

THE ENGINEERING AND MINING JOURNAL



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

VOL. LIII. FEB. 6. No. 6.

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THE SCIENTIFIC PUBLISHING CO., Publishers.

SUBSCRIPTION PRICE:

Weekly Edition (which includes the Export Edition), for the United States, Mexico and Canada, \$4 per annum; \$2.25 for six months; all other countries in the Postal Union, \$7.

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

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

THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS: R. P. ROTHWELL, Pres. & Gen'l Mang. P.O. Box 1833.
SOPHIA BRAEUNLICH, Sec'y & Treas. 27 Park Place, New York.
Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition

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THE NAVAL OBSERVATORY.

The removal and great improvement of the United States Naval Observatory naturally suggest the question of its future uses. Whether it is wise for the Government to maintain at the public expense institutions for the advancement of science; in other words, whether it should have anything more to do with astronomy than is involved in the rating of chronometers and the preparation of the Nautical Almanac, is beyond the stage of discussion so far as the Observatory is concerned. Congress has appropriated money to make it one of the best-equipped establishments of its class in the world. Having gone so far, the Government will certainly use the apparatus thus provided. Somebody will be superintendent, and the work of which he will have charge will be to an insignificant extent only connected with the Navy, or within the range of the education and experience of our naval officers. A petition has been presented to Congress, signed by a large number of working astronomers, not in the Government service, and asking for such legislation as will permit the appointment of a practical astronomer to be the superintendent of the Observatory. So far as this means the conduct of its scientific work by a responsible and competent scientific head, it seems to me a reasonable proposition. So far as it means the control of administrative details and discipline, I am inclined to think astronomers would find themselves better off if they did not ask it. It is pretty certain that a practical astronomer taking charge of a government institution of that kind would cease immediately to practice astronomy, and would be immersed in cares, responsibilities and functions for which his knowledge of astronomy would not have given him any preparation. Indeed, the most eminent astronomers are likely to be poor administrators. On the other hand, it ought to be possible to organize the observatory in such a way as to obviate the difficulty here suggested; and, with proper safeguards in that direction, it is certainly to be desired that the post of Director should be filled by the appointment of an astronomer of acknowledged ability and repute.

R. W. R.

THE DECLINE IN THE VALUE OF SILVER.

The price of silver bullion has declined during the week to about 90 cents per ounce, at which price the silver in a silver dollar was worth less than 70 cents. How far this "slump" is due to the recent assurance that the Coinage Committee will report a free coinage bill to Congress we are unable to say, but it is certain that if a free coinage bill were enacted—of which we believe there is no probability—the market price of silver would decline, for then there would be no large purchaser of the metal. It is reported that our Government is making efforts to get a new conference of European nations on the silver question, but there is little prospect of any successful issue from such a conference at present, even if it could be brought about, which is quite doubtful. So long as European statesmen believe in the possibility of this country adopting free coinage they will let us do it. And yet there is nothing that can raise the price of silver permanently except an international agreement on a ratio between it and gold, at which the chief commercial nations will accept either metal. The decline in the value of silver since Congress passed the law requiring the purchase by the Treasury Department of 4,500,000 ounces a month has been nearly 23 cents on each silver dollar, and as we have 412,000,000 of these on hand the loss is nearly \$95,000,000, not counting a loss of about \$16,000,000 on our subsidiary silver. So long as our Government can give a gold dollar for a silver one this decline in value of our currency is latent, but should gold "go to a premium," or, in other words, should it become necessary to pay a premium to get a gold dollar in exchange for a silver coin, then the silver coinage would rapidly decline in actual purchasing power, and the poor, who are the almost exclusive owners of the silver in circulation, would lose the 30 or 40 per cent. on all they held. If their wages were paid in silver, as they would be were it made legal tender, they would practically be subjected to a heavy reduction in wages. Every workman can figure this out for himself.

EX-SENATOR TABOR AND THE VULTURE MINE OF ARIZONA.

The verdict given last week by a jury in the United States Court, at Denver, Colo., in the suit of the Kaiser Gold Mines, Limited, of London, vs. Hon. H. A. W. TABOR, of Denver—formerly Lieutenant-Governor of Colorado, and for some six weeks a representative of that State in the United States Senate—confirms the warnings which the ENGINEERING AND MINING JOURNAL gave at the time.

The Kaiser Gold Mines, Limited, was registered in London April 14th, 1888, to take upon lease for 99 years a group of twelve claims, located upon the Vulture Lode, Maricopa County, Arizona, at a nominal rental of £10 for each claim. A contract was made with Hon. H. A. W. TABOR, the vendor of the property, September 7th, 1888, for this lease and the purchase of the property for £180,000, payable £15,000 in cash, £66,666 in shares and £98,334 in cash or shares at the option of the directors. The authorized capital of the company was £200,000, in shares of £1

each, of which 133,334 shares were offered for subscription in October, 1888.

By an agreement made with the vendor (stipulated in the prospectus), the company had the option of working the mines for a term of six months before the purchase was completed, and if the property did not prove as valuable as represented by the vendor the directors were empowered to call upon the vendor to reimburse the company all expenses incurred. Should he fail to comply within thirty days of such notice the whole of the property was to be sold at auction, and the amount realized by such sale utilized for payment of all expenses incurred by the company, and the balance, if any, to be paid over to the vendor. The experts who reported upon the property were CYRUS GRIBBLE, Esq., M. E., and Prof. WM. P. BLAKE, M. E.

Concerning this enterprise the ENGINEERING AND MINING JOURNAL said in its issue of October 20th, 1888: "One thing, however, in this report strikes us as being unusual and to a suspicious mind would be unsatisfactory; Professor BLAKE avoids the responsibility of saying anything on his own authority as to the amount of ore in eight, . . . quoting the calculations of Mr. GRIBBLE. . . . The terms of the sale are very unusual, and present a good basis for future transactions when the vendor has faith in the value of his property, and is satisfied that he is asking only a fair price for it."

Unfortunately this excellent and exceedingly fair agreement was not carried out, and in August, 1889, the company brought suit against Hon. H. A. W. TABOR for the sum of \$80,000, which, it alleged, had been expended above all proceeds from the mines. The period of six months provided in the original contract, at the end of which the directors of the company could consummate the purchase or withdraw from it entirely, expired on March 1st, 1889; this time had been extended by a supplemental contract to May 1st, 1889. In its bill against TABOR the company alleged that it had notified him that it had rescinded the contract and demanded the money expended, whereupon TABOR ejected the plaintiff from the property by force of arms and took possession.

At a meeting of the company held about this time the chairman made some disgraceful charges against TABOR, which have not been refuted. Thus, it appeared that a mining engineer, Capt. MORRISH, sent out to manage the property, found an astonishing amount of amalgam on the plates, which TABOR'S employes, who were still in charge of the mill, alleged was the result of a certain number of tons milled. On milling the ore himself, he found its value very much less than was stated. The manager then received an offer of \$25,000 from a friend and business connection of TABOR if he would make a favorable report upon the property. Next, he discovered that his assay results were much higher than those obtained in the mill, and, upon investigation, found that the fluxes had been salted. With such evidence that TABOR was endeavoring to swindle them, the directors decided to withdraw from the undertaking, and called upon the vendor to make good his agreement.

In the suit decided last week these charges were sustained, and damages to the amount of \$16,120 were awarded the plaintiff.

This appears but a very small award, and, if not appealed from, will, no doubt, be promptly paid by the honorable ex-Senator from Colorado. The exposure of the infamy of his acts will probably lie lightly on one who is no novice in this kind of work. The disgrace and injury of such transactions fall heavily upon the whole American mining industry—while the profession of mining engineers is injured by the facility with which so well known an engineer as Prof. W. P. BLAKE lent his name to a quasi indorsement of some other man's unfounded report on the property.

THE COST OF PRODUCING COPPER.

The cost at which any metal can be produced, not at isolated mines of exceptional richness or in localities where the cost of reduction is exceptionally low, but at mines of first-class rank, whose production is an essential contribution to the world's supply, must necessarily have a controlling influence on the selling price of the metal. However much the price may rise at times above the average minimum cost at which metal can be made and marketed, it cannot long remain below that price. And in addition to the cost of production, capital requires, in order to cover the heavy risk of mining, more than mere interest on the amount at stake.

The Census Bureau has made an attempt at determining the cost of certain metals, the magnitude of whose production gives them national importance. The method adopted has been to summarize the returns of labor employed, and the fuel and reagents consumed by the companies of each producing district. The returns are of course confidential and are used only in making up totals, and it is not clear to what extent these cover construction and other extraordinary expenses. It is therefore impossible to analyze them with a view to criticism, but unless we impugn the honesty of the companies making returns or the accuracy of the bureau in collating them, we must accept the results as approximately correct. It is to the interest of the large stock companies to make the ap-

parent cost of their product as low as possible and therefore any deviation from accuracy may be presumed to be in the direction of lower rather than higher cost. Census Bulletin No. 96 contains the statistics of copper for the census year 1889. The statistics of cost are given only for the three principal centres of mining, Lake Superior, Montana and Arizona, which produced in 1889, 216,686,424 lbs., out of a reported total for the United States of 226,055,962 lbs. The results may be tabulated as follows:

Copper produced.	Cost of mining.		Cost of concentrating and smelting.		Total cost per lb. copper.*
	Total.	Per lb. of copper.	Total.	Per lb. of copper.	
Michigan, 87,455,675....	\$7,478,828	8 55	\$985,595	1 25	9 8
Montana, 97,868,064....	3,204,455	3 27	6,297,538	6 43	9 7
Arizona, 31,362,685....	1,146,819	3 65	1,237,892	4 01	7 6

*In Michigan mineral of 74.26%; in Montana matte and Bessemerized bars, and in Arizona bars and matte.

If we add to the cost of Michigan mineral at the mines 1.98 cents, which is the cost of smelting, freight, commission and Boston expenses given in the Tamarack report in June, 1890, though this is nearly $\frac{1}{10}$ % more than it costs some other companies, we obtain a total of 11.78 cents as the cost of Lake copper sold on the seaboard.

The data are not available for accurately reducing the cost of matte made in Montana to the basis of ingot sold on the seaboard. Next to the Anaconda, which publishes no report, the Boston & Montana is by far the largest producer. Its reports for 1889 and 1890, give the cost for freight and smelting (presumably for reducing some of the matte to ingot) and selling at 1.8 cts. per lb. The report for 1890 and 1891 for the same items of cost charges 2.16 cts. per lb. But as most of the copper was sold in the matte this charge would be greater, had all the copper been refined. It is certainly safe to add 3 cts. per lb., to the cost incurred in Montana for transportation, refining and selling. This added to the census figure makes the cost of Montana ingot 12.7 cts. per lb. But from this must be deducted the value of the silver. From certain of the mines owned by the Chambers Syndicate (a branch of the Anaconda Company) rich silver matte is made. But it is much less in quantity than the Anaconda matte proper, which contains so little silver that when sold it brings in the English market only 3 pence per unit more than non-argentiferous matte, or about $\frac{1}{10}$ ct. per lb. of copper. During the two fiscal years from July, 1889, to June 30, 1891, the Boston & Montana Company made 52,697,446 lbs. of copper and 570,409 ozs. of silver. From the silver was realized \$394,184.76. Therefore, the silver (in great measure mined on its own account and not recovered as a by product from copper ore) amounted to .01 oz. to the pound of copper and reduced the cost of the pound of copper only $\frac{1}{10}$ of a cent. The popular view, therefore, that the silver is so large an ingredient of Butte copper ore that its value virtually covers the cost of mining and smelting, is a fiction to which none of the statements of the companies themselves give any warrant. Assuming, therefore, that the silver value of the Boston & Montana matte represents a fair average for the silver value of copper, we deduct .74 of a cent from the cost of the copper as calculated above and obtain the figure 11.96 cents as the actual cost of Montana refined copper according to the census and companies' returns,

The additions to be made to the cost of Arizona copper as given by the Census Bureau are more easily calculated. All except the product of the Verde mines, came to market in 1889 as 96 per cent. bars with no silver value. Freight, marketing and refining may be estimated at 2½ cents per pound, which would make the cost at sea board 9.96 cents per pound ingot. If the census figures and our addenda be correct, the cost of Lake copper is 11.78 cents per pound; of Montana refined copper 11.96 cents per pound; and of Arizona copper 9.85 cents per pound.

The totals for Lake and Montana are higher than the cost of production usually attributed to these brands of copper.

To correct them is difficult. As the two largest producers, one in the Lake District and one in Montana, publish no reports, we can check the census returns only by comparison. The following method of arriving at the average cost of copper gives results, which, extended over a long period, would be absolutely correct, but applied to a short period, are open to question.

The actual cost of a metal to any given company is the proceeds derived from sales of total output, less the dividends or other profits made and distributed.

This mode of calculating cost may be defective, owing to some really extraordinary outlay, when applied to a single year, but is infallible when it covers a series of years, always supposing dividends are not paid out of borrowed money. Nowadays, when new methods, and modifications of old, follow each other so rapidly, and demand such frequent reorganizations and reconstructions of plant, it is difficult to distinguish between ordinary and extraordinary construction, and, therefore, all construction is more safely charged at once to the cost of copper than to construction account, even when this construction account is accompanied as a rider by a sinking fund. If we take the two Lake companies, whose operations are reported in detail, and whose production is sufficiently ample to influ-

ence the calculations of average price, namely, the Tamarack and Quincy companies, we reach the following results :

OPERATIONS OF THE TAMARACK COMPANY.				
For fiscal year ending June 30th.	Production.	Amt. received from sale of copper.	Price per lb.	
1887-88.....	10,389,249 lbs.	\$1,448,943	13'95 cts.	
1888-89.....	11,036,469 "	1,423,332	12'90 "	
1889-90.....	8,928,249 "	1,070,697	11'99 "	
1890-91.....	14,076,957 "	1,971,919	14'01 "	
	44,430,924 "	\$5,914,891	average 13'31 "	
Deduct dividends		2,470,000		
Cost of copper.....		\$3,444,891	= 7'75 "	per lb.

This figure is low, for the Tamarack report for the year ending June 30th, 1891, gives the following:

Cost per lb. of refined copper for the year, excluding construction.....	6'69 cts.
for construction.....	2'42 "
Total cost per lb.....	9'11 "

In the Tamarack report for the previous year the cost of copper at the mine is given as 5'28 cents; smelting, etc., 1'98 cents; total, 7'26 cents. But if we add the amount expended that year in mining plant, viz., \$362,863.66, to the cost of copper, we would increase the above operating expense by 4'06 cents, making thus the total cost of a pound of copper 11'32 cents. That year, owing to the fire, the construction cost was exceptionally high; but as within a brief period the Calumet & Hecla, the Tamarack and Anaconda have all suffered severely from fire, accidents from fire as well as flood must be accounted more or less incidents normal to mining, rather than extraordinary accidents. In the calculation of dividends the Tamarack Company probably draws the distinction between ordinary and extraordinary expenses, which will prove embarrassing and necessitate the borrowing of more capital if extraordinary items of expense occur frequently.

Following the same method, we calculate the cost of Quincy copper to have been 9'5 cts. per lb.:

For the solar year.	Production. Lbs.	Amount received from sale of copper.	Price per lb. Cts.	
1888.....	6,367,809	\$1,014,315	15'92	
1889.....	6,405,686	766,244	11'96	
1890.....	8,064,253	1,238,442	15'35	
1891.....	10,300,000	1,326,640	12'88	
	31,137,748	\$4,345,641	average 13'97	
Dividends.....		1,360,000		
Cost of copper.....		\$2,985,641	= 9'5 cts.	per lb.

We assign 12'88 cts. to the year 1891 as the selling price. This having been the average selling price of Lake ingot during that year. The average selling price, if our figure for 1891 is correct, was, therefore, for the four years 13'97 cts.

Assuming that the Calumet & Hecla Company obtained for its copper the average of the price at which the Quincy and the Tamarack sold their copper, viz., 13'58 cts., we estimate the cost of Calumet & Hecla copper to have been 9'99 cts. per lb.

Year.	Production.
1888.....	50,295,720 lbs.
1889.....	48,640,029 "
1890.....	58,836,904 "
1891.....	65,000,000 "
	222,772,653 "

Counting this at 13'58 cts. = \$30,252,526; less dividends, \$3,000,000; leaves \$27,252,526 or 9'99 cts. per lb. as cost of copper.

Copper made by the smaller Lake companies costs, as shown by their reports, in most cases more than the above figures, so that the lake average slightly exceeds the average cost of production to the three large companies, and stands therefore say, at 10 cts. per lb. at least.

Passing to Montana and pursuing the same method we find the cost of copper to the two companies of whose financial status for four years past the public has any information, viz: the Boston & Montana, and the Parrott, to have been the same in both cases 10'9 cts., or allowing '74 ct. per lb. for silver 10'16 cts.

BOSTON AND MONTANA.	
Year.	Production.
1888.....	18,978,667 lbs.
1889.....	26,425,228 "
1890.....	26,822,804 "
1891.....	26,786,330 "
	99,013,029 lbs.

which at 13 cts. equals \$12,871,693. Deduct dividends \$2,075,000, the balance, \$10,796,693, is equal to 10'9 cts., or allowing '74 ct. for silver, to 10'16 cts. per lb. as the average cost. In assigning 13 cts. as price obtained for casting copper we fix it at a fair parity with Lake during the same period

The approximate accuracy of this figure is borne out by the report of the company for the year ending June 30th, 1891, which gives the following statistics: Gross production, \$26,693,842 lbs.; revenue from copper, \$2,937,134.48; revenue from silver, \$160,039.86; total, \$3,097,174.04.

Running expenses at mine, \$1,523,832.14; all other expenses of handling copper, \$577,481.45; total, \$2,101,313.59, or 7'87 cts. per lb. of copper. To this figure must be added the cost of reducing the copper sold in matte to ingot, which will raise the cost at least 1'5 cts., making the ingot copper cost for actual mining and smelting, 9'37 cts. The same

report gives the following additional items, which, in great part, if not in whole, should be charged to the cost of copper: mine constructions, \$104,833, or 0'39 ct. per lb.; construction at Great Falls, \$462,980, or 1'73 cts. per lb.; interest on bonds, excluding amount paid for redemption of bonds, \$110,359, or 0'41 ct. per lb. If these be added, the total cost of copper will stand at 11'90 cts. per lb., less the value of silver, which was '59 cts. per lb. of copper, leaving the net cost of copper, 11'31 cts. per lb.

The data for arriving at the cost of Parrot copper are less complete than those which can be deduced from the Boston & Montana reports. From what facts are published we draw the conclusion that the Parrott copper costs about the same as Boston & Montana.

PARROTT.	
Year.	Production.
1888.....	10,750,000 lbs.
1889.....	9,500,000 "
1890.....	9,000,000 "
1891.....	14,347,194 "
	43,597,194 lbs.

This, at 13 cents, equals \$5,667,634, and less dividends, \$900,000, leaves \$4,767,634, or 10'9 cts. per lb. of copper, less silver value.

The Anaconda Company has published no reports and declared no dividends, so that its profits are not known; but there is no reason to suppose that Anaconda copper, made from ore whose yield is very much lower than that of Boston & Montana, is produced at a lower cost than that made by either the Boston & Montana or the Parrott Company. If 10'9 cts., or, allowing for the value of silver, 10'16 cts. per lb., be the cost of Montana copper, there is a seeming error in the census returns. This discrepancy may arise from the very high outlay for construction incurred by the Anaconda Company, and from the profits distributed by other companies, being counter-balanced by—we do not say provided from—increased capital.

We have seen that if the total outlay for construction in 1891 be added to mere cost of production and of selling Boston & Montana copper, exclusive of interest on bonds, the cost of the company's copper was 11'49 cts., which approximates to the census figure of 11'96.

The only Arizona company which has published its dividends is the Copper Queen Con. Mining Company. Following our method, we deduce 10'6 as the price of Copper Queen copper.

Year.	Production.
1888.....	9,004,771 lbs.
1889.....	9,024,000 "
1890.....	9,024,000 "
1891.....	10,500,000 "
	37,552,771 lbs.

This at 13 cts. equals \$4,881,860, and less dividends \$875,000 leaves \$4,006,860, or 10'6 cts. per lb. We assume the price received to have been the same as for Montana copper.

The Arizona Copper Company publishes bi-annual reports. It has declared no dividends, though its reports show profits which are absorbed by the interest on the company's bonds.

From its report made in March, 1891, for the previous half year, we gather that 1,329 tons of 2,000 lbs. were sold for £65,322 9s. 5d., say 10'64 cts. per lb., the profits for that period were £8,771 9s. 5d., the cost was therefore \$56,551, or 9'21 cts. per lb. As these figures are for black copper we add 4% or '37 cts. per lb., giving total 9'58 cts. per lb.

The Copper Queen is known to have spent large sums during the four years from 1888 to 1891, on surface work, which may account for the higher cost of its copper than that made during the short period under review by the Arizona Copper Company.

Though we cannot claim for our results absolute accuracy they do not vary far from the truth, and they make the average cost of ingot copper from all these districts very nearly alike, viz., between 10 cts. and 11 cts. per lb.

To their actual cost must be added interest on capital and a fair allowance for depreciation by exhaustion of the mines. Unless at least an additional cent per pound, equal to, say, 10% on the cost of the copper, be given as profit to the owner, capital would not long be forthcoming for the development of our mines. When, therefore, 11 to 12 cts. is paid for copper, the miner receives back only his outlay and simple interest, and not enough to reward him for the exceptional hazards of his work and investment.

At what addition to actual cost copper should sell at in order to justify the price now paid for copper stocks opens another field for investigation and comparison.

The President on the 5th inst. issued his proclamation promulgating a reciprocity treaty with the British West India colonies, Trinidad, Windward and Leeward Islands, etc.

The report of arrangements made for consolidating the Edison and Thomson-Houston companies was officially confirmed on the 5th inst. The leading parties in interest have already come to an agreement, and the proposition will soon be made formally to shareholders.

BOOKS RECEIVED.

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

- A Handbook of Florida.* By Charles Ledyard Norton. Published by Longmans, Green & Co., New York, 1892. Pages 392. Price \$1.00. Illustrated with maps and plans.
- Complete Illustrated Catalogue and Price List of Blow Pipe Apparatus.* Published by John Taylor & Co., San Francisco, Cal., 1892. Pages, 46
- Evolution in Science, Philosophy and Art.* Popular Lectures and Discussions before the Brooklyn Ethical Association. Published by D. Appleton & Co., New York, 1891. Pages 475. Price \$2.00.
- The Mechanical Engineers' Pocket-Book of Tables, Formulae, Rules and Data.* By D. Kinnear Clark, C. E. Published by D. Van Nostrand Company, New York, 1892. Pages 656. Price \$3. Illustrated.
- Transactions of the American Society of Mechanical Engineers, Vol. XII., 1891.* Published by the Society, New York, 1892. Pages 1,074. Illustrated.

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 Market for Magnesium Minerals.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Can you kindly give me some information regarding magnesia or refer me to a proper authority? I am interested in a natural deposit of sulphate of magnesia in very pure form and desire to find out the extent of its use. Who and what are the users, cost, etc., and see if this article cannot compete with the manufactured or imported products?

ROCK SPRINGS, Wyo., Jan. 14, 1891.

AUGUSTIN KENDALL.

There is a fairly good demand for sulphate of magnesia, which is used largely for medicinal purposes and for making various preparations of magnesia. The strictly pure white article laid down in New York costs about 75c. to \$1.25 per cwt. We understand that some time ago a syndicate which owned large tracts of ground in the West containing the natural sulphate tried to market the article in the East, but could not on account of the high freights. It is very doubtful whether this article could be shipped profitably to New York with heavy freight rates to contend with.

A letter from Canada asks whether there is a market for natural carbonate of magnesia containing 15% to 35% of silica and 8% to 10% of iron. Prominent dealers in this city report that it would be very difficult, if not altogether impossible, to market it, here. Plenty of magnesite 96% to 98% pure is to be had laid down here at \$9 to \$15 per ton. The article is used in paper making and largely in the manufacture of artificial stone, and for linings for furnaces. The impure carbonate referred to in the inquiry is said to be worthless for most of the purposes to which the pure carbonate of magnesia is put. The high percentage of iron and silica renders it valueless as a refractory material.—[Ed. E. & M. J.]

FOREIGN COMMERCE OF THE UNITED STATES IN 1891.

According to the statement of the Bureau of Statistics of the Treasury Department the imports of merchandise into the United States in 1891 were valued at \$828,312,642, an increase of about \$5,000,000 over the value of imports for the twelve months ending December 31st, 1890. The value of the exports during the year was \$970,506,248, which is much in excess of any prior year. The value of the exports in 1890 was \$857,502,548, and in 1889, \$827,106,347. The increase in exports of domestic merchandise stated in the order of magnitude of value was principally in breadstuffs, raw cotton, copper and manufactures of copper, iron and steel, manufactures of iron and steel, cotton, and manufactures of cotton. There was a decrease in the exports of provisions, mineral oils, cattle, wood and manufactures of wood. Thus it will be seen that the balance of trade in favor of our exports in 1891 was \$142,193,636.

The reciprocity treaty with Brazil went into effect April 1st, 1891, and the treaty with Santo Domingo and Spain, concerning trade relations with Cuba and Puerto Rico took effect September 1st, 1891. With all of these countries there has been a decided increase of the value in exports and imports since these treaties went into effect, although sufficient time has not yet elapsed to demonstrate the full effect of these treaties upon our commerce with these countries. Furthermore, wheat and wheat flour by the terms of the treaty with Spain were not admitted into Cuba and Puerto Rico at the greatly reduced rate until January 1st, 1891. For the nine months during which the treaty with Brazil was in effect the imports from that country were valued at \$79,183,328 against \$52,861,398 in 1890; the exports from the United States to Brazil during the same time were valued at \$11,555,447 in 1891 against \$10,071,871 in 1890. During the four months that the treaty with Cuba was in effect goods valued at \$14,956,868 were imported from that country against \$11,782,023 in the corresponding period of 1890; while the exports to Cuba were valued at \$7,063,222 in 1891 against \$4,816,029 in 1890. The imports from Puerto Rico were valued at \$324,796 in the last four months of 1891 against \$662,628 in the same time in 1890; while the exports were valued at \$973,690 in 1891 and \$688,478 in 1890. The imports from Santo Domingo were valued at \$120,722 during the last four months of 1891 against \$166,757 in the same time in 1890; while the exports were \$316,238 in 1891 and \$368,711 in 1890.

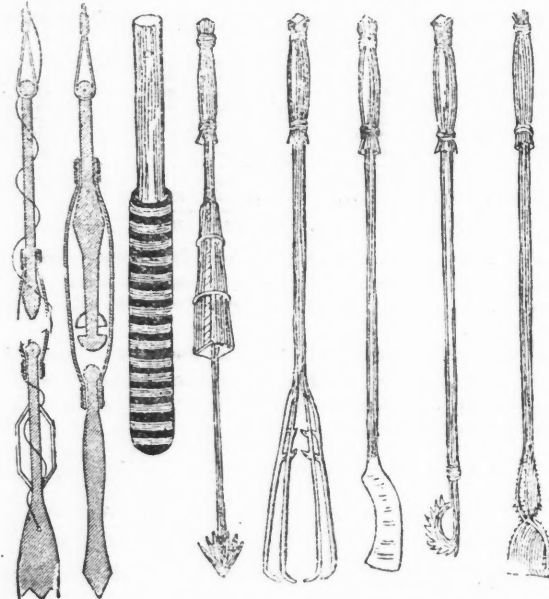
Our exports and imports of gold and silver during the last calendar year were as follows: Exports of gold, \$78,088,312; imports of gold, \$44,970,110; excess of exports of gold, \$34,118,202; exports of silver, \$27,196,937; imports of silver, \$18,192,750; excess of exports of silver, \$9,004,187; excess of exports of gold and silver combined, \$43,122,389. It will be remembered that the exports of gold during the first seven months of the year were unprecedentedly large, and only since August have the imports of gold exceeded the exports.

THE MANUFACTURE OF SALT IN CHINA.

The province of Se-tchoan, or Se-chuen, which is one of the largest in China, lies in the west of the country, on the borders of the Thibet, and is traversed by the Yang-tsi-Kiang. As a rule the country is poor in minerals, but, in the central regions especially, a very large amount of salt is produced, and associated with the brine wells are others which produce gas and oil. M. Louis Coldre, for several years a missionary in the adjacent sugar producing district, has given a very lengthy and interesting account of the salt industry in the *Annales des Mines, Tome XIX, 3rd livraison de 1891*, an abstract of which was published in *Industries*, January 16th, from which we reproduce it. The accompanying illustrations were made from pencil drawings by a Chinese artist named Ou.

Although there are no reliable statistics, the annual production of salt may be estimated at 812,000 tons. The number of wells is about 2,000, but of course their yield varies enormously, from practically nothing up to many hundred gallons of brine daily. Most of the brine has to be raised by manual or other power, but there are a few flowing wells and springs. As in some other countries, salt is here a Government monopoly, and a very amusing picture might be drawn of the cupidity and speculations of the officials, who are always ready to uphold large illicit producers as long as they contribute plenty of silver. The largest salt bearing region covers an area of 115 square miles and bears every characteristic of a manufacturing district, especially in its odors, which surpass description. The geology of the district is somewhat complicated. As a general rule the most saturated brine is found below the Carboniferous, or even below the transition beds. The Chinese draw no distinction between the various strata except by naming the rocks according to their color. The origin of the industry is quite unknown and "rule of thumb" of course prevails. It is even said that the smell of the grass indicates the presence of oil, gas or brine. As a rule, however, a well is rarely sunk except near other yielding wells.

The first operation, when a well is to be driven, is to sink a shaft some 30 yards deep, or until solid rock is reached. A short-bladed hoe and a



FIGS. 1-7.

pick are used for this work. The shaft is then solidly lined with blocks of stone bored out to form the beginning of the well, as shown in Fig. 8. The sinking and winding gear is then erected. Its construction is fairly well shown in the illustrations (Figs. 9 and 10). It consists of a derrick or head-gear of some form, a guide pulley, and a whim. The latter is about 8 ft. high and 9 ft. in diameter, and is worked by animal power. Sometimes a capstan driven by men is substituted. Rope-sinking is always employed, the boring tools being attached to the end of a rope and jumped up and down in the hole. When the weight is small, men can do this by hauling on to the rope as seen in Fig. 11, but when the depth increases the rope is attached to a rocking lever pivoted on the derrick between two platforms. The lever is then reciprocated by men jumping upon it (Fig. 9) from the two platforms alternately. As many as ten men at a time may be employed, working in spells of ten minutes, time being still measured in China as it was with us in the days of King Alfred, except that the candle is replaced by a graduated stick of incense. Twelve to fifteen blows a minute are given, and the rope is turned, by a key, one-fifth to one-sixth at each blow. The wages earned by these men amounts to about \$1.25 per month, with food found. When necessary, the debris is removed by a sludger. Fig. 12 shows the preparation of the lining tubes, which are lengths of bamboo secured together by wrapping them round with sail cloth and mastic, and Fig. 10 shows the tubes being lowered into position. A water-tight joint is made when impervious strata are met by pouring some mastic down to the bottom of the hole and allowing it to set, after which the boring proceeds. The boring tool mostly used is shown in Fig. 1.

Owing to the negligence and sloth of the workmen it is very seldom that the work proceeds uninterruptedly, but the natives have shown considerable ingenuity in devising tools for remedying all sorts of accidents. A selection of these tools is shown in Figs. 1 to 7. The most common accidents are an eruption of fresh water or of sand into the borehole, blockage of the hole by caving in, and breakage of the tubes, ropes or tools. Any leaks or breakages are stopped with clay and mastic, with the aid of the tool shown at Fig. 2. A defect in the tubes is found by a tool like an inverted umbrella, which can be closed by a ring pulled over it by a second cord when it opens out in the hole. Blockages are bored

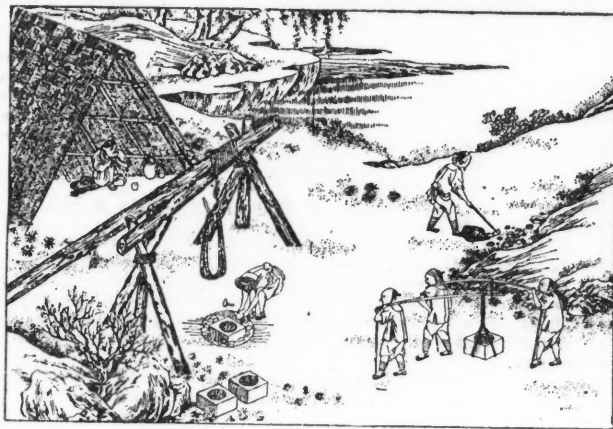


FIG. 8.—PROCESS OF WELL SINKING.

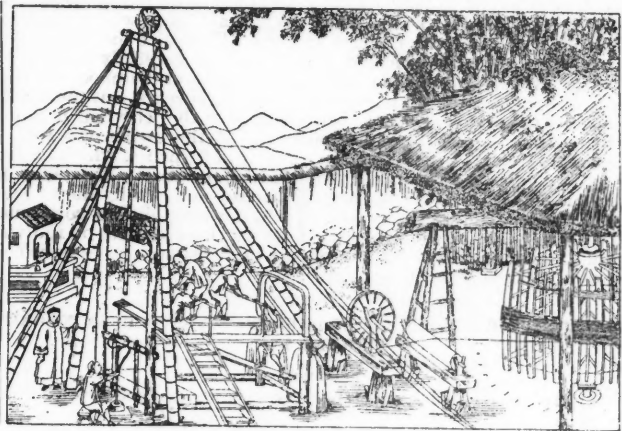


FIG. 9.—SINKING AND WINDING GEAR.

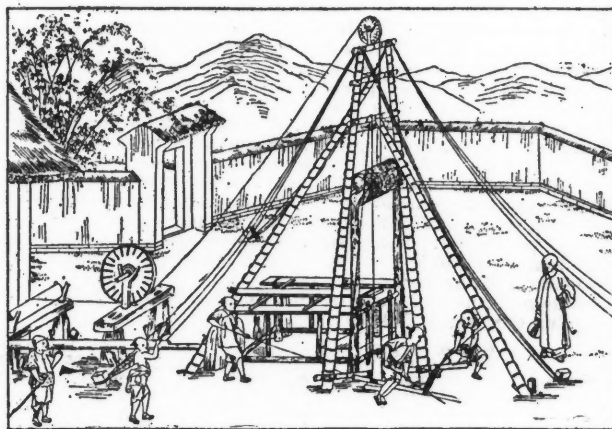


FIG. 10.—METHOD OF LOWERING LINING TUBES INTO POSITION.

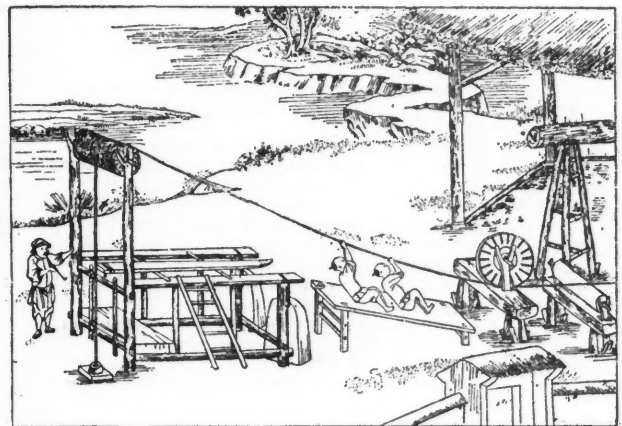


FIG. 11.—METHOD OF ROPE SINKING.

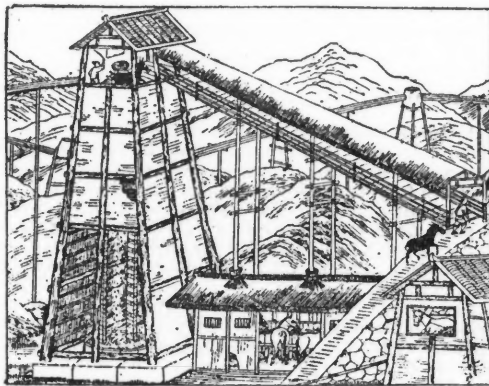


FIG. 12.—ELEVATOR FOR RAISING BRINE.



FIG. 13.—PREPARING LINING TUBES.

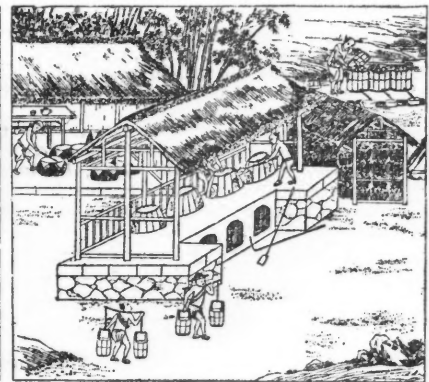


FIG. 14.—EVAPORATING PANS.

through, and sand is taken out with a sludger. Some of the tools shown are intended for catching hold of broken ropes, the illustrations being self explanatory. Sometimes, after brine has been struck, it suddenly disappears, owing to neighboring wells, and then the only remedy is to bore deeper. If the well is not a flowing one there is only one means known for obtaining the brine. A long bamboo, with an inlet valve at the bottom, is allowed to remain in the well till it is full, and is then drawn up by a winch, capstan, or whim. These bamboos vary in length from 5 yds. upward, and in diameter from 2 in. to 6 in. Generally buffaloes are used to work the whim, but men of the very lowest class are sometimes employed, and the bucket is wound up as soon as it is filled. Sometimes this is only twice a day, but in a good well it is done several times an hour, giving in some cases 5,000 gallons a day. The brine from deep wells may contain on an average 20% of salt; occasionally, however, it is nearly saturated. Petroleum is found in about 50 wells in the district. Often a little oil occurs with the brine; it is then allowed to rise to the top and skimmed off. White, greenish yellow or black oils are obtained. They are not purified at all, but are used in the crude state for illumination and for medicinal purposes.

The brine is taken to the evaporating pans in buckets, or by conduits of bamboo. In order to obtain a suitable fall in the conduits, the brine is raised by means of bucket elevators worked by animal power. These old-fashioned devices, one of which is shown in Fig. 12, are exceedingly inefficient, but any innovation is almost impossible, for the Chinese say, "if there could be better devices, our fathers would have invented them." The brine contains earthy matter in suspension, sulphates and chlorides

of lime and magnesium, much potash, and a little iodine. Above a saturation of 7% the brine generally pays for treatment unless the well is very deep. All the brine is evaporated in shallow cast iron pans. Most of these are approximately 4½ ft. in diameter, 1 in. thick at the sides and 1½ in. at the bottom. Iron plates and clay are used to increase the depth of the pan. A view of the pans and furnaces is given in Fig. 14. Two kinds of salt are made; the first is crystalline and tolerably friable, the second is fused. In both cases the brine is concentrated till the addition of a concoction of beans and other vegetable matter causes frothing, which clarifies the liquor and removes a good deal of the lime, etc., as a curd. This is pressed and forms a kind of cheese, which is largely eaten. A little pure salt is then thrown in to start the crystallization. The residual liquor is evaporated, and the resultant calcic chloride sold, probably for further cheese-making processes. When fused salt is desired, the pan is made deeper and the summing operations carried further, after which the temperature is raised sufficiently to fuse the salt. The pans are brought from a distance of four or five days' march, and cost about 40 taels (about \$46). In the first process they last from two to ten years, but only about nine months in the second process, in which the heat is much greater.

For fuel almost everything is used. Straw and any similar matter is commonly employed. Wood is expensive, as there is very little of it, and coal is not available everywhere. The most interesting fuel, however, is the natural gas which is found in some of the wells. The discovery of gas in a well is generally accidental, and then the tools are blown out by the pressure, and the gas sometimes takes fire. In that case a salt pan is

slung at the center of a long bamboo and used as an extinguisher. If this fails, they try to drown the flame by the aid of reservoirs built as near the well as the men can manage to work. To utilize the gas a truncated cone of strong oak is placed over the well and carefully tamped in position with clay, and from the cone pipes, made of bamboo, conduct the gas to the pans. Iron jet pieces are used as burners, but the use of valves is quite unknown, a brick being put over the jet when it is not wanted, and the gas goes to waste elsewhere. If the owner of a well is lucky enough to strike gas, he builds a number of furnaces, which he lets out on repairing leases at 50 taels (about \$57.50) per year. The taxes on salt are somewhat heavy. First, there is license and royalty dues; then there is a tax on the consumption, which, however, differs somewhat from the French *gabelle*, as it is levied on districts, and not on individuals; and, finally, there are various export and customs duties levied on the salt as it is taken about the country.

LIST OF BILLS AFFECTING THE MINING INDUSTRY INTRODUCED IN CONGRESS UPTO JAN. 16.

SENATE.

- No. 51.—To provide for the free coinage of gold and silver bullion and for other purposes.—By Sen. Stewart, Dec. 11th, '91.
- No. 54.—To amend Ch. 6 of title 32, U. S. Rev. Stat., relating to mineral lands and mineral resources.—By Sen. Stewart, December 10th, 1891.
- No. 57.—To authorize the sale to aliens of certain mineral lands (in the Territories).—*Ibid.*
- No. 193.—To establish a branch mint of the United States at Omaha, Neb.—By Sen. Manderson, December 10th, 1891.
- No. 212.—To provide for coinage at the branch mint at Denver, Colo. By Sen. Wolcott, December 10th, 1891.
- No. 435.—To aid the State of South Dakota to support a School of Mines.—By Sen. Pettigrew, December 10th, 1891. Reported January 11th, 1892, with an amendment.
- No. 468.—To provide for the retirement of national bank notes, the free coinage of silver for the promotion of the international free coinage of silver and for other purposes.—By Sen. Plumb, Dec. 11th, '91.
- No. 1,374.—To aid the State of Colorado to support a School of Mines.—By Sen. Tetter, January 5th, 1892. Reported by Sen. Paddock, from Com. on Public Lands, without amendment, January 11th, 1892.
- No. 1,052.—To establish a branch mint of the United States at Council Bluffs, in the State of Iowa.—By Sen. Allison, December 16th, 1891.

HOUSE OF REPRESENTATIVES.

- No. 36.—To Regulate Mining in California. (To establish under the Secretary of War a "United States Mining Commission of California.")—By Rep. Geary, January 5th, 1892.
- No. 73.—Same as Senate Bill 1,374.—By Rep. Townsend, January 5th, 1892.
- No. 127.—Same as Senate Bill 1,052.—By Rep. Bowman, January 5th, 1892.
- No. 249.—To Regulate Mines and Mining in the Indian Territory.—By Rep. Manson, January 5th, 1892.
- No. 249.—Same as Senate Bill 193.—By Rep. Byron, January 5th, 1892.
- No. 613.—To establish a branch mint of the United States at Chicago, Ill.—By Rep. Hopkins, January 7th, 1892.
- No. 2,611.—To increase the school fund of the State of Alabama. (From the net proceeds of sales of Government coal and iron lands.)—By Rep. Wheeler, January 11th, 1892.
- No. 2,617.—To amend an act entitled "An Act to Exclude the Public Lands in Alabama from the Operation of the Laws Relating to Mineral Lands." Approved March 3d, 1853.—*Ibid.*, January 11th, 1892.
- No. 2,781.—To amend chap. 340 U. S. Rev. Stats, at Large, vol. 24, 49th Congress, and to promote and encourage mining.—By Del. Smith (Ariz. Ter.), January 11th, 1892.

DECISIONS OF THE SUPREME COURT RELATING TO THE MINERAL INDUSTRY AT OCTOBER TERM 1891.

Reported for the Engineering and Mining Journal.

EJECTMENT OF SALT COMPANY—CENTRAL PACIFIC RAILROAD COMPANY GRANT TITLE UNDER ACT OF CONGRESS JULY, 1862.

1. The filing of a map of definite location of contemplated railroad by the company, with proof of payment of costs of selecting, surveys and conveyance with the Secretary of the Interior, and the acceptance of same by him is sufficient to enable a lessee of the company to maintain an action for the possession of the premises leased to him.
2. The lessee as against a stranger can have no greater right of possession than is vested in him by his lease.
3. The lines of lands, included in a grant, under water, are traceable and defined by reference to the lines of the unsubmerged land actually surveyed.
4. The possession of lands covered by waters of Salt Lake, Utah, appears to have always accompanied possession of lands on its border.—*Deseret Salt Co., Utah, pliffs in Error vs. Tarpey.* [Field, A. J., op. Jan. '92.]

U. S. CIRCUIT COURT JURISDICTION NOT DERIVED FROM, OR CONTROLLED BY, STATE LAWS—INSOLVENT MINING CORPORATION—CREDITORS' FAILURE TO PROVE CLAIM ON RECEIVER'S NOTICE.

1. The Circuit Court (U. S.) takes its jurisdiction and the extent thereof, not from any state laws, but from those of the United States.
2. While setting in any state as a Federal court it accepts and gives effect to the laws of that state, so far as they do not affect its jurisdiction and the rights of non-resident creditors. It exercises powers independent of the state laws, and when, in pursuance of the jurisdiction conferred by United States laws, it takes possession of the property of an insolvent defendant and proceeds to final decree, determining the rights of all parties to that property, its decree is not superseded or suspended by subsequent proceedings in the state court looking to the administration of that property under laws of that state.
3. No anomaly can exist in the relations of state and Federal courts. The latter, having once acquired full jurisdiction and proceeded to a final

determination, may rightfully proceed still further to an execution of that decree irrespective of any proceedings in the state courts.

5. When a creditor has received notice to file and prove his claim against liquidating an insolvent corporation or company from the receiver and neglects it, he forfeits his right to challenge the allowances of a decree of the court determining the rights of parties in the proceeds of the property of the corporation or company.—*Leadville Coal Mining Co. et al. vs. McCreery et al., appeal from N. Dist of O.* [Brewer, A. J., op. Nov. 9, '91.]

THE PRODUCTION OF GOLD IN RUSSIA IN 1890.

According to a report just issued by the Russian Department of Mines, there were 2,405 poods 37 funt (1,385,800 oz.) of gold in nuggets produced in 1890, as compared with 2,271 poods 31 funt (1,308,544 oz.) in 1889, showing an increase of 77,256 oz. Of the total quantity produced in 1890, 1,320,500 oz. were obtained from mines worked by private enterprise, the remaining 65,300 oz. coming from the mines belonging to the Imperial Treasury.

According to the gold yielding districts of the Empire, the production of 1890 compared with that of 1889, was as follows:

Region.	1890. Ounces.	1889. Ounces.
Siberia.....	1,015,042	437,844
Ural.....	370,153	369,893
Finland.....	605	807
Total.....	1,385,800	1,308,544

From these figures it will be seen that the increased production of 1890 was confined almost exclusively to Siberia, the principal gold producing region of which is that of the Lena, where are the richest gold mines of Russia. The increased production in the Lena district alone was 45,504 oz., the total production being 333,275 oz. Next come the regions of the Amoor and Southern Yenesei, of which the former produced 281,175 oz., or 16,704 oz. more than in 1889, and the latter 9,216 oz. in excess of the preceding year. The amount of ore and auriferous sand dealt with in 1890 was about 22,500,000 tons. After being melted down in the gold laboratories the production of standard gold amounted to 1,347,869 oz.; which yielded 1,232,799 oz. of chemically pure gold, together with 106,936 oz. of pure silver. In addition, gold is obtained as a side product in connection with lead and silver mining operations to the extent of about 10,368 oz. per annum.

The production of gold in the Russian Empire during the five years ending 1890 was as follows:

Years.	Gold in nuggets direct from the ore.	Karat gold.	From which were obtained chemically pure	
			Gold.	Silver.
1886.....	1,176,250 oz.	1,120,358 oz.	980,887 oz.	87,077 oz.
1887.....	1,225,757 oz.	1,185,538 oz.	1,083,658 oz.	95,717 oz.
1888.....	1,236,486 oz.	1,203,697 oz.	1,098,591 oz.	98,496 oz.
1889.....	1,308,544 oz.	1,267,200 oz.	1,156,422 oz.	103,220 oz.
1890.....	1,385,800 oz.	1,347,869 oz.	1,232,799 oz.	106,936 oz.

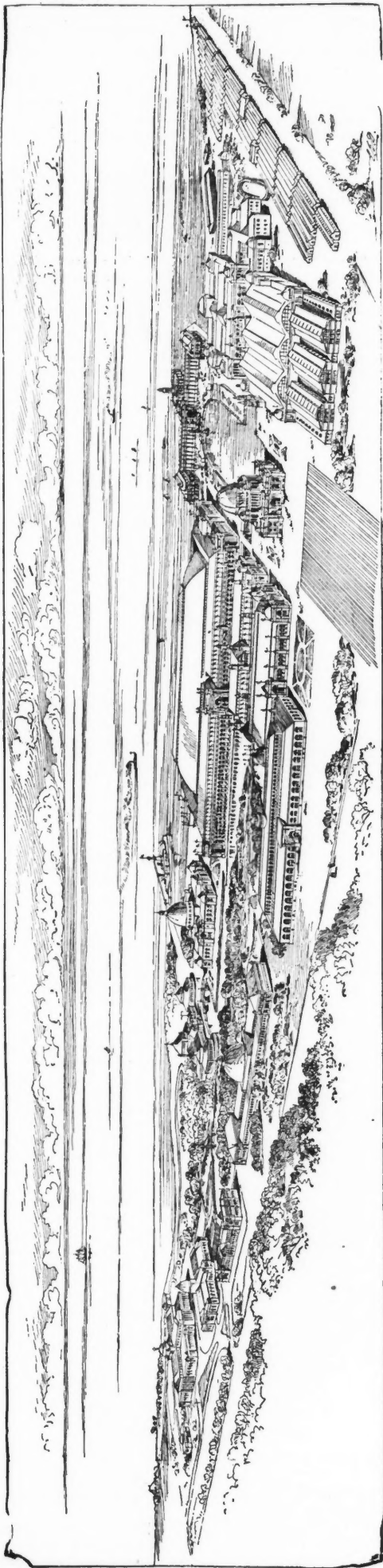
NOTE.—In this article the ounce is in all cases avoirdupois and not troy weight.

The returns for 1891 have not yet been received, but from all indications the output has increased very considerably. In the Irkutsk district in particular there has been a large increase in output.

THE MINING EXHIBIT AT THE WORLD'S FAIR.

The ground floor of the Mines and Mining Building, covering 236,000 sq. ft., is to be divided into four grand sections by broad aisles, north and south, and east and west. Of this total, 52,000 sq. ft. have been set aside for exhibitors from foreign nations, but the exact location of such space has not been determined upon. The gallery, which is 60 ft. wide and 25 ft. above the main floor, will afford a total space of 103,000 sq. ft. It will be reserved for a cabinet display of minerals, precious stones, relief models, pictures, photographs, diagrams, charts and general literature bearing on this branch of industry.

The Mines and Mining Department is in correspondence with either the secretary or executive commissioner of every one of the 38 or more states and territories having a state board, on the subject of a mining display from their respective state or territory. With hardly an exception, their answers presage very large and satisfactory state exhibits. For example, the collector and superintendent of the Mineral Department of the New Mexico World's Fair Board writes that he expects to make a complete and creditable collection. The president of the Arizona Board says that the special feature of the Arizona exhibit will be that of mining, as many of the largest mines in the territory, as well as individual miners, are already preparing their own special exhibits, while it is more than likely that every private cabinet in the Territory worth sending will be loaned for exhibition. The secretary of the California Commission says that the mineral collection of the State Mining Bureau has been placed at the disposal of the Commission. Colorado has applied for space in which to show her precious and base metals, her minerals and building stones. Indiana asks for a space in the mining building as large as any of her sister States may request. The secretary of the Iowa Commission States that his State will require a liberal amount of space for the exhibit of coal, lead, gypsum, etc., and feels sure that Iowa will make a creditable display. Idaho and Missouri call for a large space for their mineral exhibits and will make a fine showing. A representative of the lead and zinc interests of the latter State announces that they may be counted on for rich and handsome specimens. Maine has a committee on mining which is at present specially interviewing the granite men of that State. The secretary of the Massachusetts Board is at work enlisting the interest of the stone men of his State. Michigan, through the president of her board, states that she will undoubtedly make the largest mineral display of any state east of the Rocky Mountains, and will make the mineral exhibit the principal feature of Michigan's contribution. The president himself has taken charge of the salt and gypsum exhibit. The Executive Commissioner of New Hampshire promises a large mineral exhibit and refers particularly to mica, of which the State is an important producer. North Carolina will make a display excelling her Boston exhibition, which attracted so much attention. South Dakota has a com-



Art. Illinois Woman's.

Fisheries. Horticulture.

U. S. Government. Transportation.

Naval. Manufactures and Liberal Arts. Electricity. Mining. R. R. Approaches.

Casino and Pier. Administration.

Agriculture. Machinery.

Forestry. Live Stock. Dairy.

WORLD'S COLUMBIAN EXPOSITION—BIRD'S-EYE VIEW—LOOKING EAST. CHICAGO, ILL., U. S. A., 1893.

mittee on mines and mining actively promoting interest in a mineral display. Pennsylvania has a splendid organization and will make a marvelous exhibit in coal, iron and petroleum. Texas has a special commissioner on mines and a strong committee on mines and mining. Wyoming asks for room and at the same time the secretary writes that the mineral display will be the leading feature of the State's exhibit, both in size and attractiveness, and it will be noted more for its diversity than for the special value of any individual exhibit. He says that in the precious metals Wyoming will not be able to take rank with her neighbors, but in coal, iron, soda, tin and building stone she will make a fine showing. The president of the West Virginia board, after consultation with the leading mining men of the State, applies for very large space. Wisconsin has a committee on mines and lumber and promises to make an elaborate display of her mining industry.

As to exhibits from abroad, nearly all of the large mineral producing countries have intimated their intention of making a display in the mining building. England, Germany, France and Japan have made formal application for space.

With reference to special features promised, the department has assurances that the cabinet display will be especially fine. It has been in correspondence with the leading educational institutions, museums and large collectors, and the responses from them indicate that they will make extensive contributions, and justify the assertion that in extent and character this portion of the mining display will be unparalleled in the history of expositions. All of the leading economic minerals will be amply represented by states and individuals. Parties are offering their services and money to make live exhibits of oil-well drilling, novel methods of ore reduction, extraction, etc. The largest manufacturers of mining machinery promise to put up complete plants, full size and in miniature. In antique and primitive appliances and processes negotiations have been entered into already between the department an associations and owners of relics, looking forward to a complete demonstration of the evolution of mining machinery and methods.

The railroad cars containing exhibits, as they arrive, will be switched to the special track of the Mines and Mining Building and be run up to the front entrances of the building. Here will be a locomotive crane which can be moved from place to place on the track and transfer heavy exhibits from railroad cars to light installation cars. These light installation cars will be run on an interior track running the length of the mining building. From these cars inside of the building exhibits can be shifted to place and unloaded by another locomotive crane. A part of these installation cars will be designed to carry a maximum load of 30,000 lbs., spread upon 64 sq. ft. of surface. The locomotive crane for service outside of the building and a part of those for service on the inside will be capable of handling 30,000 lbs. These cranes will weigh 48,000 lbs., spread upon 128 sq. ft. of surface. In order that these cranes may be readily shifted about for their economic handling, a turn-table is designed to be placed in the outside crane track at the point of intersection with the installation track.

It is still too early in the organization of the work to give the details of the management, classification and arrangement of exhibits. The general plan of operations, as at present outlined, is to distribute this work among several distinct bureaus, each comprising several allied classes of materials. No superintendents of such bureaus have as yet been appointed.

There will be no conflict with any state department of mining, because the matter of making a collective state raw material exhibit is left in the hands of a special superintendent of each state mining department, the executive commissioner, a committee on mining, or such other person or persons as the state may officially, through its State World's Fair Board, designate or appoint. All individuals or firms wishing to make a competitive display must make application to this department either personally or through their respective state boards.

The general reception of articles at the Exposition buildings will commence November 1st, 1892, and no article will be admitted after April 10th, 1893.

The exhibits from abroad should be shipped from foreign ports in sufficient time before the date set for their reception to allow ample margin of time for accidents, delays in transportation, etc., etc., and for arrangement after arrival, bearing in mind that no exhibit will be received after April 10th, 1893.

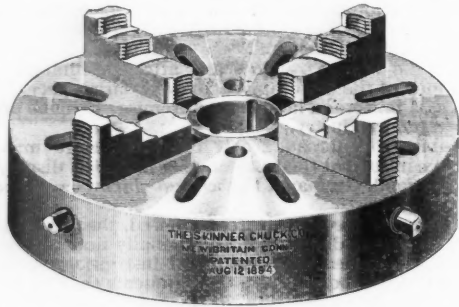
The work on the mining building began July 1st, 1891; raising frame work began September 10th, 1891; the erection of iron work began September 15th, 1891. The amount of iron work in the building is 592,000 lbs. and was all in place December 1st, 1891. The number of pieces of iron is 15,885; number of rivets and bolts, 181,750; glass in skylight, 64,520 sq. ft., or one and a half acres; linear square feet of water conductor pipe, 21,400; car loads of material glass, 6; lumber, 282; nails, 3; window frame, sash, etc., 10; iron rods and bolts, 2; constructional iron, 60. The structure is practically complete. There remained to be done December 1st, the exterior staff covering, the setting of the skylights, the plastering, painting, glazing and plumbing. Exterior staff covering will proceed as the weather permits. A large proportion of the staff pieces are cast. The building will be heated by steam and lighted by electricity and will cost \$230,000. It is farther advanced toward completion, with the exception of the Woman's Building, than any of the other World's Fair buildings.

The Mines and Mining Department prides itself on the thorough method with which it is canvassing possible and intending exhibitors. It possesses complete lists of the producers in the several groups and enters into personal correspondence with each firm or individual. Those who signify their intention of exhibiting are immediately supplied with all necessary literature for their information and an official application blank to be filled out, returned and placed on file pending the final allotment of space.

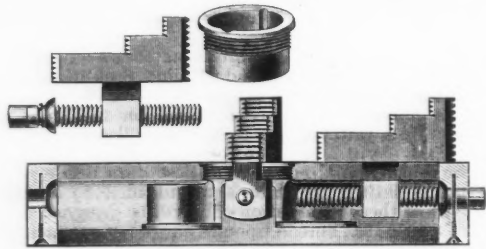
The interest manifested by the mining men of the country is evidenced by the fact that they have uniformly been chosen to take charge or cooperate in the state work or else have volunteered their services for that purpose. The leading experts in their respective lines have made known their desire to assist; also prominent representatives of the great coal and base metal companies, salt, gypsum and phosphate companies, of the granite and marble associations, of the clay-workers' associations, of the largest smelting companies, and of the leading manufacturers of mining machinery in the world.

THE SKINNER INDEPENDENT REVERSIBLE LATHE CHUCK.

Improvements in mechanical devices are constantly making the work of the mechanic easier and the result of his labors more perfect. A new device is the chuck manufactured by the Skinner Chuck Company, of New Britain, Conn., which is so constructed that strength is given at



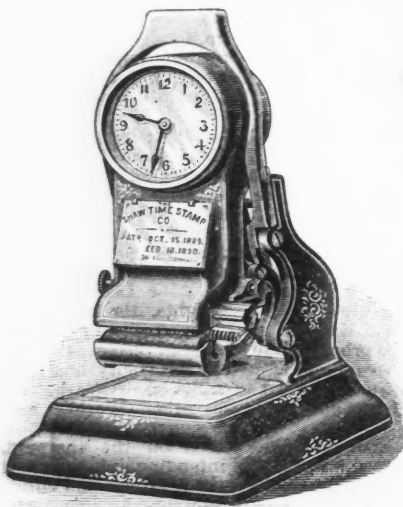
thrust points and bearings while the spaces between these points are cut down to the lowest possible point. The face of the chuck is cast solid with the usual spaces for dogs. The hub bushing is removable and the jaws are reversible. To reverse the jaws the hub is removed and the jaw screws reversed until the jaw leaves the screw, when it may be turned,



as shown in the sectional cut. The tempered steel hub receives the end thrust of screws when work is held on outside bight of the chuck. The construction is such that the chuck works near the head of lathe and thereby rigidity and accuracy are assured. The chucks are made in sizes from 4 in. to 42 in. and are adaptable to all classes of work

THE SHAW TIME STAMP.

The new automatic time stamp, illustrated herewith, is operated as follows: The arm showing above the clock is the stamping lever pivoted by the center screw of the three showing at the right hand side. The lever is pulled forward over the clock face, the automatic inking roll being moved backward at the same time. This roll is arranged in the small round case shown just above the stamping plate. As soon as the inking roll is clear the upper screw in the lever acts on the main part of the stamp, moving it down toward the table. All the type press upon the



THE SCIENTIFIC PUB. CO.,
NEW YORK.

MAY 10 1891

A M M P M
11 12 1

RECEIVED

The above is a facsimile of the Impression of the Stamp.

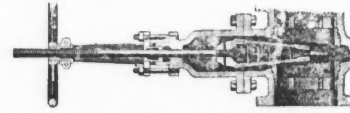
Time indicated 12.05 P.M.

matter stamped with equal force, as the stamping plate is pivoted at the center with rubber bearings, and thereby accommodates itself to the type face. The time adjustment is arranged by means of an endless rubber band, with the hours and minutes marked on its face; this band runs over the spindle of the clock that carries the minute hand.

Six words may be used in any stamp to read below the time, such as *received, sent, etc.* The time is indicated, as shown in Fig. 2, by star. Each small division represents 10 min. The clock runs 24 hours. The clock, it is stated, is an accurate timekeeper and the jar of stamping does not affect it. The stamp is manufactured and sold by the Time Stamp Company, of New York.

THE CHAPMAN STRAIGHTWAY VALVE.

A new valve designed for use with high steam pressures is being introduced by the Chapman Valve Manufacturing Company, of Boston. The construction of this valve comprises the following cardinal features: A plug or gate in one piece, guided closely in body of shell by means of the ribs, or splines, and taking all strain upon the splines instead of coming in contact with the faces of the seats, until the plug is seated, thereby insuring a true and easy vertical movement of plug. The seats are made from hard gun metal bronze for steam, or from any other metal for



gas, acids, etc. These seats are pressed into their proper positions in the body of shell and are held to their exact line by means of the screw gland inserted through the pipe ends, which can be worked forward and back by means of spanner coming in contact with the splines in the inside of screw gland. By taking off the cap and removing the plug the seats may be forced toward the inside of valve by means of the screw gland until they are released and another can be inserted. This valve can be built with an inside screw, or an outside screw and yoke, with or without the lateral ribs between the end flanges, either with or without the by-pass attachment, and with or without the male spline or tongue on the face of the end flanges.

GALLOWAY'S DIE-STOCK.

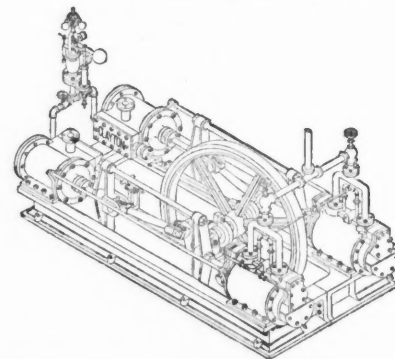
A five-die stock in one piece is a novelty made by the Wiley & Russell Mfg. Company, of Greenfield, Mass. Five dies having a capacity of from 1/4 in. to 1 in. inclusive are arranged in a circular stock. Opposite each die is a hole to receive the pipe and act as a guide for the same. The



dies are made adjustable to allow the regular fittings, and for wear, and are in two parts so that they may be taken apart to be ground when dull. The guide holes are bushed to next size larger for convenience in cutting nipples, and to enable them to be kept in repair. The main feature of the tool is the range of work which it covers and time saved in adjusting various dies in the stock.

THE CLAYTON COMPRESSORS FOR AERATING PETROLEUM FUEL.

The use of aerated crude petroleum as fuel in place of coal is rapidly extending, and very many of the largest concerns in this country, whose work requires the employment of an intense heat, have adopted this system. The chief lines of work for which it has been intended are iron and steel forging, tempering, welding, annealing, etc., in glass works, for furnaces, glory holes, lears and ovens; for generating steam, burning lime,

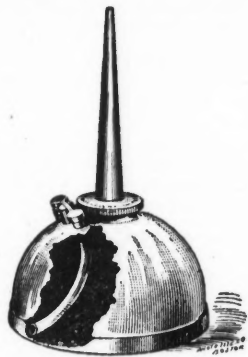


burning sewer pipe, heating asphalt, tinning and japanning, oxydizing lead, heating retorts in gas works, etc.

An efficient and economical working air compressor is a most important factor in the successful operation of these plants. The accompanying illustration shows a new type of Clayton air compressor specially designed for this purpose. A large number of them are already in use and are said to be doing excellent duty.

THE NOERA PATENT OILER.

The weak point in the ordinary oil can is in the soldered, or brazed bottom, where it is likely to leak and wear out. The accompanying illustration shows the adaptation of an air tube in an oiler. The can as shown explains itself. Air admission is attained by pressing a small cap, shown

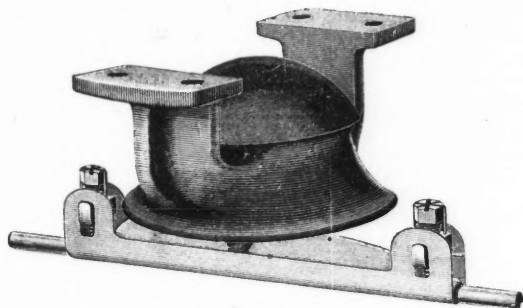


beside the oil tube, and inverting the can, thus admitting air to the vacuum space. The Paragon Manufacturing Co., of New York, which is introducing this can, claims for it greater durability and convenience than in the ordinary can. They are made in all the different shapes and sizes of the ordinary can.

A NEW MINING INSULATOR AND CLAMPING EAR.

The requirements of electrical appliances for use in mines has necessitated the production of a type of insulators varying considerably from those employed above ground, the conditions in the former case being much more severe than in the latter. The insulator and ear shown in the accompanying cut were designed for the use of the Thomson-Van Depoele Electric Mining Company, and are claimed to be particularly suited to the purpose for which they were made.

The insulator body is of iron, thoroughly coated with graphite paint, to withstand the action of the acid water frequently met with in mines, the insulator itself being made of pieces of porcelain, rubber or other suitable material, strong and large to withstand severe strains. Its construction is such that the insulation is entirely protected from the blows of the trolley, should it leave the trolley wire in electric tramway installations, and at the same time little opportunity occurs for grounding, as the head of the hanger bolt is embedded in the porcelain or rubber, and the only joint in the insulation is filled by a soft rubber washer firmly forced into position when the trolley wire ear is screwed into place. The only opportunity for surface leakage is on the under side of the insulator along



the surface of the cone, and as this has been corrugated the liability of leakage is reduced to a minimum.

The clamping trolley ear which was designed by Mr. J. P. B. Fiske, of the Thomson-Houston Electric Company, is very easy to install, as no soldering is necessary. Its security is greater than any soldered ear, as the wire cannot come down until the phosphor bronze clasp is worn through. The clasp is .082 in. thick and 8 in. long, and its life is consequently long. As the clasp can be loosened in a moment's time, the slack in the wire can be taken up at a little expense of time and trouble, a feature not possessed by the soldered ear.

The excessive sparking which occurs with the other types of clamping ear is obviated by making the bronze very thin, so that it can easily be reduced to a knife edge at the end where the trolley runs on. The clamping devices being located at the end just over the point where the trolley runs on the phosphor bronze, the latter is sure to be pulled tight against the wire at this point, thereby securing a good fit and preventing sparking.

The clamping devices are positively locked by means of a stout German silver lock wire. It is not possible for the screws to back out even the fraction of a turn without shearing off this wire, which is quite improbable, as the shearing force is practically nothing. There can be no corrosion or rusting of the clamping ear, as iron and steel have been entirely eliminated in its construction. Should the bronze clamping strip wear out a new one can be substituted at a moment's notice.

Strength of Bricks.—A recent test of brick made by the dry clay process at Watertown arsenal, according to *Paving*, showed an average compressive strength of 3,972 lbs. per sq. in. In one instance it reached 4,973 lbs. per sq. in. A test was made at the same place on a "fancy pressed brick." The first crack developed at a pressure of 305,000 lbs. and the brick crushed at 364,300 lbs., or 11,130 lbs. per sq. in. This indicates almost as great compressive strength as granite paving blocks, which is from 12,000 to 20,000 lbs. per sq. in.

PRODUCTION OF COAL IN UTAH IN 1891.

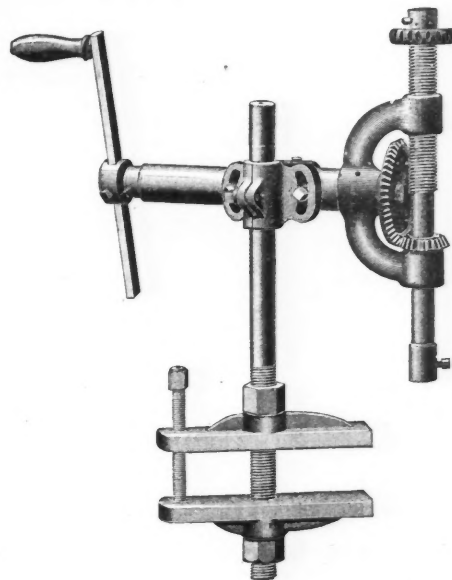
During the year 1891, according to figures collected by the Salt Lake *Tribune*, 124,440 tons of coal were disposed of in Salt Lake City. This was furnished by the following companies: Union Pacific Coal Company, 36,175; Pleasant Valley Coal Company, 36,000; Rock Springs Coal Company, 35,950; Consumers' Coal Company, 3,000; Van Dyke Coal Company, 1,000; Black Butte coal, 275; anthracite, 5,190; blacksmith coal (Eastern), 800; charcoal, 550; coke, 500. The wholesale price for lump soft coal was about \$5 per ton; for anthracite, \$9; for coke, \$11; for charcoal, \$10, and for slack, \$2.75. At retail the prices were about 50 cents per ton higher.

The Pleasant Valley Coal Company, which owns and operates mines at Scofield and Castle Gate, Emery County, employed between 500 and 600 men during the year. Its output in 1891 was as follows: Lump coal, 195,416 tons; small sizes, 42,327 tons; coke, 8,227 tons. In 1890, 189,545 tons of lump coal were produced; 41,359 tons of small sizes, and 8,395 tons of coke. The coal mined by this company is used largely by the Rio Grande Western Railway Company; 36,000 tons were sold in Salt Lake City, and the balance found a market in other towns in Utah. The Home Coal Company, which operates mines at Coalville, Summit County, mined and marketed about 43,000 tons of coal during the year, of which 40,000 tons went to Park City, which place is principally supplied by this company.

The Chalk Creek Coal Company, owning property near Coalville, did some development work in its mines during the year, but did not market much coal. The Fair View Mining Company which owns a 12-ft. vein of coal of excellent quality about thirteen miles east of Fair View at the north end of the St. Pete Valley, produced about 4,000 tons of coal, which was entirely consumed in the immediate neighborhood. This mine is located on a large seam of coal, but there being no railway to it only a small output is now being made.

THE TUCKER SWIVEL CLAMP DRILL.

A portable drill is always a useful tool in shop or factory; the necessary features in such a tool are lightness, with as large a range in the drilling capacity as possible. The accompanying illustration shows a drill which is being introduced by C. H. Tucker, Jr., & Brother, of New York, which is constructed and operated as follows: The standard is arranged with a clamp having a large opening, but is adjustable to the thickness of sheet iron. The cross arm contains the driving shaft, with a handle in the end, adjustable to various lengths, thus altering the leverage. The cross arm is fastened to the standard by an adjustable clamp, which allows the drill



shaft to operate at any required angle as well as a radial movement on the standard.

The driving shaft is geared to the drill spindle, on which the pinion is movable. The upper part of the spindle is threaded and answers for feed. This spindle has a socket which can receive a drill with 1/4-in. shank. The drill is capable of doing work from under 1/4 in. to a depth of 4 in., and at any angle. The advantages claimed for this tool are its extreme lightness, strength and adaptability to small work as well as its arrangement for clamping and its comparative cheapness.

British Metal Exports in 1891.—The British Board of Trade figures just issued show, as was expected, a considerable falling off in 1891 from those of 1890, due, undoubtedly, to the operations of the McKinley Bill and the closing of certain South American ports. The following is a tabular statement and comparison of the exports of iron, steel, coals and copper:

	Month of December.		Twelve Months.	
	1891.	1890.	1891.	1890.
Pig and puddled.....	£150,561	£168,696	£2,209,609	£3,438,568
Bar, angle, etc.....	113,283	172,841	1,461,174	1,658,800
Railroad.....	197,714	382,036	3,844,925	5,981,689
Cast and wrought.....	400,332	448,743	4,805,881	5,965,573
Hoops, sheets, etc.....	278,186	329,079	3,560,476	3,840,142
Unwrought steel.....	171,243	145,582	1,753,186	1,902,308
Unwrought copper.....	131,511	263,690	1,874,585	2,629,214
Coals, etc.....	1,420,859	1,535,230	18,894,719	19,020,263

THE MINERAL STATISTICS FOR 1891.

What is said of the annual statistical number of the ENGINEERING AND MINING JOURNAL:

Robert F. Hill, House of Representatives, Washington, D. C., says: "Permit me to thank you for the able review of the mineral statistics of the United States. It was a magnificent exhibition of private enterprise."

Professor William Allen Smith, of the Columbia College, School of Mines, New York City, says: "I tender you my congratulations on your Statistical Number. It is away beyond even your own brilliant achievements of past years."

Robert W. Hunt, President of the American Society of Mechanical Engineers, says: "You certainly have reason to feel very proud of this Statistical Number, which represents an immense amount of work and will constitute a most valuable reference book."

Professor Dr. George Lunge, of the Technisch-Chemisches Laboratorium, Zurich, Switzerland, says: "I have just received your Statistical Number, and I must again congratulate you upon the wonderful energy displayed in compiling that record—a feat altogether unparalleled, to the best of my belief."

Major S. G. Brock, Chief of the Bureau of Statistics, Washington, D. C., says: "Let me return my sincere thanks to you for your kindness in sending us an additional copy of your Statistical Number. It is a valuable statement for the year 1891, and we will probably have occasion to refer to it often."

Col. H. G. Prout, editor of the *Railroad Gazette*, New York, says: "Your Annual Statistical Number is certainly an extremely valuable and useful work and it reflects great credit upon the organization of your office that you were able to collect such a mass of statistics and bring them out so promptly."

A. Hanauer, President Hanauer Smelting Works, Salt Lake City, Utah, says: "I beg to acknowledge the receipt of the extra copy of your annual Statistical Number, for which accept my thanks. The work has been ably and conscientiously performed, and should be appreciated by all who are interested in the subjects covered."

Wm. H. Wiley, Treasurer American Society of Mechanical Engineers, New York City, says: "As to your Statistical Number I want to congratulate you on the great enterprise shown in the collection of so many and such valuable facts. This paper is, itself, worth a year's subscription to the ENGINEERING AND MINING JOURNAL."

William L. Saunders, the well known engineer of the Ingersoll-Sergeant Rock Drill Company, of New York, says: "This valuable compendium of mining news has long ago become a standard, and occupies a position in the library like that of an encyclopedia or a dictionary. It is more than either, because it is new and well up to date."

J. B. Haggin, of the Anaconda Mining Company, of Montana, says: "Many thanks for your kindness in sending me your Annual Statistical Number, which I have examined with great interest. I appreciate that the contents were a matter of great labor and trouble and it is of inestimable value to the copper producers as well as the copper trade."

Stuart W. Cramer, Assayer in charge of U. S. Assay Office, Charlotte, N. C., says: "Permit me to congratulate you upon the past year's work of the journal, to which the Annual Statistical Number is a fitting climax. This number is an invaluable addition to any library, and is certainly the most enterprising specimen of journalism I have ever seen."

James Douglas, President of the Copper Queen Consolidated Mining Company, of Arizona, says: "There can be only one opinion as to the value of your Annual Statistical Number to all engaged in the metal trade, and as to the immense enterprise, energy and skill you have shown in collecting such a body of statistics and publishing them almost the very day to which they apply."

Arthur Winslow, State Geologist, Jefferson City, Mo., says: "It seems to me there is only one opinion to be offered concerning your Annual Statistical Number and that is that it is a valuable work of reference and that it reflects great credit upon the ENGINEERING AND MINING JOURNAL, either when the character of the contained material is considered or when the surprising promptness with which you have issued these results is recognized."

M. C. Hlseng, Professor of Mining, State School of Mines, Golden, Colo., says: "The Annual Statistical Number for 1892 arrived yesterday and I cannot but address you with a letter with my humble commendation of your work, and must at the same time express my admiration for the elaborate work which was completed so promptly with the closing of the year. May you financially reap the reward which you certainly are enjoying technically."

W. D. Lawton, Commissioner of Mineral Statistics of Michigan, says: "I think very highly of your Statistical Number. It is a volume of great value. This one I think is exceptionally good; though all your annual reviews are nearly indispensable. Every mining man of intelligence that I know of appreciates them, and keeps them for reference. It is a great undertaking to collate so much statistical matter, and you accomplish it admirably. I don't see how the mining world would get on without them now."

William H. Thurstone, Secretary of the Board of Trade, Buffalo, N. Y. says: "The varied statistics of the mineral products of the United States published in the January 2d number of the ENGINEERING AND MINING JOURNAL have been accorded by the unanimous opinion of all parties by whom the compilation has been seen in Buffalo the greatest praise for its methods, work and results, accompanied with hearty good wishes for the future prosperity of the JOURNAL. This expression must be gratifying to all connected with the publication."

R. A. F. Penrose, Jr., of the Geological Survey of Arkansas, says: "Please allow me to add my congratulations to the many that you must receive on this Annual Statistical Number. I consider it one of the most wonderful editorial feats ever performed in this country or abroad. That full and reliable statistics of the varied mining in-

dustries of the greatest mineral producing country in the world can be compiled, published and issued two days after the year in question has closed, is a feat that would have been declared impossible by statisticians had not you proved its practicability. . . . You have conferred a benefit of inestimable value on the thousands interested in the mineral development of our country, and have made the JOURNAL indispensable to all interested in mining and manufacturing industries."

Production of Connellsville Coke in 1891.—The Connellsville *Courier* states that the production of coke in the Connellsville region in 1891 amounted to 4,929,960 net tons, against 6,221,518 net tons in 1890, a decrease of 1,291,558 net tons.

Locomotive Building in 1891.—Reports from the leading locomotive works show 2,153 locomotives built in 1891, as against 2,240 in 1890 says the *Railroad Gazette*. Up to December 31st the Baldwin Locomotive works built 918 locomotives, 85 less than in 1890.

Iron Ore Production of Luxemburg in 1890.—Statistics have just been published of the mining production of the Grand Duchy of Luxemburg in the year 1890. There were 3,359,413 tons of iron ore extracted, of a total value of 8,248,291 francs, or an average of 2.44 francs per ton; 4,186 workers contributed to this production. The increase, in comparison with 1889, was 188,795 tons, or 6%.

A New Blowpipe.—At a recent meeting of the *Academie des Sciences*, according to the *Building and Engineering Journal*, M. Paquelin exhibited a new blowpipe of a single tube, connected by an india-rubber tube with a carburetor. A cylinder of wire gauze prevented the flame from reaching the carburetor. The air of a bellows regulated by stop-cocks fed the flame, part of it going through the carburetor, which contained a mineral essence. The maximum heat of the flame was obtained when it was of an indigo blue color, showing a complete combustion of the carbon, and its temperature was then sufficient to fuse platinum, that is to say 1800° C.

The Real Inventor of Telegraphy.—According to a writer in the *Popular Science Monthly* for February Weber was the first who established a permanent workable telegraph line, and thereby demonstrated the practical value of the electric telegraph. Weber's house in the city was connected with the astronomical and magnetic observatories by a line between three and four kilometres (over two miles) in length. The signals were made by the deviations of the needle of a galvanometer to the right and left and were interpreted according to a conventional alphabet. The use of interrupted or reversed currents did not permit the transmission of more than one or two words a minute, but the speed was increased to seven or eight words by the use of induced currents. The following first notice of this telegraphic connection was published in one of the numbers of the *Göttingen Gelehrten Anzeigen* (or Göttingen Scientific Notes) for 1834: "We can not omit to mention an important and, in its way, unique feature in close connection with the arrangements we have described [of the Physical Observatory], which we owe to our Professor Weber. He last year stretched a double connecting wire from the cabinet of physics over the houses of the city to the observatory; in this a grand galvanic chain is established, in which the current is carried through about nine thousand feet of wire. The wire of the chain is chiefly copper wire, known in the trade as No. 3. The certainty and exactness with which one can control by means of the commutator the direction of the current and the movement of the needle depending upon it were demonstrated last year by successful application to telegraphic signaling of whole words and short phrases. There is no doubt that it will be possible to establish immediate telegraphic communication between two stations at considerable distances from one another."

DIVIDENDS PAID BY MINING COMPANIES DURING JANUARY AND FROM JANUARY 1ST, 1892.

NAME OF COMPANY.	Paid in Jan.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in Jan.	Paid since Jan. 1st.
Adams, Colo.	\$7,500	\$7,500	Homestake, S. Dak.	\$12,500	\$12,500
American-Nettle, Colo.	15,000	15,000	Lexington, Colo.	3,000	3,000
Argyle, Colo.	10,000	10,000	Maryland Coal, Md.	42,000	42,000
Bald Butte, Mont.	5,000	5,000	Maxfield, Utah.	9,000	9,000
Best Friend, Colo.	10,000	10,000	Minnesota Iron, Minn.	210,000	210,000
Centennial-Eureka, Utah.	30,000	30,000	Mollie Gibson, Colo.	100,000	100,000
Colorado Central, Colo.	13,750	13,750	Morning Star D., Cal.	3,600	3,600
Daly, Utah.	37,500	37,500	Napa, Cal.	10,000	10,000
Deadwood Terra, S. Dak.	10,000	10,000	Ontario, Utah.	75,000	75,000
De Lamar, Idaho.	72,000	72,000	Pandora, Mont.	3,000	3,000
Eureka Con., Nev.	12,500	12,500	Parrott, Mont.	18,000	18,000
Franklin, Mich.	80,000	80,000	Rialto, Colo.	4,500	4,500
Golden Reward, S. Dak.	5,000	5,000	Standard, Cal.	10,000	10,000
Hecla Con., Mont.	15,000	15,000	United Verde, Ariz.	30,000	30,000
Helen & Frisco, Mont.	20,000	20,000	W. Y. O. D., Cal.	3,000	3,000
			Yosemite No. 2, Utah.	5,000	5,000

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects issued by the United States Patent Office:

- TUESDAY, February 2d, 1892.
- 468,063. Amalgamating Silver Ores. Alexis Janin, San Francisco, Cal.
 - 468,066. Separator. Fairfax H. Wheelan, Santa Barbara, Cal.
 - 468,109. Conveyor. Charles W. Hunt, West New Brighton, N. Y.
 - 468,148. Process of Separating Aluminum. Charles S. Bradley, New York, N. Y.
 - 468,216. Apparatus for Manufacturing Oxides of Metals. William H. Birge, Franklin, Pa.
 - 468,219. Composition of Matter and Process of Preparing Comminuted Iron Ore. Gurdon Conking, Glens Falls, N. Y.
 - 468,247. Machine for Washing and Grading Gravel. Nathan Jewett, Chicago, Ill.
 - 468,251. Picking Table for Ore-Washers. Henry G. Merry, Low Moor, Assignor to George B. Gaines, Richmond, Va.
 - 468,290. Concrete Mixing Machine. William C. Barr, Jersey City, N. J., Assignor to the Cockburn Barrow and Machine Company, same place.
 - 468,292. Method of Casting Iron Pigs, Ingots, etc. James W. Cole, St. Louis, Mo., Assignor, by direct and mesne assignments, to the Fortimolite Metal Company, of Illinois.
 - 468,293. Construction of Buildings. Rafael Guastavino, New York, N. Y., Assignor to the Gustavino Fire Proof Construction Company,

PERSONALS.

Dr. R. A. F. Penrose, Jr., late of the Arkansas Geological Survey, and now of Philadelphia, was a visitor in this city this week.

Mr. Britton Davis, general manager of the Corralitos Mining Company, of Chihuahua, Mexico, is visiting New York, on business for the company.

Mr. A. W. Jenks, the assistant superintendent of the Chicago and Aurora Smelting and Refining Company, of Aurora, Ill., is at present in this city.

The *Tradesman*, of Chattanooga, Tenn., issued a very creditable annual number on January 1st, in which the various industries of the South are treated in elaborate reviews.

Mr. T. S. Ash, president of the Cumberland Mining and Smelting Company, has assumed the management of the mine and smelter of the company at Castle, Meagher County, Mont.

Messrs. Francis T. Freeland, C. T. Moore and Louis Rucker, mining engineers, of Leadville, Colo., are in Aspen working on the Johnson-Della S. suit which comes up for trial this month.

Mr. E. E. Olcott, the well known mining engineer and metallurgist of this city, has just returned from the West where he went to examine the Bunker Hill & Sullivan mines of the Cœur d'Alene district, Idaho.

Mr. John C. P. Randolph, the well known mining engineer of New York, left last Saturday for Mexico, and will be absent a few months. He can be addressed, care Fraser & Chalmers, 2da de Plasseras No. 10, City of Mexico.

Mr. C. A. Wright, general manager of the Mineral Range Railroad, the Hancock & Calumet Railroad, and otherwise prominently identified with the mining and financial interests of Houghton County, Mich., is a guest at the Holland House in this city.

Mr. Andrew Carnegie will speak on Sunday evening, the 7th inst., at the Church of the Divine Paternity, Fifth avenue and Forty-fifth street, New York. His subject will be "Young Men and Business Life, or the Gospel of Wealth," this being the first of a series of five consecutive Sunday evening lectures to be given especially to young men, at this church.

Prof. John C. Branner, director of the Geological Survey of Arkansas, has gone to Leland Stanford University, Menlo Park, Cal., to assume the chair of geology. The work of the Arkansas Geological Survey remains in his charge, however. Its field-work is about completed, we are informed, and the reports will be finished by Professor Branner at his new home.

Mr. W. F. Robertson, who is well known in connection with the Boston & Montana, the Tamarack and Osceola mines and the Orford Copper Company, has become associated with Mr. Fred F. Hunt, assayer and chemist, No. 77 Pine street, New York, and the business of the firm will now include all the branches of mining engineering and metallurgy, the erection of copper and other plants, etc. The firm will be known as Hunt & Robertson.

The President has designated Hon. Wm. B. Allison, of the Committee on Finance, U. S. Senate; Hon. Chas. Tracey, Committee on Coinage, Weights and Measures, U. S. House of Representatives; Wm. M. Newhall, Esq., California; Prof. W. H. Chandler, Pennsylvania; Geo. R. Gibson, Esq., New York; Prof. I. C. White, West Virginia; Geo. A. Garretson, Esq., Ohio; Andrew B. Hammond, Esq., Montana; H. W. Yates, Esq., Nebraska; Henry W. Cannon, Esq., New York; Prof. Chas. E. Monroe, Rhode Island; Alfred Eoff, Esq., Idaho; Gen. Jasper Packard, Indiana, and Gen. John T. Wilder, Tennessee, as commissioners to examine, test and report on the weight and fineness of the coins reserved at the several mints during 1891, in addition to the above named. Judge Wm. Butler, of the United States District Court, Eastern District Pennsylvania; Hon. E. S. Lacey, Controller of the Currency, and Dr. H. G. Torrey, U. S. Assayer, New York, are made *ex-officio* members of the commission. The official duties of the commission require it to meet at the mint in Philadelphia the second Wednesday in February, and there to test the various coins in presence of the Director of the Mint. The coinage of the mints for 1891, which this commission is to test, aggregates 118,091,470 pieces, of the face value of \$53,053,302.60. The number of pieces reserved for the test by the commission is 28,313, all gold and silver coins.

OBITUARY.

Thomas Burke, an old Comstock miner and ex-president of the Gold Hill Miners' Union died in Virginia City, Nev., on the 26th ult., from the results of an accident in the Utah mine.

Bishop John Sharp, of Salt Lake City, formerly vice-president of the Utah Central and a director of the Union Pacific, died December 20, aged 71 years. He was president of the Tintic Iron Company and otherwise prominently connected with Utah enterprises.

Robert Wallace, president and manager of the R. Wallace & Sons Manufacturing Company, of Wallingford, Conn., died at that town on January 1st, 1892. He was the founder of the German silver industry in this country, purchasing the secret of that alloy some sixty years ago.

Thomas York, for 12 years foreman of the mines of the Colorado Smelting and Mining Company, died at Butte, Mont., on January 28. Mr. York was a native of the Isle of Man, but had worked for many years in the coal mines of Lancashire and afterward at Wilkesbarre, Penn.

Richard H. Bull died in New York on the 1st inst., of liver complaint at his home, No. 34 Gramercy Park. He was born in this city in 1817. When 17 years old he entered the University of the City of New York. He was graduated in 1837, and entered the Union Theological Seminary to prepare for the ministry, but stayed only a year and became tutor, and later professor of mathematics in the university. He remained in the university until 1835, when he was made professor emeritus and received the degree of doctor of philosophy. He was the first mathematician to put into practice the plan of obtaining true time by the sun. He supplied the New York Central Railroad Company with correct time for many years. In 1860 Professor Bull was made president of the New York Savings Bank at Eighth avenue and Fourteenth street, a position he held until a few years ago. He spent the last years of his life writing a book on the subject of the six days of creation, to which he applied mathematics and astronomy in his reasonings. His book is about to be published.

SOCIETIES.

At the next meeting of the Society of Electrical Engineers, to be held the last of February, at Buffalo, N. Y., the subject of electric transmission of power will be discussed. It is stated that the question will be handled by three eminent engineers, each one taking a different stand.

The Illinois Society of Civil Engineers and Surveyors held its seventh annual meeting during the past week. The election of officers for the society for the ensuing year was held in the evening, resulting as follows: President, Samuel S. Greeley, Chicago; Vice-President, J. D. Stanford, Chatsworth; Executive Secretary and Treasurer, Samuel A. Bullard, Springfield; Recording Secretary, Charles M. Rickard, Springfield; Executive Board, A. N. Talbot, Champaign, chairman; F. C. Rositer, Chicago; D. W. Mead, Rockford, and the president and executive secretary.

The American Institute of Mining Engineers will hold its 61st meeting at Baltimore, Md., beginning Tuesday evening, February 16th, 1892. J. W. Tyson is the chairman of the local committee, and J. Harry Lee, 33 South Gay street, Baltimore, is the secretary. The sessions will be held at the Johns Hopkins University. The following provisional programme is announced: *Tuesday Evening*.—Opening session. Addresses of welcome by the chairman of the local committee, the Mayor of Baltimore and the president of Johns Hopkins University. Also the presidential address by President John Birkinbine, and a paper by George F. Kunz, New York City, on "The Mining of Gems and Other Minerals in Hungary, Bohemia and Russia," which will be illustrated with lantern views. *Wednesday*.—Sessions, morning, afternoon and evening, for the reading and discussion of papers. *Thursday*.—Excursion to Annapolis, reception by His Excellency the Governor of Maryland, and visit to the United States Naval Academy. In the evening a subscription dinner at the Hotel Rembert. *Friday*.—Excursions to the Sparrow's Point Steel Works, and to various points of interest on the harbor, including Rasin Fertilizing Works, Oil Refineries, Baltimore Copper Smelting Works, Chesapeake Pottery and the Columbia Iron Works. *Friday Evening*.—A concluding session if the business of the meeting should require it. *Saturday*.—Short excursions to the Belt Line Tunnel and the Loch Raven Water-Works.

INDUSTRIAL NOTES.

The International Steel Post Company, of Chicago, Ill., capital \$500,000, has been organized to manufacture and sell metal posts.

The Bessemer Rolling Mill, at Birmingham, Ala., which was recently sold by a decree of court to Morris Adler and others, will soon recommence work.

The stockholders of the Hudson Tunnel Company held their annual meeting in the Mills Building, this city, on the 3d inst., and re-elected the old board of directors.

Messrs. F. D. Cummer & Son, of Detroit, Mich., have sold one of their dry process plants for the drying, calcining and purifying of pebble phosphate, to the North Carolina Phosphate Company, of Raleigh, N. C.

The Edgar Thomson Steel Works, of Braddock, Pa., now hold the record for making steel rails. In 24 hours, ending at 6 A. M., January 21st, 1,977 tons of rails were turned out. The works were operating on 70-lb. rails, and made a total of 6,195 in the day.

The stockholders of the Thompson Glass Works recently reorganized in Uniontown, Pa. Thomas J. Miller was elected president, William Clark secretary, and Charles Zimmer treasurer. The capital stock was increased to \$80,000, \$40,000 of which has already been taken.

Thomas Carlin's Sons, of Allegheny, Pa., have issued for the trade a general catalogue of their different lines of manufacture. Its pages are principally devoted to the description of hoisting appliances, engines, and fittings for the same, while the lesser part is used to illustrate and describe their latest machines and supplies as used in brick-making, grinding, wet and dry, and tools used by mechanics, miners and brickmakers.

The Joseph Dixon Crucible Company, Jersey City, N. J., has during the past year made extensive alterations in its plant, so that it is now in better position to supply its products than ever before. The company was established in 1827 by Joseph Dixon, who at that time began the manufacture of black lead crucibles. The Joseph Dixon Crucible Company mines as well as imports graphite. Its mines are located at Ticonderoga, N. Y.

The Norwalk Iron Works Company, of South Norwalk, Conn., has issued a new catalogue for 1892, which illustrates the different styles of air compressors manufactured at its works, and also contains quite an extensive treatise on air compression. It gives the variations of temperature and changes in frictional resistance under different pressures in tabulated form; also other data of interest to users of compressed air.

Fraser & Chalmers (Limited) is about to fit up the foundry and boiler shop and pattern shop in its Twelfth street, Chicago, works with an electric power plant. The equipment will consist of two 80 kilowatt generators, one 25-H.P. eight 10-H.P. and eight 5-H.P. motors, distributed throughout the various buildings. The generators and motors will be wound for 250 volts. One advantage which is expected to be derived from the use of this potential is that while the electromotive force on the motor circuits will be kept down below any possible danger mark, yet by connecting the two dynamos in series a pressure of 500 volts will be obtained, which will permit of testing the various electrical machines, the motors for which are usually wound for the higher potential.

The Pelton Water Wheel Company informs us that it has made the following sales of its water wheels and motors recently to mining companies: Two motors to the Candalaria Mining Company, Mexico, to run electric generators under 1,100 ft. head for a Thomson-Van Depoele electric drill plant; one 4-ft. wheel and one motor to run machinery at the Hackberry mines, Ariz., under 400-ft. head; one 4-ft. wheel to the Georgia Marble Company; three 8-ft. wheels to the Anaconda Smelting Company, of Mont.; one 6-ft. wheel to the Gold King Mining Co., Telluride, Colo.; one 3-ft. wheel for an electric transmission plant to the Belmont Consolidated Mining Company, of Telluride, Colo.; two motors for the DeBeers Consolidated Mines, Limited, of the Transvaal, South Africa; one 8-ft. wheel for running a silver mill at Lewis, Nev.; one 6½-ft. special wheel for the John D'el Rey Mining Company, Brazil.

The Multiple Speed Traction Company, of Chicago, Ill., has established a New York office at 140 Nassau Street, where an application of its multiple speed system may be seen, applied in the form of an endless train or sidewalk, operated as follows: Running on an endless track is an endless line of trucks, similar to an ordinary railway truck, having a platform built on them, and overlaps a stationary platform on its outer periphery. Another platform is built having two rails arranged to bear on the circumference of the trucks. This platform overlaps the truck platform. The entire belt of platform being started, the first, or truck platform, runs three miles an hour; the second platform runs six miles an hour, or as fast as the circumference of truck wheel; thus a person may step from a certain point to platform number one, and he moves at the rate of three miles per hour; from this to number two and he moves six miles an hour. This allows of an endless train which passengers can board or leave without train stopping. A track 900 ft. long is now in operation at the World's Fair Grounds, Chicago.

WORLD'S FAIR NOTES.

The Thomson-Houston Electric companies are planning to make a united exhibit at an expense of \$500,000. They want to occupy 20,000 sq. ft. of space.

The fine geological collection made by the late Prof. Worthen, State Geologist of Illinois, will form part of the Illinois exhibit at the Exposition. The State World's Fair Board has purchased it for \$8,000.

The United States Potters' Association has applied for 32,000 sq. ft. in the Manufactures Building, and announces its intention of making an exhibit that will not be surpassed by any showing made by the famed potteries of Europe.

The London Polytechnic Institute expects that its plans for bringing artisans and others of limited

means to the Exposition will result in enabling 1,500 or 2,000 such persons to visit Chicago at a total expense of something like \$125 or \$130 each for the round trip.

The Chemical National Bank, of Chicago, has been granted the privilege of establishing and operating a bank on the Exposition grounds. It will afford to exhibitors and visitors all the conveniences and safeguards of a metropolitan bank, including safety deposit vaults.

The Lord Mayor of London, it is announced, will form a committee to raise the sum necessary to send to the Exposition a selected number of representative workmen from London, with a view of their making reports on the industrial exhibits there. Similar action was taken in case of the last two Paris Expositions.

EXPORT NOTES.

Consul Smithers, at Osaga and Hiogo, writes to discourage the shipment of commercial phosphate to Japan for fertilizing purposes, as the Japanese have their own domestic system of fertilization, which is satisfactory to them. He adds that the duty on all imports into Japan is five per cent. *ad valorem*.

The official returns of the commerce of Argentina for the nine months ending September 30th, 1891, show an enormous falling off from the imports during the same period of the previous year. The average decrease is 55%, but the largest decrease is found in luxuries and wearing apparel. The fall in wines and liquors is more than 75%. The customs duties collected during the first nine months of 1891 were 30% less than those collected during the corresponding period of the previous year, although there had been an increase in the tariff on many articles.

The Government of Peru has issued the following new regulations concerning the making out of consular invoices: In the case of paints, oils, etc., the quality and class must be expressed, and the weight of each drum, keg, barrel or tin given; nails, screws and the like are to be entered according to the weight of each package, stating their quality; needles, pins, hooks, etc., curtain and picture nails, must be entered per number of grosses, and their quality described; in the case of machinery of any kind, where several parts constituting one whole are packed into different packages, it is not necessary to give the contents of each, but simply to state the number of parts of the machine contained in each package, with the gross weight of each package, and the value of the whole invoice; but when the several different machines or tools or utensils are packed into one case, then the contents must be detailed and the value of each packet given; in all cases the weight in kilogrammes and value of each package must be declared on the invoice; it is recommended that shippers be careful to detail, as far as possible, the goods invoiced.

The Bureau of the American Republics announces that there will be held an exposition in Quito, Ecuador, which will open in the latter part of March. The exposition will afford an opportunity for the display of manufactures in a market that is now practically unoccupied; particularly is this so in respect to the smaller articles of agricultural implements, in which so great progress has been made. Axes are unknown in that country, the natives using the *machetes* or long cane knives; hoes, rakes, spades, small hand mills, plows, cultivators, and all the other articles exhibited in such great profusion at agricultural fairs, if sent to Quito under the charge of persons competent to explain the manner in which they are used, would doubtless open the way to a large and remunerative trade. Manufacturers of light but strong wagons, harness, etc., will find here a practically open field that by proper presentation may be made to yield handsome and increasing profits. The authorities in Ecuador would be particularly pleased to see at this exposition a compact but comprehensive collection of labor-saving and improved agricultural implements.

Commercial Agent Loomis, at St. Etienne, France, recommends that the American shipper look somewhere else in France than to Paris alone. For the rich valley of the Isère, for example, he recommends agricultural implements, more especially plows and plow points. Harrows, reaping and mowing machines, also, he thinks, might find some sale. In Southeastern France, where there is a cold winter lasting from three to five months, there are no facilities for keeping warm except small grates and stoves. Such heating apparatus as we are accustomed to in this part of the world is almost or quite unknown there, and Mr. Loomis believes that there would be a good demand for American improvements in this line if once well introduced. The building hardware throughout France is of old and clumsy patterns, and our tasteful designs in knobs, locks, bolts, hinges and window fastenings would be likely to become popular. It is said that outside of Paris and Nice there are not 300 houses and hotels supplied with sanitary plumbing. English plumbing has got some foothold in France, but there seems to be an opening for American products in this line. The elevators in general use

in France are poor, unsafe and slow. The few lightning rods seen there are of obsolete pattern. There seems to be a demand for such shoe and glove fastenings as we make, specially since we have apparently a better notion of the importance of promptness in filling an order than the French manufacturers.

Consul Croft, at Cartagena, Colombia, reports American enterprise as already making itself felt there in many channels. There is an American railway in process of building to connect Cartagena harbor with the Magdalena River, the chief commercial artery of the interior of the country. An American company has obtained a concession and begun sinking artesian wells. Another American concern has launched a fine steamboat, and another is establishing an electric plant. What is still needed, however, seems to be the introduction of American manufactures generally. The consul proposes, instead of sending out traveling agents, with all the attendant expense and inconvenience, that a number of American producers combine to set up a permanent exhibition of their wares at Cartagena, whither the merchants from the interior continually come to purchase their supplies. If 50 houses would combine, he thinks that the total expense, including rent, furniture, clerical help, freight and tariff charges and advertising, need not exceed \$250 a year to each. He also gives the following list of articles which might be tried on the Colombian market: Barley, biscuits, in tin cases of from 1 to 5 lbs.; cheese, condensed milk, confectionery, corn, crackers and hard bread in cases; flour in half-barrels and 100 lb. sacks, hams, medium size, onions, pickles in glass jars, canned beef, one-pound packages preferred; rice, salted meat, caustic soda, Florida water, lubricating oil, paints, perfumery, poison for hides, toilet soap, varnish, white lead, yellow ochre, etc.; bottles, demijohns, lanterns, lamps and chimneys, mirrors; anchors, anvils, axes of best quality, hobs and chains, copying presses, letter size; cutlery, files, firearms, flatirons, hinges, locks, *machetes*, nails, picks, safes, small and medium sizes; scales, hardware, sewing-machines, shovels, carpenters' and blacksmiths' tools, and wire fencing; harness, saddlery, leather, baskets for market and office use, blacking, brooms, brushes, carriages and carts, cement, cordage, rope, kitchen utensils, printers' ink, rosin, vegetables and seeds, slates and pencils, tallow, tar and pitch, velocipedes, strong wheelbarrows, pianos, organs, hand instruments, blank hooks, full assortments and grade, etc.; cigarette paper, envelopes, music, printing paper, sandpaper, wall paper, wrapping paper, writing paper, paper bags, furniture, light and inexpensive, without glue; artists' materials, moldings and frames.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

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

Any one wishing to communicate with the parties whose wants are given in this column can obtain their 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 goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

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

GOODS WANTED AT HOME.

2,549. A second-hand planer capable of taking in not less than 75 in. or any width up to 120 in. Illinois.

2,550. Butter tub or pail machinery. Virginia.

2,551. Catalogues of mining machinery and supplies. New Mexico.

2,252. An engine and boiler from one to five horse-power, oil or gasoline burner preferred. Texas.

2,553. Machine to make small flower pots. Texas.

2,554. A system of water-works of sufficient capacity to supply a city of 2,000 inhabitants so arranged that the capacity can be increased when it becomes necessary to do so. A stand pipe of sufficient size and about 10,500 ft. of mains will be required. Stand pipe will be located on hill 75 ft. high and within 600 ft. of main. Water convenient. Kentucky.

2,555. Acetic acid in large quantities. District of Columbia.

2,556. A steam engine and boiler, galvanized iron pipes, corrugated iron, hark mill, pump and other material generally used in the construction of a tannery. Texas.

2,559. A good second-hand tripod suitable for "Ingersoll steam rock drill." North Carolina.

2,560. Barb wire for fencing. North Carolina.

2,561. A small engine and saw-mill. Tennessee.

2,562. Shingle machine. Tennessee.

2,563. Two second-hand drills for working in marble quarry, one tripod and one bar drill; must be in good order. Tennessee.

2,564. Gin press, pulleys and belting. Georgia.

2,565. A plate planer, steam riveter and power blacksmith hammer, Illinois.

AMERICAN GOODS WANTED ABROAD.

2,517. Fancy brass work ornaments for brass bedsteads. Mexico.

2,518. A machine for hending 1/2-in., 3/4-in. and 1-in. gas piping. Mexico.

2,528. Sea Island cotton gins and presses. India.

2,529. Linseed, castor, ground wet crushing, and other oil making machines. India.

2,530. Machines for pressing or forming oil cake. India.

2,556. Machinery for a mine, including a 25-H. P. and a 40-H. P. wood burning boiler on skids; a horizontal plunger pump 250 gallons per minute. tank of 40,000 gallons capacity; and 4,000 feet 4-in. wrought iron piping. South America.

2,558. Catalogues of water wheels, gigs, concentrators, wire tramways, chain elevators, calciners and electric mining machinery. Tasmania.

GENERAL MINING NEWS.

ALABAMA.

WALKER COUNTY.

ANNISTON COAL COMPANY.—The organization of this company, with a capital stock of \$250,000, was completed at Birmingham on January 1st. The principal incorporators are Victor Gage, T. T. Leathe, Joseph F. Johnson, E. W. Rucker, J. R. Ryan and others. Victor Gage is president, and J. R. Ryan, general manager. The company has purchased several hundred acres of valuable coal lands in this county, where mines are being opened on an extensive scale. J. R. Ryan is also general manager of the Virginia & Alabama Coal Company.

ARIZONA.

PIMA COUNTY.

A tunnel to facilitate the extraction of ore from the Quijotoa mines, which at present is carried out on the backs of Indians, will be begun; in the meanwhile mining has stopped. One hundred and twenty-five tons were crushed by the mill last week, averaging \$32.80. Bullion shipped, \$5,990.37; on hand, \$2,800.

MOHAVE COUNTY.

GOLD MINING COMPANY.—The mines of this company in the Music Mountains, near Hackbery, in which work was begun late November, after a long rest for want of water, are holding their own beyond all expectations. The last week's report of the general manager shows that there was 300 tons of \$40 ore in the bins. The single Wiswell mill is running continuously with abundant water, and a new mill is en route. "The Gold Mining Company" is a re-incorporation of the former "Music Mountain Gold Mining Company," organized under the laws of West Virginia in which General Rosecrans, ex U. S. Senator Mahone, U. S. Senator Butler, Col. Canaday (ex-sergeant at arms of the Senate), were understood as holding at one time large interests. It is now under new and more vigorous auspices it seems, and the stock is mainly owned by enterprising men of Maryland and Washington. The capital is \$625,000, divided into the same number of shares of the value of \$1 each, the same being fully paid and unassessable. The president is Dr. Benj. W. Browne, of the Surgeon-General's Bureau of the War Department, and the Secretary is L. K. Brown, Esq., Chief of the Paymaster's Division of the 4th Auditor's Office of the Treasury; the General Manager at the mines is Charles W. Cunningham. Within the past year the new company has lifted most of the obligations of the mine, which accrued under the old management, and the next "clean-up," it is thought, will land the corporation clear of all debts, and something over.

CALIFORNIA.

(From our Special Correspondent.)

SAN FRANCISCO, Jan. 28.

At a meeting of the executive committee of the River Convention and a committee from the Mining Convention, held at Sacramento this week, a basis of agreement was arrived at for the future. The Miners' Committee agreed to issue a public announcement to the effect that hydraulic mining should be discontinued, or not be resumed, until the Government has progressed with the work, according to the plans of the War Department engineers, so as to insure the streams against damage from debris. In the event of anyone hydraulicking within the period he will have to stand alone without support from the miners represented in the recent convention. The delegates of the convention to Washington have already gone thither, and will there receive the active support of the senators and representatives from this State. For the first time in many years the people here generally have awakened to the fact that a

great injustice has been done by the suppression of hydraulic mining, and the prospect of its resumption is eagerly anticipated. Some further idea of the magnitude of the interests involved may be formed when the cost of the immense reservoirs constructed by some of the companies is remembered. These reservoirs, constructed chiefly for hydraulic mining on the Yuba, Bear, Feather and American Rivers have an aggregate capacity of 50,000,000,000 galls. The source of water supply of the North Bloomfield Gravel Mining Company, the Milton Mining & Water Company and the Eureka Lake & Yuba Canal Company is about the headwaters of Big Cañon Creek and Middle Yuba River in Nevada and Sierra counties. The catchment area is 68.6 sq. miles. The 11 principal reservoirs vary in area from 10 acres to 487½ acres (high water area) each, and have a capacity of from 2½ to 736,700,000 cu. ft. The total area of the reservoir of these companies is over 11,600 acres, with a total capacity of over 2,195,000,000 cu. ft. A cursory examination reveals the fact that over \$12,478,000 has been expended by the principal ditch and water companies, and this amount does not include the expenditures of the Bloomfield and several other of the principal companies. These works have been practically idle for years. The amount of auriferous gravel workable, as estimated by the commission, is as follows: North Yuba watershed, 90,000,000 cu. yds.; Middle Yuba watershed, 140,000,000; South Yuba watershed, 560,000,000; Deer Creek watershed, 25,000,000; below the forks of the Yuba, 40,000,000; Bear River region, 157,000,000; American, above the forks, 105,000,000; total, 1,117,000,000. Hydraulic miners estimate the average gold product to be 30 cents a cubic yard, making an estimated total of the immense sum of \$335,000,000. Should the storage dams, as recommended by the Commission, be erected, the cost, defrayed by the Federal Government, will be infinitesimal in comparison with the results obtained. The cost of the several works is estimated as follows: Feather River wing dams, \$300,000; Sacramento River wing dams, \$300,000; dam on Yuba River at De Guerre Point, \$640,000; dam on Bear River at Van Giesen's, \$150,000; Restriction works on Yuba below the foot-hills, \$300,000, and \$20,000 annually for maintaining the navigation on the Feather.

BUTTE COUNTY.

CHAMPION MINING COMPANY.—This company deserves great credit for its energy and enterprise. It not only owns and runs successfully the Champion mine, one mile west of Nevada City, but is also prospecting the Gothardt mine near the Delhi; new hoisting works have recently been erected at the Gothardt. It also owns the Jackrabbit mine, two miles east of Grass Valley, a new and very promising prospect in a section hitherto considered nearly barren. Mr. L. P. Goldstone was recently made superintendent of the Champion mines.

FEDERAL LOAN.—The Federal Loan is an old location on Deer Creek, about three miles east of Nevada City, but it is only during the last year, or rather in the last few months, that it has attained an important place among the mines of the district. It is now owned principally by the Vincent Bros., although shares are also held by other parties. The ledge is in slate near the granite contact; it is 3 ft. to 4 ft. wide and carries an immense amount of sulphurets—nearly 7%. It is stated. A 5-stamp mill has been erected and was started about three months ago. The underground developments are well pushed ahead and consist in a 400-ft. shaft with drifts on several levels. A new and very rich pay chute has recently been found on the 400-ft. level.

SHAKESPEARE.—The tunnel on this mine at Forbestown is now in 290 ft. and the ledge is 13 ft. wide, says the Oroville Register. It is rich in sulphurets and a hundred tons of ore will average about three tons of sulphurets. No work is being done at present in the Golden Queen. The Stow mill is now lighted with electricity, the dynamo being run by water power.

COLORADO.

Mineral surveys approved by the U. S. Surveyor General of Colorado during the week ending January 30th, 1892: Survey number, 7,215; land district, Leadville; name of claim, Convent; 7,298, Montrose, Royal Gorge; 7,192, Gunnison, Cloud; 7,193, Gunnison, Eclipse No. 2; 7,141, Leadville, Jew. Amended surveys: 4,352, Leadville, West Point.

BOULDER COUNTY.

It is reported that Messrs. Vider, Langridge & Brewster will erect a custom extract mill at Tiger gulch, near Boulder, which will cost fully \$25,000. The most important mines in the neighborhood are the New Enterprise, Cabin, Milan and Pleasant.

DOLORES COUNTY.

ENTERPRISE MINING COMPANY.—This company has increased its production to 50 tons per day, says the Rico News. The ore is sent to Durango, where it is sampled.

CLEAR CREEK COUNTY.

The past year at Idaho Springs has scarcely been up to the standard in point of ore shipments, but as far as the opening of new properties and the development of old ones are concerned, the year has been very successful. The total shipments

from the camp for 1891 aggregated 25,365,000 pounds. The value of the smelting ore, tailings and retorts shipped is estimated at nearly \$1,000,000.

COLORADO CENTRAL CONSOLIDATED MINING COMPANY.—The suit of John Turk vs. this company came up before the United States Circuit Court of Appeals in St. Louis on the 1st inst. In the United States Circuit Court of Colorado he has twice secured favorable decisions in this suit.

LAMARTINE.—During the year 1891 the Lamartine mine shipped 5,224,190 lbs. of ore to the Omaha & Grant smelter. In that time extensive improvements were made on the mine and in the facilities employed in extracting the ore. The main shaft was sunk 209 ft. Three new levels were started and a total of over 2,500 ft. in levels was driven. Winzes were sunk a total of over 500 ft. The present depth of the main shaft is 675 ft. An air-compressor was put in position in February and an electric plant was put in operation in May. The ore production, it is said, will be increased to 300 tons per month for the present year, beginning in February. Development work will then proceed more rapidly than it has in the past. The Lamartine is the largest producer in the vicinity of Idaho Springs, and gives steady employment to 85 men; Silas Hanchett is the manager.

EL PASO COUNTY.

A mining man says the following about Cripple Creek in the Denver Republican: "It is reached by the Midland via Florissant. There are several towns in the district already under way and the amount of work accomplished during the past 60 days in the dead of winter at an altitude of 9,600 ft. has been great. The mineral of the district is found in a porphyry belt 5 miles wide by 10 miles long, and is almost invariably gold quartz. The development of the claims up to the present time has been very limited, there being only a few properties in the district with sufficient development upon which one could base an opinion as to continuity of the veins. The Buena Vista has a 75 ft. shaft, which shows a vein of 2 ft. of high grade ore well defined, and should be a good producer. The Washington, Mary McKinnie and Blue Belle lodes also have sufficient work to show well defined veins, the latter showing an eight-inch streak of galena ore. The majority of the other locations in the camp are as yet prospects. Gold is found universally as a telluride, and is therefore refractory, requiring a smelting process for successful treatment. The district is alive with prospectors.

FREMONT COUNTY.

ROCKY MOUNTAIN OIL COMPANY.—Oil was sent through this company's new pipe line from Florence to Overton on the 28th ult. On the 29th ult. the pipe broke but was repaired, and oil now will flow freely.

GUNNISON COUNTY.

MAGNA CHARTA SILVER MINING COMPANY.—For several months a bitter war has been waged among the shareholders of this company in Cleveland, where the stock is principally owned. Mr. E. J. Farmer, of Cleveland, has been its general manager. Thus far it has been all outlay and no dividends, and many of the stockholders have become impatient. Dr. J. N. Wilson visited the mine, and on his return reported that Farmer had bought and was holding in his own name a large number of claims that would be opened by the company's tunnel, and made charges seriously reflecting on the general management of the company's affairs. A wordy war followed, culminating in a great row in the stockholders' annual meeting on the 3d inst. Each faction held a preliminary meeting, and decided on a temporary organization before they met in the company's offices on Euclid avenue. When they had gathered in the offices each refused to recognize the authority of the other, and the chairman attempted to secure order and transact business, shouting, yelling, and bitterly denouncing each other. The disorder became so great that the son of Manager Farmer, in fear of a resort to blows, rushed to the street and turned in a call for a patrol wagon. Two policemen soon appeared upon the scene and remained until semi-quietness was restored. Each faction finally took a room, elected the five directors to be chosen, and a dual organization is the result. The Farmer faction has the books, and its set of directors was sworn in. Each side made speeches before the meeting broke up, Farmer claiming that he had been misrepresented and that the mine would soon begin to pay dividends, and Wilson declaring that the stockholders he represented had been defrauded, and demanding an inspection of the books and business of the company.

RUBY KING.—It is reported that this mine in the Irwin district has been sold to an English company for \$200,000. This mine has been owned by Col. W. T. Holt, of Denver, since 1879, when he purchased it from the original locator. It is the extension of the Forest Queen mine, that has been developed right up to the end lines of the Ruby King for a depth of 200 or 300 ft., but for some reason very little work has been done on the King for seven or eight years. Last spring Colonel Holt bonded the Ruby King to L. R. Ehrlich and others of Colorado Springs for something less than \$100,000, and it is these gentlemen who are at present working the property. If a sale has been made,

as reported, says the Mining Exchange Journal, it has been through these gentlemen.

LAKE COUNTY.

ADAMS MINING COMPANY.—The production during the past year was 5,527 tons of ore, containing 54,245 oz. of silver and 2,000 tons of lead. The cost of mining and reducing this output amounted to \$82,905.

LOUISVILLE.—The owners of this mine since the late fire have been doing a large amount of work, and over fifty tons of very good lead carbonate ore are now being mined daily. There is a large quantity of mineral in sight and it is said the workings never looked better.

(From our Special Correspondent.)

CATALPA MINING COMPANY.—This company, in connection with the Crescent Mining Company, under the same management, is doing a great deal of new work, the main incline of the latter having been taken hold of by prominent parties here, who intend opening up a heavy roll in the limestone that cut up through the overlying white porphyry at about the fifth level. In addition to this, the discovery shaft on the Catalpa has been connected with the so-called Iron shaft on the Crescent at about 300 ft. from the surface, this greatly facilitating the handling of the ore from both properties. From here they are now shipping on an average 35 tons a day of fluxing iron, the silver contents of which is by no means inconsiderable. Much new work has been projected, the companies going in for a vigorous campaign this season.

ELK MINING COMPANY.—A good body of ore has been struck in the western portion of the workings, from which shipments will soon begin. Meanwhile, from the older workings, about 50 tons a day of argentiferous iron and some 20 tons of carbonate ore are being shipped.

GREY EAGLE MINING COMPANY.—The Penrose shaft has made a strike, and up to present writing has cut through about 6 ft. of argentiferous iron ore that carries a considerable amount of silver chloride. As the readers of the ENGINEERING AND MINING JOURNAL have been informed, this was originally disclosed at a depth of 495 ft. by the diamond drill with which the prospecting of this ground was prosecuted, but no very satisfactory cores were obtained owing to the softness of its material. There is now no question as to the continuity of the ore chutes from the Carbonate fault north and west and that it is also the same contact upon which the Sixth Street shafts are sunk is also proved by the fact that since the Penrose encountered this ore, the water in the Sixth Street shaft has been lowered at the rate of 5 ft. a day. It is understood that an early resumption of work upon these shafts will be made.

HOPE.—This mine, lying between East Sixth and Seventh streets, has resumed work, and they are now drifting northward from the 250-ft. westward. There is a synclinal basin developed at that point whose axis is in that direction, and as the Far Down folk found some fairly good ore on the northern rim of the basin, which was followed on its top by an incline, until they were enjoined from working, it is probable that the Hope will strike the chute at the bottom of the basin.

LITTLE ELLEN.—On South Evans gulch, after sinking the discovery shaft about 100 ft. through the blue carboniferous limestone, a drift was run to the westward for about 90 ft., when a raise was made. This found the limestone very thin and cored off, but on top of this stratum a fine body of lead carbonate carrying silver and some gold was encountered. From this body there are now being shipped some 10 tons a day, which amount will be increased as development proceeds.

NEW ENGLAND MINING COMPANY.—Drilling has been resumed in the Ohio Bonanza shaft of this company, and is now proceeding rapidly. This work will probably result in the meeting of the regular lime-porphry contact which underlies the Leadville district, and when met it is likely to be rich, as vertical bands of steel galena were encountered in the shaft before the drilling commenced, this shaft being then about 450 ft. deep.

LA PLATA COUNTY.

SAN JUAN SMELTING AND MINING COMPANY.—This company, at Durango, is now constructing two new blast furnaces and new roasters. The capacity at present is 200 tons daily. It is the intention of the company, says the Rico News, to increase the capacity of the works to 400 tons daily. The Posey & Crawford Red Mountain mines, it is said, have contracted to furnish this smelter with 200 tons of ore daily for one year.

OURAY COUNTY.

J. I. C.—E. O. Weed, working this mine on bond and lease, has struck a rich body of gray copper ore. The property is located near the Santiago mine on Brown Mountain.

PITKIN COUNTY.

It is reported another large enterprise is about to be started on Richmond Hill. It is the driving of a large 3,000-ft. tunnel into the mountain that will strike the vein at a depth of at least 2,000 ft. The company is composed of New York men who are profiting by the experience of the Cowenhoeven Tunnel Company on Smuggler Mountain. Several contracts have already been signed, it is said, and the machinery for the work has been ordered. It will require about a year to complete the tunnel, and will require an outlay of \$250,000.

BEST FRIEND MINING COMPANY.—This property still continues to produce from 15 to 20 tons per day. Manager James Casey recently uncovered two new bodies of high-grade ore.

MOLLIE GIBSON CONSOLIDATED MINING AND MILLING COMPANY.—Manager Palmer reports that the work of moving the entire plant of machinery on to the Silver King shaft is progressing rapidly. Recently 75 men were laid off, in view of the fact that while enlarging the Silver King shaft it will be impossible to work the entire force of men.

SMUGGLER MINING COMPANY.—This company is putting in a large electric plant for furnishing hoisting power and lights on Smuggler Mountain. It has contracted to furnish the power for the electric cars in the Durant tunnel, as soon as the tunnel is completed. The plant will cost about \$60,000, and its construction will require about six months. Work has been commenced on the dam, which is located about a mile above the town.

SAGUACHE COUNTY.

Mr. George Arthur Rice, a prominent mining man of Salt Lake City, Utah, is talking of erecting large smelting works at Creed.

Colorado papers of late have been full of the mineral riches of Creede camp. The Denver & Rio Grande Railroad has begun to run two trains daily, a passenger and a freight. From 75 to 100 people arrive daily at the camp, all of whom have been attracted by the wonderful stories told about the new camp. Just now the snow on the hillsides prevents any amount of effective work from being done on prospects, and no new discovery has been made for some days. Development in a few prospects is going on, with the result of convincing many that the theory of a blanket formation is the proper one. The big properties are keeping up a regular shipment of about 12 cars of ore a day, but are retarded in this by the inability of the railroad company, with the road in its unfinished condition, to get cars and handle the output.

IDAHO.

SHOSHONE COUNTY.

LAST CHANCE MINING COMPANY.—In the United States Circuit Court at Boise City in the case of Tyler against the Last Chance Mining Company, the jury returned a verdict in favor of the defendants on the 29th ult. The property involved is valued at a million dollars. The case will be appealed.

(From our Special Correspondent.)

The following is Traffic Manager Mellen's letter to the *Coeur d'Alene Miners Association* which caused the recent shut-down of all the important mines in that section.

GENTLEMEN: "I am in receipt of your favor of the 5th, to which a reply has been delayed owing to a desire on our part for reliable information as to the conditions surrounding the disposition of the output of your camp. From such information as we have been able to obtain there seems to be no good reason why any reduction should be made in our freight rates. Our information is to the effect that the product of your camp is contracted at the present time for the coming year, and on the basis of the rates now in effect, and that your product both can and will move on these rates.

Such being the case we feel it is better to submit to the temporary loss occasioned by your shut-down rather than unnecessarily reduce our income permanently. Yours very truly,

"C. S. MELLEN."

On account of the above there has been a general shut-down of the mines. No shipments are going forward, and many men have been laid off. The mine owners, however, are employing some of the married men to develop the mines, which work will probably be continued through the winter. W. I.

MORNING.—The Milwaukee syndicate is to pay \$400,000 for this property, \$200,000 in cash, which will be used in paying off the mortgage held by the Spokane National Bank amounting to \$112,000, and a mortgage of \$40,000 held by Mr. Head, of Chicago, and the claims of three large judgment creditors. The balance, \$200,000, is to be paid in three equal installments in 12, 18 and 24 months from the date of the sale, and $\frac{1}{2}$ interest will be paid. The notes are secured by a mortgage on the mine, and will be held by the trustees for the creditors. All the creditors but five have agreed to the above scheme, and if their consent is obtained a clear title to the mine can be given the new owners. The prospects are good for all the claims being paid within six months. By the above arrangement the new owners will have but two parties to deal with, the receiver of the mine and the trustees of the creditors. The Milwaukee people are now at Spokane ready to close the deal and to take possession of the property.

SIERRA NEVADA.—This mine has been shipping from 30 to 40 tons of ore daily, since work was resumed in it.

SILVER KING.—A strike of high grade ore was made in this mine recently. This vein has been neglected at this point, hitherto, and the strike is important on that account.

KANSAS.

CHEROKEE COUNTY.

During the week ending January 30th the output of ore from the mining districts of Galena and Empire City was: "Rough ore, pounds milled, 2,640,210; rough ore, pounds sold, 1,158,150; zinc ore, pounds sold, 405,600; lead ore, pounds sold, 295,880. Sales aggregated a total value of \$11,551.

MARYLAND.

COAL.

MARYLAND COAL COMPANY.—At the annual meeting of stockholders of this company held on the 3d inst., the old board of directors was re-elected. The report submitted to the stockholders for the year ending December 31st, 1891, shows: The production of the company's mines was 406,464 tons, against 357,117 tons in 1890. The net profits for the year, after deducting charges, were \$102,588; dividends, \$94,500; balance carried to profit and loss account, \$8,088. General balance sheet shows cash on hand \$139,231, and a profit and loss account of \$58,461; royalty account, \$150,000; total surplus of company, \$208,461. The company retired during the year \$200,000 first mortgage bonds, leaving \$120,000 outstanding. The balance of the bonds will be retired yearly until maturity in 1896.

MICHIGAN.

COPPER.

Three Lake companies made productions of mineral during January as follows: Quincy, 500 tons; Atlantic, 184; Peninsula, 110 $\frac{1}{2}$.

KEARSARGE MINING COMPANY.—The *Boston Herald* says that this company earned \$36,000 net in 1891, and put one-half of it into betterments.

TAMARACK MINING COMPANY.—The directors of this company have declared a dividend of \$4 per share, or \$200,000, payable March 10th, to stockholders of record at the close of business, February 10th. The transfer books will be closed at 3 P. M. February 10th, and will be opened at 9 A. M. February 18th. This is the regular quarterly payment, calling for \$200,000. Since April, 1888, this company has paid \$2,370,000.

IRON—MENOMINEE RANGE.

During the week ending the 28th ult., according to the *Norway Current*, the water in the Ludington shaft has been lowered about 9 ft., 4 ft. of which was effected in the 24 hours preceding Thursday morning. The water is now about 2 ft. below the 7th level.

HUMBOLDT MINING COMPANY.—This company has resumed operations at its mines in Humboldt after a three months' idleness.

GOLD.

ROPES GOLD MINING COMPANY.—Operations at this company's mill have been temporarily suspended, owing to the breakage of its rock crusher. In the mine the winze between the eighth and ninth levels has been finished.

MINNESOTA.

IRON—MESABA.

The formal contract for the building of the Duluth, Mesaba & Northern road was signed at Duluth on the 29th ult. The road extends 48 miles north to the Mountain Iron Mine, with a 16-mile branch to the Biwabic and Cincinatti mines. It is under contract to be completed to Duluth by August. For building it Foley & Grant receive \$1,000,000 of stock in each of the Mountain Iron and Biwabic mines and take bonds of the road. A contract has been made between the owners of the Mesaba mines and Duluth parties to deliver high grade soft bessemer hematite ore at the blast furnace at Duluth at \$2 per ton.

MONTANA.

BEAVERHEAD COUNTY.

GOLDEN LEAF, LIMITED.—Mr. J. Henry Long maid, manager of this company, has sent to the home office in London a statement, showing what its mines have done during the past year. The Leaf company owns a number of claims at Empire, those worked being the Empire, Whipperwill and Smithville. During the year 53,700 tons of ore were mined and milled, yielding per ton as follows: Gold, \$2.77; silver, 5 cents; tailings in gold, \$1.30; extraction in concentrates, 11 cents gold and 6 cents silver. The total proceeds from the mine was \$168,384.79, made up as follows: Gold bars sold, \$151,188.41; concentrates, \$6,575.71; collections, \$1,266.75; profits on store, \$4,134; miscellaneous profits, \$939.92; net value of ore on hand, \$4,250. The company operates a 60-stamp mill, and during the first five months of the year crushed 20,000 tons and during the other seven 33,700 tons, or an average of over 4,800 tons a month. The cost of mining the ore was \$55,487.88; milling, \$42,682.24; other expenses, \$11,278.05, a total of \$109,448.17. This shows a profit of \$58,836.62 for the year on rock that only assayed \$4.29 a ton. The cost of mining and milling was \$2.01 a ton, divided as follows: Mining, \$1.005; milling, \$0.795; superintendence \$0.21. This is a reduction in the price of mining, milling and other expenses of \$4 a ton, it formerly costing the company \$6 a ton. During the year a great deal of development work has been done on the property, altogether amounting to over 2,000 ft. As a result there is now ore enough in sight to run for 18 months, and there are 4,000 tons broken in the mine ready for the mill. One hundred men are employed.

MEAGHER COUNTY.

CUMBERLAND MINING AND SMELTING COMPANY.—An important development was recently made in the mine. From the 500 ft. level a raise was made along the footwall of the vein to a height of 250 ft. A drift was then run to the 250 ft. station at the shaft, a distance of 73 $\frac{1}{2}$ ft., passing through a solid body of lead carbonate ore the whole way. The same ore body extends 40 ft. east of the shaft, making the total width of the ore chute at this level 113 $\frac{1}{2}$ ft.

SILVER BOW COUNTY.

The alleged diamond and sapphire fields of Silver Bow are still attracting the attention of the mining men of the district. Nearly 5,000 acres of placer ground have already been taken up, and every day sees a larger number of prospectors in that neighborhood. A syndicate controlling 3,300 acres was organized last week, and another syndicate which will control some 2,000 acres will be formed early next week.

ANACONDA MINING COMPANY.—This company, it is said, is now giving employment to about 800 men in Butte. More will be put on if the upper works resume operation. The output of copper of the Anaconda is now about 6,000,000 lbs. a month.

NEVADA.

(From our Special Correspondent.)

Since the institution of the several suits in the courts the several Comstock mining companies have not seen fit to make public sworn statements for the quarters ending September and December, 1891. Whether they are on file in the office of the Assessor of Storey County is an open question, but if so they have been quietly pigeonholed. The total gold and silver bullion output for the State during the year 1891 is, according to the mint returns, placed at, in round numbers, \$5,000,000. This is a considerably falling off from the returns for the previous year, when the total output amounted to \$6,864,000. A. B.

ELKO COUNTY.

The following are the latest official letters from the Tuscarora mines:

BELLE ISLE MINING COMPANY.—A winze has been started on No. 3, 350-ft. level, on rich ore.

DEL MONTE MINING COMPANY.—At the annual meeting of this company at San Francisco on the 28th ult. 89,618 $\frac{1}{2}$ shares were represented, and the following officers elected: E. Scott, president; F. A. Berlin, vice-president, and Thomas Bell, George W. Grayson and Thoma. B. Pheby, directors. J. W. Pew was re-elected secretary and F. F. Coffin, superintendent. The Secretary's statement showed an overdraft of \$16,198.37.

NAVAJO MINING COMPANY.—The intermediate drift below the 300-ft. level is showing a small vein of very rich ore.

NORTH BELLE ISLE MINING COMPANY.—Drifts have been started each way from the bottom of No. 1 intermediate winze, showing some very good ore. No. 4 north drift, south 500, extended 17 ft., showing seams of good looking ore.

NORTH COMMONWEALTH MINING COMPANY.—At the annual meeting of this company held in San Francisco on the 26th ult., 85,497 shares were represented and the following officers were elected for the ensuing year: E. Scott, president; F. A. Berlin, vice-president; Thomas Bell, George W. Grayson and Thomas B. Pheby, directors, J. W. Pew was re-elected secretary and F. F. Coffin superintendent. The financial statement of Secretary J. W. Pew states that the company is in debt \$9,135.24. The mine shipped during the year 783.82 tons of ore, of an average battery assay of \$26.66 per ton. Worked by Union mill 603 tons, of an assay value of \$159.75 per ton. Sold 66.4 tons, assay value \$277.42 per ton. Received from tributors one-quarter interest, 21.69 tons, \$1,502.13. In transit, about 43 tons. On hand, 59 tons of first class ore, assaying \$400 per ton, and 625 cars of second class, assaying \$38 per ton. Recently a shipment of 42 tons of ore brought \$490 per ton at the Salt Lake smelters.

LINCOLN COUNTY.

PIOCHE CONSOLIDATED MINING AND REDUCTION COMPANY.—Three car lots of Pioche bullion have been received in Salt Lake containing 33 oz. gold, 8,675 oz. silver and 78,442 lbs. lead.

STOREY COUNTY—COMSTOCK LODGE.

BELCHER MINING COMPANY.—At the annual meeting of this company on the 23th ult., says the *San Francisco Report*, the opposition party succeeded in electing one director. The following officers were elected for the ensuing year: James Newlands, president; A. K. P. Harmon, vice president; J. H. Dobinson, J. P. Martin and Wm. P. Miles (opposition) directors. C. L. Perkins was re-elected secretary and S. L. Jones, superintendent. The financial statement showed an overdraft of \$19,680.48.

SIERRA NEVADA MINING COMPANY.—The Sierra Nevada hoisting works were shut down on the 25th ult., and operations through the main shaft of that mine suspended. Explorations will hereafter be conducted through the Union Consolidated shaft, owned jointly by the Sierra Nevada, Union Consolidated and Mexican mining companies. The workings of the Sierra Nevada are connected with the Union Consolidated shaft by a

UTAH.

JUAB COUNTY.

The ore shipments from the Tintic district in 1891 were as follows:

Table with 4 columns: Mines, Tons, Mines, Tons. Lists various mines like Bullion-Beech & Champion, Eureka Hill, etc., with their respective tonnage.

SALT LAKE COUNTY.

The ore shipments from Little Cottonwood in 1891 were as follows:

Table with 4 columns: Mines, Tons, Mines, Tons. Lists mines like Flagstaff, Emma, Montezuma, etc., with tonnage.

TOOELE COUNTY.

The shipment of ores and concentrates from Ophir, Dry Cañon and Stockton during the year 1891 was as follows:

Table with 4 columns: Mine, ons, Mine, Tons. Lists mines like Ophir Hill, Northern Light, Bullion, etc., with tonnage.

WASHINGTON.

TACOMA SMELTING AND REFINING COMPANY.—This company is making strenuous efforts to secure the treatment of South American ores.

OKANOGAN COUNTY.

(From our Special Correspondent.)

The Outlook is authority for the statement "that Donald Ferguson and others have formed a company for the purpose of tunneling the Cascade Range. The tunnel, which will be over a mile in length, will tap 16 ledges, with an aggregate of 24 ft. of mineral. Work will be commenced in the spring. The first move will be to build a road from the head of Lake Chetan to the tunnel site, a distance of 27 miles, so as to enable them to get in supplies and machinery. The building of the road will cost some \$8,000. It follows the bed of the Stehekin River and admits of a railroad being built to the mouth of the tunnel. The syndicate is composed of Seattle and Eastern capitalists. They have agreed to pay \$100,000 cash for a half interest in the mines and to put \$250,000 into development work."

BLACK BEAR AND WAREAGLE.—The movement on foot some time ago for the purchase of these valuable mines and other claims, including the Gold Finch and Helena, is about consummated. Messrs. Gardner, of Fairhaven, and Dunn & Getchell, of Seattle, having secured them for \$100,000. The 5-stamp mill now on the former mines will be increased to a 20 or 25-stamp mill.

WASHINGTON CENTRAL MINING AND REDUCTION COMPANY.—This company is composed of men from Concomully and has just been incorporated for the purpose of buying and selling mines, developing mining property, and mining and milling ore. The capital stock is \$500,000. The officers are: President, J. M. McDowell; vice-president, L. Irvin Baldwin; secretary, H. A. Wilder; treasurer, Thomas Ruddock. Directors, E. E. Gooding, J. H. Hartran, Theodore Peterson, Antone Albery and T. C. Flynn. They already possess ten claims on the Salmon River, the principal ones being the Washington Central and Puritan. On the latter it is proposed to run a 250-ft. tunnel. The vein of ore is some 10 ft wide.

WHITE FACE AND RED JACKET.—Work is progressing on these claims under the supervision of J. F. Gardner and H. D. Jennings. The ore is free milling, the ledge is 2 ft. wide on the surface and assays \$125 to \$400 per ton in gold. A 50-ft. shaft will be sunk and a five-stamp mill erected in the

spring. These claims were recently bonded for \$20,000 and the owner will receive \$5 per ton royalty on all ore treated until the expiration of the bond.

PIERCE COUNTY.

(From our Special Correspondent.)

The principal operations in this County are South Prairie, Wilkeson Nos. 1 and 2, operated respectively by the Tacoma Coal Company and the Wilkeson Coal and Coke Company, and Carbon Hill Coal Company.

CARBON HILL COAL COMPANY.—The operation of this company are situated 34 miles southeast of Tacoma on the Northern Pacific Railroad in a very narrow cañon, 400 ft. to 800 ft. in depth, on the Carbon River. The entire product of the plant is sent to California, where it is used by the Central Pacific Railroad Company, of which the Carbon Hill Coal Company is an offshoot. The colliery is as well opened and as well equipped as any in Pennsylvania. The coal, which is opened by means of several drifts, is carried to bunkers about one-half mile from the mines, where it is separated and picked in the same manner as in Pennsylvania breakers. In connection with the bunkers a washery has been erected, where the screenings are cleaned by means of the Diescher Patent Coal Washer; the capacity of the bunkers is 1,400 tons for ten hours, while that of the washery is 700 tons for the same time. There are four drifts working at present upon coal seams averaging 6 ft. in thickness and varying in dip from 30° to 80°; some of these gangways or drifts extend into the mountain over 1 1/2 miles, all of which work has been accomplished since 1880. About 400 men are ordinarily employed at this colliery; the present output is from 700 to 1,000 tons per day, although these figures have and can be doubled when the occasion requires. All the fans, the bunkers and washery are operated by water power, of which the Carbon River furnishes an ample supply.

SOUTH PRAIRIE COAL COMPANY.—The product of this company has the reputation of being the best steam and domestic coal in Pierce County; the plant is located on the Northern Pacific Railroad 28 miles southeast of Tacoma. The mine, which was opened in 1881, was originally operated by means of a water level drift, but in 1887 a slope was sunk, and now is the principal opening from which over 60,000 tons of coal are shipped annually. The greatest part of the output from these mines is sent to San Francisco where it is used by a gas company whose members are heavily interested in this mine.

TACOMA COAL COMPANY.—The mines of this company are situated at Wilkeson, 31 miles south east of Tacoma on the Northern Pacific Railroad. Although Wilkeson, which is the place where coal was first discovered in this vicinity, was originally opened in 1877, poor results compelled partial abandonment of the work until very recently. The coal is mined above water level, and besides the bed upon which the present workings are driven several other seams are exposed varying in thickness from 3 ft. to 14 ft. This company has worked full time during the greatest part of the past year.

WILKESON COAL AND COKE COMPANY.—The plant developed by this company lies near the Tacoma mine; operations began in 1888, and at present their whole output is converted into coke, which is used by Puget Sound, Montana and San Francisco industries.

SPOKANE COUNTY.

NORTHERN PACIFIC REDUCTION COMPANY.—This company has confessed judgment for the sum of \$32,535 93 in favor of Robert G. Ingersoll, New York, president of the company. An execution was issued from the clerk's office, and the smelter at Mead's station, the property of the company, was placed in the hands of the sheriff. This is thought in Spokane Falls to indicate that Colonel Ingersoll will start the smelter when it has been transferred to him.

WEST VIRGINIA.

JUNIOR COAL COMPANY.—This company has been incorporated by S. B. Elkinson, H. G. Davis and others, to engage in mining coal on the line of West Virginia Central Railroad. Capital stock, \$500,000.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF BRITISH COLUMBIA.

The output for 1891 at the various coal mines on Vancouver Island is reported as follows: Southfield, 201,027 tons; No. 3 shaft, 61,235 tons; No. 1 shaft, 158,320 tons; Northfield, 108,006 tons. The total output of the Wellington colliery for the year is reported to have been 328,627 tons; and of the Union colliery, Comox, 130,917 tons. Foreign shipments of coal were for the year divided as follows: By the New Vancouver Coal Company, 377,561 tons; Wellington, 229,271 tons; East Wellington, 36,085 tons; Union colliery, 94,900 tons.

(From our Special Correspondent.)

WEST KOOTANIE DIVISION.

NELSON, B. C., Jan. 8.

The snowfall has been quite heavy this winter, and, in consequence, there is 6 ft. or 7 ft. of snow at the Silver King Mine on Toad Mountain, which is located 6,040 ft. above sea level. The usual num-

ber of men, however, are at work on this property and also on the Grizzly Bear, but no development of importance is reported. The regular steamboats on the Columbia River and the Kootanie Lake are tied up and will not make their appearance again until the end of March.

Promises are made that the railway from Nelson to Fort Sheppard on the Columbia River, near the United States boundary line, will be proceeded with this year, but I have little faith in these utterances. Another company, however, is applying to the Provincial legislature for power to build a line between the same points, and this may have a stimulating effect upon the parties who already own a charter for this purpose.

NELSON DISTRICT.

DANDY.—The parties who, through Mr. Esler, secured an option on this property last year, have practically given up their bond. The vein was indeed reached on the lower level, but was found to be hard, small (2 ft. 3 in.) and low grade; the high price named in the bond may also have had something to do with their decision. Mr. Esler, however, still believes in the property, and the men now there are working at his expense. The bond expires in April, and if a rich ore chute is reached before then all may yet be well.

SILVER KING.—A suit has been entered, so it is said, by the company against J. C. Cobaugh, one of the former owners who disposed of his one twenty sixth interest last fall to James Durkin. It appears that there was an agreement between the owners that no one should sell without the consent of all the others; it was generally supposed, however that this agreement was limited in time.

SLOCAN.—Much interest is still being taken in this recently discovered district both by local men and by parties in the United States, and the early spring will undoubtedly see a great rush thither. The claims are now inaccessible on account of the snow, but the trail from Ward's Ferry, 14 miles west of here, to the Slocan Lake has been completed and is being used to pack in supplies, etc., for the spring campaign. Since the date of my last letter ore has been discovered on the east shore of the lake itself, which assays higher than any hitherto found. A sample, containing at least one-half its weight of white barren quartz, gave 2,070 ounces of silver, 8 1/2 copper, a little lead, and a few dollars in gold. It will be impossible to do any further prospecting until the end of March at the very earliest.

HOT SPRINGS DISTRICT.

Some 50 men are working for wages in the mines, but little important development is reported. The Number One is closed down for the winter, and the men have been transferred to the United. Good ore still continues to be seen in the Sky line, and the upraise to the old workings has been completed. The new hoisting and pumping plant has been placed in position on the Tenderfoot, and is in good working order.

KASLO CITY.—The new town site on the west shore of Kootanie Lake, 12 miles north of Ainsworth, and a possible outlet for the ores of the new Slocan district—is being boomed by its owners for all—and probably more than—it is worth. Anyhow, intending investors will do well to visit the spot, or get information from local and disinterested parties before parting with their cash.

PROVINCE OF NOVA SCOTIA.

Colonel Stafford and Major Degnon, of New York, represent capitalists who have undertaken to develop the iron deposits of Pictou County, lying in the vicinity of Springville. It is intended to build a line of railway from New Glasgow to Country Harbor—the latter port to be thoroughly provided with wharves and shipping facilities. The company has secured large mining areas and proposes erecting blast furnaces, etc. Some 9 miles of this line have already been built between New Bedford and Springville.

INDIA.

The production in 1891 of the four principal mines of Mysore, which practically represents the total gold output of that district, was as follows:

Table with 4 columns: Month, Mysore, Nundydroog, Ooregum, Balaghât. Lists monthly production in tons and ounces for each mine from Jan to Dec.

Tot. '91, 40,353 66,499 11,750 23,592 15,673 34,841 2,911 5,269 Do. '90, 38,822 58,181 9,495 15,364 12,929 27,350 2,014 3,614 Do. '89, 32,566 49,234 3,781 6,118 7,839 16,434 1,580 3,587

The yield per ton in almost every case shows an increase, as will be seen from the following table:

Table with 3 columns: Mine, 1889, 1890, 1891. Lists yield per ton in ounces and dwts for Mysore, Nundydroog, Ooregum, and Balaghât-Mysore.

The largest opal, it is said, ever found in the world is now on exhibition in San Francisco. It was found imbedded in a ledge of amorphous rock

a short distance below the surface at Guerrero. It is 11 in. long, 5 in. wide and 1½ in. thick and is valued by the owner, Juan Goldman, of San Francisco, at \$10,000. The stone is thought to weigh 700 carats, but, on account of the mass of rock inclosing it, its weight cannot be exactly determined.

GOLD FIELDS OF MYSORE, LIMITED.—The report of the directors of this company states, that the past year has been an eventful one in the history of the company, inasmuch as some important sales of mining land have been effected, from the proceeds of which substantial dividends have been paid to the shareholders. Mining rights have been sold extending over 492 acres of land. The consideration was represented by fully paid shares in the purchasing companies of the value of £231,250. A block comprising 220 acres of land was previously sold to the Champion Reef Gold Mining Company of India (Limited) for £27,000, of which £5,000 was paid in cash and £22,000 in fully paid shares of that company. A net profit is shown of £212,525 2s. 4d., out of which two dividends, represented by fully paid shares in the purchasing companies, and equivalent to 18s. 3d. per share have been paid. Five thousand pounds has been placed to a reserve fund, and £6,775 8s. 7d., the balance of profit, carried forward. It is seen from the balance sheet that the company holds valuable assets consisting of shares in the four principal gold mines of India, and those now held by the company are as follows: Mysore Gold Mining Company, 2,000; Ooregum Gold Mining Company (ordinary), 3,000; Nundydroog Gold Mining Company, 3,000; Champion Reef Gold Mining Company, 22,000. These shares, which are fully paid, represent a market value of £48,500. In addition to the sales of land, a contract has been entered into with the Balaghât Mysore Company for the sale to them of 90 acres for £20,000, of which £10,000 is payable in cash, and £10,000 in fully paid shares of that company. Steps are now being taken by the Balaghât Mysore Company to raise the necessary capital to complete this purchase. The original area of the company's property consisted of 8,400 acres, and the land sold up to the present, including that to the Balaghât Mysore Company, amounts to 802 acres; there thus remains in the company's possession 7,598 acres of mining land. The board has it in contemplation shortly to form a new company to purchase and work an important section of mining land belonging to the company. The report of the superintendent shows that prospecting work has been actively carried on, and has been attended with encouraging results. It appears probable that some of the lodes now being prospected will be found to be of great value. The work being prosecuted in the Victoria block presents features of special interest.

MEXICO. CHIHUAHUA.

DON ENRIQUE MINING COMPANY.—This company operating at Cusihiuachi, whose works were totally destroyed by fire in March, 1890, has ordered a quantity of new machinery through H. O. Reinhardt, formerly representative in Mexico of Fraser & Chalmers.

HIDALGO MINING COMPANY.—The board of directors has submitted to the stockholders the following statement of the condition of the company on January 12th, 1892. An accurate statement cannot be obtained until after February 1st, but the following, they say, may be depended upon as approximately the correct results for the year 1891: (The earnings and expenditures at Parral are given in Mexican silver.) Net earnings of mill for 1891 (twelve months) \$54,000; net earnings of mine for 1891 (about six months), \$62,000; total \$116,000; on the mine earnings there is unrealized for ore not yet worked or sold about \$16,000; realized net profits for the year, \$100,000. During the year there was paid out for new mining property and permanent betterments to same, including new hoisting plant, shaft, etc., about \$92,000; advance taxes on mill for 1892, \$2,500; extra supplies for mine, about \$4,000; total, \$98,500. It is to be noted that the new mining properties were producing ore only about six months, and even during that time, with very imperfect facilities, attention being centered on development work to determine the value of the property, rather than the production of large quantities of ore. Notwithstanding these disadvantages the earnings have been sufficient to pay for the property and all improvements and expenses. The mines, with new hoist, which is paid for, and which will soon be in operation, can produce from 75 to 100 tons of ore daily, while our mill can only treat 30 tons. In order to realize a fair profit on the great bulk of our ores it is absolutely necessary to treat them in our own works. Your board deem it for the best interest of every stockholder to build a larger plant nearer the mines than our present mill, which is six miles distant, as soon as a suitable location can be obtained. By pursuing this course a large saving can be effected in freights and in the cost of treatment, and the profits can be at least doubled. The company has been carrying an indebtedness in Pittsburg, as shown by last annual report, of about \$47,000 (U. S. money.) The interest on this has been paid up to December 31st, 1891, but nothing paid on account of principal during the year. There are in the hands of W. F. Armstrong, trustee, 30,000 shares of the capital stock of the company

which were contributed for the purpose of paying the debt and such other uses as might be determined by the board of directors. In view of all the circumstances, your board has concluded to sell the stock for the purpose of paying the above mentioned debt and building a new plant for the treatment of ores, and so make the earnings of the company immediately available for dividends to the shareholders. The 30,000 shares (being the remainder of the original capital of \$1,000,000), if sold at the price stated below, will pay \$105,000 into the treasury, which will pay the debt and nearly, if not entirely, build and equip a new plant having capacity of 60 tons daily. This, with our present plant, will give us a daily capacity for treatment of about 90 tons of ore, which will about equal our producing facilities. The stock is offered at \$3.50 per share.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Feb. 5.

Heavy Chemicals.—The market for the various heavy chemicals continues in the condition reported in these columns for several weeks past. The small volume of business done during the week is unusual for this season of the year, and dealers declare that they are unable to ascribe any reason for the backwardness on the part of consumers to lay in supplies. The fact is that buyers appear to think that bottom prices have not been reached, and very naturally desire to take advantage of any decline which may occur. On the other hand dealers are firmly of the opinion that prices will not go lower. In some cases contracts for delivery extending over the current year have been made at the prices reported last week. On the whole, however, the trading has been of a hand-to-mouth nature.

Caustic Soda.—The position of this chemical is pretty much as last reported. Some sales have been made, but sellers' views are above buyers', and the trading has not been as heavy as was expected. We quote: 60%, 3.10@3.20c.; 70-74%, 2.85@2.95c.; 76%, 3.15@3.20c.; 77%, 2.90@3c.

Carbonated Soda Ash.—This article is fairly firm at 1.55@1.60c., for B. M. & Co., 48%, and 1.50@1.55c. for 58%.

Alkali.—There is nothing of special interest to be reported of alkali. Quotations are: B. M. & Co., 48%, 1.55c.; 58%, 1.47½@1.52½c.

Bleaching Powder.—A good demand for spot delivery is reported, and the agents say that the inquiry for further shipments is satisfactory. The price is firm at 2.15@2.20c.

Sal Soda.—Very little of interest can be reported of this market, only a small business having been done. Quotations are: English, 1.12½@1.15c.; domestic, 95@1c.

Acids.—Manufacturers continue to report a good business in the various acids, especially in sulphuric. The trading has been active and there are prospects of higher prices. We quote this week for 100 lbs. in New York in lots of 50 carboys or more: Acetic, \$1.60@\$.2, according to quality; alum, lump, \$1.50@\$.175; muriatic, 18", \$1: 20", \$1.12½; 22", \$1.25; nitric, 40", \$4: 42", \$4.50@\$.4.75; sulphuric, 90c@\$.1.12½; oxalic, \$7.25@\$.7.75. Blue vitriol is quoted all the way from \$3.25 to \$4.

Brimstone.—The market for brimstone is quiet and weak just now under advices from the other side. For best unmixd seconds on the spot, \$27 is quoted. There are no thirds here; the nominal quotation is about \$26.25. Future shipments are held at \$28 for best unmixd seconds and \$27.25 for best unmixd thirds. It is reported that a great deal of Sicilian brimstone is coming over on consignment, unsold, in which case a decline may be expected.

Fertilizers.—This market continues quiet and dull. Whatever business has been done has been in small lots. While the prospects are good for an average business in the North the Southern trade will be less than last year. Sulphate of ammonia is a shade lower at 3c. for spot and 3.05c. for shipments. Some sales are reported of dried blood at \$1.95 per unit for high grade and \$1.85 for low grade. Other quotations are: Acidulated fish scrap, \$13.50 f. o. b. factory; dried scrap \$23.50 @\$.24. Azotine, \$2.00; tankage, \$19@21; bone meal, \$22@\$.23.

Double Manure Salts.—Quotations are about as follows for winter shipments, ex-vessel New York, in lots of 10 to 50 tons: 48%-53%, 1.18½ @1.28½c.; 90-95% 2.18@2.23½c.; 96-99%, 2.21@2.23½c.

Kainit.—There is no business doing in this article. Quotations remain \$8.75@\$.9.50, according to quantity, time of delivery, etc.

Muriate of Potash.—There have been the usual arrivals of muriate during the week, all of which went into consumption. Nothing of special interest can be reported.

Phosphates.—The weakness and dullness of this market continues unchanged. Charleston prices remain \$6 for dried and \$5 for undried, with freights at about \$2. We understand that the meeting of Florida pebble miners, to which we alluded in our last week's issue, takes place some time this week.

Nitrate of Soda.—This market is dull and quiet just now. Quotations for spot and for lots in thirty days are \$1.90. For February-March-April shipment \$1.82 is quoted.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Birmingham, Ala., Pittsburg, St. Louis, London, and Paris, see pages 196 and 198.]

NEW YORK, Friday Evening, Feb. 5.

The mining market has quieted down this week, and total sales aggregate only 41,323 shares, against 137,740 shares last week. Prices on the whole are slightly lower, but this is due to the too rapid advance of last week. People who have for years held certain mining stocks, hasten to sell as soon as an advance occurs. There is no special weakness in the mining market. It is still better, with the exception of last week, than it has been for months.

The Comstocks have experienced the customary trading. Of Alta 700 shares were sold at 50c.@55c., and of Andes 100 shares at 90c. Best & Belcher was rather quiet at \$2.90@\$.3.10. Bullion had a single transaction of 100 shares at \$1.50. Trading in Comstock Tunnel stock amounted to 1,500 shares at 18c.@20c. Exchequer shows sales of 600 shares at 65c.@80c. Justice was quiet and stationary at 70c. Of Mexican 950 shares changed hands at \$1.90@\$.2.05. Potosi declined from \$2@\$.1.85 with sales of 375 shares. Scorpion had a sale of 400 shares at 30c., and Segregated Belcher sales of 450 shares at 85c.@95c.

Utah appeared in some request, 1,100 shares being sold at 45c.@50c. Of Union Consolidated 500 shares were sold at \$1.50@\$.1.75. Consolidated California and Virginia was quiet, only 150 shares being sold at \$5.75@\$.6. Of Crown Point 620 shares were sold at \$1.30@\$.1.65, the latter price obtaining at the close. Other sales were: Gould & Curry, 475 shares at \$1.30@\$.1.55; Hale & Norcross, 250 shares at \$1.85@\$.2.10; Ophir, 500 shares at \$3.05@\$.3.35; Savage, 600 shares at \$1.35@\$.1.90; Yellow Jacket, 300 shares at \$1.10@\$.1.20.

Among the California stocks Standard was the feature, being in considerable demand. During the week 2,100 shares changed hands at \$1.25@\$.1.35. The latest financial statement of this company shows that the product of the mine amounted to \$20,900, while the expenses were only \$15,200, leaving a profit of \$5,700. There are 72 men at work at the property. Mono, which had not been traded in for a long time, shows a sale this week of 300 shares at 75c. Plymouth was dealt in to the extent of \$2 to \$3.25. Trading in Astoria has been resumed; at least, the official list of the Consolidated Stock and Petroleum Exchange reports that on Thursday there were sold 1,000 shares of Astoria at 2c. Brunswick Consolidated was in some demand during the week, 1,500 shares being sold at 6@9c. Of Belmont 1,300 shares are reported to have been sold at 61@65c.

Among the Colorado stocks Leadville was again the most popular. It underwent a steady decline from 25c. to 20c. There were sold 9,400 shares. Little Chief was also in some demand, and shows also a decline. It opened at 32c. and closed at 22c., with sales of 2,500 shares. There was a sale of 200 shares of Lacrosse at 3c., and one of 100 shares of Small Hopes at \$1.10. Trading in Chrysolite amounted to 1,150 shares at 20c.@25c. Robinson Consolidated shows sales of 300 shares at 47c.@49c.

Among the Black Hills stocks there were sales of 1,450 shares of Caledonia at 60c. to 62c., and of 200 shares of Deadwood Terra at \$2.10@\$.2.80.

There is reported a sale of 2,000 shares of Shoshone at the exorbitant price of 2c.

Horn Silver shows sales of 363 shares at \$3.50@\$.3.75. There were sales of 200 shares of Alice at \$1.30@\$.1.35.

El Cristo was rather quiet, only 500 shares being sold at 35c.@40c.

Phoenix of Arizona was dealt in during the week to the extent of 5,100 shares at 60c.@74c.; a slight decline from last week's prices, but there was no anxiety to sell at these prices.

Boston. Feb. 4.

(From our Special Correspondent.) The market for copper stocks the past week has been more active, but prices continue to decline under the pressure to sell long stocks. There seems to be a desire on the part of holders of the non-dividend paying stocks to get out of them as soon as possible and await a better market to take them back. Under these conditions the prices of these stocks show the greatest declines, while the companies which can pay dividends, even under the present depressing condition of the metal market, are quite firmly held and are taken by investors who believe in better prices in the not distant future.

This is shown by the price of Calumet and Hecla, which is selling to-day at much higher figures than it did six months ago, when ingot copper was ruling above 11c. per lb. The stock touched \$267 during the present week and did not sell below \$265 except for a small lot of two shares, which were taken to-day at \$263.

Tamarack is another stock which is held firm at about \$155, and is not very freely offered. The directors have declared the usual quarterly dividend of \$4 per share.

Boston & Montana has been the most active stock on the list sales, aggregating about 8,000 shares, but owing to the fact that the directors at the meeting a few days since decided to defer action on the dividend question for the present, the stock has been pressed for sale quite freely and declined from \$35 to \$31½, with a slight rally to \$32½ to-day. Butte & Boston, in sympathy with its neighbor, declined also from \$15½ to \$14.

	1892.		1891.
	Week.	Year.	
Pittsburg, Pa.....	28,361	120,588	111,886
Westmoreland, Pa.....	31,842	144,602	185,424
Monongahela, Pa.....	9,954	37,365	60,134
Total	70,157	302,555	357,424

Grand total.... 370,070 1,585,113 1,680,868
 *Week ending January 21st.
 †Estimated.

PRODUCTION OF COKE on line of Pennsylvania R. R. for the year ending January 30th, 1892, and year from January 1st, in tons of 2,000 lbs.: Week, 115,852 tons; year, 487,127 tons; to corresponding date in 1891, 424,121 tons.

Anthracite.

There is no greater activity in the anthracite coal trade than there was at the date of our last report. Last week, with the prices at the lowest notch reached in two years, dealers did not purchase needed stocks, because of the expectation that still lower rates would rule. To-day, with an advance of 25c. and every indication on the part of the companies that the same is being strictly adhered to, they are now looking for a decline, although along just what lines it would be hard to say. That this element of the trade is badly in need of stock there is little doubt, while it is equally true that the consumptive demand of the present time is good.

The true reason of the advance of 25 cts. in prices made last week, Thursday, has been ascertained. It seems that the Pennsylvania Railroad Company in behalf of its independent shippers intimated that in consideration of the prevalent low price of coal, it would be no more than equitable that this class should receive a reduction in eastbound freight rates. So determined seemed the attitude of this company that the others saw the only way in which they could stave off the reduction was to raise the price of coal. This they consequently did.

Although the figures are not at hand it is thought that production during the month just closed has been about equal to the allotment, or 2,500,000 tons, and from reports received from the coal fields it is believed that production is now going on at about the same rate, or on a basis of the February allotment of 2,500,000 tons.

Numerous reports have been sent out from Philadelphia during the past few days to the effect that the presidents of the railroads have settled the Coxie Bros. & Co.-Reading and other allotment issues. Diligent inquiries in trade circles in this city failed to elicit any information which would substantiate these reports. However, we have it from good authority that negotiations have been in progress between the executive officers of the coal carrying companies with a view of settling these issues.

The companies are without doubt adhering to the recently adopted circular on new business, although they are still delivering on orders placed during the days of the cut. The independent operators are cutting from 10@15c. under the circular, claiming that they must do so in self-defense, inasmuch as the companies had the most desirable customers booked at cut rates as far ahead as April.

The sales agents held a meeting this afternoon. Trade conditions were fully discussed, and an adjournment was taken for one week. It is understood that in the meantime the executive officers of the coal companies will have reached some decision on the allotment issues. The report which gained currency immediately after the meeting that it had been decided to abolish coal selling agencies and establish one large selling house, is posted as the most absurd kind of Wall street gossip.

The leading coal stocks show a marked diminution in the number of shares traded in as compared with last week. Prices have made a slight advance, due, without doubt, to the more healthy condition of the coal trade. Delaware, Lackawanna & Western has led the list, gaining a point in a week and closing at a maximum of \$147.50 yesterday. Delaware & Hudson has been very strong on light sales, and has lost \$1 to \$125.50 in the week's transactions. Lehigh Valley closed the week as it entered it, at \$48@49; sales very limited. Jersey Central developed considerable strength, and limited transactions were made at \$117.50 yesterday. Philadelphia & Reading was remarkably active throughout the week; the transactions aggregated 237,639 shares. From an opening of \$42.25 it sold as high as \$43 on three days in the week, and yesterday at a minimum and maximum of \$41 to \$42.50, respectively.

Bituminous.

The tonnage of bituminous coal which is moving nowadays has fallen off about 50%, as compared with two months ago. That which is going to market is entirely upon contract orders. It can be said without qualification that business is exceedingly dull, nor does it make promise of improvement much before the 1st of March. The demand is at a minimum, consumers finding that they have taken about all the tonnage required to satisfy their needs and the terms of their contracts, and it is too early by a month for new contracts. The transportation facilities are adequate. Production is being restricted in almost all quarters. Reports from all trade centers are to the effect that there is an abundance of stock awaiting

placement. The Seaboard Steam Coal Association held a meeting in Philadelphia this week for the purpose of determining the views of the different members of the combination relative to its continuance during 1892. From what could be learned concerning this gathering the feeling expressed was that the association had been sufficiently successful in the results attained during the past year to warrant its existence during that which is soon to open. Barring a slight unpleasantness between two very important factions of the trade, relative to a certain coal tonnage agreement, which really seems to have no direct bearing upon the association, the meeting was a very harmonious one.

Owing to the stagnation, as noted, ocean freights are exceedingly low and weak, and many vessels are being tied up. We quote 85@95c. to Boston from Philadelphia and about the same rate from Baltimore and Norfolk.

NOTES OF THE WEEK.

A number of the prominent anthracite coal operators and consumers met Hon. Morgan B. Williams and Lieut.-Governor Waters, Commissioners of the World's Fair, at Wilkesbarre on the 3d inst., for the purpose of discussing matters pertaining to the coal exhibit at the World's Fair. No regular business was transacted and an adjournment was taken until February 12th. Among the other feasible projects presented was one from Mr. John C. Haddock, of this city, who stated that it would be well to make a special effort at the fair to demonstrate the value of the small sizes of anthracite for producing steam. For this purpose he signified his willingness to contribute 2,000 tons of buckwheat coal, and stated that in view of the enormous benefits which would result from a successful and intelligent demonstration, he was of the opinion that the anthracite interests could well afford to make a contribution of 50,000 tons of huckwheat coal.

Boston.

(From our Special Correspondent.)

The result of the coal-producing companies' meeting last week was very satisfactory as far as developments in this market were concerned. However, it was regretted that the matter of percentage was not fixed for the coming year.

The action of the companies in advancing their prices 25 cents per ton, making free burning white ash stove \$3.75 net f. o. b. New York, has given this market considerable stability, but has induced very little buying. Retail dealers think to-day that present prices depend wholly on the weather. If the weather is cold enough the 2,500,000 tons allotment for February can be very easily marketed, whereas, if the weather is mild, a cut in prices may take place. One thing seems assured; that is, the dealers will just buy as little coal during this month as possible. What the trade is waiting for is the spring circular before stocking up to any extent.

We quote f. o. h. prices at New York: Stove, \$3.75; egg, \$3.60; free broken, \$3.50; chestnut, \$3.25; Lykens Valley; broken, \$4.90; egg, \$5; stove, \$5.40; chestnut, \$4.50.

The fact that standard grades of soft coal can be had here landed on cars for \$3.75 per ton against \$3.80 last week shows that the market is in a decidedly weaker condition. There is but a slight demand for bituminous coal here, and unless the weather changes materially it is likely to remain so.

Freight rates are about 5 cents per ton easier all around, which reflects the quiet condition of the market. We quote: From New York to Boston, 55@60c.; from Philadelphia to Boston, 75@80c.; from Philadelphia to Portland, 75@80c.; to Bath, 95c.@1.00; to Providence, 70@75c.; from Baltimore to Boston, 85@95c.; Newport News to Boston, 80@85c.; to Sound Points, 70c.

The retail business has relaxed from last week, the weather having been very unfavorable for the consumption of coal. Stocks held by the dealers are fair.

Retail prices are steady. We quote: Stove, \$5.50; nut, \$5.50; egg, \$5.25; furnace, \$5.25; Franklin, \$6.75@7, all sizes; Lehigh egg, \$5.50; Lehigh furnace, \$5.50. Wharf prices are 50 cents less.

The receipts of coal at this port for the week ending January 30th were 20,772 tons of anthracite and 10,342 tons of bituminous against 14,069 tons of anthracite and 21,920 tons of bituminous for the corresponding week last year. The total receipts thus far this year have been 115,604 tons of anthracite and 42,332 tons of bituminous, against 88,795 tons of anthracite and 79,078 tons of bituminous for the same time last year.

Buffalo.

Feb. 4.

(From our Special Correspondent.)

Business is fairly active but confined mostly to the retail trade for anthracite and pressing demands for bituminous from manufacturers. The latter are doing well; activity seems to prevail in all branches. Stocks of anthracite are ample and bituminous is quite plenty. Prices of the latter are shaded sometimes to save demurrage charges. All varieties are readily obtained.

Dealers, whether wholesale or retail, show pleasant faces indicative that everything is going well and that prosperity prevails among them.

Two "whaleback" propellers with decks are being built at West Superior, Wis., of about 3,800

tons, drawing 16 ft. of water. They will be the pioneer boats of a new company running from Buffalo, Erie and Fairport, Lake Erie, to Gladstone, Mich.

The Senate Commerce Committee and the House of Representatives Committee met in joint session last Saturday at Washington, D. C. Your correspondent was a delegate from Buffalo and representatives from other lake ports were present to argue in favor of the recommendation of General Poe looking to a 21-ft. water way to connect Lakes Erie, Huron and Superior. Statistics showing the enormous traffic in coal, iron, grain, lumber, etc., on the inland lakes were presented.

This end of Lake Erie is frozen over for the first time in several years. Fishermen and others journey over the ice from Buffalo to Canada without danger. Navigation will open late this year. Lake St. Clair is frozen solid and the Sauff Ste. Marie River is thickly coated with ice.

Mr. William Thurstone, the compiler of the coal and other commercial statistics for the port of Buffalo, was reappointed secretary of the Merchants' Exchange for the twenty-ninth time on Thursday last.

It is the present intention of the Lehigh Valley Railroad Company to formally open its through line from Buffalo to New York on May 11th, next. This will be a memorable event in the history of the company.

Chicago.

Feb. 4.

(From our Special Correspondent.)

The anthracite coal trade here is unmistakably dull and entirely a weather market, both at wholesale and retail. Notwithstanding the overloaded condition of the market, some shippers complain that the present blockade on Eastern roads makes the delivery even of the few orders coming in from the West very unsatisfactory so that sales are limited by the belated deliveries.

Shippers with large dockage facilities and heavy supplies of coal are making strenuous efforts to sell, but are making no sacrifices to get rid of it. Toward the end of the month just closed sales of good round lots were made at very low figures, lower than any we have heard of yet. Considerable all rail coal is coming forward. In a general way orders have been greatly curtailed by the advent and continuance of mild weather.

The glut in bituminous coal of all kinds continues, and railroad yards are lined with coal cars, despite which prices are not as badly demoralized as might be expected under the circumstances. Circular figures are shaded, but, with the exception of some grades of Illinois coal, incisive measures are not adopted. The use of oil by some of the largest users of steam soft coal cuts but little figure in the aggregate tonnage, but still it is felt by some shippers, and measures, it is rumored, are about to be taken with a view to prohibit its further introduction into the city.

Demand is only fair just now and is and will be largely governed by weather conditions. In a general way the past month was a fairly active one, and as supplies in the Northwest are by no means heavy the chances are that demand from that source will be fairly steady. Indiana block is in good supply and prices hold at \$1.50@1.60 at mine.

Coke improves in demand and "straight" Connellsville is firm. The outlook for this fuel is excellent, being so intimately connected with iron interests. Circular prices are unchanged at the following rates: Lehigh lump, \$6.25; large egg, \$5; small egg, range and chestnut, \$5. Retail prices per ton are: Large egg, \$5.75; small egg, range and chestnut, \$5.75.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, \$3.15; Hocking Valley, \$3; Youghiogheny, \$3.25; Illinois hock, \$1.90@2; Brazil hock, \$2.50.

THE CHICAGO ANTHRACITE COAL ASSOCIATION.

The Chicago Anthracite Coal Association held its regular annual meeting at the Wellington Hotel on Friday, January 25th. There was a fair attendance though some were unavoidably absent. Among those present were George Merryweather, president; A. T. Thatcher, secretary; O. S. Richardson, J. W. S. Keele, W. S. Bogle, J. L. Hathaway, E. F. Daniels, George Meeker, H. A. Bischoff and others. During luncheon and after the coffee and cigars topics of interest to the trade were discussed and nearly every subject touched upon; even mild politics were handled in a delicate way, but prices of coal were carefully avoided. The meeting was in every sense of the word a pleasant one, and regrets were expressed that they were not more frequent.

Pittsburg.

Feb. 4.

(From our Special Correspondent.)

Coal.—The local trade continues very active; prices firm. The scarcity of natural gas during the past week has kept local dealers very busy. There have been no shipments to the lower ports for some time on account of low water. The Western and Southern markets have an ample supply, low prices being the rule. John M. Risher has purchased the Coal Bluff coal property, with 1,000 acres of coal land adjoining, at \$150 per acre. A Steubenville dispatch says Pittsburg capitalists are to open up a new field in Jefferson County; it is estimated that 4,000 miners will be employed. The land purchased is estimated to be worth \$500,000. This coal land lies on both sides of the Ohio River. Options have been secured on

over 4,000 acres of coal land lying south and the railroad will be extended in that direction. January coal shipments by the Ohio River: To Cincinnati, 2,360,000 bushels; to Louisville, 2,312,000 bushels; total, 4,672,000 bushels.

Coke.—Trade presented nothing new or important. Productions remain about the same. We are now in the second month of 1892 without any changes being made in prices. All parties are looking for better times, but so far they have not been realized. Cars have been scarce, hence the shipments fell off 402 cars. There is a movement on foot to send in coke from the mountain districts, and also from West Virginia at a reduced price, but so far it has been a failure. About 20% of the ovens in the region remain idle, and of the total number of plants an average run of but five days was made last week. The shipments for the week aggregated 122,534 tons, distributed as follows: To points west of Pittsburgh, 3,700 cars; east of Pittsburgh, 1,425; to Pittsburg, 1,685 cars. Prices are without change.

METAL MARKET.

NEW YORK, Friday Evening,
Prices of Silver Per Ounce Troy.

	Sterling Exch'g.	London Pence.	N. Y. Cts.	Feb.	Sterling Exch'g.	London Pence.	N. Y. Cts.
	4.85%	41 1/2	91	3	4.86	41 1/2	90%
Feb 1	4.85%	41 1/2	90%	4	4.86 1/2	41 1/2	90 1/2%
2	4.85	41 1/2	90 1/2	5	4.86 1/2	41 1/2	90%

The market has been steady within narrow fluctuations. India has been a free buyer and shipments to London have been large, over 500,000 oz. going over on Saturday's steamers. Pressure to sell largely has been removed.

The United States Assay office at New York reports the total receipts of silver for the week to be 122,000 ounces.

Silver Bullion Certificates.

	H.	L.	Sales.
Jan. 30	91 1/2	91 1/4	65,000
Feb. 1	91 1/2	90 3/4	231,000
Feb. 2	90 3/4	90 1/2	55,000
Feb. 3	91	90 3/4	148,000
Feb. 4	91 1/2	91	45,000
Feb. 5	91 1/2	91 1/4	40,000

Total sales in barrels.....584,000

Coinage at the Mints of the United States.

The following report shows the coinage executed at the mints of the United States during January, 1892:

Denomination.	Pieces.	Value.
Double eagles.....	74,500	\$1,490,000.00
Eagles.....	5,000	50,000.00
Half eagles.....	10,000	50,000.00
Total gold.....	89,500	\$1,590,000.00
Standard dollars.....	326,000	326,000.00
Half dollars.....	560,000	280,000.00
Quarter dollars.....	1,256,000	314,000.00
Dimes.....	2,450,000	245,000.00
Total silver.....	4,592,000	\$1,165,000.00
Five cents.....	1,066,000	53,300.00
One cent.....	3,750,000	37,500.00
Total minor.....	4,786,000	\$90,800.00
Total coinage.....	9,467,500	\$2,845,500.00

Domestic and Foreign Coin.

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

	Bid.	Asked.
Trade dollars.....	72	75
Mexican dollars.....	.11	.72 1/2
Peruvian soles and Chilian pesos.....	.68	.70
English silver.....	4.75	4.85
Five francs.....	.93	.95
Victoria sovereigns.....	4.84	4.89
Twenty francs.....	3.81	3.88
Twenty marks.....	4.74	4.76
Spanish doubloons.....	15.55	15.70
Spanish 25 pesetas.....	4.78	4.83
Mexican doubloons.....	15.50	15.70
Mexican 20 pesos.....	19.50	19.60
Ten guilders.....	3.96	4.00
Fine silver bars.....	.91 1/4	.92

Copper.—The copper market has been rather flat, principally on account of the rather rapidly declining market in Europe, especially for the speculative sorts. We understand that this decline is mainly due to rather important financial troubles in Paris, which cast a gloom over all the European markets, and copper having of late been rather easily influenced by the speculative movement, a very heavy decline set in, and G. M. B.'s reached \$43 7/8. 6d. @ \$43 10s. for spot and about 10s. higher for three months prompt.

These are the lowest prices since September, 1889, shortly after the collapse of the *Société des Metaux*, at that time the visible supplies in Europe being 105,000 tons, while now they are but 57,000 tons. Besides heavy quantities were known then to exist in the United States while stocks here now are only at a normal figure. Statistics are cabled over as having increased during the

second half of January 600 tons, making a total increase for the month of January of about 1,400 tons. Of course as long as there is such an uncertainty and lack of confidence, it is but natural that prices must be influenced, but then we can only repeat that the present exceedingly cheap prices for copper cannot last for any length of time, as with consumption going on as at present the supply will not be sufficient, as copper cannot be produced by the majority of companies at a cost that will permit of present values being accepted.

Although our market here has been rather dull, the decline has not been followed. Some isolated sales of Lake copper have taken place at 10 7/10c. and 10 6/10c., but exceedingly little is to be had thereat, and most of the sellers ask 10 1/2c. The Calumet & Hecla Company is still holding for 11c. Casting copper continues scarce and readily commands 10 1/2c. @ 10 3/4c. The exports, especially of refined copper, are very heavy just now.

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

To	Copper Matte.	Lbs.	Value.
S. S. Tauric.....	6,487 bags.	743,725	\$43,000
Denmar.....	1,080 bars.	118,800	8,000
To Liverpool—	Copper.	Lbs.	
S. S. Tauric.....	70,144 ingots.	358,000	\$77,480
Denmark.....	1,302 pigs.	201,790	20,000
To Havre—	Copper.	Lbs.	
S. S. La Bretagne.....	150 casks.	187,500	\$23,000
	667 pigs.	217,396	23,500
To Rotterdam—	Copper.	Lbs.	
S. S. Amsterdam.....	191 casks.	56,397	\$5,700
	301 bars.	51,646	5,300
	126 casks.	162,000	16,500

Tin.—The London market has slightly declined, coming down to £89 ls., but closes with a little firmer tendency, and our market has closely followed this course. Sales have been made at 19 7/10c. and some at 19 6/10c., but on going to press there is a rather better demand on the part of consumers, and we have to quote for February, March delivery, 19 7/10c. @ 19 8/10c. Shipments from the East during the present month are expected to be light on account of the interruption of the Chinese holidays.

Lead is dull, with but little more business doing. We have to call the market nominal at 4 3/4 @ 4 1/2c., but there are more buyers than sellers at the former figure. From Idaho the news is confirmed that all of the mines are idle, and the difficulties there appear to be rather serious. It is somewhat difficult to understand that this has so far made no impression on the price of lead.

In Europe a very large business has been done and the market has advanced quite sharply since last week. Sales were made at up to £10 17s. 6d., but later on, the consumers being filled, the market receded to \$10 12s. 6d., which is the closing price for Spanish, while English also can now be obtained at the same figure.

About 800 tons of Mexican bullion were sent recently to Glasgow, and unusually large quantities of Australian lead have been received in England this year. Thus far 7,000 tons have arrived, and about 1,000 tons weekly are being received there. It is estimated that the supplies from Australia this year will be much greater than in 1890.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: "Lead dull and weakish. These are at 3 90c., but no buyers above 3 85c. at the close."

Spelter has been in somewhat better demand, and prices are rather firmer, but we can still quote 4 1/2 @ 4 65c. delivered New York.

London is rather flat, and good ordinaries are quoted at £21 10s. and specials at £21 15s.

Antimony is obtainable at lower rates, and appears to be rather flat. Sales of Cookson's have been made at 15 @ 15 1/2c., of Hallett's at 11 1/4 @ 11 1/2c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 5.

The general condition of the iron market shows no change from what has been reported for some weeks. The dullness continues unabated, and as the consumption shows unmistakable signs of falling off, it is probable that this state of affairs will continue until the consumers have exhausted the supplies which they bought in December. If anything the market is slightly weaker, although from many quarters the statement comes that iron cannot be bought under the prices which have obtained for several weeks past. The usual hand-to-mouth buying on the part of consumers has been done, their belief still being that the price of iron will not advance and that they will be able to supply their wants from time to time as necessary.

American Pig Iron.—Considerable Southern iron is coming to this market, and some of the companies are offering their product at low prices. It is claimed by reputable dealers that the only Southern companies which are pressing iron on this market are those whose product has not a well-established reputation. Certain it is, however, that iron is accumulating in the South and the financial condition of many of the companies there is not such as to view calmly the accumulation of stocks at their yards. It is reported on good authority that a sale was made during the week of a warrant lot of 4,000 tons of No. 2X Allentown iron on a basis of \$14.50 at tidewater.

The statement is doubted in many quarters, and it certainly has had an effect on the market. The Thomas Iron Company reports that it has booked orders aggregating a considerable quantity at the reduced prices announced last week. Quotations are: Northern, No. 1X, \$17 @ 17.50; No. 2X, \$15.50 @ \$16; Southern, No. 1X, \$16 @ \$17; No. 2X, \$15 @ \$16.

Spiegeleisen and Ferro-manganese.—Very little is doing in this market, which continues dull and uninteresting. Nominal quotations are: \$27 for 20% spiegeleisen, and \$62 for 80% ferro-manganese.

Steel Rails.—Some sales are reported by Eastern mills, but there has not been a single large transaction. The position of the market continues unchanged. There are several inquiries from railroads, but the old difficulty as to terms is experienced. The railroads are, or appear to be, satisfied that prices will not decline, but they ask concessions as to time, etc., which the mills are not disposed to give. Prices remain: \$30 f. o. b. mill and \$30.70 at tidewater.

Rail Fastenings.—No business is reported in fastenings. In the absence of any sales upon which to base prices, quotations must be regarded as nominal. We quote this week: Fish and angle plates, 1 75 @ 1 80c.; spikes, 2 10 @ 2 15c.; bolts and square nuts, 2 70 @ 2 80c.; hexagonal nuts, 2 80 @ 2 85c.

Merchant Steel.—A fairly good business continues to be reported in the higher grades of merchant steel. The lower grades, more in sympathy with the depression in the general iron market, are quiet. We quote this week as follows: R' Mushet's special, 48c.; English tool, 15c. net.; American tool steel, 7 @ 8c.; special grades, 13 @ 18c.; crucible machinery steel, 4 75c.; crucible spring, 3 75c.; open hearth machinery, 2 25c.; open hearth spring, 2 50c.; tire steel, 2 25c.; toe calks, 2 25 @ 2 50c.; first quality sheet, 10c.; second quality sheet, 8c.

Tubes and Pipes.—For this season of the year a fair business is doing in this market. Prices remain unchanged. We therefore quote ruling dimensions as follows: Butt, black, 5 7 1/2 @ 5 7 1/2c.; galvanized, 4 7c.; lap, black, 6 7 1/2 @ 6 7 1/2c.; lap, galvanized, 5 5c.; boiler tubes, under 3 in. and over 6 in., 5 5c.; 3 in. to 6 in., 6 0c.

Structural Material.—The Steel Beam Association held meetings in this city last week on Thursday, Friday and Saturday, and the result is that it no longer exists. About two years ago when the pool was formed beams were sold at 2c., and even lower in some cases and eleven manufacturers out of the fifteen in this country combined. The mills in the combination were: Passaic Rolling Mill, Cooper, Hewitt & Co., the Allentown Rolling Mill, A. & P. Roberts, the Phoenix Iron Company, the Reading Rolling Mill, the Pottsville Iron & Steel Company, Carnegie, Phipps & Co., Jones & Laughlins, the Columbia Company and the Illinois Steel Company. The companies not in the Association were the North Branch, the Cambria, the Oliver and the Indianapolis Rolling Mill. The price of beams was fixed by the combination at 3 1c. Competition soon set in, the Indianapolis company cutting heavily into the Illinois' business, and here in the East the foreign makers marketing several thousand tons. In view of the condition of affairs a meeting was held in this city. The Illinois company asked to have the pool price of steel beams reduced to 2 5c., in order to put it on a competing basis with the Indianapolis mills. The members who were present finally agreed to make the price of beams 2 8c., and of channels 2 5c. But the representative of Carnegie, Phipps & Co. could not bind his firm without first submitting the proposition to Mr. Carnegie at Pittsburg. Mr. Carnegie, so it is currently reported, has been disinclined to continue his connection with a combination which was rather to his detriment than to his advantage, and when he refused to concur in the changes suggested by the other members of the combination, disruption followed. In consequence of this the market for beams and channels has become demoralized. Some of the mills can manufacture beams so cheaply that it seems only a question of time when the less favored concerns will be forced to the wall. It is for one thing settled that importations from Europe will not continue. The productive capacity of this country is in excess of the present demand, and even of any increased demand which is likely to occur for some time to come. The price of beams has already declined to 2 5c., and still lower prices are anticipated. We quote this week: Angles, 1 90 @ 2 10c.; sheared plates, 1 85c. @ 2 25c.; tees, 2 40 @ 2 60c.; beams, 2 50 @ 2 80 channels, 2 40 @ 2 50c. Universal plates, 2 10c.; bridge plates, 2 10c., on dock.

Old Rails.—No sales are reported in this market, which continues as dull as ever. Nominal quotations are: Old tees, \$20 @ \$21; doubles, \$22 @ \$23. Wrought iron scrap is quoted at \$19 @ \$20.

Chicago, Feb. 3.

(From our Special Correspondent.)

The iron market during the past week was not as active as in January, which month was characterized by unusual heavy sales. These were brought about by the low prices and the belief on the part of consumers that values were as low as they could get, and that the prospective ad-

vance in raw material would stiffen the market later on. Most of the contracts were made to cover long deliveries and were for Northern coke irons. Southern furnaces continue to decline, the acceptance of orders for shipments extending beyond June 30. There is little, if any, improvement in demand for the manufactured article, and prices generally are not as strong as they were. Among the many causes which will greatly stimulate demand for structural iron and steel is the break in the Beam Combination. Plates and sheets, old material and scrap are very dull. Steel rails continue in good demand and the outlook excellent for a heavy tonnage.

Pig Iron.—The market is now firm and there is apparently no disposition on the part of local producers to make any further concessions in prices. During the past month the aggregate tonnage sold has been enormous and some disappointment is felt by furnace agents at the low range of prices at which contracts were taken. But the condition of the market is stronger on account of these sales and it has taken much of the stock which had accumulated during the holidays. Lake Superior charcoal iron is in better shape, orders ranging from 50 to 500 tons are more numerous, at prices varying little from \$17 to \$17.50. Southern soft irons, Nos. 1 and 2, are in some demand, but foundry is dull, as furnaces refuse to make the same long scattered deliveries as Northern makers. On the whole, the situation as regards crude iron is decidedly healthier and more promising.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, \$17@17.50; Lake Superior coke, No. 1, \$15.50@16; No. 2, \$15@15.50; No. 3, \$14@14.50; Lake Superior Bessemer, \$17; Lake Superior Scotch, \$17@17.50; American Scotch, \$17.75@18.25; Southern coke, foundry No. 1, \$15.50; No. 2, \$15; No. 3, \$14.50; Southern coke, soft, No. 1, \$15.50; No. 2, \$14.50; Ohio silveries, No. 1, \$18; No. 2, \$17; Ohio strong softeners, No. 1, \$18; No. 2, \$17; Tennessee charcoal, No. 1, \$18; No. 2, \$17.50; Southern standard car wheel, \$20@21.

Structural Iron and Steel.—The contract for the Art Institute, to be located on the lake front, has been placed with a general contractor. The plans have been modified from original designs to bring it within the appropriation. More work develops each week, and low price of beams and channels will bring them into more general use. Quotations for car lots f. o. b. Chicago are as follows: Angles, \$2@2.15; tees, \$2.30@2.40; universal plates, \$2.12½@2.15; sheared plates, \$2.20@2.30; beams and channels, \$2.50.

Plates.—Aside from the usual routine demand from warehouse there is little new to report. Mill orders are scarce, and whatever is offered is actively competed for. Steel sheets, 10 to 14, \$2.40@2.50; iron sheets, 10 to 14, \$2.20@2.30; tank iron or steel, \$2.10@2.15; shell iron or steel, \$3@3.25; firebox steel, \$4.25@5.50; flange steel, \$2.75@3.25; boiler rivets, \$4.25; boiler tubes, 2½ in. and smaller, 55%; 7 in. and upward, 65%.

Merchant Steel.—There is a fair and reasonable amount of business coming forward from consumers of merchant steel. Tool steel is in more active inquiry from railroads and mining companies. We quote \$6.75@7 and upward; tire steel, \$2.30@2.50; toe ealk, \$2.50@2.65; Bessemer machinery, \$2.10@2.20; Bessemer bars, \$1.90@2; open hearth machinery, \$2.60@2.75; open hearth carriage spring, \$2.40@2.50; crucible spring, \$3.75@4.

Steel Rails.—The new tracks which will be required by the railroads entering the exposition grounds and approaches thereto will amount to a good round tonnage. Orders during the week have been numerous for small quantities of 500 to 2,000 or 3,000 tons and negotiations have been pending for a large block for delivery at a point in Missouri which will probably be placed in a few days. Quotations here are steady at \$32. General track supplies are active. Regular quotations are: 1 80@1 85c. for steel or iron; spikes at \$2.15@2.35 per 100 lbs.; track bolts, hexagonal nuts, \$2.70.

Galvanized Sheet Iron.—Manufacturing consumers are still buying very freely, and manufacturers' agents are having a good demand for mill quantities. Discounts remain steady at 67% off on Juniata, and 67½% and 5% off on charcoal in large lots. Small quantities are quoted at 65% and 10% from list.

Black Sheet Iron.—A few orders were placed last week, but demand is light, though improvement is looked for this month. Prices are unchanged at \$2.85@2.90 Chicago for No. 27 common. Jobbing price is 3-10c. from store.

Bar Iron.—Further irregularity is noted in prices for round lots of 300 to 500 tons made by mills in need of orders. But most agents are firmer at 1-67½@1-70c. f. o. b. Chicago. There is no improvement in demand at present, but mills are laying liberal supplies in view of the expected activity. Dealers quote 1-80@1-90c., according to quality and quantity, and demand improving.

Nails.—Steel cut nails are in better inquiry and demand, but prices are no higher than they have been. Car lots are quoted at \$1.65 Chicago, and \$1.75 from stock. Wire nails are improving both in price and demand, and \$1.85 is bottom on carloads and \$1.90@1.95 from jobbers.

Scrap.—Some business is being done at outside points, but local trade is very dull and prices en-

tirely nominal. No. 1 railroad, \$19; No. 1 forge, \$18; No. 1 mill, \$13; fish plates, \$20.50; axles, \$22; borseshoes, \$18.50; pipes and flues, \$11; cast borings, \$7.50; wrought turnings, \$9.50; axle turnings, \$12.50; machinery castings, \$12; stove plates, \$8.50; mixed steel, \$11.50; coil steel, \$14.50; leaf steel, \$15; tires, \$15.50.

Old Material.—Iron rails are in poor demand and values less strong at \$21.75; old steel rails are dull at \$14 for short and \$15.50@16 for long lengths. Old car wheels are in moderate demand in small quantities, and 50 to 100 ton lots sell readily at \$16.25@16.50.

Louisville. Jan. 30.
(Special Report by HALL BROTHERS & CO.)

There is no change of importance to note for the past week. Sales have been in small quantities mainly, though several inquiries for fair size lots are out for extended deliveries. Very low figures have been accepted by several furnaces. There are signs of improvement in trade among the iron consumers in many branches of the business, several having lately secured good contracts. We quote:

Hot Blast Foundry Irons.—Southern coke, No. 1, \$14@14.25; No. 2, \$13.25@13.75; No. 3, \$13@13.25; Southern charcoal, No. 1, \$16@17; No. 2, \$15.50@16; Missouri charcoal, No. 1, \$17@17.50; No. 2, \$16.50@17.

Forge Irons.—Neutral coke, \$12.50@12.75; cold short, \$12.25@12.50; mottled, \$11.50@12.

Car Wheel and Malleable Irons.—Southern (standard brands), \$18@18.50; Southern (other brands), \$17@17.50; Lake Superior, \$19.50@20.50.

Philadelphia. Feb. 4.
(From our Special Correspondent.)

Pig Iron.—The condition of the pig iron trade is a matter of regret and surprise to a good many makers, who were very confident a month ago, that things would be otherwise than they are. The situation is worse than last week; made so by offerings of iron at lower prices from unexpected sources. Quite a number of makers have suddenly appeared in the market, offering to deliver iron during March, April and May at a trifle less than was quoted last week. The effect of this is not yet apparent. Yesterday and to-day two or three large buyers placed orders for foundry iron, and a number of others will be likely to follow suit. There is not the same weakness in forge iron, although some makers have offered more favorable terms, and business has been done in several instances at \$14.25; at the same time good standard forge is selling at \$15, and there are several makers who will not sell at less. Bessemer is very freely inquired for, but business still continues small. Quotations are about \$17.

Foreign Material.—Business is being done on a basis of \$61 for 80%.

Slabs and Billets.—Several large buyers have made inquiries through brokers here for supplies and also direct to makers, but the business of the past six days foots up very little. March deliveries are quoted for nearby points at \$26, and from that to \$26.75, according to distance.

Muck Bars.—The pressure on muck bars has crowded prices down to about \$25.50, delivered, which is a very low price and ought to bring out large orders.

Merchant Iron.—The placing of orders for 6,000 or 8,000 box cars within the past week has created anticipations among mill men of early orders, but even if the orders come, they will be hooked at the old low quotations, which are somewhere under 1-60c.

Sheet Iron.—A fair demand continues for galvanized and thin sheets at nearly card rates for small lots.

Skelp Iron.—A few small lots have been sold. **Wrought Iron Pipe.**—Discounts are nominal. It is generally understood that makers take a good deal of liberty with quotations. There is no improvement in the market.

Plate and Tank Iron.—The statement is repeated and with more confidence that there will be large orders placed by the ship builders very soon. There is also a good retail demand for boiler plate. Prices are not changed in the least, although an order for steel tank was taken at 1-80c., which, it is intimated, is the average price. Refined is about 2c.; shell, 2-15@2-25c.; flange, 2-50c.

Structural Material.—Quite a commotion was created here on Monday when we heard, on Saturday, of the break in the beam combination. Today's statement is that a large amount of business will now be placed in a great hurry, or at least, as soon as buyers are satisfied that prices have settled down. It was the anticipation of this break that held back a good deal of business, it is said. Bottom quotations are not given as yet, although beams are quoted at 2-40@2-50c.; angles, 1-90c.; tees, 2-40c. This break was quite a surprise to the market.

Steel Rails.—The latest rumor is that two or three Western roads are about to place orders for 50,000 to 55,000 tons, but that Western mills will get them. The rumor cannot be traced to any reliable source. It is certain that there have been no large orders placed in the mills of this state within a few days. Quotations are strong at \$30 at mill.

Old Rails.—Old rails would sell at \$20, but two or three lots now in town are held at \$21. Steel rails, \$17.

Scrap.—Railroad scrap is quoted at \$19@19.50; a few lots are at \$20.

Pittsburg. Feb. 4.
(From our Special Correspondent.)

The market shows no improvement compared with the preceding week, but rather the reverse; prices for most description are lower. Consumers seem to have a sufficient stock on hand and are evidently disposed to wait and take their chances for their next supply. The January sales of raw iron reached the aggregate of 173,995 tons, the largest sales for that month on record, exceeding January last year 88,933 tons. From this it can be perceived that consumers are certainly in a pretty good condition to hold off at least for a time. Under these circumstances the outlook is not very favorable.

The following are the sales of raw iron in January for the past five years:

Tons.	1888.	1889.	1890.	1891.	1892.
January 7.....	11,440	23,970	50,225	21,551	71,900
" 14.....	11,135	15,153	37,890	13,266	41,843
" 21.....	9,361	13,875	32,500	21,415	28,940
" 28.....	8,335	13,215	26,665	28,830	31,310
Total.....	40,270	66,213	147,270	85,062	173,995

Since our last report there has been a general slackening of trade and prices have been perceptibly weakened, while the production of pig iron still continues at a phenomenal rate. The demand is falling off a little, and there are more sellers than buyers, not only of pig iron but also in every branch of the trade. Stocks of unsold iron are growing gradually, although the aggregate of the surplus is still small in comparison with the great consumption.

The Louisville & Nashville Railroad has placed an order for 6,000 tons of steel rails with Carnegie Bros. & Co., the price being \$30, at the works; an order for the same amount by the same parties was placed with the Cambria Iron Company.

The president of a prominent Southern iron mill says: "I was in Pittsburg a few days ago and in conversation with the managers of the most prominent iron manufactures there was told that business has suddenly sprung into great activity, and for the last ten days orders have been pouring in on them, giving them all they can do for months to come." The Thomas Iron Company, one of the largest Eastern producers, has announced a reduction of 50 cents per ton on foundry grades, but this merely signifies meeting figures named by competitors for some time past. Eastern prices are from \$1 to \$1.25 per ton above Pittsburg prices. A Philadelphia paper says a Pittsburg mill has secured an order for 2,500 tons of ship plates for San Francisco at \$1.85, at mill. The following sales are reported:

Coke Smelted Lake and Native Ores.	
2,000 Tons Bessemer, July, March.....	\$15.25 cash.
1,500 Tons Bessemer.....	15.25 cash.
1,000 Tons Bessemer, March, April.....	15.15 cash.
1,000 Tons Bessemer, city furnace.....	15.50 cash.
1,000 Tons Grey Forge.....	13.50 cash.
800 Tons Mill, city furnace.....	13.50 cash.
750 Tons Mill, city furnace.....	13.50 cash.
750 Tons Grey Forge.....	13.35 cash.
500 Tons off Bessemer.....	14.50 cash.
500 Tons Bessemer.....	14.40 cash.
500 Tons Grey Forge.....	13.30 cash.
300 Tons Mill, Extra.....	14.00 cash.
300 Tons Extra Bessemer.....	16.00 cash.
100 Tons No. 1 Foundry.....	15.75 cash.
100 Tons No. 2 Foundry.....	14.75 cash.
50 Tons No. 2 Foundry.....	15.00 cash.
50 Tons Silvery.....	16.00 cash.
50 Tons No. 2 Foundry.....	14.50 cash.
Charcoal.	
150 Tons No. 2 Foundry.....	20.00 cash.
100 Tons No. 1 Foundry.....	21.00 cash.
160 Tons Old Blast.....	26.75 cash.
75 Tons Cold Blast.....	25.50 cash.
75 Tons Warm Blast.....	19.00 cash.
Steel Slabs and Billets.	
2,000 Tons Ste l Billets del. next three mo's.....	25.40 cash.
1,500 Tons Steel Billets and Slabs, March, April.....	25.00 cash.
1,000 Tons Steel Billets.....	25.00 cash.
500 Tons Steel Billets.....	24.75 cash.
500 Tons Steel Billets and Slabs, March, April.....	24.50 cash.
50 Tons Small Size.....	28.00 cash.
Muck Bars.	
500 Tons Neutral, spot.....	24.50 cash.
500 Tons Neutral.....	26.00 cash.
500 Tons Neutral.....	25.75 cash.
Ferro-Manganese.	
80 Tons 80% Domestic.....	63.00 cash.
50 Tons 80%, del.....	63.00 cash.
Skelp Iron.	
300 Tons Sheared Iron.....	1.80 4m.
300 Tons Narrow Grooved.....	1.57½ 4m.
200 Tons Wide Grooved.....	1.60 4m.
Steel Wire Rods.	
600 Tons American Fives, at Mill.....	33.50 cash.
500 Tons American Fives at Mill.....	34.00 cash.
Bloom and Rail Ends.	
1,200 Tons Bloom and Beam Ends.....	17.50 cash.
Old Iron and Steel Rails.	
500 Tons Old Steel Rails.....	17.25 cash.
500 Tons Old Steel Rails.....	17.00 cash.
500 Tons Old Iron Rails.....	21.75 cash.
500 Tons Mixed Steel Rails.....	17.00 cash.
300 Tons Old Iron Rails.....	22.00 cash.
Scrap Material.	
1,000 Tons Cast Scrap, gross.....	13.20 cash.
300 Tons No. 1 W. R. R. Scrap, net.....	18.00 cash.
225 Tons Coil Springs, gross.....	19.00 cash.
100 Tons Coil Springs, gross.....	18.75 cash.
400 Tons Soft Steel Scrap, gross.....	17.40 cash.

NEW YORK MINING STOCKS QUOTATIONS. DIVIDEND-PAYING MINES. NON-DIVIDEND-PAYING MINES.

Main table of New York Mining Stocks Quotations, listing various mining companies and their stock prices from Jan. 30 to Feb. 5, 1892. Includes columns for Name and Location of Company, dates, and sales.

Ex-dividend. +Dealt at in the New York stock Ex. Unlisted securities. †Assessment paid. ‡Assessment unpaid. Dividend shares sold, 22,018. Non-dividend shares sold 19,275. Total shares sold, 41,293.

BOSTON MINING STOCK QUOTATIONS.

Table of Boston Mining Stock Quotations, listing various mining companies and their stock prices from Jan. 29 to Feb. 4, 1892. Includes columns for Name of Company, dates, and sales.

Dividend shares sold, 12,774. Non-dividend shares sold, 9,530. Total shares sold, 22,304.

COAL STOCKS.

Table of Coal Stocks, listing various coal companies and their stock prices from Jan. 30 to Feb. 5, 1892. Includes columns for Name of Company, dates, and sales.

Total shares sold, 375,179.

San Francisco Mining Stock Quotations.

Table of San Francisco Mining Stock Quotations, listing various mining companies and their stock prices from Jan. 29 to Feb. 4, 1892. Includes columns for Name of Company, dates, and sales.

DIVIDEND-PAYING MINES.

NON-DIVIDEND PAYING MINES.

Main table with columns: NAME AND LOCATION OF COMPANY, CAPITAL STOCK, SHARES, ASSESSMENTS, DIVIDENDS, NAME AND LOCATION OF COMPANY, CAPITAL STOCK, SHARES, ASSESSMENTS. Lists various mining companies and their financial details.

G. Gold, S. Silver, L. Lead, C. Copper. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid \$1,400,000. ‡ Non-assessable for three years. § The Dea... previously paid \$275,000 in eleven dividends and the Terra \$75,000. ¶ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Con. Virgin... 40,000,000. ¶ Previous to the consolidation of the Copper Queen with the Atlanta, August, 1888, the Copper Queen had paid \$1,350,000 in dividends. † This company paid \$130,000 before reor... ganisation in 1890. ** This company acquired the property of the Raymond & Ely Company which had paid \$3,075,000 in dividends.

STOCK MARKET QUOTATIONS.

Aspen. Feb. 1. The closing quotations were as follows: Agnes C. Junata, Aspen Deep Shaft, Aspen Contact, Best Friend, Bimetallie, Bushwacker, Carbonate Chief, Della S., Homer & Alta, Justice, Little Annie, Mollie Gibson, Nolan Creek, Park, Maunie & Queen, Pontiac, Sheep Mountain S. & M. Co., Smuggler, St. Joe & Mineral Farm, Yellow Boy.

Baltimore, Md. Feb. 4. COMPANY. Atlantic Coal, Balt. & N. C., Big Vein Coal, Conrad Hill, Cons. Coal, Diamond Tunnel, George's Creek Coal, Lake Chrome, Maryland & Charlotte, North State, Silver Valley.

Pittsburg, Pa. Prices highest and lowest for the week ending Feb. 4. COMPANY. Allegheny Gas Co., Bridgewater Gas Co., Chartiers Val. Gas, Columbia Oil Co., Consignee Mining Co., Consolidated Gas Co., East End Gas Co., Fisher Oil Co., Forest Oil, Hazelwood Oil Co., Hidalgo Mining Co., La Noria Mining Co., Luster Mining Co., Mansfield & C. Co., Manufacturers Gas Co., Nat. Gas Co. of W. Va., N. Y. & Cleve. Gas Coal Co., Ohio Valley Gas Co., Pennsylvania Gas Co., People's Natural Gas Co., People's N. G. & P. Co., Philadelphia Co., Pine Run Gas Co., Pittsburg Gas Co., Red Cloud Mining Co., Silverton Mining Co., South Side Gas Co., Sterling Silver Mining Co., Tuna Oil Co., Union Gas Co., Washington Oil Co., Wheeling & Camb., Wheeling Gas Co., W. House E. Light, W. House Air Brake Co., W. House Brake Co., Ltd.

St. Louis. Feb. 3. CLOSING PRICES. Bid. Asked. Adams, Colo., American & Nettie, Colo., Bi-Metallic, Mont., Central Silver, Elizabeth, Mont., Granite Mountain, Mont., Little Albert, Montrose Placer, Colo., Mickey Breen, Pat Murphy, Colo., Small Hopes, Colo., Silver Age, Yuma, Ariz.

Helena, Mont. (Special report by SAMUEL K. DAVIS.) Prices highest and lowest for week ending Jan. 30, 1892. Bald Butte (Mont.), California (Castle), Mont., Champion (Oro Fino), Mont., Combination (Phillips'), Mont., Copper Bell (Cataract), Mont., Cumberland (Castle), Mont., Elizabeth (Phillipsburg), Mont., Florence (Schhart), Mont., Fourth of July, Wash., Glengary (Butte), Mont., Helena & Victor, Mont., Iron Mountain (Missoula), Mont., Iron Mountain Ext., Jersey Blue (Butte), Jumbo (Castle), Mont., Lone Pine Consolidated, Mac (Unionville), Mont., None such (Unionville), Mont., Poorman (Cour d'Alene, Idaho), Queen of the Hills (Neihart), Southern Cross (Deer Lodge), Mont., Yellowstone (Castle), Mont.

Trust Receipts. *Rates at the New York Stock Exchange for week ending Feb. 5: American Cotton Oil, National Lead.

Trust Stocks. Special report by C. I. Hudson & Co., members New York Stock Exchange. The following are the closing quotations Feb. 5: CERTIFICATES. Am. Cotton Oil, Am. Sugar Refineries, Distillers' & Cattle Feeders, Linsced Oil, National Cordage, National Lead Trust etc., Standard Oil, W. U. Beef Co.

Foreign Quotations.

London. Jan. 22. Highest. Lowest. Amador, Cal., American Belle, Colo., Appalachian, N. C., Can. Phosphate, Can., Colorado, Colo., Cons. Esmeralda, Nev., De Lamar, Idaho, Dickens Custer, Idaho, East Arvalo, Idaho, Elkhorn, Mont., Elmora, Idaho, Emma, Utah, Flagstaff, Utah, Garfield, Nev., Golden Feather, Golden Gate, Cal., Golden Leaf, Mont., Golden River, Cal., Jay Hawk, Mont., Josephine, Cal., Kohinoor, Colo., La Luz, Mex., La Plata, Colo., La Valera, Mex., Maid of Erin, Colo., Mammoth Gold, Ariz., Montana, Mont., New California, Colo., New Consolidated, New Eberhardt, Nev., New Gold Hill, N. C., New Hoston, Colo., New Hoover Hill, N. C., New Russell, N. C., New Viola, Idaho, Old Lout, Colo., Parker Gold, N. C., Pittsburg Cons., Nev., Richmond Con., Nev., Ruby, Nev., Sam Christina, N. C., Sierra Buttes, Cal., Plumas Eur., Cal., United Mexican, Mex., U. S. Placer, Colo., West Argentine, Colo., Yankee Girl, Colo.

Paris. Jan. 21.

East Oregon, Ore., Forest Hill Divide, Cal., Golden River, Cal., Laurium, Lexington, Mont., Nickel, Rio Tinto, Spain, Tharsis, Spain, Vieille-Montagne.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified. Acid-Acetic, No. 8, pure, 1.040, Commercial, in bbls. and chys., Carbonic, liquefied, Chromic, chem pure, for batteries, Hydrobromic, dilute, U. S. P., Hydrocyanic, U. S. P., Hydrofluoric, Absolute, Ammoniated, Alum-Lump, Chromium, Powdered, Lump, Aluminum-Sulphate, Amalgamating solution, Ammonia-Sul., in bbl. lots, Carbonate, English and German, Muriate, white, in bbls., Aqua Ammonia-(in cys), Antimony-Oxymur, Regulus.

Argois-Red, powdered, Arsenic-White, powdered, Yellow, White at Plymouth, Asbestos-Canadian, Italian, Ashes-Pot, 1st sorts, Pearl, Asphaltum, Prime Cuban, Hard Cuban, Trinidad, refined, Egyptian, Californian, at mine, at San Francisco, Barium-Carbonate, pure, Chlorate, crystal, Chloride, commercial, Iodide, Nitrate, powdered, Sulph., Am. prime white, Sulph., foreign, floated, Sulph., off color, Carb., lump, f. o. b. L'pool, No. 1, Casks, Runcorn, No. 2, bags, Runcorn, Bauxite, Bichromate of Potash-Scotch, American, Bichromate of Soda, Borax-Refined, San Francisco, Concentrated, in car lots, Refined, Liverpool, Bromine, Cadmium, Cadmium Iodide, Chalk, Precipitated, China Clay-English, Southern, Chlorine Water, Chrome Yellow, Chrome Iron Ore, Franciscan, Chromalum-Pure, Commercial, Cobalt-Oxide, Copper-Sulph. English Wks, Vitriol (blue), ordinary, Nitrate, Copperas-Common, Best, 100 lbs., Liverpool, ton, in casks, Corundum-Powdered, Flour, Cryolite-Powdered, Emery-Grain, Flour, Epsom salt, Feldspar-Ground, Crude, Fluorspar-Powdered, No. 1, French Chalk, Filler's Earth-Lump, Glauber's Salt-in bbls., Glass-Ground, Gold-Chloride, pure, crystals, pure, 15 gr. c. v., liquid, 15 gr. g., Chloride and sodum, Oxide, Gypsum-Calcined, Land Plaster, Iodine-Resublimed, Iron-Nitrate, Kaolin-See China Clay, Kieserite, Lead-Red, White, American, in oil, White, English, in oil, Acetate, or sugar of, white, Granulated, Nitrate, Lime Acetate-Am. Brown, Litharge-Powdered, English flake, Magnesite-Crude, Calcined, Brick, ton of 1,015 kilos, Calcined, ton of 1,015 kilos, Manganese-Ore, per unit, Oxide, ground, per lb., Mercuric Chloride-Corrosive Sublimite, Powdered, Marble Dust, Metallic Paint-Brown, Red, Mineral Wool-Ordinary slag, Ordinary rock, Ground, Mica-In sheets according to size, 1st quality, Naptha-Black, Nitre Cake, Ochre-Rochelle, Washed Nat Oxf'rd, Lump, Washed Nat Oxf'rd, Powder, Golden, Domestic, Cylinder, light filtered, Dark filtered, Extra cold test, Dark steam refined, Phosphorus, Precip., red, white, Plumbago-Ceylon, American, Potassium-Cyanide, Bromide, domestic.

Chlorate, English, Chlorate, powdered, English, Carbonate, lb. by casks, Caustic, lb. pure slick, Iodide, Nitrate, refined, Bichromate, Yellow Prussiate, Red Prussiate, Pumice Stone-Select lumps, Original cks., Powdered, pure, Pyrites-Non-cupreous, p. units, Quartz-Ground, Rotten Stone-Powdered, Lump, Original cks., Rubbing stone, Sal Ammoniac-lump, in bbls., Salt-Liverpool, ground, Domestic, fine, Common, fine, Turk's Island, bush, Salt Cake-iron ton, Sulphate-Crude, Soapstone-Sodium-Prussiate, Phosphate, Stannate, Taungate, Hyposulphite, in casks, Strontium-Nitrate, Sulphur-Roll, Fluor, Sylvinit, Talc-Ground French, Terra Alba-French, English, American, No. 1, American, No. 2, Tin-Crystals, in kegs or bbls., feathered or flossed, Muriate, single, Double or strong, 51° B., Oxy. or nitro., Tin Plates, charcoal, Vermillion-Imp. English, Am. quicksilver, bulk, Am. quicksilver, bags, Chinese, Trieste, American, Artificial, Zinc White-Am., Dry, Antwerp, Red Seal, Paris, Red Seal, Muriate solution, Sulphate crystals, in bbls.

THE RARER METALS.

Arsenic-(Metallic), per lb., Barium-(Metallic), per gram, Bismuth-(Metallic), per lb., Cadmium-(Metallic), per lb., Calcium-(Metallic), per gram, Cerium-(Metallic), per gram, Chromium-(Metallic), per gram, Cobalt-(Metallic), per lb., Didymium-(Metallic), per gram, Erbium-(Metallic), per gram, Gallium-(Metallic), per gram, Glucium-(Metallic), per gram, Indium-(Metallic), per gram, Iridium-(Metallic), per oz., Lanthanum-(Metallic), per gr., Lanthanum-(Metallic), per gram, Magnesium-(Powdered), per lb., Manganese-(Metallic), per lb., Obem. pure, per oz., Molybdenum-(Metallic), per gm., Niobium-(Metallic), per gram, Osmium-(Metallic), per oz., Palladium-(Metallic), per oz., Platinum-(Metallic), per oz., Potassium-(Metallic), per lb., Rhodium-(Metallic), per gram, Ruthenium-(Metallic), per gram, Rubidium-(Metallic), per gram, Selenium-(Metallic), per oz., Sodium-(Metallic), per lb., Strontium-(Metallic), per gm., Tantalum-(Metallic), per gram, Tellurium-(Metallic), per lb., Thallium-(Metallic), per gram, Titanium-(Metallic), per gram, Thorium-(Metallic), per gram, Tungsten-(Metallic), per lb., Uranium-(Oxide), per lb., Vanadium-(Metallic), per gm., Yttrium-(Metallic), per gram, Zirconium-(Metallic), per oz.

BUILDING MATERIAL.

Bricks-Fronts, nominal, Croton, Wilmington, Philadelphia, Trenton, Baltimore, Building Stone-Amherst freestone, eu. ft., Brownstone, Portland, eu. ft., Granite, rough, eu. ft., Cement-Rosendale, Portland, American, Portland, foreign, Roman, Keene's coarse, Keene's fine, Slate-Purple and green roofing, square, Red roofing, square, Black roofing, square, Lime-St. Johncom, and finish, Glast Falls, com. and fin.