great, especially when there is much moisture in the air; and it is still further increased when the moist air is, as in large cities, impregnated with chemical impurities.

Beranger, an engineer in the employ of the German government, has estimated the *return* of energy in different systems of transmission as follows:

Dist. in feet.	By electricity.	By cable.
1,640	68 per cent.	93 per cent.
3,280	66 "	90 "
16,400	60 "	60 "

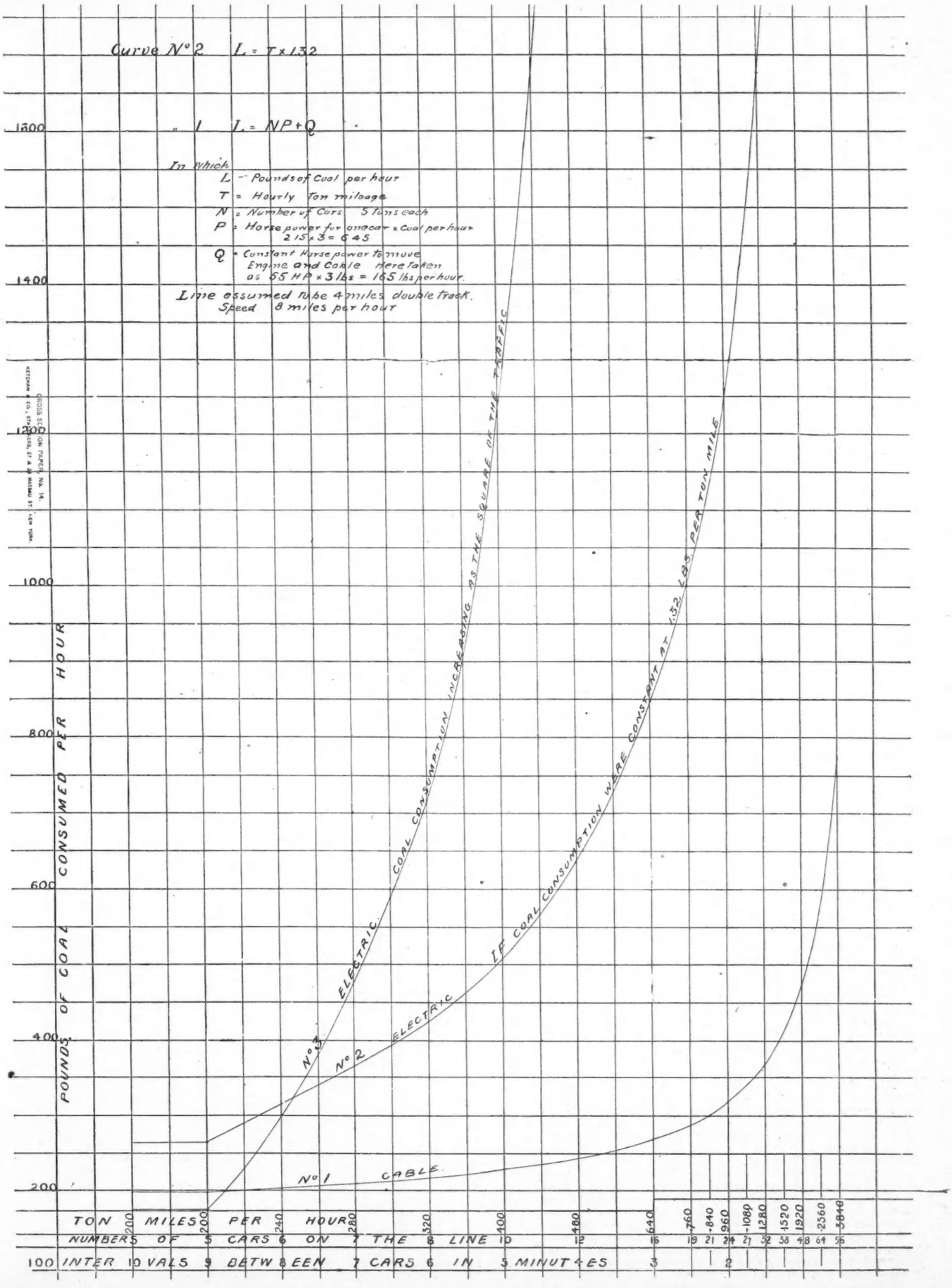
In street railway traffic the power is not all transmitted to a given point, as in the above table, but is distributed all along the line: hence the comparative economical distance for cable as given above will be very much exceeded when street railway service is to be provided for. And it must be remembered that transmission of power *only* is considered, exclusive of the loss in converting the electrical into mechanical energy by the motor.

Mr. Deprez, although a most ardent advocate of the high-voltage system of transmission, has realized only about 33 per cent. of the original energy at a small distance (J. T. Sprague, pp. 522, 926).

The loss in the dynamo is the next to be considered, and the following extract from Mr. J. T. Sprague's work on electricity will serve:

"The efficiency of a dynamo machine is often reckoned from its capacity as a converter of mechanical energy into electrical; that is, by the formula $C^2 \times R$. But the electric energy expended *within the machine* is as much waste as the mechanical friction. The true efficiency is represented by the ratio of the energy in the external circuit to the mechanical energy expended in driving. . . . If we call the horse power employed in driving 100, then we shall generally have about 10 to 13 per cent. absorbed in friction and local currents, which would reduce the efficiency of the particular Burgen,* as stated above, to 63 per cent., while the various tests made at public trials show that this true efficiency, as

*This is the machine which he previously experimented with and gives diagrams and calculations for, and which indicated a useful work of 73·5 per cent,



DIAGRAMS OF COAL CONSUMPTION FOR ELECTRIC AND CABLE TRACTION.

TABLE II.

Number.	Length of Road in Miles.		Grades, per cent.		Speed, average Miles per hour.	Time of Operating, hours.	Weights, Motors, Cars, tons net.	Mileage.		Driving Engines.			Dynamos.			Fuel.		
	Cable.	Electric.	Max.	Average.				Car.	Ton.	No.	Indicated H. P. Max. total.	Indicated H. P. To drive Cable.	No.	Rated H.P.	Total H.P.	Lbs. of coal used. Ton = 2240 lbs. Total.	Lbs. of coal used. Ton = 2240 lbs. Per ton-mile.	At $3.00 per ton, cost per ton-mile.
1		4.7	4.0	1.0	9.4	126	5 / 3	5344.9	21,379.6	2	R 240		2	80	160	39,000	1.824	.00244
1		"	"	"	"	"		3991.9	19,959.5	1	R 120		"	"	"	26,300	1.317	.00176
2		25.0	10.0	(?) 2 or 3	8.0	24	2.5	2500	6,250	3	R 125		6	50	300	11,200	1.792	.00240
3		1.9	1.		5.7	55	4.85	"about" 4380	21,243							27,826	1.31	
4	1.037		3.77		10.0	1 year			15,226,542		394.5	47.7				5,757,300	0.3649	.0004887
4	"		"		"	"			16,740,493							7,733,000	0.4612	.0006176
4	"		"		"	8 mos.			12,664,198							5,592,600	0.4416	.0005914
5	9.1										188.1	51.5						
6	3.78				8.0						280.	120.						
6	"				"						484.	120.						
7	20.25			00	8 / 10		3.5 / 6.2 Loaded				1500.	366.						

Remarks.—No. 1—Ton miles $= \frac{5344.9}{2} = \frac{2672.45 \times 5}{2672.45 \times 3}$ No. 1—7 motors, each hauling one tow-car; 18 hours per day; bituminous coal; 2-15 H. P. motors to each car; about ½ double and ½ single track; overhead conductor ⅜ copper wire. No. 1—2-15 H. P. motors to each car; volts, 500; 5 motors, no tows; one day, 6 motors; ampères, 100. No. 2—Volts, 500; ampères, 100; all single track; 2-7½ H. P. motors to each car; anthracite waste; conductors, No. 3 to 000 copper; 6 circuits connected together overhead. No. 3—Single track; double overhead trolley. No. 4—Electric lights used 4,475 hours, fuel for which is included in table; power for shops and steam heating also included. No. 4—Electric lights used 4,155 hours; power for shops and steam heating also included: new engine started, showing for some time an increased coal consumption, which, however, is working back to normal. No. 4—Electric lights used 2,602 hours; the number and power of the electric lights not known. No. 5—25 trains or 75 cars on this cable section at one time; 72·6 per cent. for cars and load; 27·4 per cent. for engine and cable. No. 6—20 trains of grip = 5,000 lbs., and pass. car = 8,500 lbs.; total aggregate load, 135 tons; two sections operated from one power station. No. 6—22 trains, total aggregate load, 148.5 tons; grades and other data not at hand to explain differences. No. 7—340 cars on section when engine at max.; 3½ lbs. soft coal screenings per horse power per hour; 75·6 per cent. for cars and load; 24·4 per cent. for engine and cable.

developed in different machines, actually ranges down to 30 per cent. only. The efficiency is greatest in large machines and when the machine is used under the conditions for which it was designed."

Next as to the efficiency of motors. High velocity of rotation is a prime condition of efficiency, and to that end the moving parts should be as light as possible. Therefore, when running at their proper full speed they are doing their best and most economical work; but when starting or running slowly, as is so often the case when passing along crowded city streets, the conditions are most unfavorable and the expense increased.

Professor Ayrton and Perry (England) give the efficiency of various motors with which they experimented as follows:

Motor.	Weight in lbs.	Resistance.	Current.	Revs. per min.	H. P.	Efficiency.
Griscom	2·5	1·1	3·9	513	·00225	·0542
Gramme armature, Siemens field.	30·8	·973	5·4	932	·0275	·296
Ayrton & Perry	37	·2	25·9	1880	·215	·382
De Meritens	72	·850	10·6	860	·154	·51
Siemens	519	.....	....	906	4·96	·746

"These figures do not relate to the cost of putting the energy into the motors. And yet some *interested* electricians claim 90 per cent. efficiency for their motors, while others, more modest, state 80 to be the figure. However, we will accept these figures and see what the result is, starting with the engine cylinders and ending at the gearing side of the motor. The friction loss of the engine we will assume to be 10 per cent., the horse power in the cylinders as one. Then there will be delivered *to* the dynamo 90 per cent. For the dynamo we will allow 80 per cent, and it will then deliver to the conductor 80 per cent. of 90 per cent. = 72 per cent. Counting loss in transmission as only 25 per cent., which, as has been previously shown, is much less than disinterested experimenters place it, we shall have delivered *to* the motor 72 — 25 = 54 per cent.; and, allowing 80 per cent. again for the motor, the resulting net return, to apply to driving the gearing on the car, will be 54 × .80 = 43.2 per cent. of the original power in the engine cylinders. This will diminish as the work to be done *increases*, and the motor approaches its maximum capacity, as for instance on grades, and it is exceedingly doubtful if any such returns have been practically realized.

Although the economy *must*, according to theory, decrease as the limit of capacity of an electric plant is approached, data from actual every-day, practical working, to substantiate what has been said, are desirable to demonstrate its truth beyond any question. These are very difficult to obtain, but a few facts from various sources will serve the purpose.

For ready comparison the data obtained have been worked out to show the pounds of coal consumed in moving one ton one mile, and the results tabulated; variations in traffic and coal consumption having been obtained wherever possible. See Table II.

Where motors and *tow* cars of different weights are used, the percentage of each has been taken and the car-miles reduced to ton-miles, for the former is obviously not a true criterion of work done. A heavy motor weighing five tons may haul a lighter car weighing but three tons; in one mile they would count as two car miles, or twice what the motor would count alone; whereas, reduced to ton-miles, the difference would be as five to eight, an increase of 60 per cent. instead of 100 per cent.

To determine the net efficiency or returns the following formulæ have been used:

Let W = weight of motor or train in tons; g = the average grade in per cent.; gr = grade resistance per ton = 20 lbs. per per cent.; t = traction resistance = 20 lbs. per ton; M = speed in miles per hour; v = speed in feet per minute; b = pounds of coal required to develop one horse power per hour in the engine; c = net pounds of coal required per ton-mile; HP = horse power for one motor or train; x = ton-miles per hour for one motor or train.

Then $HP = \frac{(Wt + \frac{Wgr}{2})v}{33{,}000}$ (1); $x = WM$, (2); $c = \frac{HP\,b}{x}$ (3), and $\frac{c}{\text{lbs. used}}$ as per Table II., = percentage returned.

The four cases for which data have been obtained have been calculated by the foregoing method, and the results are as follows:

	Pounds of coal per ton-mile actually used from Table II.	Pounds of coal required per ton-mile (derived from formulæ) to develop one horse-power, when— Three pounds of coal are used per hour.	Four pounds of coal are used per hour.	Daily ton-miles per mile of road (18 hours per day).	Percentage returned. Three pounds coal.	Four pounds coal.
1...	1·824	0·239	0·317	649 8	13·1	17·3
1...	1·317	0·239	0·317	607·0	18·1	23·3
2...	1 792	0·36	0·48	250·0	20·0	26 7
3...	1·31	0 16	0·213	609·5	12·25	16·0

Note.—No. 2. The average grade assumed to be 2·5 per cent.
No. 3. In absence of grade data, it has been assumed to be level.

From the above it will be seen that the best returns are with the lightest traffic, decreasing as the traffic increases, except for the last case, which is much less than it should be if the road was operated under like con-

ditions with those preceding, which, however, is not the case. The two first are situated in interior cities, where the air is generally dry, while the last road is by the seashore, where much greater loss in transmission would necessarily take place, due to the prevailing salt and damp air.

A diagram appended shows graphically the fuel consumption per hour for a road four miles long, double track, motors or cars weighing five tons, speed eight miles per hour. The intervals between trains, with the corresponding hourly ton mileage and total number of cars on the road are plotted as abscissa the hourly coal consumption in pounds as ordinates.

Curve No. 1 is for a cable, and 55 horse power have been allowed for moving the engine and cable alone at the regular speed.

Curve No. 2 is for electric power, *assuming* that the coal consumption is *constant* and at the lowest figures from actual working, as in Table II.

Curve No. 3 is also for electric power, but with the coal consumption increasing as the *square of the traffic*, beginning with 0.56 pound per ton-mile, for 160 ton-miles per hour.

It indicates that so far as power alone is concerned, electricity may be economical up to eight or nine minute intervals.

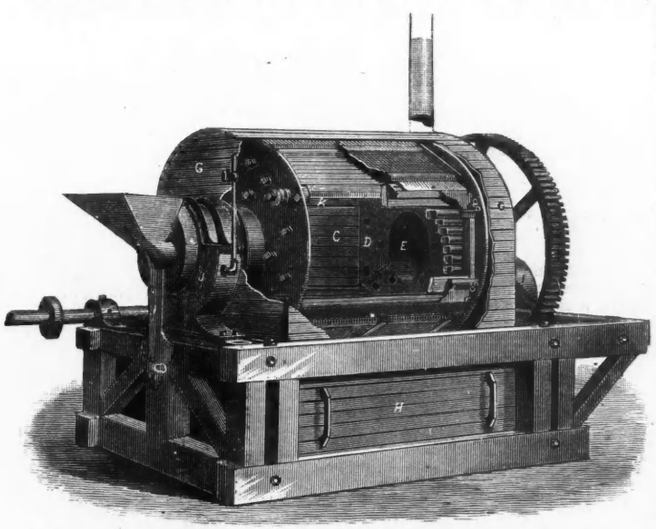
The cost of power stations will be about the same for cable as for electricity; leaving the interest on street construction and price of fuel to determine the result, due consideration being given to dangers, possibility of breakdowns, grades, and climatic effects.

The cost of an electric street construction increases with the business for which it is proportioned, due to the varying size and weight of conductors, etc.; whereas the cable is the same whether light or heavy traffic is contemplated, varying only with the character of the street through which it passes.

It is impossible to approximate even a point of economy of one system over the other applicable to all cases. Each must be studied separately, and the best general statement the writer is able to make is that *rarely, if ever*, will the intervals between five-ton cars on a four-mile double-track road, generally straight and *level*, operated at a speed up to eight miles per hour, be less than four minutes before the economical conditions for cable are reached; and this point of cable economy will be reached at longer intervals between cars as the grades and price of coal increase, and climatic conditions become less favorable to electric or any other adhesion system of traction.

THE "DODGE" IMPROVED PULVERIZER.

The principle of this mill is that of a hexagonal drum or barrel, as shown, into which the ore is fed at *J* by an ore feeder after having passed through the rock breaker. This barrel is lined inside with forged steel bars, which form a grating through which the crushed ore passes on to the screens, the fine ore passing through the bottom on to copper plates and to concentrators, if crushing wet, or into an elevator if crushing dry, while the coarser particles return back from between the screen and steel bars into the pulverizer, which must run so that all the ore will be ground fine enough to go through the screen. The pulverizer being



hexagonal in shape, the ore does not slide in mass and wear the grate bars as in cylindrical pulverizers, but falls over at each angle, thus insuring more effective crushing, causing slight wear on the grate bars. Pieces of iron from ten (10) pounds down are used for crushing, or pieces of hard stone or quartz may be used for this purpose. By using this mill, it is claimed that a much larger percentage of metals and minerals can be saved over others in which the ore has to rise up out of the mill through the screens, as in this the heavy metals and minerals pass out by their gravity through the bottom as soon as fine enough to pass through the screens, which avoids sliming the ore.

The mill is made in two sizes. No. 1 is four feet diameter and four feet long, requiring 12 horse power to drive it, and is stated to have a capacity of a ten-stamp mill, a screen surface of 31 square feet, tight and loose pulleys 30-inch diameter, 10-inch face, making 155 revolutions per minute, which gives 25 revolutions per minute of the mill. Weight, about 18,000 pounds.

No. 2 machine is 3 feet diameter and 3 feet long, requires 8 horse power to drive it, and is considered equivalent to a five-stamp mill, with a screen surface of 17½ square feet, tight and loose pulleys 26-inch diameter, 8-inch diameter, making 160 revolutions per minute, which gives 32 revolutions per minute on the mill. Weight, about 9,000 pounds.

These mills are manufactured by the Parke & Lacy Company, San Francisco, Cal., and the testimonials in their possession would seem to establish that the claims made made are fully justified.

NOTES ON THE WING.

From a Traveling Correspondent.

Pittsburg.—Pittsburg is "booming" is the universal verdict of all its citizens, as well as of all recent visitors. The city never before seemed so brisk and energetic. There has been a great change in the appearance of the city in the last five or six years. New buildings in the most modern styles of store and office architecture have been erected in the principal streets, and both streets and buildings are so much cleaner than they used to be that Pittsburg can no longer hold her old title of the dirty city. Part of the improvement is due to the substitution of natural gas for bituminous coal as a fuel for factories and private dwellings, but much is due to increase of wealth and advanced art culture of its citizens. Ten years ago it would have seemed absurd to mention art and Pittsburg in the same sentence, but is no longer so. If the improvement of the city continues at the same rate for ten years more it will rank among our most beautiful cities.

Among the fine new buildings, the new county court-house, one of the best specimens of the work of Richardson, the new post-office building and the Westinghouse office building are most worthy of notice. Two excellent lines of cable street cars connect the business part of Pittsburg with its east end. These are helping to build up the east end with a fine class of dwellings, and increasing population so rapidly that the Pennsylvania Railroad is contemplating a new accommodation train service to compete for the traffic.

The Pittsburgers are, as usual, complaining of the lack of sufficient railroad facilities for freight business, and feel sore at the defeat of the South Pennsylvania Railroad project, which promised a new outlet to the East. The railroads now centering at Pittsburg are all congested with business, and there are numerous complaints of delays of freight, as well as of unfair discrimination in rates.

Much has been said of the probability of the iron industry of the South wresting from Pittsburg its supremacy in iron manufacture, and of the steel-rail mills of Chicago taking away a portion of Pittsburg's trade; but the fact remains that, handicapped as Pittsburg is by distance from the the cheap pig iron of the South and from the ores of Lake Superior, as well as by lack of water transportation North and East, and insufficient railroad facilities and high freight charges, she not only retains her position at the head of the iron business, but is increasing at a more rapid rate than ever before. The figures of the next census will show a most extraordinary growth, and it is probable that the percentage of increase of population and of wealth in Allegheny County will be greater than that of any county east of the Mississippi River.

A great ship canal to connect Pittsburg with Lake Erie is under serious consideration. There are no engineering difficulties of any consequence in the way—it is only a question of dollars and cents. The canal would be of incalculable advantage to the industries of Pittsburg. The iron and steel business is dependent upon the iron ore of Lake Superior, which has to be trans-shipped from the lake vessels into cars and carried 150 miles by rail.

If this trans-shipment and rail carriage could be dispensed with there would be a large saving. With coal, oil and natural gas fuel surrounding the city on every side, and with the best ores in the country accessible by an all-water route, Pittsburg would maintain for all time to come its supremacy in iron manufacture, which is now being disputed by Chicago on the one side and by the iron centers or Alabama and Tennessee on the other.

One might spend a month visiting the numerous manufactories in and around Pittsburg and find something new and interesting in each. Progress is the watchword of the day. New buildings, larger mills, new products and enterprise of every kind are seen on every hand. The works are all busy to their utmost capacity, and there are symptoms of a "boom," which, apparently, rests on a more solid basis than the one of 1879, which went up and then down again inside of a year. Pittsburg received a severe lesson then in the severe reaction which followed the rapid rise of prices. Let us hope the present "boom" will not rise to such a height nor be followed by such a sudden downfall.

Between Pittsburg and Johnstown.—There are three new and important and industrial works. The first is the new plant of the Westinghouse Air Brake Company, now building a short distance beyond Braddock's. The buildings, as seen from the cars, are of vast dimensions, and no doubt a large town will soon grow up around here. The second is a large plate-glass works at Jeanette, a new town which has sprung into existence, as if it were in the far West. The third is the new steel works at Latrobe, an old town which for years past has appeared to remain almost stationary, but which now has taken a new growth. These works were built and managed by Mr. Julien Kennedy, who gained a reputation as blast-furnace constructor and manager when he was at the Edgar Thomson Steel Works which was second to none in the world. He will no doubt make as good a mark in his new position.

Johnstown.—It requires a visit to Johnstown to be able to appreciate fully the terrible calamity which overtook it on May 31st. It is a startling sight to see acres of bare ground where once stood substantial buildings. A large part of the city which was swept bare by the flood is now covered by temporary one and two story frame buildings and shanties. It looks like a Western town two or three weeks old, such as may be seen at the temporary terminus of a new railroad. Foundations are being laid, however, for more solid buildings, and it is likely that in two or three years the town will be rebuilt better than it was before the flood. The Gautier Steel Works were wiped off the face of the earth, but they are being rebuilt. The principal works of the Cambria Iron Company suffered severely, but they were not wiped out, and repairs are rapidly being made. One of the two Bessemer steel works is running, as are also the Pernot furnaces, two on steel and one as a washing furnace for dephosphorizing pig iron. The blast furnaces, the axle works and the wire rod mill are also running. There are some roll trains in the merchant steel department still covered with mud, some of the heating furnaces in

the blooming mill are still in the condition in which the flood put them, and there is much débris of scrap iron, etc., around the works, but it will not be long till all traces of the flood are removed from these works. Fortunately for the company none of the heads of departments were lost, and they are at work with their usual energy repairing the damages, and they will soon have the works in better shape than ever. The city itself, and not the works, was the chief sufferer, and it will take a long time to repair its damages.

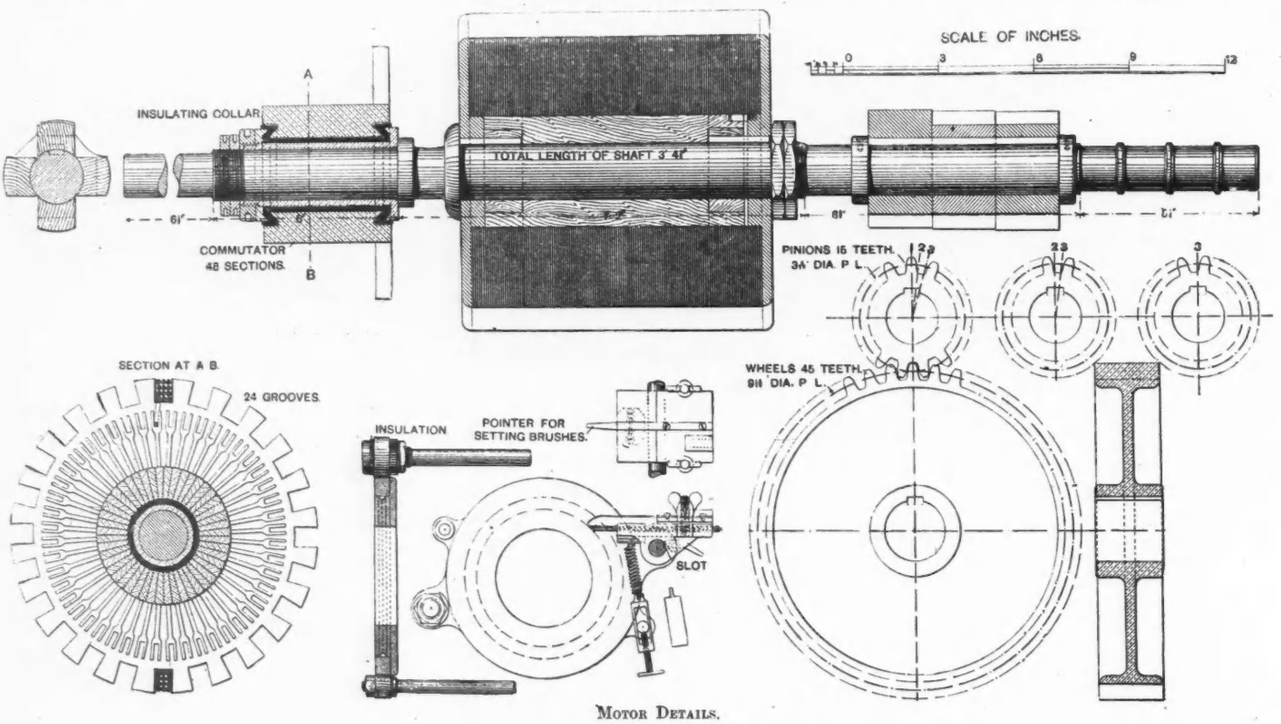
Wheeling, W. Va.—After seeing so many cities during this trip in the full tide of prosperity, we expected to find Wheeling showing similar signs, but were disappointed. There is less bustle in the streets than there was five years ago, and there are few, if any, signs of improvement. In fact the city itself, apart from the iron works in and around it, does not appear to be prospering. Inquiring the cause, one of the citizens stated that capital is being driven out of the city by the arbitrary acts of the labor unions. It is not a question of wages but of tyranny of the unions in minor matters, such as the employment of non-union men, and dictation as to rules of employment. He said that a house owner could scarcely repair his yard fence without getting in trouble with some labor union about it. Consequently building is stopped, and masons, bricklayers and carpenters are idle. The Bellaire Iron Works had a strike on their hands because they refused to discharge some men who were objectionable to the union.

question on the basis of a practical trial, and two 10 horse-power motors, one to the design of "Ironclad" and the other to that of "Agir," were actually built and tested. In this test the performance of the "Agir" motor was superior to that of the "Ironclad," and the judges have, therefore, unanimously awarded the prize to the "Agir" motor. Upon opening the sealed envelope, forwarded with the design marked "Agir," it was found that the successful design was due conjointly to Mr. F. V. Andersen, electrical engineer to Messrs. Latimer Clark, Muirhead & Co., Limited, London, and Mr. J. O. Girdlestone, engineer to Messrs. B. Verity & Sons, London.

After thus ascertaining the names of the winners of the prize, the proprietors made arrangements on behalf of the designers for securing an English patent for the successful design. This patent has now been completed, and we are enabled, says *Industries*, to publish herewith a table giving results of the tests and full illustrations of the "Agir" motor:

Electrical horse-power supplied.	Speed of motor spindle.	Mechanical horse-power given of motor spindle.
11·81	248	7·31
14·85	285	10·60
12·70	252	9·48

The motor is series wound, the resistance of the armature being 0·065, and that of the field 0·001 ohm: total, 0·126 ohm. The weight of the motor without pulley is 8 cwt. 3 quarters 5 pounds. It is designed to



MOTOR DETAILS.

"INDUSTRIES" PRIZE ELECTRO-MOTOR.

The iron, steel, and nail works, however, are generally very busy, although the prosperity does not appear to improve the appearance of the town. The profits made in the business are probably being spent elsewhere.

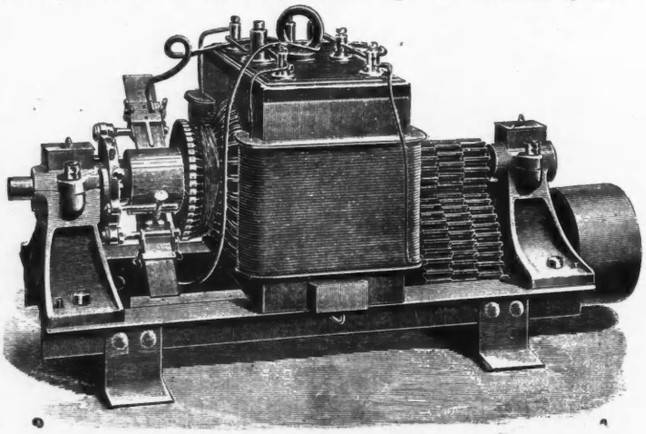
The Riverside Iron and Steel Works is a most interesting place, from the fact that it is the first steel works in the country to engage in the manufacture of lap and butt-welded pipe. They have a large pipe mill, finely equipped, and are turning out regularly pipes from one-eighth to eight inches diameter, made exclusively from steel made in their own Bessemer steel works. The pipe seems to be a complete success. It stands all the regular pressure tests, endures flanging and expanding, and thread cutting equal to the best iron pipe. In fact, we never saw iron pipe with as perfect threads as are cut on these steel pipes.

The Wheeling Steel Works is one of the most comfortable-looking steel works we have ever seen, since it has no odds and ends of steel ingots, blooms, billets, crop ends, and other scrap lying around such as are seen at most other works. The reason is that all its product is made into nail slabs and shipped into cars while still hot. There are two converters, a lot of Gjers soaking pits for heating the ingots, a blooming mill for rolling the slabs, a large shear for shearing them, a lot of little iron cars in which they are cooled by streams of water, a dumping arrangement for dumping the slabs from the little cars into a railroad car, and besides the necessary equipment of the boilers, engines, locomotives, etc., this is about all. The plant was designed especially for making rail slabs, and it is a most excellent design.

THE "INDUSTRIES" PRIZE ELECTROMOTOR "AGIR."

In May, 1887, our London contemporary, *Industries*, announced that of the various designs of a 10 horse-power electromotor sent in to compete for the *Industries* prize of 100 guineas, those marked "Ironclad" and "Agir" were considered by the judges to be of equal merit, so far as could be ascertained from the drawings and descriptions. As the conditions of the competition did not permit of dividing the prize between two competitors, the proprietors of *Industries* determined to decide the

work with a current of 150 volts pressure, and a speed of motor spindle of 250 revolutions per minute. According to the terms of the competition, the weight was not to exceed 950 pounds, the speed of the motor spindle



GENERAL VIEW OF PRIZE MOTOR.

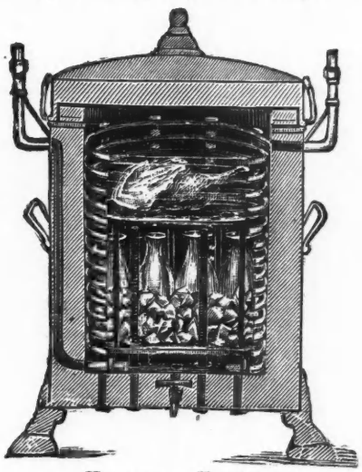
was not to exceed 250 revolutions per minute, the pressure was not to be less than 100 or more than 500 volts, and a commercial efficiency of 80 per cent. should be aimed at. The prize motor, although falling short of this standard of perfection, has been considered by the judges to come sufficiently near it to merit the award. The drawings of this motor,

which we produce from our contemporary, are so complete that no detailed description is necessory.

Messrs. W. H. Preece, F.R.S., Prof. G. Forbes, M.A., F.R.S.E., and Prof. Grylls Adams, M.A., F.R.S., kindly acted as judges gratuitously in deciding the awards.

A SIMPLE HOUSEHOLD FREEZER.

An improved freezer, specially adapted for making ice in small quantities for household use, or for cooling bottles of wine or other substances, is illustrated herewith, and has been patented by Mr. Theodore L. Delpy, of Paris, France. It consists of a receptacle adapted to hold a freezing liquid, and having double walls filled with a non-conducting material, an upwardly projecting pin in the bottom of the receptacle being fitted with a sleeve secured to a vertical shaft, the upper end of which passes through a suitable bearing in the cover. The outer end of the shaft has a hand wheel, and from the sleeve at its bottom extend radial arms provided with upright T-shaped beaters. Centrally in the receptacle is held a vessel, preferably star-shaped, in cross section, the vessel being supported by L-shaped arms resting on the top edge of the receptacle. In the central



HOUSEHOLD FREEZER.

vessel is held a tube, through which passes the sleeve and vertical shaft, so that the latter can revolve without revolving the vessel. This machine is simple in construction and rapid in operation. It is stated that with it a child of five years of age can make a solid piece of pure ice without the least trouble. Such a machine should be appreciated by yachtsmen, confectioners, hotel-keepers, cafés, etc., and to farmers and families living in the country where ice is scarce.

The outer receptacle being supplied with a proper quantity of any suitable freezing liquid, such as sulphate of soda and hydrochloric acid, or other mixture, and the inner vessel holding the water or other liquid to be frozen, the operator turns the hand wheel, whereby the freezing mixture is agitated by the beaters and exerts its freezing power on the inner vessel.

The American agents for the Delpy machines are L. Dermigny & Co., W. Twenty-fifth street, New York.

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.]

Catalogue of Abendroth & Root Manufacturing Company: Root's Sectional Safety Boiler. Published by the Abendroth & Root Manufacturing Company, 28 Cliff street, New York, 1889. Paper, 4to, 48 pp. and 21 pp. of tables. Illustrated. This is a handsome pamphlet descriptive of the Root sectional safety water-tube boiler, of which a number of forms are shown, singly and in battery. The illustrations, given partly in section, show plainly the method of construction. The whole catalogue is attractively gotten up, and is a fine specimen of this class of publications. The very elaborate tables, prepared by Mr. E. M. Hugentobler, engineer to the company, appear to be of great value. They are: (1) a table of horse-power conversions for gauge pressures up to 300 pounds, and temperatures of feed water from 32 degrees to 212 degrees Fahrenheit; (2) a table of relative degrees of evaporation for the same pressures and temperatures.

Briquette Making in Pennsylvania.—The Reading Coal Company at Mahanoy City have adopted a system of briquette making from coaldust. This waste-saving process consists of the coaldust being evenly distributed with one-tenth per cent. of pitch. This, by an ingenious contrivance, is pressed into large cakes, steam being used to moisten the mass. So hard does it become that it possesses the same power of resistance as coal, or, in other words, a hundred pounds of coaldust pressed will last as long as the same amount of hard coal. A pressure of 35 tons is brought to bear on each briquett. There are two presses in operation now, and when run to their full capacity will turn out about 800 tons of the briquette in 24 hours. The briquettes take up 25 per cent. less space than ordinary coal, and in consequence an engine can be loaded to go one-fourth further without replenishing the supply of fuel.

Victorian Tariff Alterations.—The revised tariff bill was passed in October, and by it brush ware is raised from 25 to 35 per cent. ad valorem, chinaware and porcelain (except photographic telegraphic materials) changed from 2s. 6d. per cubic foot to 15 per cent. ad valorem; earthenware, including packing (except the above materials), altered to 8d. per cubic foot, measuring outside the package as imported, instead of 1s. 4d. per cubic foot measured after the goods had been unpacked and stacked, and all breakages thrown out; bent and bevelled glass, instead of 1s. per cubic foot, is now 20 per cent. ad valorem; all bottles, including medicine bottles, are to be 6d. per cubic foot, measured outside the package, not the solid measurement of the bottles themselves; the duties on oils in bottles are doubled (4s. per dozen quarts and so on), and a new line has been introduced imposing 12s. per dozen on bottles of oil containing more than a quart but less than a gallon. Acetic acid, formerly 3d. per pint or lb., is now charged at that rate when containing not more than 30 per cent. of "acidity," and for every extra 10 per cent., or part of 10 per cent., above 30 per cent., 1d. per pint or pound. Chlorodyne is classed as a drug at 25 per cent. ad valorem.

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 DECEMBER 3D, 1889.

416,150. Railway-Joint. Allen Bagley, Ypsilanti, Mich.
415,152. Safety Device for Railway Cars. Alexander A. Cameron, Cobbville, Ga
416,161. Car Wheel and Axle. James Grady, Brooklyn, N. Y.
416,164. Marble Cutting Machine. Manning F. Hatcher, Brooklyn, N. Y.
416,172. Steam Pump. John Maslin, Jersey City, N. J.
416,187. Car Coupling. George M. Smillie, Newark, N. J.
416,189. Wire Rope or Cable. James B. Stone, Worcester, Mass.
416,191. Electro Magnetic Motor. Nikola Tesla, New York, N. Y., Assignor to the Tesla Electric Company, same place.
416,192. Method of Operating Electro-Magnetic Motors. Nikola Tesla, New York, N. Y., Assignor to the Tesla Electric Company, same place.
416,204. Crushing and Grinding Mill. James F. Winchell, Springfield, Ohio, Assignor to the Foos Manufacturing Company, same place.
416,206. Apparatus for Pumping Oil Wells. George Allen, Franklin Pa,
416,210. Ditching Machine. Walter Carter and David MacKenzie, St. Thomas, Ontario, Canada.
416,247. Irrigating Apparatus. Paul Ackermann, Salisch, near Glogau, Prussia Germany.
416,252. Rotary Pulverizing Machine. John J. Bordmann, Brooklyn, N. Y.
416,262. Lamp Carrier for Miners' Hats. Charles H. Hobson, Mount Carmel, Pa.
416,273. Center-Bearing Plate for Cars. Charles T. Schoen, Philadelphia, Pa.
416,300. Apparatus for the Transport of Material. Henry Rider, Wellingborough, County of Northampton, England, Assignor by mesne assignment to the Lamson Consolidated Store Service Company, of New Jersey.
416,314. Apparatus for use in Decomposing Metallic Salts and Desulphurizing Ores. Phineas H. Adams, Jr., and Orsemas T. X. Adams, Chicago, Ill., Assignors to Melinda Peck, same place.
416,337. Lining for Journal-Boxes. Christian A. Koch, Chicago, Ill. Assignor to the Anti-Friction Composition Journal-Bearing Company, same place,
416,342. Railway-Rail Fastening. Frank X. Owesney, Canton, Ohio. Assignor of one-half to Arthur J. Mealand, same place.
416,349. Dumping Apparatus. George W. L. Smith and Joseph F. Dresbach, Homer, Ill.
416,371. Grinding Mill. Ambrose Millot, Zurich, Switzerland.
416,374. Apparatus for Welding Tubing. Peter Patterson, McKeesport, Pa. Assignor of one-half to the National Tube Works Company, same place.
416,375. Well-Drilling Machine. Frank R. Peacock, Le Mars, Iowa.
416,390. Apparatus for the Amalgamation of Gold. Alfred Woodhouse, London England.
416,393. Dumping-Car. Gustav Bogusch, Vallecillo, Mexico, and August Zincke, Llano, Texas, Administrator of Robert J. Bogusch, deceased.
416,396. Metallic Railway Rail Tie. John Casely, Knightstown, Ind.
416,403. Process of Separating Metals by Amalgamation. Pedro Del Valle, Mexico, Mexico.
416,413. Hydrocarbon Burner. Frank B. Meyers, Fort Plain, N. Y., Assignor by direct and mesne assignments to Byron H. Elwood, same place, and Warren T. Diefendorf, Brooklyn, N. Y.
416,448. Process of Separating Metals. Pedro Del Valle, Mexico, Mexico.
417,451. Cable Attachment for Dump Cars. George C. Eaton, North Bend, O.; Archibald T. Eaton, administrator of said George C. Eaton, deceased.
416,533. Crushing and Grinding Mill. James F. Winchell, Springfield, O., Assigno to the Foos Manufacturing Company, same place.
416,535. Car-Axle Lubricator. Joseph Wood, Red Bank, N. J.
416,562. Clutch-Pulley. Charles E. Burwell, Springfield, Mass.
416,663. Ore-Concentrator Belt. Henry G. Blasdell, Oakland, Cal.
416,657. Water Motor. Albert F. Chace, Boston, Mass., Assignor, by mesne assignments of one-half, to Lee E. S. Perkins and Edwin H. Buzzell, both of same place.
716,668. Car Coupling. John Coup, Euclid, Ohio, Assignor to Amanda B. Coup, same place.
416,675. Rolling Forge-Bars. Joseph Guest, Pittsburg, Pa.
416,688. Automatic Lubricator. William G. Smith, Denver, Colo., Assignor of one-half to Charles R. Hotchkiss, same place.
416,702. Automatic Steam-Injector. Albert Lambert, Wadsworth, Ohio.
416,703. Glass-Furnace. Jacob Pease. Brooklyn, Assignor of one-half to William Brookfield, New York, N. Y.
416,704. Ore-Concentrator. Henry P. Holland. San Francisco, Cal.

DIVIDENDS PAID BY MINING COMPANIES DURING NOVEMBER AND SINCE JANUARY 1ST, 1889.

NAME OF COMPANY.	Paid in Nov.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in Nov.	Paid since Jan. 1st.
Alaska, Alaska	.....	25,000	Lexington, Mont.	.....	64,000
Alma, Idaho	.....	15,000	Mammoth, Utah	.....	30,000
American & Nettie, Colo	30,000	150,000	Mt. Diablo, Nev	.....	40,000
Aspen, Colo	.....	280,000	Monitor, Dak	.....	25,000
Atlantic, Mich	.....	80,000	Montana Lt., Mont	.....	206,250
Boston & Mont., Mont	100,000	500,000	Morning Star, Colo	.....	25,000
Caledonia, Dak	.....	80,000	Napa, Cal	.....	30,000
Calliope, Colo	.....	30,000	Navajo, Nev	.....	40,000
Calumet & Hecla, Mich	.....	1,500,000	N.Y. & Hond. R., C.A.	.....	30,000
Central, Mich	.....	40,000	New Guston, Colo	.....	100,000
Colorado Central, Colo	.....	55,000	North Star, Cal	.....	50,000
Confidence, Nev	.....	24,960	Ontario, Utah	75,000	825,000
Cons. Cal. & Va., Nev	.....	756,000	Osceola, Mich	.....	50,000
Copper Queen, Ariz	.....	70,000	Pamlico, Nev	.....	12,000
Cœur d'Alene, Idaho	15,000	70,000	Parrot, Mont	.....	144,000
Derbec Gravel, Col	.....	20,000	Plumas-Eureka, Cal	.....	123,046
Daly, Utah	37,500	412,500	Poorman, Colo	.....	15,000
Deer Creek, Idaho	.....	10,000	Quicksilver, Cal., Pref.	.....	193,107
Dunkin, Colo	.....	40,000	Quincy, Mich	.....	280,000
Evening Star, Colo	.....	12,500	Silver Cord, Colo	.....	50,000
Granby Mg. & Sm., Mo	.....	20,000	Silver Mg. of L. V., N. M	.....	25,000
Granite Mt., Mont	200,000	2,200,000	Sierra Nevada, Idaho	.....	20,000
Homestake, Dak	12,500	175,000	Small Hopes, Colo	.....	25,000
Hecla, Mont	15,000	165,000	Tamarack, Mich	.....	440,000
Ivanhoe, Colo	.....	10,000	Ward Cons., Colo	.....	10,000
Idaho, Cal	15,500	162,750	Webb City, Mo	.....	4,400
Illinois, N. M	.....	20,000	Woodside, Utah	.....	25,000
Iron Silver, Colo	.....	100,000	Young America, Cal	.....	10,000
Jackson, Nev	.....	5,000			
Jay Gould, Mont	.....	74,000	Total, 56 companies	500,500	9,994,513

PERSONALS.

Mr. William Ide Pierce, mining engineer, has returned to New York City from Korea, where he has been for some time engaged in professional business.

Mr. John S. Kennedy, recently superintendent of the Pulaski Iron Company, at Pulaski City, Va., has been appointed superintendent of the Everett Furnace, at Everett, Pa.

Mr. W. W. Allen has resigned his position as manager of the coal properties of the Atchison, Topeka & Santa Fe Railroad Company, and Mr. C. J. Devlin has been appointed as his successor.

Mr. Robert Peele, Jr., Mining Engineer, New York, is about to start for Oregon, where he has been engaged as general manager of the Oregon Mining and Milling Company in the Cornucopia District.

Gen. S. V. Benet, Chief of the Ordnance Department, and Capt. Charles P. Smith, United State Army officers, of Washington, visited the works of the Bethlehem Iron Company, at Bethlehem, Pa., this week on a tour of inspection.

Mr. Walter Graham, who was formerly chemist of the Bellefonte Furnace Company, at Bellefonte, Pa., has accepted the position of manager of the Graham Furnace Company, which is building a coke furnace at Graham, Tazewell County, Va.

Mr. A. Merry, manager of the Hafod Works of Messrs. H. H. Vivian & Co., Limited, Swansea, Wales, has been in New York for a few days. He returned from Canada, where he has been for some time attending the operating of a new mine in the Sudbury district. He sailed for England on Wednesday.

Mr. A. A. McLeod has been elected vice-president of the Philadelphia & Reading Coal and Iron Company, and Mr. C E. Henderson has been appointed general manager, succeeding Mr. McLeod in that position. Mr. Henderson was formerly general manager of the Indiana, Bloomington & Western Railroad.

Prof. Theo. B. Comstock, who for some years past was connected with the department of mining engineering of the University of Illinois, is now in Texas, connected with the Geological Survey of that State as geologist for Central Texas. He has been in the field since June last, and has examined many of the counties of his district.

Mr. Jos. C. Platt, who has been president of the Mohawk & Hudson Manufacturing Company (Eddy Valve Company), of Waterford, N. Y., since its incorporation in 1875, has withdrawn from participation in its management. Mr. Platt does not sell any of his interest in the business. This change took effect November 30th. Mr. Platt's personal matters require more attention and it it also his present intention to spend a portion of the coming winter in the south.

OBITUARY.

Francis S. Haas, founder of the Bushwick Iron Works, of Brooklyn, N. Y., died on the 30th ult. aged 61 years. Mr. Haas was a native of Lowenthal, Prussia, and came to America half a century ago, and in 1859 established the Bushwick Iron Works.

Samuel Wilkeson, the secretary of the Northern Pacific Railroad Company, died at his home in New York City on the 2d inst., aged seventy-two years. Mr. Wilkeson had been connected with this great railroad enterprise, which has so largely aided the development of the mining industry of the Northwest, for 21 years, and it is to his indefatigable labors that much of its success is due.

INDUSTRIAL NOTES.

Sheffield, Ala., furnaces have begun sending pig iron to St. Louis by the new all-water route.

The puddlers employed in the iron mills in Harrisburg, Pa., have received an advance of wages from $3.75 to $4 per ton.

Judge Gresham, in the court at Worcester, Mass., on the 30th ult., dismissed bill for want of equity, in case of Thorn Wire Hedge Company, of Chicago, against Washburn & Moen Manufacturing Company for $400,000 damages, holding that latter owed former nothing.

A secret meeting of the nut and bolt manufacturers of the United States was held at the Hotel Anderson, Pittsburg, Pa., on Wednesday. Fifteen firms from various parts of the United States were represented. Those present at the meeting positively refused to say what action was taken. They say, however, that the selling prices will not be advanced.

It now reported that the Federal Steel Company, which proposed to combine manufacturers of wire rods, barbed wire and wire, to the proposed organization of which we referred in the ENGINEERING AND MINING JOURNAL of November 30th, will not be organized after all on account of the refusal of three or four manufacturers to enter the combination.

Messrs. Carnegie, Phipps & Co., of Pittsburg, Pa., will give Southern Bessemer pig iron a trial. Recently, it is reported, 2,000 tons of this material was ordered from a Talladega (Ala.) furnace company and at the Homestead Works the pig will be given a practical test. The arrival of this iron, it is said, will be the first considerable quantity of the Southern article that has been brought into this district.

The Illinois Steel Company's additions to their South Chicago plant will comprise, when completed, four blast furnaces and open-hearth steel works and a plate mill. The construction of the blast furnaces has begun, and two stacks are so well under way that the company hope to have them completed by the first of next July. The other two will probably be finished by the first of the following November. Each of these furnaces will have a 21-foot bosh, while the height of each stack will be 85 feet. They will be equipped with the most improved hot-blast furnaces and ten blowing engines. The contract for the engines has been awarded to the Southwark Foundry and Machine Company, of Philadelphia. Each engine will be of the vertical type, with an 84-inch blowing cylinder, 42-inch steam cylinder and 5-foot stroke. There will be 40 steam boilers in all, but contracts have thus far been made for only half of them, which are to be built by John Mohr & Son, of Chicago. They will be steel tubular boilers, each 20 feet long and 5 feet in diameter. The ground will not be broken for the open-hearth steel works and plate mill until next spring. The plans which have been made contemplate the erection of four 15-ton open-hearth furnaces and a plate mill adapted to the production of all kinds of steel plates, embracing very wide and heavy sizes.

CONTRACTING NOTES.

Manufacturers of machinery, engineers and contractors should consult our directory of "Contracts Open" on page xx. This week proposals are invited for the following work: Engines; Pier Work; Street Work; Tunnel; Iron Work; Court House; Steel Plates; Electric Lighting; Court House; Bridge; Street Work.

The contract for supplying the boilers and machinery for the United States Battleship Texas has been awarded to the Richmond (Va.) Locomotive Works by the Navy Department for $634,500.

The Secretary of the Navy has awarded to the Midvale Steel Company, of Philadelphia, Pa., the contract for supplying steel for use in the construction of the two 3,000-ton cruisers to be built by the government at New York and Norfolk. The price is $65,000. The contract for furnishing boiler tubes for the machinery was awarded to William A. Wheeler, of New York, for $15,489.

Bids were opened on the 30th ult. at the Navy Department for furnishing steel armor-piercing projectiles for the Navy, for which $200,000 is available. This amount is to be apportioned in classes as follows: Fifteen per cent. for 6-inch projectiles, 21 per cent. for 8-inch, 50 per cent. for 10-inch, 14 per cent. for 12-inch. The projectiles will be of forged steel, and finished by the contractors. Two shells will be selected from each lot for trial purposes, and will be delivered at the Naval Proving Ground at Annapolis. The testing target will consist of a steel plate of thickness equal to the calibre of the shell to be tested, secured to an oak backing 36 inches thick. There was only one bid, that of the Midvale Steel Company, near Philadelphia, as follows: Class A, 6-inch shells, 360 to be delivered in twenty months, $30,000; class B, 8-inch, 235, twenty-four months, $42,000; class C, 10-inch, 340, thirty-six months, $100,000; class D, 12-inch, 60, thirty-six months, $28,000.

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.

395. Railing makers' shears and punch, to punch at least ⅝-inch iron. New York.
396. Five-ton ice machine. Kentucky.
397. Wood-working machinery for variety works. Planes, molders, band, scroll and cut-off saws and lathe. Georgia.
398. Boiler, 50 H. P. New York.
399. Light rails, about 27 pounds per yard. New York.
400. Steam Drills. New York.
401. Contractors' dump cars, wheel barrows, and other rock-working tools. New York
402. Machinery and appliances for hotel of 100 rooms. Kentucky.
403. Complete outfit for manufacturing excelsior, consisting of power, four double machines, and mill for grinding shucks for making mattresses. Georgia.
404. Tennant machine for finishing spokes. South Carolina.
405. Corliss engine and two boilers. New Jersey.
406. Engine, 75 H. P., second-hand automatic cut-off. New York.
407. Lathe. Special lathe for turning axles for mine cars. Ohio.
408. Machinery for making cotton ropes. Georgia.
409. Engine and boiler of about 40 H. P. New York.
410. Freight elevator. New York.
411. Vertical engine, 50 H. P. New York.
412. Fifty-light dynamo, incandescent. New York.
413. Bridge machinery. Iron and steel. Maryland.
414. Drag saw and bolter rig for shingle mill. Arkansas.
416 Electric light plant of twenty 2,000 candle power arc lights, and three or four hundred 16 candle power incandescent lights. Complete plant (except power), with about two and one-half miles of arc construction and about one mile of incandescent construction, with 125 lamps wired up not over 1,500 feet from dynamo; 20 double arc lamps and 300 incandescent lamps with keyed sockets. Everything to be put in running order ready for the belt. West Virginia.
417. Prices of spoke and ax handle machines, with their capacity. Louisiana.
418. Flour machinery. Spindle, pulley driver. bolting cloth, smut machine, belts, buckets, etc. North Carolina.
419. Molding machine and jointer. Kentucky.
420. Artesian wells. Competent party wanted to bore one or more artesian wells to a depth of 1,000 to 2,000 feet. Arkansas.
421. T-rails. Weight 30 or 35 pounds; spikes, splices, etc., for five miles of railroad. North Carolina.
422. Two iron lathes one iron planer and pipe tools. North Carolina.

AMERICAN GOODS WANTED ABROAD.

393. Information about nail-making machines, with estimates and cuts of same. Turkey.
415. Brick pressing machine, which presses the brick in such a way as to save further artificial or natural drying before burning them. Germany.
423. Spades and shovels. Queensland.
424. Cypress moss. Nos. 1, 2, 3 and 4, dyed and undyed, packed in 400-lb. bales. Queensland.
425. Refrigerators, in large lots, for an ice company to lend out to customers. Queensland.
426. Tram car parts for 500 cars. Wheels, axles, springs, window fasteners and catchers for the same. Decorated material for roof of railway cars. Decorated panels for tram cars. Queensland.
427. Well boring machinery. Queensland.
428. Hardware specialties and patented goods. New South Wales.
429. Hams, provisions, food stuffs, etc. West Indies.
430. Paints in small packages, ¼ and ½-lb. cans for household use. West Indies.
431. Agency for American goods patented in the colonies; hardware, machinery and mills, more particularly. New Zealand.
432. Refrigerators of good quality. Queensland.

GENERAL MINING NEWS.

ARIZONA.

COCHISE COUNTY.

A conference of capitalists having extensive interests in mining properties in the neighborhood of Tombstone, it is said, will take place shortly. The question of resuming deep mining will probably be discussed.

CALIFORNIA.

It is reported that a syndicate has been formed to build extensive smelting and reduction works at Los Angeles. At present, it is stated, there are but two smelters in Southern California, one at National City and the other at Colton, but they are not of large capacity.

AMADOR COUNTY.

SUTTER CREEK GOLD MINING COMPANY.—Superintendent Jas. H. Tibbitts writes to the New York office under date of November 29th as follows: "We have been running five stamps nearly all the month. The water has been short with our company on account of breakage in the canal. I have one shift of men extending the lower level to tap the ore body 60 feet below our present level. My impression is the ore on this level will be of a higher grade. We are in 80 feet, and expect to strike the ore at a distance of 150 feet. Whenever the company becomes situated to increase our stamp power, and tap the canal from a different direction, the company will then experience no trouble in running steadily. Will clean up about December 5th, and our returns will be in the neighborhood of $600 from one battery."

WILDMAN.—It is stated by local papers that the last clean up at this mine realized $8,000 in free gold. The sulphurets will yield from $1,000 to $2,000 more. It is also stated that this would give an average yield of about $8 per ton.

CALAVERAS COUNTY.

CLOUD.—A rich strike is said to have been made in this quartz mine, situated near Albany Flat, two miles south of Angels. The shaft is 18 feet deep and the vein is about 4 feet in width. Average assays, it is claimed, run up to $103.32 per ton. The ore contains about 60 per cent. of sulphurets. This property was sold some years ago for $4,500.

COLORADO.

(From an Occasional Correspondent.)

CLEAR CREEK COUNTY.

COLORADO CENTRAL.—As noticed in the ENGINEERING AND MINING JOURNAL, Mr. G. W. Hall, the successful manager of this property for ten years past, resigned at the last annual meeting. The cause, as far as your correspondent could learn, was a report made last summer by a mining engineer from Holland. This gentleman recommended several things as to the working and management of this property, which seemed to the manager and other practical mining men to be of an impracticable nature and unsuited to the property. Some of the directors seemed inclined to follow out the suggestions of this report, consequently Mr. Hall resigned. His resignation was not accepted, however, and a board of directors, favorable to his management, was elected. Mr. Hall is still manager, but undecided, I believe, as to whether he will continue to hold the position or not.

There is a suit on trial in the United States Court at Denver, involving a portion of the western workings of this lode This case is somewhat similar to the suit with the Equator Company some years ago, which resulted favorably to the Colorado Central Company.

LAKE COUNTY.

AGASSIZ CONSOLIDATED MINING COMPANY.—A press dispatch says that this company, of Leadville, made an assignment on Monday last to Charles L. Hill, giving that gentleman power of attorney to sell and dispose of its properties and settle all debts. Liabilities, $114,000; assets, $200,000.

CHRYSOLITE SILVER MINING COMPANY.—From the report of Mr. S. F. Parrish, presented at the annual stockholders' meeting in New York recently, we condense the following: "During the year ending October 10th, 1889, the company has shipped and sold 2,987 tons of ore, dry weight, or $10.43 per ton. By far the largest product of the property is argentiferous iron ore. I reported a year ago that the dumps were good for one more season. Although not entirely worked out now, they will produce but little during the ensuing year. With the exception of a little work done in October last by the company, all dump work has been under lease, the royalty paid to lessees varying from 80 per cent. to 85 per cent. of smelter returns on iron ore, and 70 per cent. to 75 per cent. on other ore and concentrates; the only expense borne by the company being the control assaying. All shipments yielded 50,681 ounces of silver and 99,203 pounds of lead, being an average of 16·9 ounces of silver per dry ton, and 1·7 per cent. lead. The total shipments of the company to date amount to 114,134$\frac{1119}{2000}$ tons gross, or 101,237$\frac{577}{2000}$ tons dry, yielding 4,891,887 ounces of silver and 31,063,184 pounds of lead, for which the company has received $4,443,003,.02, being an average of 48·3 ounces of silver per dry ton and 15.3 per cent. lead, and an average price received per dry ton of $43.89. The mining of iron from underground has been conducted entirely upon company account at a profit for the year of $1,486.65, or 18 per cent. of the smelter returns. In order to reach this iron it has been necessary to do a large amount of dead work, otherwise the percentage of profit would have been greater. The condition of the old workings, where the marketable iron bodies are found, is such that in many places the cost of reaching them is greater than it would be to go through entirely new ground, owing to the crushing-in of old timbers.

The prospecting work of the company, outside of that done in the old mine, has been conducted entirely upon the western part of its property in blocks Y, Z, AA, BB, 38, 39, 40, from Fairview No. 4 shaft. When driven out of the bottom of this shaft a gopher, at a depth of 140 feet, was started in an easterly direction in the mixed lime and porphyry, encountering in its course, besides the lime and porphyry and contact matter, a large mass of iron ore known by exploration to be 100 feet in length, 40 feet in thickness and 70 feet in width. Its dimensions are even greater than stated, for it was not entirely prospected. Unfortunately, however, it is of no present marketable value. The dip of the country here is strongly to the west. Going down the shaft 25 feet further, as far as the water in the shaft would permit, another gopher was started in an easterly direction to cut the contact found above, where it would be more in place; so soon as it was cut, at a distance of 45 feet from the shaft, a strong flow of water was encountered, which, together with caving ground, necessitated the stopping of work. Had it been practicable to sink the shaft deeper, the contact would probably have been cut at a depth of 210 to 220 feet. The shaft, however, is a small prospecting shaft, and not large enough to hold a pump of sufficient capacity to handle the water. In view of the not improbable sinking of one or more shafts to the west of the displacements occurring immediately west of Carbonate, Yankee and Fairview Hills, which, so far as at present known, would require a large outlay of money, not only on account of the depth, but because of the almost certain heavy flow of water to be encountered, it would be advisable, in my opinion, to abandon for the present further work on that part of the company's property lying west of the faulting discovered in All Right No. 2 shaft; the company's territory here is not great and the information gained from other work to the west would probably enable the company to decide whether further developments would be advisable or not. The market for iron ore at present is strong, and the grade required is not so very high in silver as it was a year ago. In addition to this, there appears to be a demand developing for a high-grade basic excess iron ore, carrying little or no silver, to be used in manufacturing steel. Of such iron the company has, so far as it is known, a large body near Vulture No. 6 shaft, on the southerly end of the property. If, upon further inquiry, a sufficiently high price can be had for this product, I would advise work to be commenced in this locality. I regret to say I have been unable to do anything with the mill property."

The financial statement for the year ending October 10th, 1889, shows:

Receipts.		
Ore sales, 2,987 525·2000 tons	$31,143.52	
Mining expense, supplies sold	1,741.88	
Dump leases, "	264.48	
Chrysolite mill, "	747.90	
Interest on reserve fund	616.13	
		$34,513.91
Cash on hand October 12th, 1888		30,604.03
		$65,117.94
Expenses.		
Mining expenses	$17,741.30	
Mining iron	6,408.22	
Hutching	693.75	
Paid dump lessees	17,254.53	
General Expenses.		
Leadville	$4,139.73	
New York	1,320.64	
	$5,460.37	
		$47,558.17
Cash on Hand.		
In New York	$17,468.39	
In Leadville	91.38	
		17,559.77
		$65,117.94

DUNKIN MINING COMPANY.—The operations of this mine for the period from October 16 to November 20, 1889, according to Boston reports, show: Gross receipts, $8,044.96; expenditures, $6,545.89; profit, 18·66 per cent., $1,499.07. The company has purchased about 30 acres of mineral lands in the Breckenridge district, Summit County, some 40 miles from the Dunkin property, and adjoining the Juanita mine. The new acquisition is undeveloped, but assays are satisfactory. It will be immediately developed. The ore is chiefly silver, but there is some free gold in that region. The Juniata mine yields a fair output of silver ore. The property is crossed by the Denver & South Park division of the Union Pacific road.

IRON SILVER MINING COMPANY.—Chief Justice Fuller of the Supreme Court has issued an order passing over until a full bench is appointed the case of Sullivan against this company, an appeal from the United States Circuit Court of Colorado. This is the fourth of this company's cases in which a similar order has been made.

PITKIN COUNTY.

ASPEN UNITED MINING AND MILLING COMPANY.—At present 15 men are employed on the Sunset mine owned by this company, part of the force in running a lateral from the Old Dominion tunnel, which has been leased for a term of years, for the purpose of working the Sunset property through, and which will reach the vein at a considerable depth. The others are driving the Lake tunnel, which is now in a distance of 150 feet and will require 50 more to reach the vein. There has been considerable ore shipped from the mine in the past year, says the Aspen *Chronicle*, but in extracting it the shafts and drifts were not properly timbered, and Mr. Lloyd, manager, on assuming control, determined to abandon them for a time and open the mine at a greater depth through the tunnels he is now running. It is estimated that it will take about 80 feet yet to reach the vein through the Old Dominion lateral, although in the work so far done, two blind leads have been struck which are now showing some good ore.

DURANT VS. BONNYBEL.—In the United States Circuit Court at Denver, on the 27th ult., Judge Hallett rendered a decision in favor of the defendants. This is the second decision in favor of the Bonnybel Company. As readers of the ENGINEERING AND MINING JOURNAL will remember, the Durant people sued to recover the value of ore taken from ground about 71 × 14 feet in size, in round numbers about $40,000. It was set up by the defence that the mineral in dispute was on a vein having its apex in Bonnybel ground, and that in consequence no wrong had been done to the plaintiff. An injunction was asked for by the Durant people, and at once granted by the court, which restrained the defendants from working beyond their sidelines. This injunction will now be removed, and it is said the Bonnybel vein would be followed until it encounters the stope in the Compromise incline, and then suit for damages against the Compromise company would at once be commenced. From the present working in the Bonnybel to the big stope the distance is said to be about 800 feet, and it will likely take close on to a year to reach it after work has been actually commenced.

SAN JUAN COUNTY.

SUNNYSIDE EXTENSION.—This mine, says the Silverton *Miner*, has shipped about 2,000 tons of ore this season. Some 800 tons were shipped out to Denver in the spring, 400 tons run through the mill, and about 800 tons are now at the mill ready for starting up in the spring. The supply of water at the mill fell recently, and as there was only sufficient to keep five stamps running, Rasmus Hanson closed it down until spring, when he will build a reservoir and so arrange that the mill can run to its fullest capacity from January to December in future. Some of the ore run through during the past two weeks milled as high as twenty ounces gold to the ton.

DAKOTA.

LAWRENCE COUNTY.

CALEDONIA MINING COMPANY.—The following important communication from Mr. A. S. Cheminant, the secretary of the company, has just been received by Messrs. Laidlaw & Co., the New York transfer agents: "I am in receipt of a number of letters from shareholders East, and would request you to place this on the company's file as answer, and by it state that the reason the November 3d dividend was not declared was owing to the fact that the ore in the 400 level, instead of maintaining its former value of $4, has gradually decreased to $3. At the time of our last annual meeting the directors, hoping for an improvement, continued paying an $8,000 dividend while the profit was but $5,000, and thus reduced the surplus to some $23,000; besides this present surplus there is $33,000 worth of supplies at the mine which can be looked upon as almost a cash asset. As to future dividends I feel safe in stating that the accumulating profits will be distributed periodically."

ILLINOIS.

The strike of the block-coal miners at Brazil has been voted off. The strike was begun May 1, against a reduction from 85 to 70 cents. The mines are running, but orders are scarce, and not all the strikers can get work.

MICHIGAN.

The Isle Royal Land Company, an English syndicate, says the *Iron Age*, formed to mine copper in Michigan, have completed their explorations, and next year will commence active operations.

The government is making an investigation into the character of the obstructions in Portage Lake Canal, where it is alleged that navigation is interfered with by the accumulation of débris from the copper stamp mills at Hancock and Houghton.

COPPER MINES.

OSCEOLA MINING COMPANY.—On this property No. 1 shaft is already down to the boundary; No. 2 is fast approaching it, and the same thing will, before very long, occur at No. 3 shaft, also. This, and the fact that the rich ground had been found mostly at the north end of the mine, says the Calumet and Red Jacket *News*, was enough to make both the management and shareholders feel rather blue; but latterly a change has taken place in its prospects. The rich ground is found to extend further south as depth is reached. The 12th level has been holed in the No. 5 or Opechee shaft. Several of the other levels are being driven rapidly in the same direction. The mine, therefore, has now a long stretch of good stoping ground, No. 5 shaft being 1,400 feet south of No. 4. The Opechee shaft is now down to the 14th level, where a plat is being cut. This shaft, which is a double-skip one, was sunk 48 feet during the first fourteen days of November. If this shaft should run, before going much deeper, into good ground, the mine will have a long existence, as it would take very many years before the boundary at this part of the property could be reached. The management propose to continue the sinking of this shaft. A new hoisting engine has lately been erected at No. 4 shaft.

TAMARACK MINING COMPANY.—On November 1st No. 3 shaft, sinking on section 11 of this prop

erty, was down 217 feet, and No. 4 shaft, at the same location, was down 103 feet. These shafts are not down below water yet, hence the sinking progresses slowly. In No. 2 shaft, which recently struck the lode, cross-cutting is progressing to the lode at the eleventh level. This shaft is expected to begin production of mineral next spring. The delay is caused by the necessity for opening and blocking out ground in the newly developed part of the mine.

TAMARACK JUNIOR MINING COMPANY.—This company's shafts were down 1,392 and 891 feet for Nos. 1 and 2, respectively, November 1st. Sinking progresses at an average rate of fully one hundred feet per month, so the lode should be struck in No. 1 shaft before the end of 1890, say in the latter part of November. No. 1 shaft is expected to reach the lode at 2,500 feet.

GOLD AND SILVER MINES.

ROPES GOLD AND SILVER MINING COMPANY.—The general manager of this company, Mr. W. H. Rood, is reported to have said that the entire cost of mining and breaking, crushing and stamping, also including fuel, repairs, etc., per ton of ore is $1.75.

MINNESOTA.

IRON MINES.

MINNESOTA IRON COMPANY.—This company has begun shipping ore by rail from its mines at Tower to the Illinois Steel Company's furnaces at Chicago, which fact, the Marquette *Mining Journal* says, serves to show the strength of the present demand for ore, as it is quite out of the ordinary to have rail shipments begin right on the heels of the close of shipments by water.

MONTANA.

At the Mineral Land Convention, which met in Helena on the 30th ult,, a resolution was adopted favoring the formation of a mineral land association whose capital stock will be $50,000 in $1 shares. Two prominent mining men from each county are made incorporators. Its object is the active prosecution of protests and contests against the Northern Pacific Railway's efforts to obtain patents to mineral lands in Montana; also to assist by competent counsel all miners in Montana to obtain titles to mining lands.

DEER LODGE COUNTY.

AMERICAN SILVER, COPPER MINING, MILLING AND REDUCTION COMPANY.—This company has been organized with a capital of $1,000,000, in shares of $1 each. The incorporators are Charles Cooper, Robert Dixon, Adrian Pritchard, James Ogden and James E. Marcum.

JEFFERSON COUNTY.

ELKHORN MINING COMPANY.—According to reports the property of this company has been sold to English investors.

HELENA AND BALD MOUNTAIN MINING COMPANY.—The mines of this company are three in number, and are located on Bald Mountain, in this county, about 20 miles directly south of Helena. A little over three years ago the company commenced operations upon one of the lodes, the center one of the group, attacking the vein with a tunnel, which has been driven at intervals, as money was obtainable to prosecute the work, until now the face of the tunnel has reached an extreme length of 292 feet into the mountain. This work, according to the Helena *Mining Review*, has all been done along the vein, the samples assayed from time to time giving promise of future ore bodies. Work is now progressing in the tunnel, and recently the company struck an ore body of apparently high-grade galena ore about two feet wide, from which, as yet, no assays have been made.

SILVER BOW COUNTY.

ANACONDA MINING COMPANY.—The situation of the Anaconda and St. Lawrence mines is unchanged. The injection of steam into the workings of the mine still continues, and the indications are such, says the *Butte Inter-Mountain*, as to cause Foreman Carroll to be very hopeful that the fire is being overcome without much damage to the mine. The fires have been banked at the upper smelting works of the company at Anaconda, and there is grave fear that the lower works will also be obliged to shut down solely on account of lack of coal. It is stated that there is no shortage of ore whatever on account of the fire. There was a supply ahead for ten days at the smelter, and the force had been increased at the syndicate mines, so that the smelters at Anaconda would have been kept steadily supplied. Lack of coal is the only difficulty. The citizens of Anaconda are much disappointed at the shut down, but hope that the Union Pacific will send coal in that direction shortly. The lower works consume 600 tons of coal daily, and the upper works a little more than that.

NEVADA.

EUREKA COUNTY.

In the United States Circuit Court at Carson, Nev., Judge Sabin has rendered his decision in the Eureka timber cases tried before him recently. In the case of the United States against the Eureka & Palisade Railroad Company judgment was rendered for the government for $5,200. There is a suit to follow against the railroad company for conversion of government timber in the past involving $550,000, and according to the principles laid down in Judge Sabin's decisions the railroad company will lose. In the case of the government vs. the Richmond Mining Company judgment was rendered for the defendant on the ground that the Richmond company had the right to fell and remove timber and other trees growing on mineral land on the public domain and to use the same for mining and smelting purposes. It is not expected that a trial of the Eureka Consolidated case will be reached before spring.

EUREKA CONSOLIDATED MINING COMPANY.—Advices received in New York this week state that the second furnace will be completed shortly. Work in the mine is also progressing satisfactorily. A new drift has been started on the 900-foot level, about 70 feet from the Lawton shaft, which will run under the ore body on the 800 level. It is also stated that the company now has sufficient ore on hand to run both furnaces for six months to come.

STOREY COUNTY—COMSTOCK LODE.

CHALLENGE CONSOLIDATED MINING COMPANY.—At the annual meeting of shareholders, held in San Francisco, November 21st, the following officers were elected: A. K. P. Harmond, president; James Newlands, vice-president; Directors, J. H. Dobinson, William Norris and J. D. Fry. C. L. McCoy was re-elected secretary and W. E. Sharon, superintendent. The secretary's financial statement showed a credit of $3,385.

KENTUCK MINING COMPANY.—At the annual meeting held in San Francisco, November 27th, the following Board of Directors was elected: Wales H. Palmer, president; H. C. Swain, vice-president; J. W. Pew, secretary; I. F. Thompson and C. P. Tinkham. Edward Conradt was re-elected superintendent and the Bank of California treasurer. The secretary's financial sheet shows a balance of $1,436.89 in the treasury. In his annual report the superintendent says: "I would recommend sinking the main winz 50 feet deeper, to the 1,000-foot level, to connect with the drift that runs from the Yellow Jacket to the Crown Point; then if we should strike water we would be prepared. The prospects for making the property pay are favorable. The Kentuck lies between two prominent and paying mines. On the 160-foot level we have to extend our water drift further west for an increase of water. The drift is in 580 feet, in good condition, and the car track up to the surface ready for going ahead west. The last 35 feet are in ledge matter, strongly mineralized. We are liable to get into a new ledge of pay quartz any time. In the east ledge the ground is all virgin from the 900 level downward. There are two ledges, and the probability is good for getting kidneys of pay ore in either. We found spots that assayed well in cross-cutting east. The Yellow Jacket had pay ore in the same ledges, north of us, on the 900 and 1,000 levels."

NEW JERSEY.

WARREN COUNTY.

It is said that the forthcoming report of the late Prof. George H. Cook, the State Geologist, will show that the mineral resources of this county are greater than heretofore supposed.

NORTH CAROLINA.

HOWIE.—We are informed that the machinery with which this mine is equipped, to which we referred in our issue of November 2d, was furnished by the Wiswell Electric Mining Machinery Company, of Boston, and has been working satisfactorily.

GUILFORD COUNTY.

NORTH CAROLINA STEEL AND IRON COMPANY.—This company has been organized at Salisbury, with a capital stock of $1,000,000, to build a Bessemer iron furnace of 150 tons daily capacity at Greensboro, to be followed by the first Bessemer steel rail mill in the South, a rolling mill, etc. The incorporators of the company are George S. Scott, of New York, president of the Richmond & Danville Railroad; Julius A. Gray, president of the Cape Fear & Yadkin Valley Railroad Company; A. B. Andrews, president of the Western North Carolina Railroad; James B. Pace, president of the Planters' National Bank, Richmond, Va.; B. B. Osler, Esq., Q. C., attorney for the Canadian government, Toronto, Canada; Theo. F. Kluttz, president of the Yadkin Railroad, Salisbury, N. C., and Samuel H. Wiley, president of the Davis & Wiley Bank, Salisbury, N. C. The company has secured the famous "Ore Hill" and other iron ore lands near Greensboro, and other magnetic iron ore lands in Western North Carolina.

PENNSYLVANIA.

COAL.

It is reported that arrangements have been made by all the coal operators of the Monongahela Valley to close down their mines indefinitely, as the few mines in operation have demonstrated that the demands of the miners cannot be conceded with the price of coal as low as it is at present at Cincinnati and the lower ports.

Three boilers of a nest of twenty-one exploded on the 30th ult. with terrific force at Breaker No. 4, at Jeansville, operated by J. C. Haydon & Co. The building is a total wreck, catching fire after the explosion, which was extinguished with great difficulty. The cause of the explosion is unknown, there being no one around the building at the time but the fireman.

ENTERPRISE COLLIERY.—Work in this colliery, in Wilkesbarre, has been suspended for an indefinite time.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to November 30th, were as follows:

	1889. Gals.	1888. Gals.
From Boston	4,334,977	4,301,956
Philadelphia	149,716,936	125,468,432
Baltimore	8,334,744	6,835,545
Perth Amboy	15,775,196	20,050,068
New York	407,478,643	342,060,478
Total exports	585,640,499	498,716,479

RHODE ISLAND.

We are advised that the coal mining at Portsmouth, now owned and operated by the Worcester Steel Company, have got the water out of the North mine and have a vein of 12 feet of superior coal. The North mine slope is about 1,600 feet in length at an angle of 340 degrees.

VERMONT.

RUTLAND COUNTY.

Reports state that a deposit of lignite coal has been discovered near Brandon. Mr. H. R. Heyl, of Philadelphia, Pa., it is said, has taken a long lease of the Brandon coalfields for the purpose of working the mines. The deposit lies from 30 to 35 feet below the surface, and the bed of lignite is 85 feet deep. There are indications of the existence of other fields of lignite in this region.

VIRGINIA.

PAGE COUNTY.

[From an Occasional Correspondent.]

Apparently, Virginia is about to produce a second good mine of manganese. Ten miles south of Luray there have been uncovered very considerable bodies of high-grade ore, and explorations are being made to yet further develop the deposit. The workings lie in the middle member of the Potsdam, upon a gentle mountain slope, and something less than a mile from the Shenandoah Valley Railroad. They consist of open cuts and open pits, which show that the ores reach nearly to the surface. In one of these the solid manganese has been stripped bare over a surface of about 600 square feet. Apparently, there is little or no gangue mixed with the ore—not even hematite.

A railroad is staked out from the mine to the Shenandoah Valley tracks, and while the grade will be considerable (in favor of the traffic), cost of construction will be light. There is no apparent reason why this manganese may not now be hauled to rail by wagons, and in considerable quantities, too. This mine is owned by the Eureka Manganese Company, at the head of which is Gen. W. S. Rosecrans, of Washington, with Mr. T. J. McSpeeden, a gentleman of large experience in mining affairs, as manager.

Two miles southward of the Manganese mine, and just beside the Shenandoah Valley Railroad tracks, the Blue Ridge Iron Company, to the incorporation of which we referred in our issue of Nov. 30, is opening the Biedler Mountain hematite veins. The principal one of these crosses a gentle plateau and pitches then abruptly (200 feet vertical) into the narrow valley of a considerable mountain brook. From this valley two levels are being driven into and along the vein, which pitches at an angle of about 60 degrees under the horizon. The upper level is about a hundred feet vertical under the surface of the plateau, and the lower one about the same distance vertical under the upper level. Mining in this way does away with hoisting and pumping plant.

By means of shallow shafts the vein has been traced for about a quarter mile along the surface. Its width varies, but will average between 15 and 20 feet. The prospectus of the mining company gives several analyses of the ores, made by various chemists, which go to show that they carry about 50 per cent. of iron, 0·18 phosphorus, and that they are otherwise desirable for furnace stock.

The striking features of this mine are these: Two hundred feet vertical of the vein for a fourth of a mile in length can be mined through the two levels and without hoisting or pumping plant. No transport is required to rail, because the mine openings are less than a hundred yards from the Shenandoah Valley road.

The mine lies in the upper member of the Potsdam, being the horizon in which has been done the profitable hematite mining in the great valley through Pennsylvania and Virginia. And according to Fontaine, it is the horizon in which will be found the higher grades of manganese in this locality.

LURAY, Va., November 30th, 1889.

BLUE RIDGE IRON COMPANY.—In the description of this company's property in our last issue a typographical error occurred in the statement in regard to the assays of hematites and manganese found here in abundance. Correctly stated the manganese deposits assay 41·50 per cent. metallic manganese and 0·26 per cent. phosphorus. The hematites assay from 47·75 to 53·90 per cent. metallic iron and from 0·168 to 0·171 per cent. phosphorus.

WASHINGTON.

PIERCE COUNTY.

Dr. Willis E. Everette, mining engineer, of Tacoma, advises us that there are large deposits of pottery, brick, tile and fire clay near Tacoma, easily accessible. It is stated that a lease can be

obtained for a nominal sum, providing works are erected at an early date.

WISCONSIN.

ASHLAND COUNTY.

Petroleum is said to have been discovered near Ashland.

WYOMING.

In Wyoming the lesser minerals are of endless variety, says the Cheyenne *Tribune*. Ordinary fireclay is abundant. Graphite or black lead, 70 to 80 per cent., abounds in the Laramie range. Mica is plentiful. Gypsum has been tested most successfully for stucco and plaster of Paris. Building stone is found almost everywhere. Granite is found coarse grained and fine grained, easy to polish and unpolishable. Sandstone also is general, and appears frequently in the fantastic water-worn forms which has made famous the Colorado Garden of the Gods. A couple of miles from Rawlins is a huge ledge which has a wide reputation. Very many men work here and get out the blocks which tax the strength of the Union Pacific flat cars. Limestone of all sorts protrudes all over the country. It embraces both the carbonate, useful for various arts, and the hard variety for building. At Cooper Lake, on the Laramie plains, marble quarries have been worked to a considerable extent, but not much elsewhere.

FOREIGN MINING NEWS

CANADA.

ONTARIO.

(From our Special Correspondent.)

Considerable excitement has been caused by the discovery of copper in the townships of Blake and Crooks, about 15 miles south of Port Arthur. It is found in amygdaloid dykes, varying from 15 to 40 feet in width, and is exposed in one instance for a quarter of a mile. Careful assays have given 9·27 and 11·40 per cent. copper. Rumors of large deals in these lands are current, and will likely develop into reality before long. Three well-defined and promising silver veins have lately been located in the township of Crooks, surface assays showing $22, $36 and $200 per ton respectively. A party of mining men, representing local and eastern capital, have just returned from there, and appear to be highly satisfied.

A valuable natural mineral spring has been discovered on the Kakabeka Falls property, within the limits of the proposed new city, whose promotors are engaged in securing all the necessary property on which to lay out the town. They have already received propositions for the erection of two flour and pulp mills, and several other business propositions of magnitude have been made them.

The Ontario government has surveyed the new township of Scoble, lying between Paipoonge Blake, and Gillies.

BADGER.—This mine shipped on the 23d inst. 24 barrels of concentrates and 15 barrels of silver ore, valued at $19,230.

CROWN POINT.—This mine, W. Montgomery, superintendent, shipped $7,800 of ore to Kansas City in September, and expect to make regular monthly shipments during the winter.

MURILLO.—A company has been organized in London, Eng., with a capital of £60,000, to work the Murilla mine, 12 miles southwest of here. They are now engaged in erecting camps and other necessary improvements, preparatory to active mining in the spring.

PRINCE.—Some exploratory work is being done on the "Prince" location. This is the oldest mine on the Canadian shore of Lake Superior, having been worked in 1846 by the late Col. Prince.

SHUNIAH WEACHU.—Capt. Thomas H. Trithewz, superintendent of this mine, shipped 15 barrels of ore on the 22d inst., valued at $2,200. This ore is shipped to Liverpool, Eng., the freight being $7 per ton.

WEST END MINING COMPANY.—This company, A. Falco, superintendent, shipped $12,500 worth of ore on Oct. 25, and has another large shipment ready.

MEXICO.

[Reported for the ENGINEERING AND MINING JOURNAL by R. E. Chism, M.E.]

MICHOACAN.—A sale is reported to have been made of the copper mines at Inguaran, in this State, to an English company for the sum of $1,500,000. If this is the case some poor British capitalists are likely to regret it very soon. A friend of mine, a mining expert, visited the mine last March. He describes it as having an apparently considerable deposit, which has been badly cut up through careless working, and it is not in a condition to produce more than a ton or two of ore a day without the expenditure of large sums for development. Not a pound of machinery of any kind, either for mining or for treating the ore, is on the property, and $100,000 is here thought to be a very high estimate for its value, especially as it is situated more than 100 miles from a railroad, for the greater part of which distance no wagon road exists. It is suggested here that a zone concession has been grafted on to the mining property that my friend saw, thereby making the purchase more valuable. Now the value of the concession of a mining zone in this country is just nothing at all, as but few privileges are granted that are not available through the ordinary mining laws, and the privileges are so overloaded with conditions that they are of no importance whatever from a practical standpoint.

SAN LUIS POTOSI.—The Concepcion mine at Catorce is paying monthly dividends having paid a heavy debt contracted a year or so ago for hoisting and pumping plant. On the Dolores Trompeta tunnel the owners of the mine abandoned their policy of sinking downward from the tunnel level, with its attendant expenses of drainage, and have turned their attention to working some of the side veins. This new start was only taken a few months ago, yet the mine is beginning to pay largely and already has $40,000 in the treasury.

SONORA.—The Oso Negro mine is owned by Gage & Leach, of Tombstone, Ariz., who have expended some $500,000, it is said, in the development of the mine and the erection of the mill, which commenced work a short time ago. It is said that there is ore in sight which will much more than cover this expenditure.

The Yerba Buena group of mines in the Trinidad district has been bonded by Mr. Carl Hesse, who has gone to Europe to place the property. This is an old mine, said to have produced rich ore from the surface down. It is reported to have been abandoned by the old workers on account of not being able to handle the water, but it is more likely that they encountered a streak of zinc blende, which is a substance untreatable by any process that the early workers understood. A five-stamp mill is now running on ores from the Chipiona Mountain in the same district. The mill is owned by some Mexicans.

The celebrated Mulatos gold mine is situated on the Mulatos River, which is the most southern branch of the headwaters of the River Yaqui. The mine is supposed to contain untold millions of the yellow metal, only, and very unfortunately, no one has as yet been able to get any vast amount out. Lately an extensive cave-in took place in the mine, covering up some of the richest mineral, and it will require a long time and some money to repair the damage.

The Santa Clara coal mines, of Sonora, have been for many years in the hands of Graff & Co., of Guaymas. They are situated about 100 miles due east from Hermosillo, and about 120 miles northeast of the port of Guaymas, and about three or four miles west of the Yaqui River. There are two veins, one nine feet thick, the other seven feet thick, and the coal is said to be anthracite and semianthracite. There are also some silver mines a few miles from the coal mines which have been thrown in, as it were, to the purchase which has just been made by some New York capitalists. A railroad is now being surveyed from Guaymas to the coalfields, so as to bring the product to tidewater.

The Trinidad mine, in the district of the same name, was bonded to Eastern parties, but was taken over again by the original owners, and is said to be in the hands of a receiver. Bad management is stated to be the cause of the difficulties through which the enterprise is now passing.

At the Tajos mine, about 15 miles southwest of Torres station on the Sonora Railroad, of which Mr. D. F. Allen is superintendent for the Tajos Mining Company, of San Francisco, a 5-ton smelter is now smelting ore which is stated to average 40 ounces of silver and 60 per cent. of lead. Probably my correspondent made a slip of the pen, and the figures should be tother way about. At the Minas Prietas mines, owned by the mining company of the same name in the San Antonio de la Huerta mining district, the company has recently erected a 30-stamp mill, but the great difficulty has been the want of water; two artesian wells have been spoiled and the tools lost by unskilful workmen. The contract has been lately taken by the Oil Well Company, of Bradford, Pa., which it is to be hoped will at last solve the problem.

The Promontorio camp, 26 miles southwest of Nogales, is stated to be a camp of great promise. The Tumacacori, Boss, and Santa Helena are the three principal mines. The two former mines are owned by the Promontorio Mining Company. The property is said to be well developed. One tunnel on the property, 600 feet in length, is said to pass through five distinct ledges, all high grade, smelting, and milling ore. The Santa Helena mine is the property of Mr. McCaris. He is said to have been working the mine on a small scale for the last 10 years, during which time the product has amounted to over $200,000. The present production is about 20 tons a week of rich ore.

TAMAULIPAS.—A syndicate of New York and London capitalists, headed by Mr. N. F. Cleary, of St. Louis, Mo., is reported to have bonded the Vegonia and Imogen mines, belonging to S. G. Smith and to the Tamaulipas Mining Company, of St. Louis. These mines, together with several others included in the deal, are located in the San Carlos mountains in the San Jose mining district, about 170 miles southeast of Monterey, the capital of the State of Nuevo Leon, where there is a station of the Mexican National Railroad. The Monterey & Gulf Railroad, which is now being actively constructed, will pass within 20 or 30 miles of the mines before the spring. The mines are located on wide quartz ledges crarying free gold, and a stamp mill is now on the way down to be erected on the property. There are also silver and copper mines included in the properties bonded which will be actively worked as soon as the plans of the present management with respect to the gold mines can be carried out. Mr. A. W. Gifford, of St. Louis, Mr. Smith, and others of the owners, have spent several years and a considerable amount of capital in the development of this district, and I hope that the results will reward the energy and perseverance they have displayed.

ZACATECAS.—I hear that a syndicate of New York people has bought the Providencia tunnel in the Mazapil district and the mines with which the tunnel connects. The tunnel is a most important work which has been carried on in desultory fashion by the Mexican owners for some years, and the mines with which it is to connect certainly present very fine surface indications. The workings are, however, so caved in as to be inaccessible, and the tunnel is designed to open up new ground and cannot be very far from the lodes, if these have not been struck already.

The American Mining Company, which has a property near the city of Zacatecas, is reported to have paid its 37th dividend of $1,000 per share. In twenty months this company has divided over $900,000 among its stockholders.

MEETINGS.

Columbia Chrome Mining and Chemical Company, 93 Nassau street, New York City, December 2th, at 11:30 A. M.

Keely Motor Company, 913 Walnut street, Philadelphia, Pa., December 11th, at 12 o'clock noon.

Ranken & Fritsch Foundry and Machine Company, 2201 North Main street, St. Louis, Mo., December 9th, at 9 A. M.

DIVIDENDS.

Cœur d'Alene Silver Mining Company, on November 26th, paid dividend No. 4, of three cents per share, aggregating $15,000.

Delaware & Hudson Canal Company, dividend of 1¾ per cent., payable December 16th, at No. 21 Cortlandt street, New York City. Transfer-books closed November 27th, and reopen December 17th.

Hubert Mining Company has paid dividend No. 43 of one-half a cent per share, aggregating $5,000.

Kearsarge Mining Company, of Michigan, dividend No. 1, of $2 per share, aggregating $100,000, payable January 1st, 1889, to stockholders on record December 10th.

Lehigh Coal and Navigation Company, dividend of 2½ per cent., payable December 11th, in Philadelphia, Pa. Transfer books closed until December 11th.

Tamarack Mining Company, dividend No. 8 of $3 per share, aggregating $120,000, payable January 1st.

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 515 and 516.]

New York.

FRIDAY EVENING, Dec. 6.

The advent of the month of December seems to have thoroughly chilled the market for mining shares. Values all around show a weakening tendency, and there has been a very decided subsidence of speculative interest on the part of the outside public in the doings of the exchange. Exchange traders are inclined to attribute the weakness of values to the demoralization in the railway share market, brought on particularly by the sensational decline in the stocks of a number of the trusts. One of the largest traders—a prominent member of the committee on mining securities—attempts to put a cheerful aspect on the situation by explaining that in his career of 20 years, December has always proved a month of liquidation and depressed values and January a month of profits.

The silver question, of course, continues to attract a great deal of attention. The proposition of the Secretary of the Treasury on the subject does not arouse much enthusiasm, and, in fact, does not seem to satisfy any class, either silver or gold "bugs." Nevertheless, all indications seem to point to an advance in the price of silver bullion on account of its commercial situation, and the relative position of supply and demand, without regard to anything that the government may do or may not do in the way of increased purchases

The only real features of interest that have been apparent in this week's trading have been the fluctuations in the new Comstock Tunnel securities. The new common stock opened at 21c on Monday and sold at 14c. on Tuesday, recovering later to 19c. The drop is explained on the part of those interested by the fact that a great deal of this stock was held as margin on disastrous railway speculations and consequently was forced upon the market. The Comstock Tunnel bonds sold at $38 to $40. Sutro Tunnel old stock sold at 6c. and 7c. Mr. Frank J. Symmes, the San Francisco representative of the dissatisfied stockholders of the old company, has issued an advertisement requesting all Sutro Tunnel stockholders not to sacrifice their old stock as measures are about to be taken to protect their interests. This manifesto, however, has not created much excitement, as, in fact, the public are pretty thoroughly tired of the countless troubles and endless litigations in which

this company and its stockholders have been involved.

Consolidated California & Virginia has declared its usual 50 cent dividend for December. The San Francisco *Report* says that it is not likely that a dividend will be paid in January on account of the low grade of the ore milled during November, which yielded a very small profit, so that the surplus after the payment of the December dividend will be very materially reduced. The *Report* further says that the mine has now reached a stage where the resources of good ore will have to be husbanded and handled very carefully else no profit will be made at all. Among the sales of the Comstock Lode shares during the week were the following: Consolidated California & Virginia at from $6@5.75; Hale & Norcross, $3.10; Gould & Curry, $1.70; Ophir, $4.05@$3.90; Savage, $1.50@$1.75; Alta, $1.90@$1.70; Best & Belcher, $3.10@$2.85; Bullion, 80@70c.; Chollar, $1.75; Exchequer, 80@75c.; Julia, 49c.; Mexican, $3.15@$3; Oriental & Miller, 6@7c.; Occidental, $1; Potosi, $1.85; Union Consolidated, $3.05; Utah, 99@80c.

Promoters of the Tuscaroras are still prophesying increased activity in these specialties. During the week Navajo sold at 37@38c.

Eureka Consolidated is quiet, at $4.50 asked. As will be seen by reference to our mining news column, work at the mine continues satisfactory. The management of the company, when asked this week by an ENGINEERING AND MINING JOURNAL representative in regard to the probability of early dividends, stated that if the project of draining the lower levels of the mine, in co-operation with the Richmond Consolidated Company, is long delayed, it is probable that if the company is able to accumulate a sufficient surplus a dividend of $25,000, or 50 cents per share, will be declared. It will be remembered that the government has a suit for very heavy damages pending against this company for timber that has been used from government lands. This suit has heretofore occasioned some solicitude to the stockholders, and they are much gratified to learn that a similar suit against the Richmond Consolidated Company has been decided in favor of the defendant company. This decision, of course, will serve as a precedent in the Eureka Consolidated case.

There has been little activity in Barcelona this week, a single transaction being recorded at 39c.

Among the Amador County properties Astoria continues quite active at from 10 to 15c., closing at 25c. Most of the transactions recorded are looked upon as the result of manipulation. Sutter Creek sold at 54@56c.

Standard Consolidated sold at 50c. In a letter received this week, President Pettibone says that the condition of the mine is improving, but as the company continues largely in debt, this news affords only slight consolation to the stockholders.

Horn Silver has been moderately active and much weaker, at $2.30@$2. Ontario sold at $36.25.

Colorado shares have been quiet and steady. La Crosse sold at 7@6c.; Little Chief at from 34@35c.

The Dakota stocks are represented by sales of Deadwood Terra at $1.65@$1.50. The activity in Father de Smet has subsided. A very important communication of interest to Caledonia stockholders is presented in our mining news columns.

Montana silver shares continue firm, but in small demand in sympathy with the general tone of the market. Alice sold on Saturday at $1.20 and on Wednesday at $1.05 and $1.10, ex dividend, equal to about $1.11 and $1.18, dividend on. Transfer books closed on the 2d inst. Traders are looking forward with a great deal of interest to the annual statement of the condition of the company, which it is thought will be presented in January. Moulton sold at 27@29c.

El Cristo has been weaker, sales being made at $1@$1.10. An upward improvement is predicted in this stock, "when the management is ready," whatever that may mean.

Among the miscellaneous transactions were United Copper at $1.15@$1.20; Mutual Mining and Smelting at $1.65; Rappahannock at 6c.

Phœnix, of Arizona, has sold lower at from 40@49c., closing at 36c.

Silver King sold at from 25@30c.

NOTES OF THE WEEK.

The committee on mining securities, at its regular meeting this week, took up the matter of determining what should constitute a "board-room lot" of Comstock tunnel bonds. We referred to this question at length in this column last week. Contrary to expectation, the committee decided that a $1,000 bond will hereafter be the minimum lot.

Boston. Dec. 5.

[From our Special Correspondent.]

The market for copper stocks continues to rule strong, with an upward tendency. There are more orders to buy than to sell, and the prospect is better for high prices than for a long time. The strength of ingot copper, both in this market and in London, has given to the market a degree of confidence which will be sure to enhance the value of all the copper-producing companies in this country, and we look for great activity and higher prices all along the line.

Calumet & Hecla touched $250 for the first time since March 9th, when the big decline set in. It did not quite hold that figure, but declined to $247 to-day. There is very little stock offered, however, and any big orders would quickly put it up again.

Boston & Montana declined early in the week from $46 to $43¼ on the report of a bond issue. The decline was only temporary, as good parties were ready to take the stock offered, and to-day it is up again to 46½.

Tamarack reached the point we predicted for it, viz.: $150, advancing from $143. The usual quarterly dividend of $3 per share is announced, payable January 1st, 1890. This dividend makes $1,080,000 paid since the opening of the mine.

Quincy is quiet but steady at $68@$70.

Franklin advanced from $16 to $17¼, with a slight reaction. The product for November (404 tons) is believed to be the largest monthly product ever reported, netting the company about $40,000. We look for higher prices on this stock and a good dividend next month.

Atlantic is more sought for than usual, and advanced from $13½ to $15. A dividend from this company may be looked for early next season.

Osceola sold up to $19, reacting to $17½, and recovering to $18¼. There is a good demand for it, and will, no doubt, sell still higher.

Kearsarge surprised its stockholders by the announcement of a $2 dividend, payable January 1st. We have all along advised buying this stock as a good purchase, and one which would pay big profits; but we hardly anticipated it would enter the dividend-paying ranks so soon. The stock sold as low as $4½ in October, and this week reached $10⅛, selling to-day at $10¾.

The reports on this property have been hitherto very vague and indefinite; but it is now stated that they are getting out 100 tons mineral a month, which will yield a profit at the rate of $2 per share while copper sells at 14c. per pound.

Allouez, under the general improvement in the market, advanced from 95c. to $1.05.

Huron and National are both becoming more active, and there is good buying of both at $2½@$2¾. They will both go higher if the present outlook is continued.

Santa Fe has been very active and at improved prices, selling up from 75c. to $1.10. There is considerable bullish talk on this stock, some parties claiming that it will sell up to $2 again. We advised its purchase at 75c.@80c. in a recent letter.

Bonanza is also one of the stocks which ought to advance. It is now selling at 80c., and ought to be good for $1 or more soon.

There is a demand for all the low-priced copper stocks, such as South Side, Mesnard, Washington, Native, etc., etc., and an active market for this class, with a chance to make money if purchased early, is confidently predicted.

Silver stocks dull and neglected.

3 P. M.—At the P. M. call Santa Fe advanced to $1.30, and for a small lot $1.40 was paid. Bonanza sold up to 87½c. Balance of the list unchanged.

Lake Superior Gold and Iron Stocks.

(Special Report by David M. FORD, Houghton, Mich.)
Nov. 30.

Since the iron mines are mainly close corporations, it is very difficult to get quotations, or state the value of the stocks of some of the best mines in this district. The stock is held by men who are able and willing to keep it, and there is very little for sale. On the whole iron stocks are dull, no change in prices since last quotations. Shipments by water have closed, with shipments of over 6,600,000 tons of iron ore. When the shipments by rail are added the total output of the Lake Superior iron mines for 1889 will crowd close to 7,000,000 tons, perhaps slightly exceed that figure. These iron mines are equipped with some of the best mining machinery, and are managed by men of great skill and experience, and should the prospective demand hold good for next year, it is likely that the output for 1890 will run up to near 9,000,000 tons. On the close of shipments by lake, many of the mines at once commenced shipping by rail, the ore going largely to Chicago and furnaces this side, as well as to furnaces as far east as Ohio and Pennsylvania. This all-rail winter shipment has many advantages for the mines and blast furnaces, and will hereafter cut quite a figure in the transportation problem. Many of the best and wealthiest mines, such as the Cleveland, Lake Superior, Republic, Minnesota Iron Company, and others, tired of the exactions of the "ore carriers," resolved to become their own shippers, and have had built and now own some of the largest and best boats on the lakes, and many more such ore carriers are already contracted for and under way for delivery as early as possible next year.

As to gold stocks, there has been an active demand for the past week, the interest centering on the Michigan, though the "Ropes" has felt the benefit, and the stock is held much firmer. This mine, with 65 head of stamps at work, is now said to be earning a net profit of 50 to 60 cents a share. It has paid no dividends yet, the management deciding for the present to use the profits in adding to their plant 10 more head of stamps, which they have room for in the new mill, thus giving them 75 head. This will materially increase the capacity at comparatively small expense, as they have the room and ample power.

The Lake Superior Iron Company's gold property, on the next 40 acres west of and adjoining the Michigan, has been leased, and mining will begin there next week. It was on this 40 when the rich gold was first discovered, about July 1st, 1887. The Lake Superior Iron Company owns the fee. This property contains the Michigan vein, and yields native gold of about the same richness as the Michigan.

At the Michigan, mining is being pushed with great vigor. The 77-foot shaft has been unwatered and sunk to a depth of 80 feet, the quartz growing richer as they go down, at the new rich finds near the eastern part of the property. Sinking is in progress and rich rock, showing native gold to the eye, is being produced.

The work is being carried on under the supervision of Mr. T. P. Mills, one of the directors of the company, and superintendent of Cleveland Iron Mining Company, and by Mr. Julius Ropes, chemist and assayer of the company. The demand for the stock has been active, and several thousand shares have changed hands, from small and weak holders into the hands of capitalists and business men, who have bought as an investment, this stock being withdrawn from the market has made it scarce. There has been an active demand for Michigan, and large amounts have been sold in the iron and copper districts, as well as to outside cities, but as the gold stocks are not listed, and no regular reports of sales made, it is impossible to give total amount of sales, and I can only give you actual sales here, viz.: 2,550 shares Michigan at $".50; 325 Michigan, at $3; 295 shares Ropes, at $2.15, all spot cash sales during week ending Nov. 30th.

GOLD MINING STOCKS. Nov. 30.

Name of Company	Par value.	Lowest.	High.
Grayling Gold & Silver Co.....	$25.00	$0.90	$1.00
Michigan Gold Co.....	25.00	2.50	3.00
Peninsula Gold & Silver Co....	25.00	.75	.90
Ropes Gold & Silver Co...	25.00	2.00	2.50

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co.....	$25.00	... ..	$66.00
Aurora Iron Co.....	25 00	.....	7.75
Champion Iron Co.....	25 00	$100.00	110.00
Chandler Iron Co.....	25.00	35.00	40.00
Chapin Iron Mining Co.....	25.00	25.00	35.00
Chicago & Minn. Ore Co.....	100.00	.....	110.00
Cleveland Iron Co.....	25.00	19.00	20.00
Jackson Iron Co.....	25 00	110.00	115.00
Lake Superior Iron Co.....	25 00	62.00	66.00
Milwaukee Iron Co.....	25.00	7.50	9.00
Minnesota Iron Co.....	100.00	80.00	85.00
Montreal Iron Co.....	25.00	.....	5.50
Nem'e (Metropolitan).....	25.00	.....	55.00
Odanah Iron Co	25.00	.....	6.25
Pittsburg Lake Angeline Co..	25.00	131.00	135.00
Republic Iron Co.....	25.00	48.00	49.00

PIPE LINE CERTIFICATES.

(Special Report by Messrs. WATSON & GIBSON.)

The petroleum market, this week, has had a tendency downward, but there has been nothing doing in it of consequence, and nothing new has really transpired in the situation. The feeling is growing up that Ohio oil will be successfully used as an illuminant, and since its price is lower than Pennsylvania oil, being now about 15 to 20 cents, those who would otherwise bull Pennsylvania oil, on its strong statistical showing, are deterred from doing so.

NEW YORK STOCK EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Nov.	30....	105¼	105¼	103¼	103¼	223,000
Dec.	2. ...	102½	103⅞	101½	103⅜	288,000
	3.....	103½	104⅞	103½	104⅛	183,000
	4.. ..	104¾	105¼	103⅜	103⅜	219,000
	5.....	103½	103¾	101⅞	102⅞	383,000
	6.....	102½	103⅜	102¼	103⅜	313,000

Total sales in barrels.... 1,630,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Nov.	30.....	105⅜	105⅜	103½	103¼	387,000
Dec.	2.....	103½	104½	102¾	104	356.000
	3.....	103⅞	105½	103⅞	105	306,000
	4.....	105	105¾	104	104	365,000
	5.....	104	104	102½	102¾	715,000
	6.....	102¾	104⅜	102½	104⅜	475,000

Total sales in barrels..... 2,604,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Dec. 6.

Statistics.

PRODUCTION OF ANTHRACITE COAL for week ended November 23d and year from January 1st.

	1889.		1888.
Tons of 2,240 lbs.	Week.	Year.	Year.
P. & Read. R.R. Co.....	164,265	6,661,596	6,731,117
Cent. R.R. of N. J.....	125,797	5,579,112	5,347,354
L. V. R.R. Co.....	180,543	6,827,330	6,321,793
D., L. & W. R.R. Co.....	120,000	4,825,240	6,445,732
D. & H. Canal Co.....	79,599	3,514,680	4,181,579
Penna. R.R.	45,454	2,934,667	4,196,071
Penna. Coal Co.....	19,010	1,260,850	1,555,280
N. Y., L. E. & W.....	13,250	891,574	878,210
Total..... ..	727,918	32,475,059	35,657,140
Decrease.....	.....	3,182,081	.....

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

These figures are subject to corrections for duplications.

Production for corresponding period:

1884.....	29,388,609	1886.....	30,032,139
1885.....	29,021,111	1887.....	31,948,033

PRODUCTION OF COKE on line of Pennsylvania R. R. for week ending December 6th, and year from January 1st, in tons of 2,000 lbs.: Week, 111,673 tons; year, 4,095,830 tons; to corresponding date in 1888, 3,752,407.

PRODUCTION OF BITUMINOUS COAL for week ended November 30th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

Tons of 2,240 lbs.	1889. Week.	1889. Year.	1888. Year.
Phila. & Erie R.R.	2,207	79,514	60,648
Cumberland, Md.	65,500	2,813,102	3,327,600
Barclay, Pa.	2,500	111,042	144,397
Broad Top, Pa.	10,029	326,587	341,971
Clearfield, Pa.	70,758	606,880	3,101,510
Allegheny, Pa.	18,310	751,237	737,660
Beach Creek, Pa.	10,975	1,404,876	1,358,516
Pocahontas Flat Top.	28,848	1,571,715	1,269,408
Kanawha, W. Va.	29,787	1,681,298	1,494,295
Total	238,914	9,346,251	37,015,656

WESTERN SHIPMENTS.

Pittsburg, Pa	15,473	616,799	673,111
Westmoreland, Pa.	31,788	1,412,015	1,437,332
Monongahela, Pa.	3,257	346,830	362,179
Total	50,518	2,375,644	2,472,622
Grand total	289,432	11,721.895	39,488,278

Anthracite.

The improvement in the trade, occasioned by the cold weather of the week, has been in feeling rather than in fact. Prices are undoubtedly weak and coal is certainly too plentiful. The actual condition of the market under such circumstances can as well be imagined as described.

At this late date, a period of continued cold weather is the only thing that can decidedly relieve the situation. The producers have had every opportunity and many an importunity to restrict the output of coal, and if an unsatisfactory market results from an utter lack of a judicious regulation of the supply to the demand, they have only themselves to blame.

There is no dearth of rumors as to where the surplus supply is coming from, and in the absence of official statistics many erroneous impressions are current. A good deal of doubt as to the accuracy of many of the statements of production is entertained, and, in general, the policy of the various railway managers in refusing to make their tonnage statement public, seems to have proven the reverse of satisfactory to all concerned. The Philadelphia *Ledger* prints what it claims to be the respective (corrected) tonnages of the seven anthracite carrying companies for the nine months of this year to September 30th, compared with the corresponding period of last year:

	1889.	Inc. and dec.
Reading Railroad	5,090,916	Inc. 139,239
Lehigh Valley Railroad	4,781,005	Inc. 45,503
Central Railroad, of N. Jersey.	4,294,705	Inc. 174,184
Delaw. Lackaw. & Western	3,862,350	Dec. 1,163,464
Delaware & Hudson Canal	2,836,584	Dec. 452,751
Pennsylvania Railroad	2 858,116	Dec. 615,959
Pennsylvania Coal Co.	973,718	Dec. 269,420
New York, Lake Erie & We.	889,894	Inc. 194,344
Total	25,587,287	Dec. 1,948,324

"The above official figures show," says the *Ledger*, "that the Reading continues to lead in tonnage all of the other anthracite roads, and it has evidently largely exceeded its percentage of the allotment of output this year to that date, and the Lehigh Valley appears to have also done the same thing."

Several weeks ago, it will be remembered, the ENGINEERING AND MINING JOURNAL referred to the policy of President Corbin, of the Philadelphia & Reading Railroad, and the above figures, if correct, seem to corroborate the rumors then referred to. There could be no more potent argument against the suppression of the official statistics than is afforded by the condition of the market at present. The lack of definite information has not only encouraged the circulation of exaggerated reports as to the dullness of the trade, but it has promoted a feeling of mutual distrust among the producers themselves which has prevented a uniform and unselfish adherence to the terms of the numerous agreements, both as to price and output, that have been made, and has given a supply of coal altogether in excess of the requirements of the market. We trust that this year's experience will serve to demonstrate the senselessness and utter inutility of this secrecy.

It is reported from Philadelphia that the Reading Coal & Iron Company is now working 39 of its 46 active collieries. The Lincoln Colliery, which, when in operation, is a large producer of Lykens Valley coal, was drowned out by the heavy rains early last week, and is still idle in consequence. The Reading Railroad has resumed shipping anthracite to the North and West via the Fall Brook route, the damages to that railroad by the recent floods having been repaired.

Recent changes in the management of the Philadelphia & Reading seem to indicate that the management is becoming concentrated into the hands of a single individual.

The Delaware & Hudson Canal will be closed about December 10. After the 1st instant no permits were issued for tows to Honesdale, and it is thought that those on the way to Rondout from that place will reach their destination early next week, when the water will be drawn from the canal.

All other canals of New York State closed at midnight on the 1st instant.

Actual selling prices of free burning stove f.o.b. are about $4, and proportionately less for other sizes.

Bituminous.

There has been little if any increase in the car supply during the week, and coal is consequently as scarce as ever.

Eastward freights are lower from New York, but the changes at Philadelphia and Baltimore continue relatively very high.

The committee appointed at the Philadelphia meeting some time ago to draw up a plan of combination intrusted the task to a sub-committee, which has recently made its report. This report is now under consideration by the general committee. Its outcome is awaited with much interest.

While arrangements for this mutual benefit association are being harmoniously matured, it is significant to note the manifesto that has just been issued by the Norfolk and Western shippers in the shape of an advertisement calling attention to the merits of Pocahontas steamer coals. This, of course, is looked upon as an announcement that the Southern producers hereafter intend to fight for a share in the steamer trade at this port, a great part of which at present is held by Clearfield companies. In pursuance of this policy, it is stated that Southern shippers are increasing their facilities for bringing coal to this market at the minimum of expense.

The Chesapeake & Ohio will have a considerable addition to its tonnage about February, when it expects to complete its branch line to the Hawk's Nest Mines.

New York Retail Trade.—The Consumers' Coal Company, whose office is at No. 111 Broadway, and yard at the foot of East Forty-third street, had seven judgments entered against it this week, in favor of Mrs. H. C. Schenck, wife of the president, for $12,159, and one in favor of M. Briggs for $636. The company was organized December 8th, 1881. The price of the shares was $5 each, and the authorized capital stock $500,000, which was reduced in July, 1884, to $135,500, of which $55,500 was paid in cash, and $80,000 issued for property necessary for the company's business. C. Stewart Schenck was president of the company. Among the trustees were Gen. Daniel E. Sickles, Henry Dexter, Samuel N. Hyde and Paul Coster. The statement of the company on June 1, it is said, showed liabilities for merchandise and borrowed money $22,600, and assets $57,000, consisting of plant, $28,000; horses, trucks, etc., $11,000; accounts, $11,500; coal, $5,000; cash, $1,500.

We have received the following communication in regard to the short weight problem which at present is agitating the members of the New York Retail Exchange:

EDITOR ENGINEERING AND MINING JOURNAL:

Allow me to suggest a remedy for the retail trade in relation to the problem of "short weights," which is now troubling the New York Retail Exchange. My plan would be to have all carts rigged up with a scale on each cart, in such manner that it would insure the purchaser full weight in each case; these carts to be licensed by the city, and regularly inspected by the Government Inspectors of Weights and Measures.

This would, of course, entail an additional expense to each dealer in the original outlay for carts (I should think not over $50 for each cart); but on the other hand would relieve them from the delay in weighing at the office, where they are obliged to throw on or off to make the even ton, and which consumes quite a little time for each load, as the driver could fill his cart with exact tons at the pile in yard.

To make this effective it would be necessary for an ordinance to be passed making it compulsory on all dealers, but in a case of such importance for the public good why not do so? PRO BONO PUBLICO.

Buffalo.

Dec. 5.

(From our Special Correspondent.)

The features of the anthracite coal trade at this port present nothing new either in supply, demand or items of interest. A few cold days has helped consumption, and that is all.

The bituminous coal trade is also without any special incidents worth noting. The receipts are more liberal, and the demands of consumers are more readily met than has been the case for many weeks. Prices strong.

Coke is in fair demand and firm.

The car "famine" is about over, and the reports received indicate that the pressure at many points has been relieved, to the advantage not only of this locality, but of many other coal centres. Railroad men are looking over their rolling stocks and preparing for future exigencies.

The stocks of anthracite coal at this port are light, but adequate for the requirements of the trade.

The Lake Shore Railroad has contracted with the Buffalo car firm for building 500 gondola and 200 box cars, to be delivered as quickly as possible.

The Lehigh Valley Railroad has given out an order for 2,000 coal cars.

After drilling 2,530 feet, the Niagara Falls Natural Gas Company have suspended operations. Cause, no gas!

Extraordinarily severe storms prevailed on Lakes Michigan and Huron last Wednesday, Thursday and Friday; many vessels, coal laden, were lost. The storms were the most disastrous known for many years. Quite a fleet of vessels are on the lakes now bound for this port, but all "up" business has closed for the season.

The year's lake and canal trade has been very good and profitable, taken as a whole. The statistics of the commerce, when completed, will show a very gratifying exhibit as compared with 1888. It is not expected that many vessels will be built at lake ports this winter, as the tonnage is nearly adequate to the requirements expected in 1890.

On January 1st, 1890, the three Buffalo gas companies will reduce the price of gas for illuminating purposes 10 cents per 1,000 feet. The figures will be $1.30, instead of $1.40, per 1,000 feet. It is claimed that if the three companies were united and the capital reduced from $3,600,000 to $2,000,000, $1 per 1,000 feet would be an adequate compensation for the service rendered. The difference of 30 cents is practically a charge on unnecessary capital paid by consumer.

The coal shipments by lake from this port from November 27th to the close of navigation were 12,550 tons to Chicago, 1,000 tons to Gladstone, 1,300 tons to Toledo and 650 tons to Saginaw. Rates of freight: 75c. to Chicago, 50c. to Toledo, 75c. to Saginaw and on owner's account to Gladstone.

Receipts of coal by canal for fourth week of November, 2,847 net tons; shipments, 403 net tons. Navigation closed.

Statistical.—Railroad receipts and shipments of coal at this port are not reported by request. Receipts of coal by lake this season, none. Shipments by lake westward for month of November, 255,280 net tons, as compared with 303,820 tons in 1888, and 244,730 tons in 1887; for season to December 1st, 2,156,670 net tons, as compared with 2,548,620 tons in 1888 and 1,902,580 tons in 1887. The receipts of coal by canal for month of November, 4,571 net tons, as compared with 24,894 tons in 1888, and 3,462 tons in 1887. The shipments, 1,679 net tons, as compared with 457 tons in 1888, and 565 tons in 1887. Total receipts by canal this season to December 1st, 85,055 net tons as compared with 148,857 tons in 1888 and 59,539 tons in 1887; the shipments, 11,672 net tons, as compared with 4,374 tons in 1888, and 8,706 tons in 1887. The aggregate shipments by lake thus far this year show a decrease of 391,950 net tons as compared with 1888. The rates of freight by lake hence to ports named were as follows during November: 60@75c. to Chicago and Milwaukee; 25@75c. to Detroit and Lake Superior ports, and 30@50c. to Detroit and Toledo. The rate to Chicago December 1st, 1889, was 75c.; in 1888, $1, and in 1887, $1.50 per ton.

The shipments of coal by lake this season to December 1st were distributed about as follows:

	Tons.		Tons.
To Chicago	980,400	To Mackinaw	650
Milwaukee	439,590	Houghton	2,850
Duluth	158,900	St. Ignace	500
Superior	110,110	Port Burwell	35
Racine	28,260	Kelly Island	690
Detroit	30,490	Port Clinton	740
Bay City	6,620	Muskegon	1,530
Alpena	600	Hancock	2,000
Windsor	4,000	Owen Sound	500
Sheboygan	6,810	Perry Sound	50
Saginaw	12,630	Depere	1,100
Green Bay	23,400	Toledo	48,370
Washburn	800	Port Rowan	70
Escanaba	2,250	Cheboygan	700
Rogers City	20	Marquette	14,560
Amherstburg	1,190	Port Stanley	85
Oscoda	600	Sarnia	700
Dover	355	Menominee	1,150
Chippewa	88	Algonac	310
Pequaming	200	Lake Linden	4,375
Kenosha	8,220	Manitowoc	6,130
Port Huron	3,500	Marine City	800
Port Arthur	3,220	Duncan City	50
Sandusky	350	Portage	2,450
Fort William	3,100	Luddington	530
Gladstone	36,320	Various ports by vessels clearing from Tonawanda receive their cargoes here but not included in reports of Custom House, about.	150,000
Au Sauble	450		
Huron, O.	240		
Victoria Harbor.	200		
Wallaceburg	350		
Sault Ste. Marie.	2,000		
Serpent River	40		
Ashland	21,280		

Boston.

[From our Special Correspondent]

The market for anthracite coal is improving. Receipts are heavy, and coal which has been ordered for some time has been delivered. There is beginning to be a better inquiry from those who have an eye to replenishing stock. We have had several regulation December days this week and coal is going freely into consumption. F. o. b. prices of anthracite here are very easy still. Fair coal can be had on a basis of $4 f. o. b. at New York for stove, and there is an abundance of all sizes. There is not much prospect of any improvement in prices, but a fair December demand will, it is thought, keep prices from further weakening.

The bituminous market is kept well swept of coal. Anything afloat or on the market by reason of demurrage is quickly taken, with only secondary regard to quality. Georges Creek and all Cumberland coal generally shipped from Baltimore is practically out of the market. Shippers of such coal would be glad to be guaranteed against their contracts. An offer of $2.70 f.o.b. at Baltimore has been refused this week and no date for shipment will be named. Vessels have been two weeks and more loading. Clearfield coal is in sharp demand at $2.60@$2.65 f.o.b. at Philadelphia and Cumberland; coal shipped from that port brings $2.70@$2.75. There is plenty of coal, plenty of orders and plenty of vessels, but a continuous shortage of cars from the mines. The Pennsylvania Railroad in particular has not recovered from losses of rolling stock sustained in the Johnstown flood, and will not recover fully for some months to come.

Freights are weaker at New York. I hear of a 400-ton vessel being chartered at 90c., but this is, perhaps, exceptional. The rate is generally 95c.@

$1.05. There are more vessels there, and orders have been very slack. The rate is not likely to remain low. The Philadelphia rate is still $1.40@$1.50, and Baltimore, $1.60.

The retail movement is improving; it has been very slack, and dealers have grumbled freely to keep up their spirits. Prices have held well up.

The receipts for the week have been 34,382 tons of anthracite, and 14,907 tons of bituminous, against 39,745 tons of anthracite, and 14,158 tons of bituminous for the same week of 1888. Since January 1st receipts have been 1,538,527 tons of anthracite and 880,137 tons of bituminous.

Pittsburg. Dec. 5.

(From our Special Correspondent.)

Coal.—There is nothing either new or important in regard to the coal trade, the mines on the Monongahela being closed, with very few exceptions. Operators say it is out of the question to pay three cents for mining, while the miners decline to accept less. The pools are crowded with empties. The Southern markets have a sufficient supply to last for some time. The November shipments reach 8,500,000 bushels against 12,850,000 bushels in November, 1888

The nominal rates are:

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.—We can report a very firm market with a good demand. The car situation is improving; while prices have not advanced, the impression is becoming strong that on or before Jan. 1 prices will be moved up. The week's output, 13,375 active, 625 idle ovens, production, 126,550 tons, a decrease from previous week. Shipments aggregate 7,175 cars, last week 7,200; furnace men with big contracts must have coke, cost what it will.

November prices: Furnace, f.o.b., $1.75; foundry, $2.05; crushed $2.55. Report says 100 cars were sold at $1.85 per ton. We give the rumor for what it is worth.

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

FREIGHTS.

The canals of New York State closed at midnight on November 30th. According to one estimate the canal tonnage this year shows an increase of 350,000 tons over that of last year.

From Baltimore to: Boston, Mass., 1.60; Bridgeport, Conn., 1.40; Charleston, .80; Fall River, 1.40; Galveston, 3.00; New Bedford, 1.40; New Haven, 1.40; New London, 1.40; New York, N. Y., 1.15; Portland, 1.60; Providence, 1.40; Quincy Point, 1.80; Richmond, Va., .85; Salem, Mass., 1.60; Savannah, 1.00; Williamsburgh, N. Y., 1.15@1.20.

From Philadelphia to: Charleston, .75; East Cambridge, 1.50*; Fall River, .95*@1.05*; Galveston, 3.05; New Bedford, .95*@1.05*; New York, .90†; Norfolk, Va., .80; Portland, 1.45*; Providence, .95*@1.05*; Richmond, 1.00.

* And discharging. † Alongside. ‡ And towage.

MET-L MARKET.

NEW YORK, Friday Evening, Dec. 6.

Prices of silver per ounce troy.

Nov	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Dec.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
30	4.84	44 3-16	96				
Dec.				4	4.83¾	44⅛	95½
2	4.84	44⅜	93¼*	5	4.83¾	43¾	94¾
3	4.84	44⅜	96⅜	6	4.83¾	43¾	94¼†

* To 96⅜. † To 95.

Allotment of council bills on Wednesday was insignificant.

Market opened strong and advancing this week, but suffered a sharp decline on December 4th and 5th, with entire cessation of London orders.

Secretary Windom's silver scheme is supposed to have had a bearish effect on London buyers. Market closes firmer.

United States Assay Office at New York reports total receipts of silver for the week 96,000 ounces.

Domestic and Foreign Coin.

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

	Bid.	Asked
Trade dollars	$ .75	$ —
Mexican dollars	.75¾	.76
Peruvian soles and Chilian pesos	.73½	.74½
English silver	4.83	4.88
Five francs	.94	.95
Victoria sovereigns	4.84	4.88
Twenty francs	3.88	3.92
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.75
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

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 five per cent. During the week the bank lost £240,000 bullion, and the proportion of its reserve to its liabilities was reduced from 43·38 to 38·06 per cent., against a reduction from 41·27 to 40·35 per cent. in the same week of last year, when its rate for discount was five per cent. Thursday the bank lost £250,000 bullion on balance. The weekly statement of the Bank of France shows a loss of 13,275,000 francs gold and a loss of 1,225,000 francs silver.

Copper.—During the past week the copper market has continued strong in tone, and values have advanced a little more. At the beginning of the week the quotation for Lake copper was 14¼c., but later on some sales for delivery up to April next were effected at 14½c. Although the current consumptive demand still continues satisfactory, the higher prices now asked are doubtless having the effect of moderating the eagerness of buyers, and in the interest of the trade in general it is to be hoped that quotations will not be raised further for some time to come at any rate. On the other hand, there appears to be no reason whatever why prices should have any material relapse. With the principal producers actually sold out for some months to come and little or nothing floating about on the market in speculative hands, there is very little encouragement for anybody to wait for lower prices for Lake copper, and the same remarks apply almost with equal force to casting brands, for which latter quotations have now been advanced to 13@13¼c., and nothing can be bought under these prices. The fact is that not only have the stocks of copper in smelters' hands entirely disappeared, but many of them are also somewhat in arrear with deliveries on running contracts. European mail advices all unite in reporting a continuance of the strong tone which has characterized the markets on the other side for some time past and the transactions last reported were gradually stiffening prices. A large business has recently been done in furnace material, and prices for refined and manufactured copper are exceedingly firm. The latest quotations for these are: English Tough, £54@£55; best selected, £56@£57; strong sheets, £62@£64; India sheets, £59@£60, and yellow metal, 5¾d.@5⅞d. per pound.

In sympathy with the somewhat violent fluctuations and lower prices in the British pig iron markets, the London market for Chili Bars and G. M. B. copper has been a little weaker during the past few days, and this morning the lowest point of the week was touched at £48 15s.@£49 spot, and £48 10s.@£48 15s. three months, but latest cable advices give the closing quotations this afternoon about 5s. higher.

Advices received by cable from London report a decrease of about 2,000 tons in the statistics of visible supplies for the second half of November.

A press cable of to-day's date states the copper syndicate holds less than 130,000 tons of that metal taken from the Société des Metaux. It is the intention of the syndicate to maintain the price of copper at from £50 to £55 per ton. Should the price fall below £50, the syndicate will cease selling, and will even buy at the decline. It is believed that the syndicate is competent to sustain its project.

The situation at the Anaconda mine remains unchanged, the fire still continues, and steam is being injected to smother it. The upper works smelters have been closed down, but this is on account of want of coal, not for lack of ore, the supply at the works being ten days ahead of the furnaces.

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

To Liverpool—	Copper Matte.	Lbs.	
By S. S. Italy	13,422 sacks	1,511,803	$67,400
To Liverpool—	Copper.		
By S. S. Lake Huron	146 bars	63,928	6,200
" Plato	85 casks	57,616	11,650
"	679 plates	56,050	11,650
To Hamburg—			
By S. S. Bohemia	389 bars	113,364	12,500
To Rotterdam—			
By S. S. Feendam	251 pigs	56,303	5,714

Tin.—The tin market has been steady throughout the week without any important change in quotations. Operators have shown very little disposition to do anything, but orders from consumers continue to come in at a fairly satisfactory rate. The quantities now afloat and in course of shipment to this country having been considerably reduced, no accumulation of stocks is anticipated. Our closing quotations to-day are: Spot, 21¾; December, 21⅜; January, 21¾; February, 21⅜; March, 21⅜.

In London the market has been more irregular, and while in the early part of the week the price of spot tin rapidly advanced to £98 2s. 6d@£98 5s., against last week's closing quotation of £96 5s.@£96 7s. 6d., futures were much neglected and rather flat at about £10 15s per ton lower than the spot price. From this it is evident that there is a considerable scarcity of spot tin in the English market. The latest London closing prices received by cable to-day are spot, £97 15s.@£98. Futures, £97@£97 5s. For the month of November the statistics of visible supplies of tin show a decrease of 400 tons.

Lead.—With very little business doing prices have remained firm. No pressure to sell is observable for early delivery, and there are no sellers at present for the more deferred deliveries. We quote December and January, 3·85@3.87½c.

The London market has fluctuated rather considerably during the week and prices at one time touched £14 15s., but a relapse has since taken place and the latest quotations are for Spanish lead, £14, and for English, £14 5s.

Spelter continues rather firm, with little metal offering, and we must now quote $5.30 to $5.35 New York for prime Western. The London Spelter market is firm, and the latest quotations are £22 7s. 6d.@£23 2s. 6d. for ordinaries, and £23 2s. 6d.@£23 7s. 6d. for specials.

The St. Louis Market: Messrs. John Wahl & Co. telegraph us to-day as follows: Lead is firmer. Common is salable at 3·60c., and refined at 3·62½c.

The Chicago Market.—Messrs. Everett & Post telegraph us as follows: "Our lead market has ruled very firm all the week at 3·65c., and the steady demand has resulted in sales of over three hundred tons, mostly at that figure. At the close values are higher, 3·70c. asked and 3·65c. freely bid.

Antimony.—Our market is still almost bare of supplies, and we have to quote Cookson's (nominal) 32@33c., and Hallett's 20½@21c. Nothing can be bought in London for December shipment from England, and it is understood that producers are well booked with orders for the first three months of 1890.

Nickel.—Recent importations have created a rather easier feeling in this market, but asking prices show no important variation from the figures last quoted. Quotations average about 75 cents a pound, subject to fluctuations, according to quantity. An importation of 11,000 pounds was reported yesterday.

Quicksilver.—There have been no important developments in the quicksilver market this week. London cables quote £9 15s., and local dealers ask 66 cents per pound. The market closes steady and without new features of interest.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, December 6.

Pig Iron.—December brings no change in the market for American foundry or forge irons, save that with the approach of 1890 the firmness heretofore noticeable becomes the more pronounced, and a general hardening of prices seems to be under way. So far as can be learned, there is not much business doing in spot iron, as there is little demand for immediate deliveries, but forward contracts are still inquired for, and it is believed that a number of furnaces are beginning to quietly book orders. The volume of business already contracted for, however, has been small, and there is still a very general indecision as to prices for 1890. The Thomas Iron Company up to date has steadily refused to name any figures. As noted last week, the leading Southern companies are asking $20 and $21 for No. 1 X iron for February-March deliver. At present it is hardly believed that an advance to these figures will be general, but both consumers and sellers, so far as their opinions can be defined at all, are apparently expecting opening prices to be either $19 or $20 for No. 1 and proportionately less for other grades. Deliveries from Southern ports on old contracts still continue unsatisfactory for reasons heretofore explained in these columns.

A feature of considerable importance, and one which has occasioned much uncertainty as to prices for next year, has been the cost of Lake Superior ores. According to telegraphic advices from Cleveland this week, large ore sales have been made at from 50 to 75 cents higher than the ruling prices during the past season. If this continues, and proves to be general, higher prices for Bessemer pig will, of course, be looked for.

Scotch Pig.—The arrivals of Scotch iron to this port now are almost entirely on orders that were placed some time ago at low figures. In fact, the high prices have completely severed the relations between the American market and the Scotch producing districts. The Glasgow market during the week has fluctuated considerably, with alternate decline and advances, but on the whole the tendency appears to be a rather weaker one, and as noted in this column last week, it is generally believed on this side of the water that the advance has, at least for a time, been checked. Quotations by cable to-day to the Metal Exchange were 58s. 7d. for Scotch warrants.

Spiegeleisen and Ferro-manganese.—After several weeks of quietness there has been a renewal of activity in this line. We understand that sales aggregating about 10,000 tons of 20 and 30 per cent. spiegeleisen have been made. The terms were private, but as $33 is now asked, it is thought that the sales were made at an advance over the quotations of last week. For ferro-manganese, 80 per cent., $95@$100, according to quantity and date of delivery, is quoted.

Billets, Slabs and Rods.—A decided advance may be said to have taken place in this line during the week, quotations being notably firmer than at the date of our last report. Sales of billets are reported as high as $35.75 delivered at Cleveland, and for New York deliveries at least $36 may be quoted. The same quotation will also apply to nail slabs. Foreign wire rods have also advanced, the latest asking price being $55 ex ship New

York. Rods can still be bought at American mills for $50.

Steel Rails.—A firmer feeling is noticeable in the steel rail market, and values seem to be nearer the$35 mark than they have been. One leading mill reports sales at this figure, but as business has been light, we may quote nominally $34.50@$35. During December very little business is, of course, looked for, as it is the month when large expenditures are not usually made. The quietude can, therefore, be called entirely seasonable, and the mills display no anxiety to secure business.

Structural Iron and Steel.—What is said of steel rails is applicable to this branch of the trade to a certain extent. Prices, if changed at all, are firmer, but the current business does not amount to much. Buyers, for the time, appear to be holding off. Bar-iron men are disposed to complain that the advance in railway freights to western points, which went into effect last month, has checked the volume of business, the high rates of freights deterring many buyers from entering the market, as they might otherwise have done. The advance in refined bar iron from store, which was ordered at the last meeting of the Bar Iron Association, went into effect on Monday last, the 2d inst., as agreed upon. Quotations in detail are as follows: On wharf, bridge plate, 2·30c.; iron angles, 2·25@2·35c.; iron tees, 2·80@2·85c.; steel angles, 2·35c.; beams and channels on wharf, 3·1c.

Steel plates on wharf: Tank and ship, 2·6c.; shell, 2·8c.; flange, 3@3·1c.; fire-box, 4@4·1c.

Iron plates on wharf: Common tank, 2·25c.; refined, 2·35@2·45c; shell, 2·5@2·6c.; flange, 3·5@3·7c.; extra flange, 3¾@4c.

Bar iron at mill is quoted at 1·8c. for common and 1·8@1·9c. 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, 5¼c.

Merchant Steel.—A general firmness in all grades of merchant steel is reported. At this time the thoughts of approaching annual stock taking begin to engage the attention both buyers and sellers. The current business is fair, but in no particular case large enough to invite comment. In point of activity, the lower grades, particularly, seem to have the advantage. 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, 3¾c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.

Pipes and Tubes.—Prices and rates of discount remain at the figures adopted at the November meeting. Trade continues good and the mills busy. It is as yet undecided whether or not any action in regard to prices will be taken at the December meeting of the Manufacturers' Association. Rates of discount on wrought-iron pipe remain as follows: Butt welded, plain and tarred, 50 per cent. discount; galvanized, 12½ per cent. discount; lap-welded, plain and tarred, 62½ per cent. discount; galvanized, 50 per cent. discount. A discount of 57½ per cent. is allowed on boiler tubes of 2 inches and larger, and 52½ per cent. on 1¾ inches and smaller.

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

Rail Fastenings.—New business is not discoverable, but prices continue very firmly maintained. We quote as follows: Spikes, 2·25c.; angle fish plates, $2·15@2·25c.; bolts and square nuts, 3c.; hex. nuts, 3·25c.

Old Material.—In accordance with the predictions that have been frequently made in these columns, holders of old rails continue to advance their asking prices to correspond with each advance in the views of buyers. It is now said that old iron tees are unobtainable at less than $27. We may quote nominally from $26@$2. for old tees, and about $28 for double heads. No. 1 wrought scrap iron is quoted at $24.

Cleveland. Dec. 4.

(From our Special Correspondent.)

Since my last report to you of November 15th, the market for iron, steel and Lake Superior iron ores has advanced and become very firm. I said in that letter that from six to eight hundred thourand tons of Lake Superior iron ore had already been sold for next year's delivery at an advance of about fifty cents a ton at the mine. Since that time, further sales have been made for delivery on cars at the mine, at a price somewhat greater than fifty cents over last year's prices. Ore sold in this way, viz, f.o.b. cars at the mine, is entirely for the use of Ch cago and Michigan furnaces.

During the last two weeks, sales of a million tons or over have been made to be delivered at Lake Erie ports. These have consisted almost entirely of Bessemer ores, for which the demand is extraordinary. The price was $1 a ton over that of last year, and furnacemen hesitated but little in paying this advance.

Minnesota, Champion and Republic have sold at $6.50, Lake Angeline and Lake Superior, section 16, yielding 66 in iron and not over ·02 in phosphorous, have sold at $7.25. Norrie and Chapin at $5.50. In every instance $1 advance has been obtained. Owing, however, to the largely increased demand for Bessemers from Western Pennsylvania, Ohio and Illinois furnaces, brought about by the increase in their furnace capacity and to the largely increased prospective wants of Lake Superior Bessemer by Eastern furnaces, occasioned by the scarcity and high price of foreign ores, it would surprise no one if before January there should be another and still greater advance in "Bessemer" ores. In the latter part of 1886, when the then present and prospective condition of the iron and steel market was very similar to the conditions now prevailing, ores were sold for delivery during the following season at $7 for "Champion" and "Republic," $6.50 for "Lake Superior" and "Cleveland No. 1" (Red Speculars), with corresponding prices for the lower grades. In other words, fifty cents a ton more than has thus far been asked. It is quite likely then, that before long prices on ore will rise to the level of those prevailing in January, 1887.

Quite a large amount of vessel tonnage has been contracted for at an advance of ten cents a ton over last year's season charters. The vessel men, however, now think they have made a mistake, and are already beginning to ask more.

Relative to "Non-Bessemers," quite large sales have already been made of high-grade "Specular non-Bessemers," at an advance of $1, and it is the general opinion that this will be the prevailing advance, although at present consumers hesitate to pay it. There is but an insignificant amount of ore on hand unsold.

Following quotations are the same as those in my last letter, and apply to the little ore that remains on hand.

SPECULAR AND MAGNETIC ORES.	
Bessemer, 66 to 69 per cent	$6.50@$7.25
Bessemer, 60 to 64 per cent	5.25@ 6.25
Non-Bessemer, 66 to 69 per cent	5.50
Non-Bessemer, 62 to 65 per cent	4.75@ 5.50
Non-Bessemer, 57 to 60 per cent	4.25
SOFT HEMATITES, DRIED AT 212.	
Bessemer, 62 to 65 per cent	$5.00@$6.00
Bessemer, 59 to 61 per cent	4.75
Non-Bessemer, 57 to 62 per cent	4.00@ 4.50

The above prices are delivered on docks at Lake Erie ports.

Philadelphia. Dec. 6.

[From our Special Correspondent.]

Pig Iron.—Only a moderate amount of business has been done in crude iron this week, owing in the first place to the fact that makers and brokers are asking more money than buyers think they will have to pay; and second, to the fact that there is not a large amount of business now under contract to be covered. Yesterday and to-day quite a number of inquiries were received, and in some cases offers were made; but scarcely any business has been transacted. The limits within which No. 1 has been sold range from $18.50 to $19.50. There are a number of parties ready to buy No. 2 iron, but $17.50 is their outside figure, and as most holders are asking $18, there is not much business to be reported. Besides, the founders are not very anxious to buy far ahead at present. Interest is centering at present in forge iron. Salesmen who are keeping a bright lookout report that stocks in hand are low, although this sign is often deceptive, as it is the custom with many buyers here to have their iron delivered from month to month as it is wanted, under long contracts. Some two or three makes of No. 1 foundry are being held at $20.50. A few good brands of No. 2 could not be had under $18.50; a few brands of forge are very strong at $18, according to the talk of makers; but buyers pay very little regard to such quotations.

Foreign Iron.—Brokers here have received within a day or two several inquiries from parties who want spiegeleisen, and the best quotation for 20 per cent. is $36; ferro-manganese is selling at $90@$92 for 80 per cent.

Blooms & Billets.—Nail slabs are very strong to-day at $36; one or two makes are quoted at $37. Tank plate is strong at $38. Best boiler material sold at $48. A sale of charcoal blooms was made yesterday at $54.50. Anthracite blooms have advanced to $44@$45 and scrap is hard to get under $34.50.

Muck Bars.—Muck bars suddenly made an advance, and $31 to $31.50 has been asked, under an unexpected rush of inquiry. Two or three sales were made at $30, as the option has been extended on that basis.

Merchant Iron.—The iron makers of Eastern Pennsylvania held a meeting this week with a view of effecting a combination of interests, preparatory to united action for higher prices. Very little good iron can be had in this State under 2 cents. From now until the end of the year business will be irregular. Market conditions, however, are very strong, as the consumption of merchant bar, as well as of all other kinds of iron, is increasing.

Skelp Iron.—A few days ago skelp iron showed some little weakness on the surface, but the promptness with which buyers came forward sent prices up to 1·90c. for grooved for early delivery. Sheared skelp is strong at 2·20c.

Wrought Iron Pipe.—The pipe mills have been favored with an unusual amount of business for the early part of December. There is a large amount of work in hand calling for pipe supplies, and a good many buyers have been following the dangerous policy of not placing their orders until the work was about ready for pipe.

Nails.—Contrary to expectations, even of makers themselves, nails have advanced 10 cents, but the explanation of this is given by the heavy purchasing of the country trade. Steel nails are bringing $2.40 for all that sell; but the iron nail is in the lead.

Sheet Iron.—The sheet iron mills are pretty well run down with work. A few manufacturers have been endeavoring to sort up store stocks, in order to stand a heavier run; but the store supplies continue low. The signs of the times point to a much larger absorption of heavy and light sheets and galvanized this winter than for many years.

Plate and Tank Iron.—Plate and tank does not seem to obey the law of demand and upply in this respect; that, considering the very heavy demand there has been and now is, prices are in favor of buyers. Several large building enterprises are in hand now, and other enterprises into which tank iron largely enters; and yet the quotations made since Monday to cover some of this work show that manufacturers are still anxious to secure the greatest possible amount of business at the lowest possible prices. Ordinary iron can be had at 2·30c., or even less; shell iron, 2·60c.; flange, 3·25c., and fire-box, 3·80c.; ship plate, 2·50c.; flange, 3·20c.

Structural Iron.—Quite a number of enterprises, large and small, are now under consideration. A very large amount of material will be required to complete all of the work in sight, but the policy of the managers of many of these concerns is to break up their requirements into small lots. Bridge plates and angles are about 2·30c., though 2·40c. has been named for bridge iron. Tees, 2·75c.; beams and channels, 3·10c.

Steel Rails.—The situation of the steel rail market is still a matter of uncertainty. Brokers who have orders to place give different accounts. Two or three companies are endeavoring to place orders, but find less encouragement to put all their rails into one order and at one mill than they had hoped for. Rail makers are very firm in their views, and are not inclined to shade $35 very much.

Old Rails.—Old rails are quoted at $26.50 to $27.

Scrap.—Scrap would be higher than it is but for the fact that a good many dealers are short of the market, and are compelled to buy low. As nearly all are in the same boat, scrap iron quotations are a little below what free competition would make them. Quotations for No. 1 are $24 to $25; No. 2, $18; steel rails, $22; fish plates, $27.

Pittsburg. Dec. 5.

(From our Special Correspondent.)

Raw Iron—The market shows increased strength and activity. The demand was very active, with buyers more numerous than ever, the question being not so much about prices as to the quantity of iron that can be furnished during the next three or four months. As for spot iron, the market is bare, the iron in consumption at the present time being what was sold in the fall for later delivery. There is not a furnace in Pittsburg or vicinity that is not sold ahead for several months. During the week the demand for standard brands of Gray Forge has attracted a good deal of attention, and sales of several good-sized blocks have been disposed of at a further appreciation of prices. There is entirely too much difference between the quoted value of Bessemer and Gray Forge, the present difference being five dollars per ton. Two and a half or three dollars per ton is about the real difference in value, and, as there is no immediate prospect of Bessemer declining, we may look for a further advance in Gray Forge Bessemer pig from the South. A lot of 2,000 tons was purchased from an Alabama furnace as a trial; the price has not yet been made public. The fact is, iron must be had, it makes no difference whether it is made east, west, north, or south. It is the price and quality that will decide the matter. The freight rates from Alabama to Pittsburg are about $4.50 per ton, and the purchase we have referred to will be watched with a good deal of interest by consumers and furnace men. In the meantime consumption is going on, on a gigantic scale exceeding anything on record.

As a matter of fact the market is very strong, as parties who have to buy can testify; while those who have iron for sale hardly know what price to ask. There would not be the least trouble in obtaining what are called current prices, although even these are by no means uniform. The Shenango and Mahoning Valley furnaces are crowded with orders, and are asking big figures for future delivery. Our report will be found interesting.

Coke and Coal Smelted Lake Ore.

5,000 Tons Bessemer, January, February and March	$23 00 cash.
3,000 Tons Bessemer, March, April and May	23.50 cash.
2,500 Tons Gray Forge	17.75 cash.
3,500 Tons Bessemer, January and February	23.25 cash.
2,000 Tons Gray Forge	17.60 cash.
2,000 Tons Gray Forge	17.50 cash.
2,000 Tons Bessemer, City Furnace	22 00 cash.
2,500 Tons Bessemer	23.50 cash.
1,000 Tons Mill Iron, extra	18.50 cash.
1,000 Tons Gray Forge	17 75 cash.
500 Tons Gray Forge	18.00 cash.
500 Tons Gray Forge	18.00 cash.
500 Tons No. 2 Foundry	18 75 cash.
600 Tons Bessemer	23.00 cash.

Coke, Native Ore.

1,000 Tons Gray Forge	17.75 cash.
700 Tons Gray Forge	17.50 cash.
500 Tons Open Gray	17.60 cash.
500 Tons Gray Forge	17.25 cash.
500 Tons Gray Forge	17.50 cash.
400 Tons Gray Forge	17.50 cash.
150 Tons Silvery	17.50 cash.

Charcoal.

250 Tons No. 2 Foundry	22.25 cash.
250 Tons No. 1 Foundry	23.25 cash.
100 Tons Cold Blast	27.75 cash.

Muck Bar.

1,000 Tons Neutral	31.45 cash.
500 Tons Neutral	31.50 cash.
500 Tons Neutral	31.25 cash.
300 Tons Neutral	30.50 cash.

Steel Slabs and Billets.

1,500 Tons Slabs and Billets	35.00 cash.
1,0.0 Tons Steel Slabs	35.50 cash.
1, 00 Tons Slabs and Billets	35.32 cash.
400 Tons Billets	35.00 cash.

Steel Wire Rods.

500 Tons American Fives	51.00 cash.
500 Tons American Fives	50.50 cash.

New Steel Rails.

5,000 Tons New Rails	34 00 cash.

Spiegel.

1,000 Tons 20 per cent., at seaboard	35.00 cash.
500 Tons 20 per cent., at seaboard	34.75 cash.
100 Tons 20 per cent., at seaboard	34.50 cash.
500 Tons 10 and 12 per cent., at seaboard	30.00 cash.

Steel Bloom Ends.

500 Tons Bloom Ends	24.50 cash.
500 Tons Bloom Ends	25.00 cash.

Ferro-Manganese.

50 Tons 80 per cent., ex ship New York	95.00 cash.

Skelp Iron.

450 Tons Sheared Iron	2.15 4 mo.
700 Tons Narrow Grooved	1.77½ 4 mo.
450 Tons Wide Grooved	1.82½ 4 mo.

Prices.

Coke or Bituminous Pig—	
Foundry No. 1..	$19.75@20.00
Foundry No. 2..	18.50@18.75
Gray F. No. 3..	17.75@18.00
" No. 4..	17.25@17.50
White	16.50@16.75
Mottled	16.50@16.75
Silvery	17.00@20.00
Bessemer	23.00@23.25
Low Phos	26.00@27.00
Charcoal Pig—	
Foundry No. 1..	23.50@24.50
Foundry No. 2..	22.00@22.25
Cold-Blast	25.00@.8.00
Warm Blast	24.00@25.00
10 + 12% Spiegel at seaboard	@30.00
20% Spiegel at seaboard	34.50@35.00
Muck-Bar	30.50@31.50
Steel Blooms	34.50@35.00
Steel Slabs	34.50@35.00
Steel Cr'p Ends	34.25@34.75
Steel Bl. Ends	24 00@25.00
Ferro-Man., 80% (ex. ship, N.Y.)	@95.00
Steel Billets	35.00@35.50
Old Iron Rails	27.00@27.50
Old Steel Rails	21.00@22.00
No. 1 W. Scrap	22.00@22.50
No. 2 W. Scrap	@19.00
Steel Rails	@34.00
" light sec	34.00@37.00
Bar Iron, nom	1.80@ 1.90
Iron Nails	2.25@ 2.30
Steel Nails	2.25@ 2.30
Wire Nails	2.60@ 2.65

CHEMICALS AND MINERALS.

New York, Friday Evening, Dec. 6.

Heavy Chemicals.—The only lots of carbonated soda ash or alkali now obtainable appear to be from second hands, and most of the current business is supplied from these sources. The greater part of all arrivals due this month have been contracted for. Some holders who bought some time ago at low prices are reaping a small harvest from the present advanced figures, a very handsome profit being afforded by the advance of about 20 cents per hundred pounds in comparatively a short time. For carbonated soda ash, 48 per cent., $1.40 to $1.47½ is quoted. For Brunner Mond alkali, 48 per cent., $1.50 to $1.55 continues to be asked, and for 58 per cent. $1.37½ to $1.45 are quoted.

Caustic soda ash, 48 per cent., is rather weaker. From $1.30@$1.35 is nominally quoted, but such transactions as there have been were made at the lower figure.

Caustic soda continues very week. For higher tests, 70 and 74 per cent., $2.27@$2.35, according to quantity and quality, are now quoted. For 60 per per cent. $2.45@$2.50 is asked, these figures representing a decline of about five per cent. per hundred pounds from the prices named last week.

Bleaching powder also lacks strength. Quotations are nominally $1.70@$1.75.

English advices of the 22d ult. contain the following: "Manufacturers are much depressed since learning the result of the meeting held in Liverpool last week. The inability of makers to revive the association has cast quite a gloom on the prospect here, and buyers are doing what they can to take advantage of the situation. As a rule, however, the local manufacturers, notwithstanding the semi-panic which seems to have taken hold of many Lancashire makers, refuse to sell forward at the low prices which at present are freely offered by many merchants. The London soda demand continues to keep the crystals makers fully employed."

Acids.—A very interesting document has been filed with the Secretary of the State of New Jersey. It sets forth that there has been duly incorporated in that State the Knickerbocker Chemical Company. The incorporators are Messrs. Henry S. Deshon and James L. Morgan, Jr., both of Brooklyn, N. Y., and John M. Goetchins, of New York City, and William M. Johnson, of Hackensack, N. J. The stated object of the corporation is the manufacture and sale of acids and chemical products. The total capital authorized is $25,000, and it is said that the company has commenced business with the same amount. The par value of the shares is $100. The principal office is in Hackensack, Bergen County, New Jersey.

This will be readily recognized as the outcome of the deliberations of the much-talked-about combination of New York acid manufacturers. It will be noticed that two of the gentlemen mentioned are representatives of the firm of James L. Morgan & Co., another of the Lodi Chemical Works, and the fourth of the Dundee Chemical Works. This affords some indication of the probable manner in which the combination will carry out the plans it has in contemplation.

A very interesting meeting of the "combine" was held on Tuesday afternoon. Those who were present are curiously divided as to whether or not everything has at last been settled. It is apparent that there is a good deal of difficulty in arranging details, but those interested hope that the sense of the mutual interests involved will prevent any serious dissensions, or at least any that would prevent the consummation of the scheme.

It must be acknowledged in view of the recent decisions against "combines," and in view of the fact that the proposed acid combination will leave a very important loop-hole for outside competition, that the prospects of its permanent success are not as brilliant as might be.

Trade is brisk and an active demand is reported for all varieties, principally, however, for muriatic and sulphuric. Nitric also meets with ready sale.

Acetic acid.—Nothing further has been done since our last report of the small combine among the New York makers. Manufacturers are refusing to make any contracts for forward delivery until after January 1st, but local buyers seem to be well supplied, and consequently there is very little activity in the article. It seems that the Boston and Philadelphia makers are not as firmly bound to this agreement as was at first supposed, and while makers profess to be adhering to schedule quotations, it is apparently doubtful whether or not anything very important will be accomplished next year. If the combine for other acids succeeds, however, the acetic acid agreement will probably not be long in coming.

The collapse of the combination of Swedish, English and German makers of oxalic acid has been quickly followed by a cablegram from London stating that prices for next year's contracts have been made as low as 3d., or about 6⅛ cents per pound ex store here. An effort has been made in some quarters to attribute the collapse to the actions of a certain English manufacturer, but, judging from the advices that have been received in New York, this is unjust, as the cause of the collapse appears to be, as stated in our last issue, a general dissatisfaction, of which the drop in prices is only a natural sequence.

During the year there has been a pretty well-defined suspicion that the combination prices of oxalic acid have been too high. This suspicion seems to be confirmed by the present decline in prices of over 33⅓ per cent.

Fertilizing Chemicals.—Little, if any, improvement is to be noted in the market for crude fertilizing materials. Prices may be quoted nominally as follows: Azotine, $2.05@$2.12½; dried blood, city, low grade, $2@$2.05; high grade, $2.05@$2.10. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $20.50 per ton, and low grade, 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $20. Fish scrap, $21.50@$22 per ton, f. o. b. factory. Sulphate of ammonia at $3.15 per cwt. Concentrated tankage, $2@2.05. Refuse bone-black, guaranteed 70 per cent. phosphate, $20 per ton. Dissolved bone-black is 90c. per unit for available phosphoric acid, and acid phosphate 79@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.

Probably the most important event of the week has been the announcement of the syndicate's prices for sulphate of potash for next year. The syndicate's sales agents inform us that for double manure salts, from 48 to 51 per cent. sulphate of potash, the price for shipment after the opening of navigation in 1890 will be $1.10 per 100 pounds on the basis of 48 per cent. For high grade manure salt, 90 per cent., $2.35 per 100 pounds on the basis of 90 per cent. sulphate of potash. High grade manure salt, 96 per cent. sulphate of potash, $2.40. These prices are good for orders placed on or before Dec. 21, 1889; all orders received after that date will be 2½c. per 100 pounds higher. The prices quoted are for invoices of 50 tons, and are based on foreign analyses and foreign invoice weights, and are ex store, New York.

Muriate of Potash.—Arrivals of 1,200 tons are reported at Charleston, Boston and New York, all of which, it is stated, have gone into consumers' hands.

Kainit.—In this line there is nothing new to report as yet, but before long the announcement of next year's prices is to be looked for. For December shipment we may quote nominally $10 per ton foreign invoice weight.

Two cargoes of Peruvian guano, aggregating about 2,500 tons, have been received during the week. This is the first arrival at this port since last February. It is rather remarkable that so many agriculturists entertain the opinion that the supply of Peruvian guano is exhausted, and that anything that is offered here is not the genuine manure. An examination of the charter papers of the cargo, which has just arrived, should be a sufficient refutation of any such a belief.

Brimstone is quiet at $19.50 for best unmixed seconds on the spot, and $18.75 for the same to arrive. For thirds to arrive $18.25 is quoted.

Nitrate of soda continues quiet at $1.92½@$1.95. Mr. F. B. Nichols' report shows that there were no arrivals during the fortnight ending December 2d, and that deliveries during the same period aggregated 6,022 bags. The stock on the spot is thus decreased to 37,581 bags, all of which except 2,000 bags is in store or afloat in New York. Total deliveries to December 2d for the year aggregated 517,161 bags, as compared with 419,906 bags in 1888, and 445,468 bags in 1887. Prices ruling at this time last year were $2.27½@$2.40.

In speaking of the market at present, Mr. Nichols says that it is dull for spot goods, but there is an active inquiry for forward shipments. European markets are lower, but Valparaiso has not come down to the present view of buyers for distant shipment.

NOTES OF THE WEEK.

The regular semi-annual meeting of the National Association of Manufacturing Chemists was held in the rooms of the Down Town Association on Wednesday afternoon. There was a fairly large attendance with the usual enthusiasm. Mr. Cochrane occupied the chair in the absence of the president. The usual routine business was gone through with, and a number of matters of personal interest to the members received attention. Messrs. Wilson, Hazard and Mathiesen were appointed a committee to endeavor to secure a more equitable freight classification of chemicals for railway transportation. The World's Fair of 1892 was not lost sight of, and Messrs J. L. Morgan, Jr., W. H. Nichols and G. M. Olcott were appointed a committee to arrange for a suitable chemical exhibit at the fair, wherever it may be held. The committeemen are New Yorkers, however, and the sentiment of the meeting was plainly in favor of this city as a site for the exposition.

Liverpool. Nov. 27.

(Special report by Messrs. J. P. Brunner & Co.)

Chemicals.—With the exception of soda ash, our market for heavy chemicals is very depressed, and owing to the unsettled position of affairs buyers will only operate from hand to mouth.

Soda ash, owing to scarcity, keeps very strong, and 1⅛d. is nominal quotation for carbonated, but makers are fully sold in this ash for this year. For deliveries over 1890, sales of 48 per cent. carbonated are reported for America at 1⅛d. Caustic ash is quiet, but there is little offering, and 1 1/16d. is nearest value on the spot; also for forward delivery.

Soda crystals are slightly weaker. Although £2 15s. is still the nominal spot price, this quotation would probably be shaded in some quarters for December delivery.

Caustic soda is dull and rather weaker, but, at the same time, there is not a great deal offering. For 70 per cent. some resales have been made at £7, makers quoting 2s. 6d.@5s. per ton more money; 60 per cent. is in small compass, and £6 5s.@£6 7s. 6d. nearest values; 74 per cent. is quiet and rather easier at £7 17s. 6d.@£8; 76 per cent., £9. For all 1890 buyers are not anxious to operate, and £7 5s. and upward asked by makers for 70 per cent., while, we believe, business has been done as low as £7.

Bleaching powder is also weak, and £6 10s. has been accepted for good brands prompt delivery, although most makers decline to sell at this price. For 1890 a sale of hardwood is reported for America at £5 15s., but buyers are afraid to operate, and it is doubtful if even this figure could now be obtained by sellers. Business has been done in soft wood over next year at £5. "Rails" Works and "Newcastle" makers are reported to be offering soft wood for January delivery at same price. Chlorate of potash is very quiet, and 5d. to 5⅛d. are about nearest spot values, while possibly a little could be had from second hands at a shade under the lower figure. Bicarb. soda scarce at £5 5s. per ton and upward for one hundredweight kegs, according to brand and quantity, with usual allowances for larger packages. Sulphate of ammonia advanced, and now held for £12 2s. 6d. per ton for good gray, 24 per cent. f. o. b. Liverpool.

BUILDING MATERIAL MARKET.

New York, Friday Evening, Dec. 6.

Brick.—The cold weather emphasizes the certainty that the season for production and shipment is about closed; probably the barges now on the way will be the last that will be received this season, unless navigation should continue open unusually late. The approach of winter also serves to hasten the building that is underway, so as to insure as much progress as possible before the weather absolutely prevents work, and therefore a rather improved demand for brick is to be expected. No improvement from this source has been apparent this week, however, and prices are certainly not firmer than at the date of our last report.

For the first qualities of Haverstraws, $7 per thousand continues to be the highest figure asked,

and even this price is difficult to obtain. Quotations in detail are about as follows: Haverstraw, $6.50@$7; Up-rivers, $6@$6.75; Jerseys, $5.50@$6.50; Pale, $3.25@$3.75. The demand for pale brick is not so good as formerly, and while prices are nominally unchanged a decidedly weaker tendency is apparent, and actual values are probably lower than last week.

A Hartford dispatch contains the following: "The past season has been one of serious loss to the brick manufacturers in Connecticut, and the year's production has been materially reduced on account of the unfavorable weather. The belt of territory through the State in which a suitable clay can be found for the brick industry extends along the Connecticut River as far as Middletown, including extensive beds in the neighborhood of New Britain and Berlin.

"The annual production in the New Haven district, which is controlled by a Hartford syndicate, reaches 15,000,000. This season it will hardly exceed 12,000,000. During the past two months the price has advanced eight per cent. by the wholesale. The New Britain and Berlin yards will probably produce 5,000,000 this year. The North Haven yards will aggregate from 15 to 20 millions through the summer and fall. Very few brick are made east of the Connecticut River. The yards that are operated are located in East Hartford and East Windsor. Nearly all the brick now made in the State are machine work. An attempt has been made this season by the manufacturers here to produce a pressed brick which shall be able to compete with the Philadelphia article. The kiln will be burned on the yards north of this city, and the result will be awaited with much interest. The Springfield clay has a larger sand ingredient than that worked along the Connecticut belt, producing a brittle brick. The syndicate, which is composed of manufacturers in this city, was organized six months ago, and controls the trade. There is no cutting of prices, as the transactions are through one agency."

Lime.—The Knox County Lime Burners' Association is consistently following its practice of regulating the supply to the demand by putting out more of its kilns so that the present production is only one-third of the regular output. Under these circumstances local receivers are able to dispose of all that arrives with little difficulty, and association rates are maintained. The demand is seasonable; this applies to all varieties, including Rockland, Rockport, Thomaston, St. John and State lime.

Cement.—The closing of the New York State canals on the 1st. inst. now makes it necessary to ship all cement to interior points in this State by rail, and the season is therefore very nearly at an end, although this year, as last, there is considerable rail trade. Prices show no material change for either domestic brands or imported.

CONTENTS.

IMPORTS AND EXPORTS OF METALS AT NEW YORK NOVEMBER 23 TO NOVEMBER 30, 1889, AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co	28	198
Downing & Co., R.F		51
Hendricks Bros		28
Lamarche's Sons, H.		6
Lewisohn Bros.		84
Naylor & Co		425
Total	28	794
Corres. date, 1888		1,242
Nickel.	Lbs.	Lbs.
McCoy & Sanders		11,240
Total		11,240
Corres. date, 1888		138,166
Antimony.	Casks.	Casks.
Total	1,148	2,506
Corres. date, 1888	155	2,696
Pig Lead.	Lbs.	Lbs.
Bruce & Cook		111
Caswell, E. A		10
Erie Dispatch		9
Foley, E		43
Henderson Bros		11
Hendricks Bros		78
Total		262
Corres. date, 1888		1,944
Tin.	Tons.	Tons.
Abbott & Co., Jac		55
Amer. Metal Co	175	1,444
Bidwell & French	76	1,360
Bruce & Cook		40
Bursley, Ira		75
Carter, Hawley & Co		46
Cohn & Co., A		12
Crooke S. & R. Co		10
Crooks & Co	110	485
Davol & Son, John		29
Hendricks Bros		194
Herold, Emil		20
Knauth, N. & Kuhne		10
Lehmarer, S. & Co	20	197
Mendel & Tompkins		1
Muller, Schall & Co	80	1,040
Naumann, F		2
Naylor & Co	150	1,965
Nissen, Geo		73
Phelps, Dodge & Co	210	3,270
Pope, J. E., Jr		293
Schmarer & Co		11
Schreider, J. & Co		10
Thomsen, A. A		151
Thomsen, D		196
Townsend, J. R		135
Unnamed	270	285
Wheeler & Co		1
Total	1,091	11,300
Corres. date, 1888	1,465	11,155
Tin Plates.	Boxes.	Boxes.
American MetalCo		477
American MetreCo		620
Brown & Co., V. H		350
Bruce & Cook	5,832	86,193
Byrne & Co., J		8,392
Central Stamp. Co	282	75,480
Coddington & Co	4,824	150,148
Cohen, S. M		272
Cohn & Co., A		34,698
Con. Fruit Jar Co		2,387
Cort & Co., N. L	4,492	151,792
Corbier, F. & S		6,790
Crooks & Co	1,208	78,585
De Milt & Co	200	14,392
Dickerson, V. D	11,143	340,426
Downing & Co		366
Erie Dispatch	220	244
Fenton, D. U		5,390
Foley, E		74
G. L. N		75
Holder & Herrick		271
Iron Clad M. Co		283
Ismay, J. B		500
Lalance & G	1,160	8,729
Lazard Bros		2,356
Lombard, Ayres		3,000
Merchant & Co	1,079	26,964
Mersick & Co		12,226
Morewood & Co		7,568
Mulholland & H		767
Newell Bros		294
Payne & Son		313
Phelps, Dodge & Co	10,642	616,629
Pratt Mfg. Co		206,392
Sanders Bros		479
Shepherd & Co	3,080	29,372
Somers Bros		1,256
Stillwell, G. H		325
Taylor Co., N. & G	312	2,744
Thomsen, A. A	2,258	158,766
Warren & Co., J. M		4,134
Wheeler & Co	1,850	20,569
Whittemore & Co	1,076	36,655
Wolff & Reesing	2,291	10,605
Total	51,949	2,094,137
Corres. date, 1888	229,472	1,817,492
Pig Iron.	Tons.	Tons.
Baldwin, A		766
Bartlett, N. S		1,200
Crocker Bros	200	6,700
Crooks & Co		500
Drummond, McC. & Co		3,560
Henderson Bros		3,416
Godwin & Son, A. G		390
Irvin & Co., R		300
Lilienberg, N		350
Martin, W. T		200
Naylor & Co		50
Page, Newall & Co		469
Perry & Ryer		125
Pierson & Co		500
Pope, Sons & Co		250
Sheldon & Co., G. W		200
Stetson & Co		5,650
Topper & Beattie		100
Walbaum & Co		275
Whittemore & Co., H		50
Williamson & Co	300	4,200
Total	500	30,291
Corres. date, 1888	27,351	57,505
Steel Sheets, Billets, Forging, etc.	Tons.	Tons.
Abbott & Co		2,450
Ames, W. T		303
Austin & Co		30
Baldwin Bros. & Co		15
Belcher, H. W		95
Boker, C. F		131
Carey & Moen		118
Carter, G. F		200
Coddington & Co		24
Crenshaw, Hugh		27
Crooks & Co		292
Cortis, R. J		408
Curran, J		5
Dana & Co		14,846
Downing & Co		171
Erie Dispatch		40
Galpin, S. H		497
Hugill, Chas		95
Ismay, J. B		174
Lalance, & G		106
Lazard Bros		6
Leng's Sons, J. S		114
Lublin & Estey		7
Lundberg, G		51
Mersick & Co		5
Milne & Co	26	3,091
Montgomery & Co		5
Naylor & Co		2,750
Newton & S		35
Oelrich & Co		389
Pierson & Co		323
Pilditch, F. S		75
Power, C. W		36
Prosser, Thos		496
Roebling's Sons	54	355
Schulze & R		13
Standard Oil Co		222
Stetson & Co		11
Strouse & Co., M		25
Temple & L		15
Wagner, W. F		373
Wallace & Co		5
Wetheral Bros		2
Whitney & W		30
Wiel Elie		44
Wiell & Co		7
Williams, W		73
Williams & W		95
Wolff, R. H		347
Wright, P. & Son		4
Total	80	28,041
Corres. date, 1888		22,482
Bar Iron.	Tons.	Tons.
Abbott & Co., J.	25	3,537
American Metal Co	125	125
Bacon & Co		1,334
Dana & Co		25
Downing & Co	50	709
Froment, F		10
Fuller, Dana & Fitz		23
Haines, C. A		2
Holt & Co., H. N		374
Jacobus, E. G		35
Lang & Co		3
Lilienberg, N		8
Lundberg, G		1,793
Lundell, C. G		160
Merchants' Dispatch		15
Milne & Co	27	2,482
Muller, Schall & Co		601
Naylor & Co		571
Ogden & W		7
Page, N. & Co		1,903
Plenty, John		2
Trument, F		440
Wells, F., & Co		15
Total	227	13,866
Corres. date, 1888	2,837	8,460
Steel and Iron Rods.	Tons.	Tons.
Abbott & Co., J	50	5,891
American S. Co		1,071
Bacon & Co		507
Baker, H		3
Belcher, H. W		14
Boker, H		35
Bruce & Cook		20
Carey & Moen		979
Cooper, H. & Co		58
Crabb & Co., W		17
Dana & Co		2,203
Downing & Co		805
Durbrow, Walter		829
Eckstein, G. C		298
Fuller, D. & T		15
Galpin, S. H		1,447
Greeley & Co		8
Hazard Mfg. Co		20
Heyn, A		2,124
Hugill, Chas		27
Jansen, J. A		150
Lee & Co., James		105
Lilienberg, N		56
Lundberg, G		1,120
Lundell, C. G		248
Merritt, A		3
Milne & Co		2,222
Montgomery & Co		120
Muller, Schall & C	300	803
Naylor & Co	450	11,636
Nichols, B. J		10
Oelrichs & Co		103
Page, N. & Co	77	701
Pilditch, F. S		15
Plenty, J		1
Pratt Mfg. Co		30
Roebling's Son		2,485
Wagner, W. F		8
Wetherall Bros		2
Wheeler & Co., E. S		120
Whitney & Co	250	1,145
Williams & W		5
Wolf & Co	258	4,787
Wright P. & Co		3
Total	1,308	43,366
Corres. date, 1888	4,440	56,452
Old Rails.	Tons.	Tons.
Baldwin Bros. & Co		240
Bowring & A		57
Crossman & Bro		2,162
Frankfort, M		729
Henderson Bros		150
Neumark & Gross		6,115
Perkins, C. L		535
Perry & Ryer		177
Sheldon & Co		203
Ward & Co., J. E		21
Wolff, H		239
Total		10,191
Corres. date, 1888		10,097
Scrap Iron.	Tons.	Tons.
Bowring, A		25
Burgass & Co		162
Crossman, W. H. & Bro		500
Downing & Co		321
Funch, E. & Co		397
Henry, A. F		100
Muller, Schall & Co	24	24
Neumark & Gross		500
Ruger, Theo		445
Spaulding & Co		172
Ward & Co., J. E	101	660
Watjen, T. & Co		152
Total	125	3,958
Corres. date, 1888	328	3,293
Charcoal Iron.	Tons.	Tons
Bacon & Co		97
Downing & Co		671
Lilienberg N		6
Milne & Co		94
Muller, S. & Co		135
Naylor & Co		45
Page, N. & Co		754
Total		1,802
Corres. date, 1888		404
Sheet Zinc.	Lbs.	Lbs.
Crooks & Co		441,814
Lemarch's S's, H		1,554
Total		443,368
Corres. date, 1888		375
Spiegeleisen.	Tons.	Tons
Abbott & Co		3,234
Blakely & McLellan		5,207
Crocker Bros	627	18,626
Dana & Co		14,269
Farris & Co		325
Geisenheimer & Co		310
Hernsheim, L	401	2,819
Jansen, J. A		10,465
Naylor & Co		14,320
Perkins, C. L		4,860
Pierson, C. L		45
Walbaum Bros		675
Total	1,028	63,428
Corres. date, 1888	5,792	41,990
Sheet Iron.	Tons.	Tons.
Coddington & Co		456
Downing & Co		16
Kelly, Hugh		5
Total		477
Corres. date, 1888	25	1,230
Iron Ore.	Tons.	Tons.
Bergen Pt. Chem. Co		9,951
Bowring, A		1,300
DeFlores, R		200
Earnshaw, A		5,496
Lawrence, Johnson & Co		480
Sheldon & Co., G. W		25
Total		10,201
Corres. date, 1888		26,394

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co	126,750	875,321
Amer. Metal Co	508,333	4,609,871
Am. & Patterson		2,897,706
Ansonia B. & C. Co	56,000	57,250
Barber & Co		100,000
Belmont & Co		987,500
Friedenstein, Jas		2,258
Fyfe, Robert		100,000
Hurst, F. W. J		113,000
Lewisohn Bros	441,276	1,653,713
Naylor & Co		1,570,500
Orford, C. & S Co		112,013
Piper, D. & Co		3,898
Raftery, T. E		362,000
Seaman, Sam'l H		234,615
Ward & Co., J. E		11,250
Wil'ms & T'hune	692,080	823,570
Total	1,824,439	14,514,465
Corre. date, 1888	243,633	23,124,337
Copper Matte.		
Abbott & Co		427,613
Amer. Metal Co		4,517,187
Am. & Patterson		1,670,979
Clark, W. A		879,019
Cortis, R. J		240,660
Henriott, F		5,293,260
Lewisohn Bros		719,184
Nichols & Co., G. H	224,039	448,918
Oelrichs & Co		265,800
Seaman, Sam'l H		19,400
Wil'ms, T'hune	526,588	17,165,483
Total	750,627	32,727,343
Corres. date, 1888		37,101,505
Copper Ore.		
Burgass & Co		32,460
R. J. Cortis		34,000
Lewisohn Bros	260,000	260,000
Total	260,000	326,360
Corres. date 1888		181,589

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. 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	*				800,000	Dec.	1888	.06¼
3	Alma Cons., G.	Idah.	300,000	30,000	10	*				45,000	Dec.	1888	.50
4	Alturas, G.	Idah.	1,500,000	100,000	5					262,500	Jan.	1888	.37½
5	Amy & Silversmiths, S.	Mon.		341,419						247,530	Aug.	1887	.12½
6	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	520,000	Feb.	1889	2.00
7	Argenta, S.	Nev.	10,000,000	100,000	100	335,000	July	1889	.10	40,000	Feb.	1880	.20
8	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10	*				360,000	July	1889	.20
9	Aurora, I.	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
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.	1879	.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	88,750	May	1889	.10	187,500	Jan.	1887	.10
14	Bodie Con., G. S.	Cal.	10,000,000	100,000	100	575,000	Nov	1889	2.00	1,295,000	Apl.	1885	.50
15	Boston & Mont, G.	Mon.	2,500,000	250,000	10	*				520,000	Jun.	1886	.10
16	Boston & Mont., C. S.	Mon	2,500,000	100,000	25	*				1,300,000	Nov.	1889	1.00
17	Breece, S.	Colo	,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	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000				32,350,000	Oct.	1889	5.00
23	Carbonate Hill, S. L.	Colo.	1,500,000	300,000	10	*				80,000	Apl.	1884	.05
24	Carlisle, G.	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
25	Castle Creek, G.	Idah.	100,000	100,000	1					51,000	Oct.	1888	.03
26	Catalpa, S. L.	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
27	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,930,000	Feb.	1889	2.00
28	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
29	Colorado Central, S.	Colo.	2,750,000	275,000	10	*				406,000	July	1889	.05
30	Confidence, S. L.	Nev.	....	24,960	...	287,440	Apl.	1887	.50	199,680	Apl.	1889	1.00
31	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,196,800	Sept	1889	.50
32	Contention, S.	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
33	**Cop. Queen Cons, C.	Ariz.	1,400,000	140,000	10					140,000	Oct.	1888	.50
34	Crescent, S. L. G.	Utah	15,000,000	300,000	25	*				228,000	Oct.	1888	.03
35	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,880,000	Sept	1889	.50	11,588,000	Jan.	1875	2.00
36	Daly, S. L.	Utah	3,000,000	150,000	20					1,275,500	Nov.	1889	.25
37	Deer Creek, S. G.	Idah.	1,000,000	200,000	5	*				20,000	Jun.	1889	.05
38	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
39	Derbec B. Grav., G. S.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, S. L.	Colo.	5,000,000	200,000	25	*				390,000	Sept	1889	.05
41	Dunstone, G. S. L.	Mont	1,000,000	200,000	5	*				6,000	Nov	1888	.03
42	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
43	Elkhorn, G. S.	Mont	1,900,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
44	Empire Lt., G.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
45	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	550,000	Jun.	1889	.50	4,955,000	July	1888	.25
46	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,425,000	Apl.	1889	.25
47	Excelsior, G.	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1886	.25
48	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
49	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun.	1871		800,000	Dec.	1888	2.00
50	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
51	Fresno Enterprise, G.	Cal.	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
52	Garfield Lt., G. S.	Nev.	500,000	100,000	5					85,000	Apl.	1888	.12½
53	Golconda, G. S.	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
54	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	4,434,600	Oct.	1889	.30	3,826,800	Oct	1870	10.00
55	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec	1882	.25
56	Grand Prize, S.	Nev.	10,000,000	100,000	100	685,000	Oct.	1889	.30	497,000	Mar.	1884	.25
57	Granite, S. L.	Idah.	500,000	500,000	1	*				10,000	Jan.	1888	.02
58	Granite Mountain, S.	Mont	10,000,000	400,000	25					7,600,000	Nov.	1889	.50
59	Green Mountain, G.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
60	Hale & Norcross, G. S.	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,162,000	July	1888	.50
61	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50					1,332,500	May	1889	.50
62	Hel'a Mg & Red, G.S.L.	Mont	3,315,000	363,000	5	*				197,975	July	1886	.06
63	Holmes, S.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	.10	75,000	Apl.	1886	.25
64	Holyoke, G.	Idah.	200,000	200,000	1					27,000	Feb.	1885	.10
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,900	July	1878	1.00	4,468,750	Nov.	1889	.10
66	Honorine, S. L.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125,000	Sept	1887	.05
67	Hope, S.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,050,000	Nov.	1889	.12½
69	Hubert, G.	Colo.	1,000,000	100,000	1	*				247,000	Nov.	1889	.00½
70	Idaho, G.	Cal.	310,000	3,100	100					5,235,400	Nov.	1889	5.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
72	Illinois, S.	N. M.	100,000	100,000	1	*				45,000	Apl.	1889	.20
73	Independence, S.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
74	Iron Hill, S.	Dak.	2,500,000	250,000	10	134,000	July	1889	.03	156,250	Nov	1887	.07½
75	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
76	Jackson, G. S.	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.20	55,000	Jun	1889	.10
77	Jay Gould	Mont	2,000,000	400,000	5	*				365,000	Apl.	1889	.04
78	Jocuistita, G.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1888	.50
79	Jumbo, G.	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
80	Kentuck	Nev.	3,000,000	30,000	100	360,000	July	1889	.30	1,350,000	Dec.	1886	.10
81	La Plata, S. L.	Colo	2,000,000	200,000	10	*				610,000	Sept	1882	.30
82	Leadville Cons., S. L.	Colo.	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
83	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
84	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*				800,000	July	1888	.10
85	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	.50
86	Marion Bullion, G.	N. C	500,000							15,000	Jan.	1886	....
87	Martin White, S.	Nev.	10,000,000	100,000	100	1,175,000	Jan.	1889	.25	140,000	Dec.	1886	.25
88	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
89	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	....
90	Mono, G.	Cal.	5,000,000	50,000	100	90,350	July	1889	.25	12,500	Mar.	1886	.25
91	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	*				2,355,285	Oct.	1889	.12½
92	Morning Star, S. L.	Colo.	1,000,000	100,000	10					775,000	Mar.	1888	.25
93	Moulton, S. G.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
94	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
95	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	150,000	Oct.	1889	.20
96	Napa, Q.	Cal.	700,000	100,000	7					310,000	July	1889	.10
97	Navajo, G. S.	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
98	New Guston, S.	Colo.	500,000	100,000	5					200,000	Oct.	1889	.50
99	N. Hoover Hill, G. S.	N. C	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
100	Northern Belle, S.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	.50
101	North Belle Isle, S.	Nev.	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1888	.50
102	North Star, G.	Cal.	1,000,000	100,000	10					60,000	Sept	1889	.50
103	Ontario, S. L.	Utah	15,000,000	150,000	100					10,550,000	Nov.	1889	.50
104	Ophir, G. S.	Nev.	10,000,000	100,000	100	1,159,440	May	1889	.50	1,595,800	July	1882	1.00
105	Original, S. C.	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
106	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,222,500	Mar.	1889	1.00
107	Oxford, G.	N. S.	125,000	125,000	1	*				78,500	Sept	1888	.02
108	Paradise Valley, G. S.	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
109	Parrot, C.	Mont	1,800,000	180,000	10					480,000	Oct.	1889	.05
110	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	......
111	Plumas Eureka, G.	Cal.	1,406,250	140,625	10					2,548,046	Oct.	1889	.37½
112	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
113	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
114	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100					1,728,483	Oct.	1889	1.50
115	" com., Q.	Cal.	5,700,000	57,000	100					643,857	July	1882	.40
116	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,250,000	Aug.	1889	2.00
117	Richmond, S. L.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
118	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
119	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
120	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
121	Savage, S.	Nev.	11,200,000	112,000	100	6,542,000	July	1889	.50	4,460,000	July	1869	3.00
122	Shoshone, G.	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
123	Sierra Buttes, G.	Cal.	2,225,000	122,500	10					1,568,145	Apl.	1888	.12½
124	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,259,000	Oct.	1889	.50	102,000	Jan.	1871	1.00
125	Sierra Nevada, S. L.	Idaho	1,000,000	¶	1	*				40,000	May	1889	.02
126	Silver Cord, G. S. L.	Colo.	4,500,000	150,000	10					270,000	Apl.	1889	.10
127	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
128	Silver Mg. of ...	N. M.	500,000	500,000	1					50,000	June	1889	.05
129	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				50,000	Nov.	1886	.02
130	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				3,137,500	Jun	1889	.10
131	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
132	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	.25
133	Standard, G. S.	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
134	Stormont, S.	Utah	500,000	500,000	1	*				155,000	Nov.	1881	.05
135	St. Joseph, L.	Mo.	1,500,000	150,000	10	*				844,000	Dec	1887	.20
136	Surinam, G.	D. G.	3,000,000	300,000	5					105,000	Nov	1887	.05
137	Swansea, G.	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
138	Syndicate, G.	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
139	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,080,000	Oct	1889	3.00
140	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov	1881	.20
141	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
142	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
143	Valencia, S.	N. H.	150,000	1,500	100					37,500	Apl	1886	2.50
144	Viola Lt., S. L.	Idah.	750,000	50,000	5	*				272,500	Oct.	1888	.37½
145	Ward Cons., S. L.	Colo.	2,000,000	200,000	10					10,000	Apl.	1889	.05
146	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
147	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,508,000	Mar	1889	.50	2,184,000	Aug	1871	1.50
148	Webb City, L. Z.	Mo.	55,000	11,000	5					3,300	Jun.	1889	.10

NON-DIVIDEND PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value	Assessments. Total levied.	Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, C.	Mich	2,000,000	80,000	25	$697,000	Mar.	1889	.50
3	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	588,750	July	1889	.87½
4	Alta, S.	Nev.	10,080,000	100,800	100	2,248,800	Sept	1888	.50
5	Amador, G.	Cal.	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5				
9	Astoria, G.	Cal.	200,000	100,000	2				
10	Barcelona, G.	Nev.	5,000,000	200,000	25	*			
11	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500	Jan.	1889	.10
12	Belmont, S.	Nev.	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	2,155,390	Sept	1889	.25
14	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*			
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Bremen, S.	N. M	5,000,000	500,000	10	*			
19	Brunswick, G.	Cal.	2,000,000	400,000	5	*			
20	Bullion, G. S.	Nev.	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
21	Calaveras, G.	Cal.	500,000	500,000	1	*			
22	Carisa, G.	Wy.	500,000	100,000	5	*			
23	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*			
24	Cashier, G. S.	Colo.	500,000	250,000	2	*			
25	Cen. Contin'l, G.S.L.	C.&A	2,000,000	200,000	10	*			
26	Charles Dickens, G.S.	Idaho	1,250,000	250,000	5	*			
27	Cherokee, G.	Cal.	1,500,000	150,000	10				
28	Chollar, S.	Nev.	11,200,000	112,000	100	1,484,000	July	1889	.50
29	Cleveland, T.	Dak.	1,000,000	500,000	2	*			
30	Colchis	N. M.	500,000	50,000	10				
31	Commonwealth, S.	Nev.	10,000,000	100,000	100	170,000	Nov	1888	.50
32	Comstock, G. S.	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	.15
33	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,800,000	Nov.	1888	.05
34	Con. Pacific, G.	Cal.	6,000,000	60,000	100	192,000	Oct.	1889	.10
35	Cons. Silver, S.	Mo.	2,500,000	250,000	10				
36	Courtlandt	Colo.	500,000	50,000	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	Dardanelles, G.	Cal.	1,000,000	100,000	10				
43	Decatur, S.	Colo.	1,500,000	300,000	5	*			
44	Denver City, S. L.	Colo.	5,000,000	500,000	10	*			
45	Denver Gold, G.	Colo.	300,000	60,000	5				
46	Durango, G.	Colo.	500,000	500,000	1	*			
47	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1888	1.00
48	El Cristo, G. S.	U.S.C	1,000,000	500,000	2				
49	El Dorado, G.	Cal.	1,000,000	250,000	4	*			
50	El Talento, G.	U.S.C	1,000,000	500,000	2				
51	Empire, S.	Utah	10,000,000	100,000	100				
52	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	*			
53	Exchequer	Nev.	10,000,000	100,000	100	815,000	Apl.	1889	.2
54	Found Treasure, G.S.	Nev.	10,000,000	100,000	100	30,500	Apl.	1889	12½
55	Gogebic I. Syn., I.	Wis.	5,600,000	200,000	25				
56	Gold Cup, S.	Colo.	500,000	500,000	1	*			
57	Golden Era, S.	Mon.	2,000,000	200,000	10	*			
58	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
59	Gold Rock, G.	Cal.	1,000,000	500,000	2	*			
60	Goodshaw, G.	Cal.	10,000,000	100,000	100	*			
61	Grand Belt, C.	Tex.	12,000,000	120,000	100				
62	Grand Duke	Colo.	800,000	80,000	10				
63	Great Remance, G.	U.S.C	1,000,000	500,000	2	*			
64	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
65	Gregory Con., G.	Mon.	3,000,000	300,000	10				
66	Harlem M. & M. Co., G.	Cal.	1,000,000	200,000	5				
67	Head Cent. & Tr. S. G.	Ariz.	10,000,000	100,000	100				
68	Hector, G.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
69	Highland, C.	Mich	500,000	25,000	20				
70	Hollywood	Cal.	200,000	100,000	2				
71	Hortense, S.	Colo.	2,000,000	200,000	10				
72	Huron, C.	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
73	Iron Gold & Silver, S.	N. M.	2,000,000	200,000	10	*			
74	Ironton, I.	Wis.	1,000,000	40,000	25				
75	Iroquois, C.	Mich	1,250,000	50,000	25				
76	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
77	Julia Cons., G. S.	Nev.	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
78	Kearsarge, C.	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00
79	Lacrosse, G.	Colo.	1,000,000	100,000	10	*			
80	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
81	Mammoth Bar., G.	Cal.	10,000,000	100,000	100	50,000	Dec.	1880	
82	May Belle, G.	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
83	Mayflower Gravel	Cal.	1,000,000	100,000	10	485,000	Jan	1889	.50
84	Medora, G.	Dak.	250,000	250,000	1				
85	Mexican, G. S.	Nev.	10,000,000	100,000	100	2,775,760	July	1889	.25
86	Middle Bar, G.	Cal.	400,000	200,000	2	*			
87	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*			
88	Monitor, G.	Colo.	100,000	100,000	1	*			
89	Moose Silver, S.	Colo.	3,000,000	300,000	10	*			
90	Mutual Mg. & Sm.	W'su	100,000	100,000	1	*			
91	Native, C.	Mich	1,000,000	40,000	25				
92	Neath, G.	Colo.	1,000,000	100,000	10				
93	Nevada Queen, S.	Nev	10,000,000	100,000	100	250,000	Oct.	1889	.20
94	New Germany, G.	N. S.	100,000	100,000	1	*			
95	New Pittsburg, S. L.	Colo.	2,000,000	200,000	10	*			
96	N. Commonw'th, S.	Nev.	10,000,000	100,000	100	60,000	Apl	1888	.30
97	North Standard, G.	Cal.	10,000,000	100,000	100	20,000	Nov		
98	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
99	Oneida Chief, G.	Cal.	500,000	125,000	100	*			
100	Oriental & Miller, S.	Nev.	10,000,000	400,000	25				
101	Osceola, G.	Nev.	5,000,000	500,000	10	*			
102	Overman, G. S.	Nev.	11,520,000	115,200	100	3,794,600	July	1889	.25
103	Park, S.	Utah	2,000,000	200,000	10				
104	Peer, S.	Ariz.	10,000,000	100,000	100	155,000	Sept	1889	.10
105	Peerless, S.	Ariz.	10,000,000	100,000	100	370,000	Mar.	1889	.25
106	Phœnix	Ariz.	500,000	500,000	1	*			
107	Phœnix, G. S.	Ark.	5,000,000	200,000	250	*			
108	Phœnix Lead, S. L.	Colo.	100,000	100,000	1	*			
109	Pilgrim, G.	Cal.	600,000	300,000	2	*			
110	Potosi, S.	Nev.	11,200,000	112,000	100	1,461,600	Sept	1889	.50
111	Proustite, S.	Idah	250,000	250,000	1	*			
112	Puritan, S. G.	Colo.	1,500,000	150,000	10	*			
113	Quincy	Colo.	3,000,000	300,000	10				
114	Rappahannock, G. S.	Va.	250,000	250,000	1	*			
115	Red Elephant, S.	Colo.	500,000	500,000	1	*			
116	Ropes, G. S.	Mich	2,000,000	80,000	25	147,200	July	1887	.50
117	Russell, G.	N. C.	1,500,000	300,000	5				
118	Sampson, G. S. L.	Utah	10,000,000	100,000	100	288,157	July	1888	1.06
119	San Sebastian, G.	San S	1,600,000	320,000	5	*			
120	Santa Fe, C.	N. M.	5,000,000	500,000	10				
121	Santiago, G.	U.S.C	400,000	200,000	2	*			
122	Security, S.	Colo.	10,000,000	1,000,000	10				
123	Sheridan	N. M.	2,000,000	200,000	10				
124	Silver Queen, C.	Ariz.	5,000,000	200,000	25	*			
125	South Bulwer, G.	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
126	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1885	.05
127	South Pacific	Cal.	500,000	100,000	5				
128	Stanislaus, G.	Cal.	2,000,000	200,000	10				
129	State Line, S.	Nev.	250,000	250,000	1				
130	St. Kevin, G. S.	Colo.	100,000	100,000	1	*			
131	St. Louis & Mex., S.	Mex.	5,000,000	500,000	10	*			
132	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
133	St. L. & St. Felipe, G. S.	Mex.	1,500,000	150,000	10				
134	St. L. & Sonora, G. S.	Mex.	1,500,000	150,000	10				
135	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
136	Sunday Lake, I.	Mich	1,250,000	50,000	25				
137	Sullivan Cons. G.	Dak.	600,000	200,000	3	*			
138	Sutter Creek, G.	Cal.	500,000	100,000	5				
139	Sutro Tunnel	Nev.	20,000,000	2,000,000	10	*			
140	Sylvanite, S.	Colo.	5,000,000	500,000	10	*			
141	Taylor-Plumas, G.	Cal.	1,000,000	200,000	5	10,000	Feb.	1886	
142	Tioga Cons., G.	Cal.	10,000,000	100,000	10	295,000	May	1888	
143	Tornado Cons. G. S.	Nev.	100,000	100,000	1	*			
144	Tortilita, G. S.	Ariz.	1,000,000	100,000	10	*			
145	Tuscarora, S.	Nev.	10,000,000	500,000	20	160,000	Oct.	1889	.10
146	Union Con., G. S.	Nev.	10,000,000	100,000	100	3,260,000	Oct.	1889	.25
147	Utah, S.	Nev.	10,000,000	100,000	100	170,000	July	1889	.25
148	Washington, C.	Mich	1,000,000	40,000	25				
149	West Granite Mt., S.	Mon.	5,000,000	500,000	10	*			
150	Zelaya, G. S.	C. A.	600,000	300,000	2	*			

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1881, the California had paid $31,320,000 in dividends, and the Con. Virginia, $42,90,000. ** 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.	Nov. 30. H.	Nov. 30. L.	Dec 2. H.	Dec 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4 H.	Dec. 4 L.	Dec. 5 H.	Dec. 5 L.	Dec. 6 H.	Dec. 6 L.	SALES.
Alice, Mont.	1.20	.....	....	....	....	....	1.05	....	1.10	....	....	..	700
Argenta, Nev	....	....	....	....	....	....	....	..	....	....	....	..	.....
Atlantic, Mich	....	..	....	....	....	....	....	..	....	....	....	..	.....
Basic, Colo	....	....	....	....	....	....	....	..	....	....	....	..	.....
Belcher	....	....	....	....	....	....	....	..	....	....	....	..	.....
Belle Isle, Nev	....	....	....	....	....	....	....	..	....	....	....	..	.....
Bodie Cons., Cal	....	....	....	....	....	....	....	.80	.	....	..	..	100
Bes. & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	..	.....
Breece, Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Bulw..r, Cal	....	....	....	....	....	....	....	....	....	....	....	..	.....
Caledonia, Dak	....	....	....	....	....	....	....	....	....	....	....	..	.....
Calumet & Hecla	....	..	....	....	....	....	....	..	....	....	....	..	.....
Chrysolite	....	....	....	....	....	....	....	....	....	....	....	..	.....
Cous. Cal. & Va., Nev.	....	....	6.00	....	5.75	....	....	....	....	5 61	5 50	..	370
Crown Point, Nev	....	....	....	....	....	....	....	....	....	....	....	..	.....
Deadwood, Dak	1.65	....	....	....	....	....	....	1.50	....	....	....	..	300
Eureka Con., Nev	....	....	....	....	....	....	....	..	4.00	....	....	..	86
Father de Smet, Dak	....	....	....	....	....	....	....	....	....	....	....	..	.....
Franklin, Mich	....	....	....	....	....	....	....	....	....	....	....	..	.....
Freeland, Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Gould & Curry, Nev	....	....	....	....	....	....	4.70	....	....	....	....	..	100
Hale & Norcross, Nev	3.10	..	....	....	....	....	....	....	....	....	....	..	400
Holyoke, Id	....	....	....	....	....	....	....	....	....	....	....	..	.....
Homestake, Dak	....	..	....	....	....	....	....	....	....	....	....	..	.....
Horn-Silver, Ut	....	....	2 30	2 25	2.30	2 20	2.25	...	2.2	2.00	2.20	....	1,225
Iron Hill, Dak	....	....	....	....	....	....	....	....	....	....	....	..	.....
Iron Silver, Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Leadville C., Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Little Chief, Colo	34	....	.34	....	.35	....	.35	.34	.31	.30	.31	....	2,400
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Moulton, Mont	....	....	....	....	.29	.28	.27	....	.27	.26	....	..	800
Mount Diablo, Nev	....	....	....	....	....	....	....	....	....	....	....	..	.....
Navajo, Nev	.38	....	.38	.37	....	....	....	....	....	....	....	..	1,200
North Belle Isle, Nev	....	....	....	....	....	....	....	....	....	....	....	..	.....
North Star, Cal	....	....	....	....	....	....	....	....	....	....	....	..	.....
Ontario, Ut	....	....	35 88	....	36 25	....	....	....	....	....	....	..	25
Ophir, Nev	4.05	....	3.95	....	3.90	....	....	....	....	....	....	..	1,400
Osceola, Mich	....	....	....	....	....	....	....	....	....	....	....	..	.....
Plutus, Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Plymouth, Cal	....	....	....	....	....	....	....	....	....	....	....	..	.....
Quicksilver, Com	5.50	....	....	....	....	....	....	....	....	....	....	..	200
Quincy, Mich	....	....	....	....	....	....	....	....	....	....	....	..	.....
Robinson Cons. Colo	....	....	....	....	....	....	....	....	....	....	....	..	.....
Savage, Nev	.	....	1.50	....	1.75	....	....	....	....	..	1 40	....	400
Sierra Nevada, Nev	....	....	....	....	....	....	....	....	....	....	....	..	.....
Silver Cord	....	....	....	....	....	....	....	....	....	....	....	..	.....
Silver King	....	....	.25	....	....	....	.30	.28	.33	.32	.30	....	900
Silver Mg. of L V	....	....	....	....	....	....	....	....	....	....	....	..	.....
S andard	....	....	....	....	.50	....	....	....	....	....	....	..	100
Stormont, Utah	....	....	....	....	....	....	....	....	....	....	....	..	.....
Tamarack, Mich	....	....	....	....	....	....	....	....	....	....	....	..	.....
Ward Con	....	....	....	....	....	....	....	....	....	....	....	..	.....
Yellow Jacket	....	....	....	....	....	....	....	....	....	....	....	..	.....

NON-DIVIDEN D-PAYING MINES

NAME AND LOCATION OF COMPANY.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4 H.	Dec. 4 L.	Dec. 5. H.	Dec. 5. L.	Dec 6. H.	Dec 6. L.	SALES.
Alpha	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Alta, Nev	....	....	....	.....	1.90	....	1.70	..	1.75	....	1.75	....	400
Andes, Nev	....	....	....	.....	..	....	....	..	....	....	....	....	.....
Amador, Cal	....	....	....	.....	..	....	....	..	....	....	....	....	.....
American Flag, Colo	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Astoria, Cal	.13	.11	.13	.10	.15	.10	.14	.11	.20	.18	.25	.23	26,700
Barcelona, Nev	....	....	....	.....	....	....	.39	....	....	....	....	....	500
Best & Belcher, Nev	3.10	....	3 05	....	....	....	2.90	2.85	....	....	3.00	....	700
Brunswick, Cal	....	....	....	.....	....	....	....	....	....	....	.01	....	2,000
Buffalo Iron Min'g	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Bullion, Nev	.80	....	.78	....	....	....	.70	....	....	....	.70	....	570
Cashier, Colo	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Chollar, Nev	1.75	....	....	.....	....	....	....	....	....	....	2 10	....	200
Col. & Beaver, Id	....	..	....	.....	....	....	....	....	.02	....	....	....	800
Comstock T., Nev	....	....	.21	.15	.18	.14	.19	.17	.19	.18	.18	....	16,700
Con. Imperial, Nev	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Con. Pacific, Cal	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Denver City, Colo	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	....	....	.....	....	....	....	....	....	....	....	....	.....
El Cristo, Rep of Col	1.10	....	1.10	....	1.10	....	....	....	....	....	....	....	.....
Excelsior, Cal	....	....	....	.....	....	....	....	....	1 05	1.00	....	..	810
Exchequer Nev	.80	....	.75	....	....	....	.75	....	....	....	....	....	850
Hector, Cal	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Julia, Nev	.40	....	.40	...	....	....	.40	....	....	....	.35	....	1,100
Kingst'n & Pemb'ke	....	..	....	.....	....	....	....	....	....	....	....	....	.....
Kossuth, Nev	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo	.07	.06	....	.....	....	....	....	....	....	....	....	....	1,500
Lee Basin, Colo	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Mexican, Nev	3.15	....	3.00	....	....	....	....	....	....	....	3.00	....	400
Middle Bar, Cal	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Monitor, Colo	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Mutual Sm. & M. Co	1.65	....	1 65	....	1.65	....	1 65	....	1.70	....	1.65	....	1,900
Nevada Queen, Nev	.80	....	.80	....	....	....	....	....	....	....	....	....	700
N. Com'n w'th, Nev	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Occidental, Nev	....	....	....	.....	....	....	1.00	....	1.05	....	1.05	....	700
Oriental & Mil., Nev	.06	....	.07	....	.07	....	....	....	.06	....	....	....	2,200
Overman, Nev	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Phœnix of Ariz	.45	....	.42	....	.48	.40	.49	....	.20	....	.42	.38	1,650
Potosi, Nev	1.85	....	....	.....	....	....	....	....	1.20	....	1 90	....	450
Rappahannn'k, Va	.06	....	.05	....	.05	....	.05	....	06	....	.05	....	6,500
S. Sebastian, San S	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Scorpion, Nev	....	....	....	.....	....	....	.25	....	....	....	....	....	.....
Shoshone Idaho	....	....	....	.....	....	....	....	....	....	....	.30	....	800
Silver Hill, Nev	....	....	....	.....	....	....	....	....	.45	....	....	....	100
Silver Queen	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Stanislaus, Cal	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Sutco Tunnel, Nev	....	....	.07	.06	....	....	....	....	....	....	....	....	.....
" Trust Cert.	....	....	....	.....	....	....	....	....	....	....	....	....	1,300
Sutter Creek, Cal	.54	....	.55	.53	.56	....	.55	....	.56	....	.56	....	5,100
Union Cons., Nev	....	....	3.05	.....	....	....	....	....	....	....	....	....	100
United Copper	1.15	....	1.23	....	1 20	....	1.15	....	1 15	....	1.20	....	1,700
Utah, Nev	90	....	....	.....	.80	....	.85	....	....	....	.85	....	500

* Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted securities ‡Assessment unpaid. Dividend shares sold, 10,500. Non-dividend shares sold, 76,880 Total, New York, 87,380.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Nov. 29.	Nov. 30.	Dec. 2.	Dec. 3.	Dec. 4	Dec. 5.	SALES.
Atlantic, Mich	13.50 13.25	14 75 14 00	14 88 14.75	....	15.0 14 75	....	1,117
Bodie, Cal	....	....	....	....	....	....	.....
Bonanza Developm't	.70	....	.... .75	.65 .75	.... .85	.78	2,300
Bost. & Mont., Mont	45 50 43.25	45.00 44.25	45.00 44.50	46.00 45.50	46.50 45 75	46.63 45.88	7,805
Breece, Colo	....	....	....	....	....	....	.....
Calumet & Hecla, Mich	243	251 250	....	....	248	247 245	126
Catalpa, Colo	.. ..	....	.. ..	.. ..	.. ..	....	.....
Central, Mich	....	....	....	.. ..	.. ..	.14	25
Chrysolite, Colo	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev	....	....	....	....	....	....	.....
Dunkin, Colo	.70	....	.... .65	.... .65	.. ....	....	1,150
Enterprise	....	....	....	....	....	....	.....
Franklin, Mich	16.50 16.13	16 25	17.0 16 38	17.25 16.88	17.25 16 50	16.75 16.13	2,726
Hale & Norcross, Nev	....	....	....	....	....	....	.....
Homorine, Utah	.18	....	....	....	....	....	100
Kearsarge	8.50 8 25	8.65 8.20	8 65 8 20	9.00 8.75	10.88 9.00	10 75 9.88	5,567
Little Pittsburg, Colo	....	....	....	....	....	....	.....
Martin White, Nev	.... ..	....	....	....	....	....	.....
Moulton	....	....	....	....	....	....	.....
Napa, Cal	....	....	....	....	....	....	.....
Ontario, Utah	....	....	....	....	....	....	.....
Osceola, Mich	19.00 17.50	19.00 18.50	18 00 17.50	19 00 18.13	19 00 18.50	18 50	936
Pewabic, Mich	....	....	....	....	....	....	.....
Quincy, Mich	70.00 68.00	70.00	69.00	70.00	70.00 69.50	....	219
Ridge, Mich	....	....	....	....	....	....	.....
Sierra Nev., Nev	....	....	....	....	....	....	.....
Silver King, Ariz	....	....	....	....	....	....	.....
S andard, Cal	....	....	....	....	....	....	.....
Tamarack, Mich	147 145	150 147	149 146	150 14½	150 149	150 149¾	413

NAME OF COMPANY.	Nov. 29.	Nov. 30.	Dec. 2.	Dec. 3.	Dec. 4.	Dec. 5.	SALES.
Allouez, Mich	1.00 .90	....	1.05	1.05	1.05 1.00	1.05	3,975
Arnold, Mich	....	....	....	....	....	....	.....
Aztec, Mich	....	....	....	....	....	....	.....
Bowman	....	....	....	....	....	....	.....
Butte & Bost., Mont	....	....	....	....	....	....	.....
Canada	....	....	....	....	....	....	.....
Casnier, Colo	....	....	....	....	....	....	.....
Crescent, Colo	.06	....	....	....	....	....	200
Denver City, Colo	....	....	....	....	....	....	.....
Don Enrique, N M	.16	....	....	....	....	....	100
Everett, Mich	....	....	....	....	....	....	.....
Hanover, Mich	....	....	....	....	....	....	.....
Humboldt, Mich	....	....	....	....	....	....	.....
Hungarian	.20	....	....	....	....	....	200
Huron, Mich	....	.... 2.38	.... 2.75	2.50 2.75	.... 2.75	.... 2.75	2.50 520
Mesnard, Mich	.23	....	....	....	....	....	100
National, Mich	....	2.00	2.00	2.50	.... 2 50	.... 2.75	2.50 825
Oriental & M., Nev	....	....	....	....	....	....	.....
Phœnix, Ariz	....	....	....	....	....	....	.....
Pontiac, Mich	....	....	....	....	....	....	.....
Rappahannock, Va	....	....	....	....	....	....	.....
Rockland	....	....	....	....	....	....	.....
Santa Fe, N. Mex	.80 .78	.80	.87 .83	1 00 .90	1.05 1.03	1.40 1.03	16,435
Security, Colo	....	....	....	....	....	....	.....
Shoshone, Idaho	....	....	....	....	....	....	.....
South Side, Mich	....	....	....	....	.20	.20	600
St. Louis Cop., Mich	....	....	....	....	....	....	.....
Washington, Mich	....	....	....	....	....	....	.....

Boston: Dividend shares sold, 24,384. Non-dividend shares sold, 32,955. Total Boston, 57,339.

COAL STOCKS.

NAME OF COMPANY.	Par v. l. of sh'rs.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4. H.	Dec. 4. L.	Dec. 5 H.	Dec. 5 L.	Dec. 6. H.	Dec. 6. L.	Sales.
American Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cambria Iron	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cameron Coal & Iron Co	....	....	....	.....	5¼	4¾	5¼	5¼	8	5½	7	.....	7¼	6¾	3,000
Ches. & O. RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Col. & Hocking Coal	100	....	....	....	....	....	16¾	....	20	19½	17	16½	....	....	505
Col., C. & I	100	34¼	33¼	34¼	33	35	33½	34⅜	34	37⅜	34	38⅛	37⅛	25,840
Consol. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del. & H. C	100	....	....	146¼	138⅝	145½	144¼	145¼	145	....	....	147¼	146¼	10,744
D., L. & W. RR	50	140½	139½	139⅝	137¼	139⅝	136⅞	138	137	138	137½	140	138⅛	181,905
Hocking Valley	100	20¾	20	20⅜	20	20	....	20	19	20¾	20	....	....	1,795
Hunt. & Broad Top	....	....	....	....	....	....	....	17½	....	....	....	....	....	100
Do. pref	....	45	....	45	....	....	....	45	....	....	....	....	....	247
Lehigh C. & N	50	....	....	52¼	....	52¼	....	53	52½	53	52⅝	....	....	783
Lehigh & W. B. Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lehigh Valley RR	50	52⅝	52¾	52¾	52½	52½	52¼	52⅜	52¼	52¾	52⅝	....	....	2,791
Marshall Con. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mahoning Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex	100	....	....	....	....	....	....	....	....	148½	....	149	....	90
New Central Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. J. C. RR	100	119½	118	118	115½	120	117	118½	118	119	118¾	121¼	120	5,360
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	....	....	8	....	8	7⅞	....	....	8	....	8	....	1,500
Do. pref	100	32½	....	....	....	....	....	31¾	31½	....	....	....	....	881
N. Y. & Perry C. & I	100	....	....	....	....	....	....	....	....	....	....	22	....	100
Norfolk & Western R.R.	50	19⅞	19¾	19	....	19¼	....	....	....	19⅞	19½	....	....	600
Do. pref	50	59⅜	59⅜	59½	59	60¼	....	60¼	60	59⅝	59¼	60	59⅞	1,900
Penn. Coal	50	....	....	....	....	....	....	312½	....	310½	....	....	....	186
Penn. RR	50	52⅜	52¼	52⅜	52⅛	52¼	52⅛	52⅜	52¼	52¾	52½	....	....	3,350
Ph. & R. RR.**	....	40¾	39¾	39¾	38½	39⅜	38	38¾	38⅛	39¼	38¾	40⅛	39½	408,094
Sunday Creek Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tennessee C. & I. Co	....	78	75½	75½	67	74	73	75¾	73	74¾	73½	76	74⅛	20,137
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Westmoreland Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....

**Of the sales of this stock, 87,374 were in Philadelphia, and 320,720 in New York. Total sales, 670,208.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. Nov: 29.	Nov. 30.	Dec. 2.	Dec. 3.	Dec. 4.	Dec. 5.
Alpha	....	....	....	....	....	.....
Alta	1.95	.....	1.80	1.60	1.60	1.65
Belcher	....	....	....	....	....	.....
Belle Isle	.30	....	....	....	....	.....
Best & Bel	3.05	3.00	2.90	2.85	2.85	2.95
Bodie	.55	....	....	....	.50	.50
Bulwer	....	....	....	.25	....	.....
Challar	1.65	1.80	2.00	2.00	1.95	2.00
C'm'weal'h	3.10	3.00	3.00	3.00	2.80	....
Con. C. & V	6.00	....	5.88	5.75	5.75	5.88
Con. Pac	....	....	....	....	....	.....
Crown Pt.	2.50	2.35	2.15	2.00	2.00	2.15
Eureka C	....	....	....	....	....	.....
Gould & C	.....	1.65	1.65	1.60	1.60	1.65
Grd. Prize	....	....	....	....	....	.....
Hale & N	2.95	2.90	3.05	2.75	2.75	.....
M. White	....	....	....	....	....	.....
Mexican	3.10	2.90	3.00	2.80	2.85	2.95
Mono	....	....	....	.30	2.45	.35
Mt. Diablo	....	....	....	....	....	.....
Navajo	....	....	....	.30	....	.25
Nev. Queen	.75	.70	.85	.80	.75	.....
N. Belle I	....	....	1.20	....	1.00	.....
Occidental	....	....	....	....	....	.....
Ophir	4.00	3.85	3.90	3.75	3.85	3.90
Potosi	1.80	.....	1.70	1.70	1.75	1.80
Savage	1.45	1.40	1.35	1.30	1.25	1.30
Sierra Nev	2.50	2.45	2.50	2.45	2.40	2.60
Union Con	2.95	2.95	2.00	2.80	2.85	.....
Utah	.80	.....	.75	.80	.75	.80
Yellow Jkt	....	....	....	2.40	2.40	2.45

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid.	Asked
Atlantic Coal	....	....
Balt. & N. C.	.10	.15
Big Vein Coal	....	1.50
Conrad Hill	....	....
Cons. Coal	....	....
Diamond Tunnel	.35	.45
George's Crk. C	1.12½@1.15	....
Lake Chrome	....	.05
North State (Balt.)	....	.22
Silver Valley	.30	.40

Prices bid and asked during the week ending Dec. 4th, 1889.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Con. C. & C. Co	....	$20
Ala. R. Mill Co.	....	$60
*Alice Furnace.	$102	....
Anna Howe G. Mg. Co	$¼	$⅜
Bess. Land Co.	$22½@$23¾	$23½@$24
Bir. Mg.& M g.	....	$120
Broken Arrow.	....	$33¼
Cahaba Coal Mg. Co	....	$77½
Camille Gold Mg. Co	$½	$¾
De Bardeleben C. & I. Co.	....	$59
Decat. L. Imp.	$9½@$9¾	$10 @ $11¼
Decatur Min. L.	$15@$19	$21 23
Enterprise Mfg.	....	$30@$40
*Eureka	$100	....
Florence L. & Mg. Co.	17½	....
Hen. S. & M. Co	$45@$47½	$62½@$64
Jagger Fowley C. & C	$11@$11½	....
Mag-Ellen.	$91	....
Mary Lee C. & R. Co	$30	$50
Sheffield C. & I. Co	$57@$57½	....
Sloss I. & S.	$55@$55¾	....
†Sloss I. & S.	....	$95
††Sloss I. & S.	$74	$80
Tuscaloosa C. I. & L. Co.	$20½	....
Tenn. C. & I. Co.	$76@$76½	$80
" pref.	$100	....
Woodstock I Co.	$59	$61

Prices bid and asked during week ending Dec. 3d.

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

Denver, Colo.

COMPANY.	H.	L.	Sales.
Allegheny, Colo	.47½	.35	27,000
Amity "	.19	.17	73,100
Aspen Mutu'l "	.51	.14	179,600
Big Indian "	23	.21	55,500
Brownlow "	.47½	.42½	32,000
Calliope "	.50	.45	1,300
Claudia, J., "	.25	.15	83,900
Clay County "	.51	.35	....
Hard Money "	.10	.03	6,400
Legal Tender "	.10	.06½	51,300
Matchless "	2.05	1.60	38,000
May-Mazeppa "	.60	.50	139,500
Mollie Gibson "	.55	.45	100
Morning Glim "	.26	.23	122,100
Puzzler "	.17½	.15	7,200
Silver Cord "	.77½	.60	100
Whale "	.32	.29	19,000
Total			836,100

Prices during the week ending Nov. 27, 1889.

Kansas City, Mo.

COMPANY.	Par value.	Bid.	Dec. 3. Asked.
Ben Harrison	....	$25.00	$35.00
Burch, L. & Z., Mo.	1	.20	.30
Hillsboro Gold	....	....	....
Farmers' Coal Co	....	50.00	75.00
Ida Hill, S., N. Mex	100	90.00	100.00
Kan. City M. & M. Co.	....	....	3.00
K. C., Colo.	....	....	1.00
Kentuck, Z., Mo	1	....	.02
La Motte, Mo	100	98.00	100.00
Maverick, S., Colo.	10	.97	1.00
Minnequa Zinc	....	.25	.40
Sonora, G. & S., Mex.	10	1.00	1.02
Standard, S. S., Colo.	....	10.00	....
Silver Monument	....	....	3.00
Templar, N. Mex	1	.03	....
The Sylph	....	....	2.50
Webb City, L. Z., Mo.	5	5.65	....
Wichita, L. Z., Kan.	100	....	40.00
Granite	....	....	....

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas Co.	$39.00	$39.00	$39.00
Bridgewater Gas Co.	29.00	29.00	29.00
Chartiers Val. Gas	....	....	....
Columbia Oil Co.	3.00	2.25	2.25
Consolidated Gas Co.	38.00	38.00	38.00
Hazlewood Oil Co.	55.00	50.50	55.00
Hidalgo Mg. Co	....	....	....
La Noria Mining	*.75	*.75	*.75
Luster Mg. Co.	*14.00	*14.00	*14 00
Nat. Gas Co. of W. Va	....	....	....
N. Y. & Clev. Gas Coal.	*36.00	*36.00	*35.00
Ohio Valley Gas	....	....	....
Pennsylvania Gas	*13.00	*13.00	*13.00
People's Nat. Gas Co.	....	....	....
People's N. G. & P. Co.	*15.13	*15.13	*15.13
Philadelphia Co.	*30.38	*29 00	*29.50
Pittsburg Gas	64.00	64.00	64.00
Silverton Mining	1.00	1.00	1.00
South Side Gas	24.00	24.00	24.00
Tuna Oil Co.	68.00	68.00	68.00
Union Gas	60.00	60.00	60.00
W'house Brake Co.	65.00	65.00	65.00
W'house A. B. Co.	114.00	112.00	114.00
W'house E. Light.	*47.75	*47.75	*47.75
Wheeling Gas	*26.00	*26.00	*26.00
Yankee Girl Mg	3.50	3.00	3.50

Sales during the week ending Dec. 4: * Actual selling price. † Ex-dividend.

La Noria Mg. Co.	600 shares	.75
Luster Mg. Co.	105 shares	$14.00
N. Y. & Clev. Gas Coal	20 shares	36.00
Penn. Gas	100 shares	13.00
People's N. G. & P. Co	300 shares	15.13
Philadelphia Co.	770 shares	29.00@ 13.38
W'house Elec. Co.	10 shares	47.75
Wheeling Gas Co.	100 shares	26.00

St. Louis.

Dec. 4.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo	$ .25	$ ....
American & Nettie	3.20	3.40
Anderson	.09	.10
Aztec, N. Mex.	.17½	.20
Black Oak, Cal.	.05	.06
Black Spar	....	....
Bremen	....	.03
Buckskin	.03½	.04½
Carriboo, Idaho	....	....
Central Silver	.28¾	.30
Cleveland, Colo.	.03½	.04½
Cleveland, Idaho	.60	.66½
Cœur d'Alene	.85	.95
Dinero	.03	.04
Golden Era, Mont.	.01	....
Golden King	.10	.15
Gold Run	.02	.04
Granite Mountain, Mont.	4.25	....
Hope	3.00	4.25
Ingram	....	....
Iron Clad	.20	....
Ivanhoe, Colo.	....	....
I. X. L., Colo.	.08	.09
Jumbo	.00½	.02
Keystone	.02½	.04
La Union	.04½	....
Little Giant	....	....
Major Budd, Mont.	.16¼	.17½
Mexican Imp., Mex.	....	....
Michael Breen	.75	.76¼
Montrose Placer	.45	.50
Mountain Key	.60	.65
Mountain Lion	.12½	.13
Neath, Colo.	.12	.15
Old Colony	....	....
Old Jesuit	.02	.03
Pat Murphy, Colo.	.08	.09½
Phillips, Colo	.22½	.25
Pine Grove, Idaho	.03	.03½
Queen of the West, Idaho	.08	.12
Raspberry, Mont.	....	.50
Rosalia	....	....
San Francisco, Mont.	.06½	.07
San Pedro	.00½	.02
Silver Age, Colo.	2.40	2.47½
Silver Bell	.06½	.1
Small Hopes, Colo.	.97½	1.05
Tourtelotte, Colo.	.04½	.05
West Granite, Mont.	.82½	.85
Wire Patch	.12	.13½
Yuma, Ariz.	.41¼	.45

Electric Stocks.

Dec. 6.

The following closing quotations are reported to-day by Tobey & Kirk, New York City:

COMPANY.	Par value.	Market price.
Brush	$ 50	....
" Illuminating	100	$70 @$80
Daft	100	$30 @$37
Consolidated	100	$52½@$57½
Edison	100	$90 @$94
" Illuminating	100	$92 @$95
Julien	100	@ $9
" Traction	100	$4¼@ $5¼
United States	100	....
" " Illum	100	....
Westinghouse	50	$17 @$19
Thomson-Houston	....	$57 @$59
Thomson-Hous. Welding Co	....	....

Trust Stocks.

Dec. 6.

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

CERTIFICATES.	
American Cotton Oil	.$32 @$32¼
Cattle Trust	10 @ 15
Distillers' & Cattle Feeders'.	39 @ 40¼
Linseed Oil	44½@....
National Lead	19¾@ 20
Natural Gas	@120
Standard Oil	162½@163¼
Sugar Refineries	66¾@ 66⅞

Sales at the New York Stock Exchange week ending Dec. 6:

	Sales.	Price H.	Price L.
American Cotton Oil	25,330	32¼	27
National Lead	64,296	20	17
Sugar	197,773	67¼	55

Foreign Quotations.

COMPANY.	London. Highest.	Nov. 23. Lowest
Almada. Mex	1s. 9d.	1s. 3d.
Alturas Gold, Idaho	....	....
Amador, Cal	1½s.	⅞s.
Appalachian, N. C.	1s. 6d.	1s. 3d.
Arizona Copper, Ariz.	....	....
California Gold, Colo.	....	....
Callao Bis, Venz	....	....
Canadian Phos. Canada.	£⅛	£⅛
Carlisle, N. Mex	4s. 6d.	4s.
Colorado, Colo.	3s. 3d.	2s. 9d.
Comstock, Utah	....	....
Conoova	1s.	6d.
Cons. Esmeralda, Nev.	4s. 3d.	3s. 9d.
Denver Gold, Colo.	1s 3d.	9d.
Dickens Custer, Idaho.	3s. 6d.	3s.
East Arevalo, Idaho	2s. 6d.	2s.
Eberhardt, Nev	....	....
El Callao, Venezuela	....	....
Elmore, Idaho	5s. 3d.	4s. 9d.
Empire, Mont	....	⅛s.
Flagstaff, Utah	....	....
Garfield, Nev	4s.	3s.
Hambley Freehold, N. C.	....	....
Ilex, Cal	....	....
Jay Hawk Mont	4s.	3s.
Josephine, Cal	7s.	5s.
Kohinoor, Colo	2s. 3d.	1s. 9d.
La Luz, Mex	2s. 6d.	2s.
La Trinidad, Mex	3s. 6d.	2s. 6d.
La Valera, Mexico	1⅛s.	1⅛s.
Montana Lt., Mont	£1 7-16	£1 5-16
New California, Colo.	12s.	11s.
New Consolidated	1s.	6d.
New Eberhardt, Nev.	1s. 6d.	1s.
New Emma, S., Utah	3s. 9d.	2s. 9d.
New Flagstaff Utah	1s. 6d.	1s.
Newfoundland, N. F.	3s.	2s. 6d.
N. Gold Hill, N. C.	1s. 6d.	1s.
New Hoover Hill, N. C.	2s. 3d.	1s. 9d.
Old Lour, Colo.	£9-16	£7-16
Palmarejo, Mex	22½ 6d.	21s. 6d.
Pinos Altos, Mex	13-16	11-16
Pittsburg Orig., Cal	£⅜	£¼
Pittsburg Cons., Nev	£⅜	£¼
Quebrada, Venezuela	....	....
Richmond Con., Nev	2s.	1¾
Ruby & Dunderberg, Nev	1s.	6d.
Sam Christan, N. C.	3s.	2s. 6d.
Sierra Buttes, Cal.	£⅜	£¼
Soncra, Mex	9d.	3d.
Stanly, N. C	7s. 6d.	6s. 6d.
United Mexican, Mex	7s.	5s.
U. S. Placer, Colo.	6s. 6d.	5s. 6d.
Viola Lt., Idaho	2s.	1s. 6d.

Paris.*

	Nov. 21.
Belmez, Spain	550.00	550.00
Callao, Venez	105 00	105.00
Callao Bis, Venez	4.00	4.00
East Oregon, Ore	21.25	21.25
Forest Hill Divide, Cal.	300.00	300.00
Golden River, Cal	300.00	300.00
" parts	65.00	65 00
Lexington, Mont.	125.00	125.00
" parts	3.75	3.75
Ouray, Colo	10.00	10.00
Rio Tinto, Spain	380.00	380 00
Tharsis, Spain	116.00	116.00

* Francs.

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—acetic, ₱ 100 lbs. $1.75@$ 5.00
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. 3.05
Carb., per lb. 7½@8½

Arsenic—White, powdered, ₱ lb. 3¼@3½
Red, ₱ lb. 3¾@4¼
White, at Plymouth, ₱ ton. £12 2 6d.

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

Asphaltum—P. ton 13.00
Prime Cuban, ₱ lb. 4½@5½c.
Hard Cuban, ₱ ton $8.00
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. 9½@9⅝
Concentrated 7¾@8⅛
Refined at Liverpool, ₱ ton 2.9

Brimstone—*See Sulphur.*

Bromine—₱ lb. 37@38

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

China Clay—English, ₱ ton 13.50@15.00
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 2½

Phosphate Rock—S. Carolina, per ton, 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. 4@45

Pumice Stone—Select lumps, lb. 4
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 2 @ 2
Salt Cake—₱ lb. 60@65½

Saltpeter—Crude, ₱ lb. 5½@5½
Refined, ₱ lb. 6@8

Soda Ash—Carb., 48% ₱ 100 lbs. 1.45
Caustic, 48% 1.30
Soda Caustic, 60% 2.50
" " 70% 2.27½@2.35
" " 74-76% 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@10½

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@5¾
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. $3.@$4 00
Sheet, per lb. 6.00@8.00

Arsenic—(Metallic) per lb. .40

Barium—(Metallic), per gram $1.00

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

Tantallum—(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. 2.75

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@3.75
Jerseys, ₱ 1,000 5.50@6 50
Up Rivers, ₱ 1000 6 00@6.50
Haverstraw seconds, ₱ 1000. 6.50@7 75
Haverstraw firsts ₱ 1,000. 6.75@7.00
Fronts, nominal; ₱ 1000.
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.50
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. 0

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