

# THE ENGINEERING AND MINING JOURNAL



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

VOL. LIII. JAN. 30. No. 5.

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

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

SOPHIA BRAEUNLICH, Business Manager

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. 27 Park Place, New York. SOPHIA BRAEUNLICH, Sec'y & Treas.

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

### CONTENTS.

The Production of Steel Rails in 1891 .....	Page. 151
The United States Gold Placers Fraud .....	151
The Profits in Mining; Gold and Silver Mining Companies.—II..	151
Canadian Apatite Mining.....By Geo. Spotswood, M. E.	153
The Jones Mine, Pennsylvania .....	By John H. Hardin, M. E. 153
The Free Coinage Question.....By Posey S. Wilcox	153
Some Improved Metallurgical Processes.....By A.D. Hodges, Jr.	153
The Heat-Balance of the Blast Furnace.....By H. B. C. Nitze, E.M.	1 4
* Professor Martens on Drop Tests.....By G. C. Henning, M. E.	155
* Steel Rail Pit Props.....	156
Production of Bessemer Steel Rails in the United States in 1891.	156
A Japanese Sulphur Mine.....	157
Production of Pig Iron in United States in 1891.....	158
Prominent Men in the Mining Industry; John Wesley Powell ..	159
Official Reports; Granite Mountain Mining Co.....	160
Valentine's Statistics of the Production of Gold and Silver in the United States and Mexico in 1891 .....	160
The Nitrate Trade in 1891.....	161
Digest of Decisions of the Secretary of the Interior Relating to the Mining Industry .....	161
James Lewis & Sons' Copper Statistics for 1891 .....	161
Patents Granted.....	161
Personals — Obituary — Societies — Industrial Notes — Machinery and Supplies Wanted.....	162-163
Notes: Cost of Producing Iron in England, 155—Manganine; A New Alloy, 155—A Coke Works Equipment, 156—A Large Diamond, 156—A New Process of Copper Smelting, 157—Mannesmann Tubes, 158—A New Coating for Metals, 158—Railroad Building in the United States in 1891, 158—Old Iron Rails, 160—Magnesite Slabs, 160—A Direct Process for Smelting Iron, Etc., 160—Profit in Cinder Fig, 161.	

\* Illustrated.

MINING NEWS:	Washington.....166	Coal Stocks.. 172	Pittsburg.....169
Arizona.....163	West Virginia.. 166	New York.....172	METALS.....169
California.....163	FOREIGN:	San Francisco. 172	IRON:
Colorado.....163	Canada.....166	Baltimore.....174	New York.....170
Florida.....164	Mexico.....167	Helena.....174	Chicago.....171
Idaho.....164	MEETINGS.....168	Pittsburg.....174	Louisville.....171
Illinois.....164	DIVIDENDS.....168	St. Louis.....174	Philadelphia.. 171
Michigan.....164	ASSESSMENTS.....168	Trust Stocks.. 174	Pittsburg.....171
Minnesota.....165	MINING STOCK	Aspen.....174	BUIDING MATER-
Missouri.....165	MARKETS:	London.....171	IAL MARKET. 174
Montana.....165	New York.....167	Paris.....174	CHEMICALS AND
Nevada.....165	Boston.....168	MARKETS:	MINERALS.....167
New Mexico.. 165	Denver.....168	COAL:	CURRENT PRICES
North Carolina. 166	San Francisco. 168	New York.....169	Chemicals.....174
Oregon.....166	St. Louis.....168	Boston.....169	Minerals.....174
Pennsylvania.. 165	St. Louis.....168	Buffalo.....169	Rarer Metals.. 174
South Dakota.. 166	Pipe Line.....168	Chicago.....169	ADVT. INDEX... 19
Tennessee.....166	MINING STOCK		
Vah.....166	TABLES:		
	Boston.....172		

THE trouble which has been brewing in the Cœur d'Alene district for many months has come to a head, and, as a result, most of the important mines there have been closed down. The immediate cause of this action is said to be the old difficulty between the mines and railways concerning freight rates. On January 1st, 1890, the rate on ore from the Cœur d'Alene to the Missouri River was increased \$2 per ton, making the total \$18 per ton. The mine owners grumbled much thereat, but submitted. Now the railways propose to make a further increase of \$2 per ton, which would be apparently the last straw on these overloaded mines, and they have consequently suspended operations until the question is settled; in the meanwhile they have sent a committee to Chicago to discuss the situation with the railway officials.

This subject of freight rates has been agitating the Cœur d'Alene miners for several years, and there is no doubt that they have been treated rather harshly by the railways, which have maintained unduly high freight rates. Last year the miners were compelled to organize a combination—the Mine Owners' Association—for their own protection, and it is this body that has now taken up the fight. It is to be hoped that it will be successful, and that the railways will be made to see the folly of pursuing this policy, which is retarding the development of the Cœur d'Alene district.

Whatever be the outcome of this contest, the year does not open auspiciously for the Cœur d'Alene, with all its important mines idle; while in the background hovers the dark shadow of possible labor difficulties. It will be remembered that the Bunker Hill & Sullivan Company was obliged to suspend operations for a short time last autumn on this account, and at the close of the year it was fully expected that there would be, early in January, a general shut down of mines and mills, owing to the arbitrary action taken by the labor organizations. This complication seems to have been avoided temporarily at least. However, it is obvious that with the production almost entirely stopped for one month, and perhaps more, and with other difficulties impending, the lead output of this district is likely to show a falling off in 1892.

### THE PRODUCTION OF STEEL RAILS IN 1891.

According to the annual report of the American Iron and Steel Association, just issued, an abstract of which will be found on another page, the make of steel rails, of all kinds, in the United States in 1891 was 1,366,259 tons of 2,000 lbs., against 2,013,188 tons in 1890, a falling off of 646,929 tons, which accounts for the greater part of the decline in the make of pig iron in 1891. In our Statistical Number, published Jan. 2, 1892, we reported the production in 1891 as 1,090,000 tons, while we should have said "the total of standard sections, as reported by the Rail-makers' Association." This oversight caused the erroneous impression that our figures covered the entire make of rails, which was not the case. We must add to our figures the amount of rails of light sections (below 50 lbs. to the yard) to get the correct total of 1,366,259 tons reported by the Iron and Steel Association.

### THE UNITED STATES GOLD PLACERS FRAUD.

The strong light of official investigation thrown recently upon the United States Gold Placers, Limited, in London has disclosed another disgraceful fraud upon the English investing public—one no less injurious to legitimate mining interests in America than to the unfortunate shareholders. Yet, while this scheme, disgraceful in its inception, iniquitous in its promotion, and thoroughly unprincipled in its management, was drawing upon English capital, through false representation, the Colorado newspapers, some of which undoubtedly were acquainted with the facts, refrained from publishing them, presumably because the sale of the mines would bring a certain amount of money into the State.

They and many individuals who knew the facts did not think of the certainty of injury to our mining interests which every swindle, and even every unsuccessful mining enterprise begets, or they would have denounced this fraud or placed the information in the hands of the ENGINEERING AND MINING JOURNAL, where its publication would have effectually prevented its consummation. It is our boast that no mining fraud can be carried through if the ENGINEERING AND MINING JOURNAL knows the facts in the case. In this instance the foolish shareholders who subscribed £142,836 on faith in preposterous promises of profit would have saved their money, and the mining industry would have been saved a very injurious reputation.

The English and American promoters of this fraudulent scheme share with the officers of the English company the opprobrium; the latter, in fact, not content with the first loss of the subscribers, systematically drained them by "calls" or assessments, after it had been demonstrated that the project could never succeed. The receiver appointed by the English courts in winding up the affairs of this ill-begotten company recommends an investigation into this.

It is some satisfaction to know that the chairman of the company, Thomas Gilbert, has been prosecuted criminally for embezzlement and falsification of accounts in his administration of the Gold Queen, Limited,

which was organized in 1888 to take over certain mining properties in Montrose County, Colorado.

It is fortunate indeed that frauds of so pronounced a nature are seldom brought forward, but it is true, nevertheless, that to these occurrences may be laid much of the stagnation and lack of confidence in mining investments manifested at the present time. Colorado newspapers should not be shortsighted: they, of all others, should recognize that one such affair will counteract the good effect of a dozen glorious successes.

#### II.—THE PROFITS IN MINING; GOLD AND SILVER MINING COMPANIES.

In our last issue we discussed the profits realized from mining investments, with especial reference to the Lake Superior copper mining companies. We showed that the dividend-paying mines of this group had yielded in 1891 about 8.5 per cent. upon their average market value during the year, and in 1890, about 7.5 per cent., the latter figure, however, being evidently below the normal rate. From the figures presented it seemed that from 8 per cent. to 8.5 per cent. was the return generally expected from investments in these stocks.

Turning to the gold and silver mining companies, the figures obtained are less satisfactory, as there is no group of mines owned entirely by public companies which make statements of their earnings and dividends paid. Nevertheless, an analysis of these figures, so far as rendered, is interesting, and furnishes some valuable deductions.

With respect to the Montana silver mines the most noteworthy feature was the great decrease in the payments of the famous Granite Mountain mine, which, in 1890, led the list with the sum of \$2,400,000 paid to the stockholders. For the first two months of 1891 it continued to pay at the rate of \$200,000 per month, but subsequently the dividends were reduced to one-half that amount, and the total for the twelve months was but \$1,400,000. The price of the shares fell at the same time the dividend rate was reduced, and at the end of the year represented a market value of \$7,000,000, against \$17,200,000 at the same time in 1890. On the average market value of the year the return was about 14 per cent., or nearly the same as in the two preceding years. The decrease in the dividends of this company was due to the falling off in the grade of the ore. During the fiscal year ending July 31, 1890, according to the official report, the amount of ore crushed in the mills was 60,212 tons, of which the average assay was 70.94 ounces silver per ton; during the fiscal year ending July 31, 1891, 68,850 tons were crushed, the average assay being 50.6 ounces silver per ton.

The decrease in the amount of dividends paid by the Granite Mountain Company was in considerable measure made up by the increase of its neighbor, the Bimetallic, which paid \$290,000 in 1890, and \$840,000 in 1891. The dividends of 1891 represented about 14 per cent. on the average market value of the stock. On the basis of the market value at the end of the year 1891, dividends continuing at the present rate, an investment in these shares would realize nearly 15.3 per cent. In 1890 the rate was much lower, this being due, of course, to the high price set upon the stock for its prospective and speculative value; hence comparisons would be misleading. In 1891, the capacity of the mine being better understood, the rate rose more nearly to its actual investment level.

Of the other Montana silver mining companies the record of the Elkhorn is the most noticeable, it having declared dividends to the amount of \$375,000, or treble that paid in 1890. On the average market value of its shares it paid 30.7 per cent. in 1891. This is one of the English companies of comparatively recent organization that have proved such fortunate investments for their shareholders. Nearly all the silver mining companies of Montana did well in 1891 and paid increased dividends, notwithstanding the fact that the price of silver was low and declining. Including the dividends paid by the gold and copper companies of Butte, the State of Montana leads all others in the aggregate of payments, the total being \$4,346,500.

The mines of Colorado paid \$3,315,675, the largest dividend payer being the famous Mollie Gibson mine of Aspen, which appears on the list for the first time with \$1,000,000 to its credit; Aspen is also represented by the Aspen Mining and Smelting Company, which paid \$100,000 against \$200,000 in 1890, while the Best Friend paid \$70,000, and the Little Rule \$120,000. Two Leadville companies paid dividends, viz., the Maid of Erin, the English successor of the Henriett & Maid, and the Adams, whose property is worked under lease by the first named company. The sulphide ore chute extending through these mines has proved better than was expected, and both companies have been able to declare large dividends in consequence; the Adams paid nothing in 1890. Some of the best results are shown by mines in the San Juan district. Thus the New Guston paid \$440,000, which was 80 per cent. on its capital stock, and a little more than 25 per cent. on its average market value during the year. This is one of the most successful investments of Englishmen in American silver mines. The present company, a reconstruction of another of the same name which was a failure, has repaid within the past three years the money put into it more than twice over. The Yankee Girl, which has paid more dividends than any other mine in the San Juan, has not had so prosperous a year, however, having been

obliged to pass one of its quarterly payments. One of the important events of the year in this section of the State was the sale of the Enterprise group of mines at Rico to the Enterprise Mining Company, which commenced work early in the autumn and at the end of the first quarter paid a dividend of \$250,000, or at the rate of 40 per cent. on its capital stock.

Of the Utah stocks, Ontario and Daly both paid the same dividends as in 1890, the amounts being \$900,000 and \$450,000, respectively, which were 14 per cent. in each case on the average market value of the shares during the year. The rates in 1890 were about the same. Horn Silver paid \$200,000 in 1891, as in 1890, or 14.7 per cent. on its average market value. Mammoth, of Tintic, which ranked second among the dividend payers of Utah in 1890, continued to declare dividends at its regular rate for the first six months of 1891, but then suspended, the mine being practically closed down until autumn. Dividends were resumed in November, the total for the year being \$320,000, or 23.5 per cent. on its average market value. Centennial-Eureka, also a Tintic mine, made a largely increased output, several rich strikes having been made, and paid a total of \$330,000 in dividends, 21 per cent. on the average market value of the shares, which was an increase of \$157,500 over 1890.

Consolidated California & Virginia was again the only Comstock mine to declare a dividend. Its total for the year was \$216,000, against \$162,000 in 1890. Owing to manipulation the fluctuations in the value of this stock during the year were great, ranging from \$2.10 to \$20.50. Consequently it is difficult to determine the exact average, but the figure was probably about \$7.35. Assuming this as a basis, these shares yielded a little more than 13.5 per cent. in 1891. No comparisons concerning the Comstock mines are worth anything, however, as all of the mines are controlled by the swindling mill ring which the ENGINEERING AND MINING JOURNAL has so often denounced, and in none of the mines so controlled is mining honestly conducted. The only other Nevada mine paying a large amount was the Cortez, another successful English company, of recent organization, which paid \$250,000, against \$173,000 in 1890.

Of the Idaho mines the Cœur d'Alene paid only one-half the amount that it did in 1890, while the Red Cloud paid four times as much. The DeLamar, which was taken over by an English company early in the year, paid two dividends of \$75,000 each, or 6½ per cent. on the present market value of its shares. This company has been working throughout the year, however, with a small and inadequate mill, a larger mill having been in course of construction. The value of the stock consequently was largely speculative and prospective; hence the low ratio between the dividends paid and the market value of the shares. No Arizona mine is reported as having paid a dividend in 1891, while the Silver Mining Company of Lake Valley was the only important one of New Mexico. Its dividends amounted to \$80,000, or 40 per cent. on its market value, against \$180,000 in the preceding year.

In California the Kennedy paid the largest dividend, showing a very great increase over its payments in 1890. Of the other gold mines of the State the famous old Idaho and the Champion paid increased amounts, while several companies appear in the list for the first time. Three quicksilver companies paid dividends, viz.: the Quicksilver, which paid less than in the preceding year; the Napa, which paid more; and the Great Western, which had paid none prior to 1891.

The Alaska-Treadwell Gold Mining Company of Alaska paid \$450,000. The Homestake of Dakota paid \$150,000, the same amount as in 1890; but the dividends in 1891 were at the rate of but 10.9 per cent. on the average market value during the year, against 12.4 per cent. in 1890.

Summarizing the foregoing, it would appear that the investor in Lake Superior copper mines is satisfied with a return of from 8 per cent. to 8.5 per cent. on his money. These mines have long records as steady dividend payers; they are located on wonderfully strong and uniform lodes; and they are opened a long way ahead; so that the prime point of consideration, with respect to their immediate value, is the price of the copper. It is impossible to make comparisons between the Butte copper mines and those of Lake Superior, as Boston & Montana is the only one of the former that furnishes data, the shares of the Parrot not being listed on any exchange. Turning to the silver mines, the Ontario & Daly, Granite Mountain and Bimetallic constitute a distinct group, the mines being of similar character and the shares of the companies being held almost entirely as investments. All are located upon strong, well defined fissure veins, mineralized in rich, strong and continuous chutes; all have been steady dividend payers since they were opened; all are well explored, and have large ore reserves. The dividend rates of these companies for the past three years have agreed very closely, ranging between 13 per cent. and 16 per cent., and these limits may be taken as the return expected from investments in these stocks, and stocks of similar character. It is difficult to make further classification, the dividends paid by other mines ranging from 1 per cent. to 40 per cent. Such good properties as the Mammoth, Centennial-Eureka, New Guston, Enterprise and Elkhorn, all well opened and with good ore reserves, pay over 20 per cent. The conclusion to be arrived at from these data is clearly that legitimate mining is an extremely profitable investment.

## 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.

## Canadian Apatite Mining.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Concerning Dr. Wyatt's statement that it costs \$14 per ton to mine Canadian apatite, I have the authority of the Dominion minister of agriculture for saying his department has no such statistics and there is no such official statement elsewhere. Also there is no such information in the Ontario reports; in fact there is no record of the cost of mining this mineral collected by these governments.

I would suggest if your readers who are experimenting with finely ground phosphates as a fertilizer would mix it intimately with ground sulphate of lime they would get better results, but think it in the end cheaper to give plants digestible food or acid phosphates.

KINGSTON, Ont., December, 1891.

GEO. A. SPOTSWOOD, M. E.

[Our correspondent has evidently not read "The Phosphates of America." If he will kindly do so, with special attention to chapter 3, pages 42, 43, he will find a very complete answer to his criticism and full justification of the figures in question.—Ed. E. & M. J.]

## The Jones Mine, Pennsylvania.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your issue of the 23d under the head of "General Mining News" you refer to the Jones mine, Caernarvon Township, Berks County, Pa., as "to be abandoned" for the reason "the expense of following the ore is considered too great in the present condition of the iron trade."

The Jones mine is part of the "Warwick Reserve" in Berks and Chester counties belonging in unequal portions to several parties, the larger parts to the Phenix Iron Company, Phenixville, and the E. & G. Brooke Iron Company, Birdstown, which have mined in partnership at the Jones mine for more than ten years.

Jones mine suspended Oct. 30, 1891, the owners having at French Creek and Bazertown mines a full supply of sulphury ore to carry them over the winter, the Jones being an open excavation, while the operations of the other two are underground, protected from the weather. The pump was removed, it being less costly to pump all at once, on resumption, rather than continuously until that time. That is all there is in it. There is plenty of ore in sight, the mine has not been abandoned, and I have good grounds for believing it to be the largest known deposit in Eastern Pennsylvania, not including Cornwall, which it very much resembles in its deposition and character.

JOHN H. HARDEN, Gen. Min. Eng. Phenix Iron Works.

PHENIXVILLE, Pa., Jan. 26, 1892.

## The Free Coinage Question.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I am reminded of one of Bulwer's sayings as I read Mr. George Rutledge Gibson's article in the JOURNAL of December 19th, to wit: "That it is a pity that those who set out to instruct others will not first consent to learn something themselves." Had Mr. Gibson taken the precaution to do this, he would not talk about this country's "needing more copious additions to its circulating fund, etc.," nor assert that France made a steady relation between gold and silver for 70 years. No economic authority, no writer, even of moderate repute has attached the slightest importance to the *per capita* theory of circulation; the doctrine is not new.

A study of Great Britain's commercial history will show that a nation's commerce may double, over and over, again, while her volume of circulating medium remains at a standstill. President Harrison made the blunder, in his late message, of believing in the *per capita* theory.

As to France's having steadied the ratio of gold to silver for 70 years, she didn't do it; she had alternate standards. And 70 years is all too brief a time for a decisive and definite test of the question. "The proof of the pudding is in the eating thereof," and France seemed to cease her task of "steading without inconvenience" the price of silver in gold, nor does she manifest the slightest wish or intention of returning to the easy task and its benefits. One reason that the advocates of unlimited coinage are derided, if that is the case, is because they deny this axiom, "Things which are not equal to the same thing are unequal."

One word as to the quotation from Mr. Goschen; that government action has had an influence on the relative value of gold and silver is plain, because in using the two metals in any system of coinage a ratio must needs be adopted, whether there be unlimited coinage or not. But using silver as token money only, and only coining it on government account, is keeping within the power and ability of the same to make the token good—i. e., keep the promise. But if every government should take away the legal tender function of the two metals, but continue to refine them and divide into such weights as they now use, placing thereon an identifying mark which would at once be a certificate of quantity and fineness, their value, price and use would remain as they are.

For not by convention, nor sudden impulse, did men fail to using the metals as a medium of exchange and comparison of values, but by the attributes of the metals relatively to man's nature and circumstances, forcing them on him. The evolution was not unlike a man's climbing a mountain—he moves along the line of least resistance; it was and is and ever will be easier to use them than to barter and surer than to take promises, whether oral or written, by whomsoever made.

I must disclaim any intention to be disrespectful of Mr. Gibson; but in opening as I do I mean only to emphasize how crude his opinions seem to one who has analyzed many theories of money, yet adheres to the simplest, the one "order standard of the people," a single standard of gold with subsidiary money of its not less useful brother and no paper promises of governments, nor of its favored ones, to circulate as legal tender, nor any warehouse receipts for bullion.

SPOKANE, Wash., Jan. 11, 1892.

POSEY S. WILSON,

## Some Improved Metallurgical Processes.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Four facts have come to my knowledge within the last year, two of them within the last two months, which have interested me greatly. Four mining engineers of great practical skill and scientific knowledge have introduced important improvements in smelting, amalgamation and lixiviation. I regret my inability to give the details of these improvements. Until the processes have been protected by patents no details can be published. But as it is of interest to engineers to know as early as possible that improvements have been made in processes which they are using, and as the JOURNAL seems to be the place where the latest reliable information on such matters is expected, I offer for your consideration the following statements:

The first two facts I merely mention. The last two, occurring in a country where the engineer has to contend with special obstacles, I dwell on more at length.

1. Mr. W. Maynard Hutchings, general manager of some of the largest lead works in England, and an occasional correspondent of the JOURNAL, has introduced an important improvement in silver-lead smelting.

2. Mr. Alexis Janin, after successful trials elsewhere, is experimenting on a large scale with a modification of the free-milling process at the Comstock. This fact you have mentioned in your mining news columns. I hope that before long Mr. Janin will write an appendix to the paper on "Amalgamation at the Comstock Lode" published in the last volume of the *Transactions* of the American Institute of Mining Engineers.

3. Mr. Pedro F. Remy, formerly professor at the School of Mines at Lima, Peru, has perfected a process of lixiviation, intended more particularly for the treatment of argentiferous blends, but applicable to all classes of silver ores not strictly smelting ores.

The Carahuacra lode near Gaudi, in the Department of Junin, Peru, situated nearly 14,000 feet above sea-level, is one of the largest veins in the world. It has been worked superficially for many years and has been opened for a length of over 1½ miles, for a width varying from 65 to 130 feet, and to a depth of about 250 feet. Pyrrargyrite, polybasite, stembergite, argentite and native silver have been found in pockets in large masses and have made the lode famous throughout Peru. Tetrahedrite, argentiferous galenite, argentiferous blende, pyrite and chalcocopyrite abound, and with these occur in greater or less abundance a large number of sulphureted minerals, mostly silver-bearing. The gangue is chiefly limestone in various forms, sandstone more or less compact, and limonite more or less earthy. Up to within recent days the ore was chiefly exported or treated by the Indians in their curious little furnaces in which roasting, smelting and refining alternated. The fuel was *táquia* (llama droppings), and the blast was produced by the movement of the hand while tossing the fuel into the furnace, either an oxidizing or a reducing flame being produced at will by experienced firemen.

In early times the vein was extensively worked, but in the mole hole style. When the workings reached a depth where natural drainage was no longer possible operations practically ceased on account of the great amount of water encountered. Apparently, also, a zone of comparative poverty was met, and the mole-hole system had resulted in frequent cavings of the ground. But the upper levels of the lode, not having been thoroughly exploited, still contained rich bodies of ore, and the discovery of this fact led to the renewal of operations seven or eight years ago by a company formed in Lima. Large quantities of very rich ore were found and extracted. Large amounts of poorer ore were also produced. This last class, being of a value too small to bear the expenses of exportation, was subjected to local treatment. Being very "rebellious," the ores did not yield their precious contents to the simple methods, and Professor Remy was called upon for his professional services. After a series of careful experiments, conducted on a workscale, Professor Remy writes me that he has attained success. By his process, which contains novel features, a very high percentage of the silver is extracted. I am informed from other sources that Mr. Remy's success has been such as to induce him to sever his connection with the School of Mines and devote himself to the introduction and application of his process.

4. Mr. A. Heberling has been treating with excellent financial results, at the San José works at Huaytará, in the Province of Castro-vireyna, Department of Huancavelica, the very rebellious ores of the Caudalosa mine. These ores contain tetrahedrite, bournonite and enargite, with stibite, blende (holding considerable indium), galenite, clausthalite and syrite, in a gangue of quartz, calcspar and heavy spar. The ores as delivered at the works, hold 0.3% to 0.4% silver, with 16% copper, 15% zinc, 12% lead, a little gold, and large amounts of arsenic and antimony.

The works are located in the Sierra, 13,000 ft. above sea level, in a region where roads can hardly be said to exist, and where the engineer is forced to evolve many important articles out of very unpromising, raw material. The workmen are all Indians, needing most patient and persistent drilling. Mr. Heberling writes that, after years of toil, he has succeeded in making his head-roasters as good furnacemen as can be found anywhere.

The ore is crushed in arrastras driven by water-power. Each arrastra grinds about 6 tons in 24 hours. The table costs about 500 silver dollars and lasts 2 years on the average. Each grinding stone costs 12 dollars and lasts from 3 to 4 weeks.

The roasting furnaces, built by Indian masons of brick manufactured on the spot, roast 3 tons of ore (with 10% of salt) in 24 hours. They have run 10 months without stoppage. The fuel is *táquia*. The ore is chloridized up to 98%. The loss in roasting is 2% to 3%. Salt (90% Na Cl) costs, delivered, 70 cents per 100 lbs.

Much difficulty was experienced at first in leaching, but these difficulties have been overcome, and the process is now carried on smoothly. The whole loss of precious metal in all the operations averages less than 9%.

The success of Mr. Heberling at Huaytará has attracted considerable attention. He has a contract with the well known firm of Carlos Maria, Pflucker & Co. to introduce the lixiviation process at the amalgamation works at Santa Inez, in the same province as Huaytará, and has been called into Bolivia by the President of that Republic, on professional business.

## THE FREAKS OF A THUNDERBOLT.

Whether fatalities from lightning are more or less common in the Peruvian Sierra than in other mountainous regions I know not, but I have



could not be absolutely obtained in this case) to correspond to that of Cleveland pig No. 3 as follows: C, 3.4%; Si, 1.2%; Mn, 0.5%; P, 1.3%; Fe, 93.6%.

The furnace received the following amount of carbon per kg. of pig iron: From the coke, 1.017 kg.; from the limestone, 0.073 kg.; total, 1.090 kg.; amount of C absorbed by pig, 0.034 kg.; amount of C contained in waste gases, 1.056. Therefore the amount CO in the waste gases per kg. of pig is  $y = \frac{77 \times 1.056}{33 \times 21 \times 0.542} = 1.831$  kg.

The amount CO<sub>2</sub> in waste gases =  $my = 0.542 \times 1.831 = 0.992$  kg. From this the total amount of the waste gases, and the weight of the blast entering the furnace are obtained as follows: Total amount of oxygen of waste gases: O in 1.831 kg. CO, 1.046 kg.; O in 0.992 kg. CO<sub>2</sub>, 0.721 kg.; total, 1.767. Of this there was derived from the charge: From CO<sub>2</sub> of limestone, 0.197 kg.; from reduction of 1.337 kg. Fe<sub>2</sub>O<sub>3</sub> to 0.936 kg. Fe, 0.401; from reduction of 0.025 kg. SiO<sub>2</sub> to 0.012 kg. Si, 0.013; from reduction of 0.007 kg. MnO to 0.005 kg. Mn, 0.002; from reduction of 0.029 kg. P<sub>2</sub>O<sub>5</sub> to 0.013 kg. P, 0.016; total, 0.629 kg. The amount entering the furnace with the blast was therefore 1.138 kg.

These 1.138 kg. O led  $\frac{77}{23} \times 1.138 = 3.810$  kg. N into the furnace; therefore the weight of the dry blast per kg. of pig iron is  $1.138 + 3.81 = 4.948$  kg. The weight of dry waste gases per kg. pig is: CO, 1.831; CO<sub>2</sub>, 0.992; N, 3.810; total, 6.663 kg.

I. (a.) Heat Received by Furnace by the Combustion of Carbon.—The waste gases contain 0.992 kg. CO<sub>2</sub> per kg. of iron, of which 0.197 kg. are derived from the charge, consequently 0.795 kg. are produced by the combustion of charcoal corresponding to 0.217 kg. carbon. The total amount of carbon consumed is  $1.017 - 0.034 = 0.983$  kg. Of this 0.217 kg. forms CO<sub>2</sub>, leaving 0.766 kg. for combustion to CO. The heat production is: By combustion to CO<sub>2</sub>,  $0.217 \times 8,080 = 1,753$  cal.; by combustion to CO,  $0.766 \times 2,473 = 1,891$  cal.; total, 3,644 cal.

(b.) Heat Received by the Furnace from the Hot Blast.—4.948 kg. of air heated to 780° produced  $4.948 \times 780 \times 0.237 = 914$  cal.

II. (a.) Heat Expended for Reduction.—0.936 kg. Fe from Fe<sub>2</sub>O<sub>3</sub>,  $0.936 \times 1,796 = 1,681$  cal.; 0.012 kg. Si from SiO<sub>2</sub>,  $0.012 \times 7,830 = 94$  cal.; 0.005 kg. Mn from MnO,  $0.005 \times 2,000 = 10$  cal.; 0.013 kg. P from P<sub>2</sub>O<sub>5</sub>,  $0.013 \times 5,760 = 75$  cal.; total, 1,860 cal.

(b.) Heat Carried Off by the Gray Pig Iron, 280 cal.

(c.) Heat Carried Off by the Slag.—The amount of slag was 1.48 kg.; the heat equivalent of the same was 500 cal. per kg., therefore the total heat is  $1.48 \times 500 = 770$ .

(d.) Heat Carried by the Waste Gases,  $6.633 \times 412 \times 0.237 = 647$  cal.

(e.) Heat Required for Evaporating and Superheating the Water.—The hygroscopic moisture of the ores is not given, but we may assume it to be 4% of the total weight of ore in the charge; moisture of the coke is 24%; therefore the amount of water converted to steam: From 2.41 kg. ore = 0.097 kg. From 1.10 kg. coke = 0.268 kg. Total, 0.365 kg. Heat of evaporation,  $0.365 (90 + 536) = 78$  cal. Heat required for superheating to 412°:  $312 \times 0.365 \times 0.48 = 18$  cal.; total, 96 cal.

(f.) For the Decomposition of Limestone,  $0.27 \times 943 = 254$  cal.

The balance sheet shows, therefore, that the heat received was: From combustion of coke, 3,644 cal.; from hot blast, 914 cal., total, 4,561 cal. The heat expended was: For reduction, 1,860 cal.; carried off by pig iron, 280 cal.; carried off by slag, 740 cal.; by waste gases, 647 cal.; for evaporating and superheating water, 96 cal.; for decomposition of limestone, 254 cal.; radiation and absorption of coolers (diff.), 684 cal.; total, 4,561 cal.

Nearly all of the expense items are higher in Example II. than in Example I., which may be explained by the difference in the working conditions. The heat consumption for reduction is higher, because the reduction of the Si, Mn, and P in the gray iron requires a greater amount of heat. The amount of heat carried off by the pig iron, however, is appreciably greater in the gray iron than it is in the white iron, even though the difference is not very great. A far more considerable difference is noticed in the case of the heat carried off by the slag, which in the production of gray iron is almost treble that of white iron. The reason for this is that the Cleveland ores and the coke ashes not only contain in themselves more slag-forming ingredients than the ores and charcoal ashes of the Vardernberg furnace, but that they require a larger percentage of fluxing material in order to produce a basic slag necessary in the production of gray iron. The amount of slag therefore in the production of gray iron is nearly double that of the Vordernberg furnace; but every kilogram of slag in the former carries off more heat from the furnace than in the latter case. The facts are similar in reference to the heat carried off by the waste gases. In order to balance the consumption of heat for reduction, melting of slag, etc., the coke furnace running on gray iron requires a greater amount of heat than the other, which is obtained by increased fuel consumption. The amount of the waste gases and the amount of heat carried off by them is accordingly greater. The greater percentage of CO<sub>2</sub> in the charge of the Ormsby furnace also requires a greater amount of heat for its expulsion. The difference in the heat consumption by radiation and absorption by the cooler water is explained partly by the relatively lower working effect of the Ormsby coke furnace. This furnace produced 63,000 kg. of iron daily with a cubic capacity of 534 cu. m., therefore 108 kg. per cu. m.; while the Vordernberg charcoal furnace produced 15,000 kg. daily with a capacity of 31.9 cu. m., or 470 kg. per cu. m.; i. e., more than four times as much as the Ormsby furnace. It must also be taken into consideration that the temperature required for making gray iron at the Ormsby furnace must necessarily be appreciably higher than in the other furnace; the walls are more highly heated, require a more thorough jacketing and cooling, radiate more heat, and consequently the heat consumption is greater.

The cost of producing pig iron in the North of England, particularly in the Cleveland district, is given by the *Colliery Guardian* at 37s. 3d. per ton for No. 3 pig, divided as follows: Coke (22 cwt.), 14s. 10d.; ironstone (3½ tons), 16s. 8d.; limestone (11 to 12 cwt.), 2s. 6d.; labor, 3s. 0d.; total, 37s. 3d. As the ruling price for No. 3 in 1891 was only 40s. 1d., the outlook seems poor for the Cleveland iron producers, particularly as the market opened at 38s. in January, 1892.

PROFESSOR MARTENS ON DROP TESTS.

Written for the Engineering and Mining Journal, by Gus. C. Henning, M. E.

In *Zeitschrift des Vereines Deutscher Ingenieure*, XXV., 48, are given a résumé of Buckling's tests, made with a drop test apparatus, by Prof. A. Martens, Director of the Royal Testing Laboratory at the Polytechnic School, at Charlottenburg, Berlin, Germany. The results of these tests, which were commenced in 1885, have demonstrated that they are quite sufficient to determine the properties of materials accurately. With proper precautions and care these tests are exact and reliable. Several series of tests have demonstrated that they can be made with great exactness, and that errors are less than 0.5%, whether cubes 0.5 in., 0.6 in., or 1.2 in. are used. Steel rails and tires for drivers, followers, and car wheels, cast iron, wrought iron, low steels, copper, aluminum alloys, white metal, magnesium and others were tested in similar manner, and all of these results are reported and plotted in full. The report is a masterly piece of a most exhaustive and carefully made investigation.

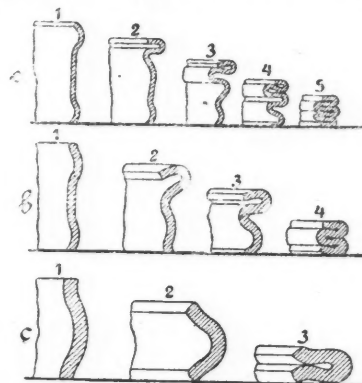
It was proved that distortion due to percussion or compression was the same, and variation of shapes identical, when tests were correctly made and errors of manipulation avoided. Different shapes, such as cubes, tubes and short columns, were also compared, and the uniformity of shape of distortion was remarkable.

The material was furthermore tested at different temperatures, and after having been subjected to different treatment. In this respect it was found that when experimenting with three grades of low steels they all showed highest resistances for similar distortions at a temperature of 302° F., while tensile tests of the same materials show the greatest resistance invariably at 392° F. The curves plotted corroborate Kick's law: That a few intense blows produce greater effect than a greater number of light blows of the same total work done.

It is shown that test pieces must be made strictly like the standard form, and allowable variation must be very small, otherwise results of tests will be considerably affected; this effect, due to variation of form, is not as noticeable under the early blows as it is later on. Slight variations of form must be counteracted by change in height of drop of weight. Cast iron is found to show greatest resistance when subjected to repeated blows, due to identical height of drop of weight. Resistance decreases under several blows preceding that one which produces failure. The elastic distortions in cast iron remain almost proportional up to point of failure, but vary for differently shaped bodies.

Heavy blows produce greater effect than lighter blows of the same total work done. Height of recoil of weight or ball is but slightly greater for light than heavy blows.

All of these tests, as well as those on low steels previously referred to, prove the practical utility of drop tests, which is emphasized to a greater degree by the figures below, showing results of testing hollow cylinders.



For these tests pieces of tubes made of a high steel were cut off so that the length was equal to extreme outside diameters and surfaces were truly normal to axis of cylinder.

Distortion is quite characteristic for different shapes, and this was almost the same as that obtained by compression tests, so that a similar amount of depression produced the same changes of form as shown in the figure, and this without causing failure, slight cracks sometimes appearing when bent to the final shape.

The law of proportionate resistances is also verified by these tests, and they demonstrate that: Geometrically similar bodies of the same material subjected to similar numbers of specifically similar amounts of work due to blows thereby undergo changes of form geometrically similar and equal per cent. of changes of height. It is also seen that for steel these latter changes due to impact are proportionate to tensile resistance, and similarly that they are proportionate in elongation and contraction of section. In the case of cast iron but a slight increase of resistance to impact was noticed with increased tenacity. In the case of copper which had been annealed it was found that the consequent effect decreased with increasing number of blows, as change of form due to blows rehardened copper previously annealed.

**Manganine; A New Alloy**—Manganine is the name of a new alloy, consisting of copper, nickel and manganese, which has been brought on the market, says *Iron*, by the German firm, Abler, Haas & Angerstein, as a material of great resisting power. The specific resistance of manganine is given as 42 microhm centimetres, that is, higher than that of nickeline, which has hitherto passed as the best resisting metal. Another advantage of manganine is its behavior under variations of heat, the resistance, it is claimed, being affected only in a minute degree by high temperatures. It is therefore adapted for the manufacture of measuring instruments and electrical apparatus in general, which are required to vary their resistance as little as possible under different degrees of heat. A further interesting fact is that while other metals increase their resistance by the raising of the temperature, that of manganine is diminished,

## STEEL RAIL PIT PROPS.

The ENGINEERING AND MINING JOURNAL, in preceding volumes, has frequently discussed the question of the employment of steel as props in mines, instead of wood. A recent number of the *Iron and Coal Trades Review* contains a description of a system of utilizing old steel rails as props, devised by Mr. W. Wilson Barnes, of Harrington, Cumberland, England. We are indebted for the accompanying cuts illustrating this system to our English contemporary.

Figs. 1 to 8 show some of the formations of rail ends and rails cut for the purposes of the invention, some of the figures representing rails of flange or Vignoles section and others double-headed sections. Fig. 9 represents a length of flange or Vignoles rail *A*, cut as a prop, a sole plate *B*, and a cap plate *B'*, these plates preventing the prop ends from being forced into the floor and roof. One end of the rail is shown to have the web punched or cut away for a short distance so as to form a notch, as in Fig. 2. When the prop is in position, it can be tightened up so as to carry the weight of the roof by driving a wedge, *B''*, into the notch at the top of the prop. The sole plate and cap plate and wedge may be of iron or wood, and of any size, according to the position in which the prop is placed, and condition of the sole and roof. In Fig. 10 are two props, *A A*, resting upon shoes or sole plates, cut according to Fig. 2 at the roof end, and carrying a cross-piece rail, *C*, which is cut at each end, according to Fig. 3, the flange or flat foot being turned upward so as to present a wide bearing surface and support to the roof. The recessed props, *A A*, receive the ends of the cross-piece rail *C*, the cutting at the ends allowing it, at its flange and web, to rest upon the head and flange and web of the upstanding rails *A A*. Thus the head of the cross rail *C* is gripped between the flange and head of the upstanding rails *A A*, presenting a structure of great strength. In Fig. 11 a sole or bottom cross-piece rail *C* is added to the construction of

forced forward into the forehead by any suitable means (hydraulic press, etc.), and upon them are placed four lengths of Vignoles rails, *X*, curved to the required circumference, which are recessed in their webs at their ends, so that they may be keyed upon the heads of the longitudinal rails, *W*. In the webs of the curved rails *X* are holes for inserting steel bars which are used as supports when getting into position the curved rail segments. These bars can be moved backward or forward as required, and can be forced forward together or separately into the fore-brest or heading. They also assist to keep in their respective positions the curved rail segments and the longitudinal or key rails. Upon these bars is fitted a trellis work, steel saddle, which sustains the superincumbent and side earth, preventing it rushing. As desired, the curved rail segments may be placed close together with their flange edges touching, or they may be placed at any desired distance apart, and can, when once keyed upon the longitudinal rails *W*, be made to slide or move backward or forward as required. They can then be secured by angles or knees bolted upon their webs, which are again bolted on to the webs of the longitudinal rails, and may then be bricked, cemented or concreted. In any position on a level sloping, or vertically, the structure, when once secured, will resist enormous lateral pressure, and may be rapidly fitted together under any condition of strata or under water. Fig. 17 shows an alternative combination, with Figs. 10, 11, 12 and 14, of rails suitable for use in main gateways of collieries or for tunnels, culverts, etc. In this example two partly curved rails, *M M*, are cut at the floor or sole ends, as in Fig. 1, and having their heads resting upon and gripped by a cross length of double headed rail, and the curved or top ends are cut or notched in their webs, as in Fig. 5, to engage with and grip the head of the longitudinal rail *N*. The curved rails *M M* and the longitudinal rail *N* can be bolted together by means of angles, brackets or knees at their webs. This combination forms a strong arched opening or tunnel. Any number of lengths of longitudinally placed rails, *N*, can be fished together.

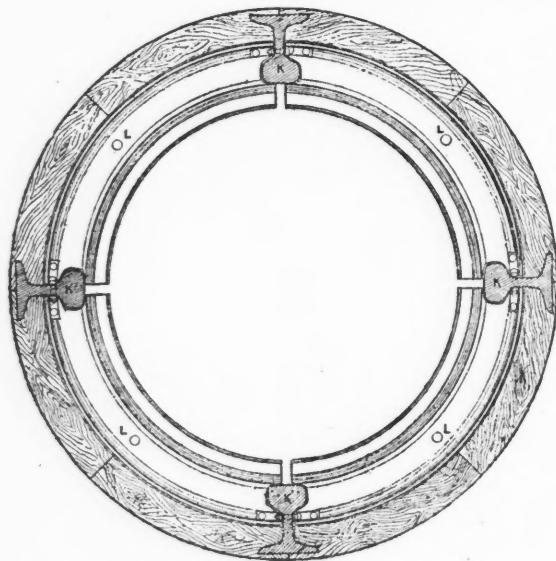


FIG. 10.

Fig. 10, being intended for use in cases where the sole is weak or broken, and has a tendency to heave or rise. The upstanding rail pieces *A A* rest upon the sole or bottom rail *C*, the ends of such rail being cut as shown in Fig. 3, thus making reversible roof and sole, and side and side. Fig. 12 shows a set specially adapted for vein mining. A support *C* is sustained at one end by being let into the wall or cheek, and at the other by a slanting prop *E* which rests upon a sole plate or shoe. The roof support *C* is cut at one end, as shown in Fig. 3, to enable it to engage with and bear well upon the end of the slanting prop that is cut at its roof end or top, as in Fig. 2. The support *C* can be inclined to any angle from the horizontal to engage with the sloping prop *E* with safety.

Figs. 13 and 14 illustrate the application of rails for the support of the walls or sides of a right-angled mining or other shaft. At intervals in the shaft, lengths of flange or Vignoles rails *F F* are placed in horizontal positions on opposite sides of the shaft, with the flange or flat foot in contact with the wood lining or casing of the shaft *G G*. Other lengths *H H* of double-headed rails fit tightly between the pieces *F F*, at the same time supporting the other two walls or sides of the shaft. The ends of the pieces *F F* are cut in the manner shown in Fig. 4, so as to form shoulders, which keep the lengths *H H* from yielding inward, the ends of the lengths *H H* being notched or cut out, to engage with the lengths *F F*. The lengths *F F* and *H H* are spiked to the lining or casing of the shaft. Fig. 15 shows a modification suitable for circular shafts. In this example, vertical rails *K* of flange or Vignoles section are placed with their flanges against the wall or side of the shaft, and are fished and connected together end to end from the top to the bottom of the shaft. Four lengths of horizontal rails *L* are curved to suit the size of the shaft, and their webs are cut or notched at each end, to engage with and grip the head of the vertical rails *K*, which have bolted upon their webs brackets or angles. Upon such brackets rest the horizontal rails *L*, which may be bolted through their webs. The sectionally curved rail pieces, *L*, may be placed at any distance apart in the shaft, or may be closed together with their flange or flat foot edges touching each other. In either case bricks, cement or concrete, can be laid between and bedded upon the webs of the curved rails, thus forming a water-tight casing. Fig. 16 illustrates the combination of Vignoles or flange rails for tunnels, aqueducts, etc. Here four Vignoles rails, *W*, are placed longitudinally with their flanges pressing against the sides, top and basement of a cutting or tunnel, being

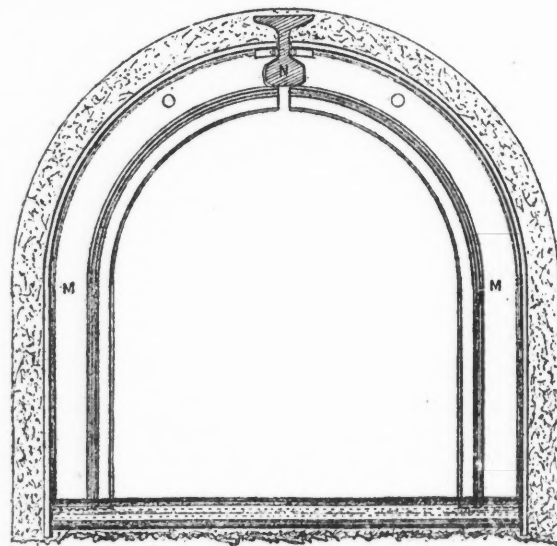


FIG. 17.

The system is also applicable for the erection of bridges, gantries and jetties, at nominal cost. A number of practical tests have been made of it, which have shown that sets may be erected very rapidly, a point which will also commend itself to mining engineers.

## PRODUCTION OF BESSEMER STEEL RAILS IN THE UNITED STATES IN 1891.

The *Bulletin* of the American Iron and Steel Association gives the statistics of the production of Bessemer steel rails of all weights and sections in the United States in 1891, exclusive of the comparatively small quantity made by other manufacturers from purchased blooms, as follows: The total production in 1891 was 1,366,259 net tons, or 1,219,874 gross tons, a decrease of 577,615 gross tons from the production in 1890. The following table shows the production in each half of 1891 and the total production of the year compared with that of 1890, with the exception above noted for both years:

States.	First half 1891. Net tons.	Second half 1891. Net tons.	Total 1891. Net tons.	Total 1890. Net tons.
Pennsylvania.....	439,902	506,252	946,154	1,396,460
All other States.....	140,027	280,078	420,105	616,728
Total net tons.....	579,929	786,330	1,366,259	2,013,188

**A Coke Works Equipment.**—According to the *American Manufacturer*, the following is the material necessary to construct, and the tools, equipment and supplies necessary to operate 100 coke ovens one year: Fire brick—130,000 crown brick, 270,000 lining brick, 13,000 tiles, 2,400 14-in. brick, 200 skewbacks, 100 tunnel heads, 800 jamps; T rails, 15 tons; 1-in. gas pipe, 1,500 ft.; scraper pipe, 150 ft.; 35 globe valves for 1-in. pipe; round iron for 150 bridles, and 100 ft. of 1-in. for scraper tubs; 35 wheelbarrows, 70 scrapers, 85 coke forks, 4 shovels, 250 ft. 1½-in. hose, 1 larry, 2 horses, 2 sets harness, 1 cart, 1,000 ft. 2-in. oak plank.

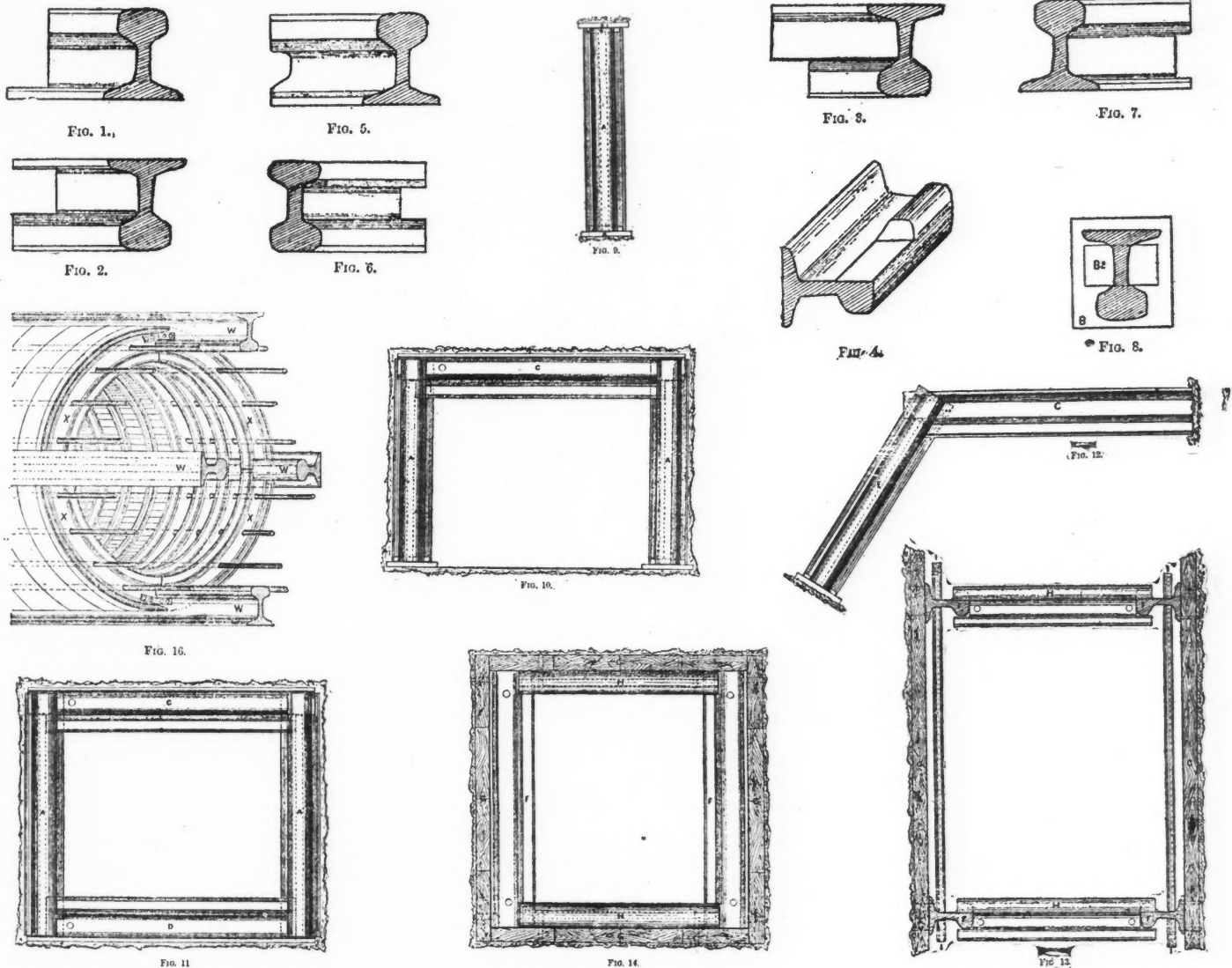
A JAPANESE SULPHUR MINE.

A writer in the *Japan Mail* of Yokohama describes a visit to a sulphur mine in the northern part of the main island. The works are situated on a platform made in a gorge partly by hand and partly by a landslip, and from the back a road goes up to the *sofataras*. On each side are high hills well wooded, save where landslips have occurred. They possess a bath, deliciously warm, containing sulphur in suspension and iron and alum in solution. About a mile up the gorge are the springs which supply the baths at the works, and also a bathing establishment in another valley some miles away, and another spring is used by the miners to cook their rice. All are boiling when they issue, but unless inclosed in covered pipes they cool rapidly and deposit fine "flowers of sulphur," which is collected and sold for local consumption.

Leaving the springs the sulphur region proper is entered, which is almost at the top of the gorge, or head of the valley. Before coming into the hands of the present proprietors, the *sofataras* was worked on govern-

ment proprietors profess to turn out an article equal to the "roll" sulphur of commerce. In the sulphur regions there is no sign of life, vegetable or animal, but the cone and descent are well wooded, and rare plants and flowers flourish in profusion. These, however, become stunted as one descends into the crater, and on the mud plane there is not a vestige of verdure. There are, of course, no fish in the rivers.

**A Large Diamond.**—A magnificent diamond, a perfect octahedron, weighing 205 carats, has been purchased from a river digger by a Kimberley buyer, says the *South African Mining Journal*. It is the second largest stone ever found at the Vaal diggings, the largest being the celebrated Spalding diamond of 280 carats, but which was yellow and of bad shape. The price paid for the stone recently found is said to have been £2,000; since his return from the river the buyer has been offered £8,000 for it, which offer has been refused.



STEEL RAIL PIT PROPS.

ment account, and one of the old workings is very curious. It is a small gallery with a hot ceiling, and exudes very beautiful needle-shaped crystals of pure sulphur, hot and transparent when first gathered, but soon becoming opaque and changing into small octahedral crystals that will not bear much pressure, but crumble to the touch, showing that the sulphur has been deposited at fusing heat, or 20° F. above boiling point. Arriving at the head of the stream the ascent of the crater begins. There is a toboggan slide of 720 ft. from the crest of the crater down the steep cone to the upper workings. The ascent is neither safe nor easy. A miner went in front with a pick to cut steps, and the clouds were entered about half-way up. At the bottom of the crater are very rich mounds of sulphur ore in vast quantities. The workings give off fumes and gas, and great care is needed by the workmen. The place seemed much like that described in one of Sindbad's voyages—no life, no vegetation, no water, only mud and sulphur.

It is on record that 315 years ago the crater exploded like Bandaisan, and did great damage. The path down the gap then made in the crater is a difficult one, overhanging rocks threatening at every step, the path entirely obliterated, and the chasms left by the torrent being both steep and dangerous. Above the neighboring town of Numajiri there is a sulphur factory on the old Japanese principle of smelting in an open boiler and refining in a close cylinder furnace. It was not at work, but must be a most wasteful method, and hurtful from the fumes given off. The deposits are enormous and must amount to millions of tons. The pro-

**A New Process of Copper Smelting.**—Patents have been issued to T. D. Nicholls and C. James, both of Swansea, and the Cape Copper Company, Limited, London, for an improved process of treating copper ores. The extraction of copper from ore and other compounds containing the same is accomplished according to these inventors by this improved process, whereby a good quality of copper is obtained at a reduced cost and in less time than by the ordinary processes. According to this method the inventors proceed in the ordinary way until a regulus or like product is obtained containing from 65% to 80% of copper, and such a quantity of iron as it may be deemed expedient to retain for the proper "slagging off" of the non-volatile impurities. This regulus having been crushed is calcined until as much sulphur as is desirable has been driven off. The calcined regulus is then mixed with a suitable proportion of crushed but uncalcined regulus, such as previously referred to, or with other regulus of like description, the quantities of the calcined and uncalcined regulus being in such ratio that the oxygen contained in the calcined portion will combine with all the sulphur in the uncalcined portion. A charge of this mixture, with the addition of any suitable flux, is then placed in a refining furnace and melted. The volatile impurities, whether left in the calcined portion of the charge or present in the uncalcined portion, are volatilized by the intense heat generated, and are carried away with the discharge of sulphurous gas which ensues. The copper is finally skimmed, brought to pitch and "ladled" or run into ingots or cakes as desired.

PRODUCTION OF PIG IRON IN THE UNITED STATES IN 1891.

The American Iron and Steel Association has received from the manufacturers complete returns of the production of pig iron in the United States in 1891, and also complete returns of the stocks of unsold pig iron in the hands of pig iron manufacturers or their agents at the close of the year, the details of which the *Bulletin* of the association gives as follows:

The total production of pig iron in 1891 was 9,273,455 net tons of 2,000 lbs., or 8,279,870 gross tons of 2,240 lbs., against 9,202,703 gross tons in 1890—a decrease of 922,833 gross tons, or over 10 per cent. The decreased production may be said to have all occurred in the first half of 1891, as the production in the second half of 1891 was larger than in either half of 1890.

Our production of pig iron in the second half of 1891 was 269,573 gross tons larger than in the second half of 1890, which was the half year of largest production in our history prior to 1891. Our production in the second half of 1891 was at the rate of 9,823,526 gross tons per annum. It was larger than in any full year in our history down to and including 1885, and larger than Great Britain's production in any whole year down to and including 1867. Our production of pig iron in 1891 was about one million gross tons larger than that of Great Britain in the same year.

The shrinkage in production in 1891 as compared with 1890 was distributed among the different fuels used in our blast furnaces, and it was shared by most of the pig iron producing States in the North and West, most notably by Pennsylvania, which lost over half a million net tons, all in the first half of the year. But the Southern States lost in the aggregate less than 40,000 net tons, while many of them actually increased their production in 1891 over 1890.

The stocks of pig iron which were unsold in the hands of the manufacturers or their agents on December 31st, 1891, and which were not intended to be used by the manufacturers, amounted to 596,333 gross tons, against 442,055 gross tons on June 30, 1891, and 608,921 gross tons on December 31, 1890. The above figures include a part of the stocks of pig iron held at the periods named in storage warrant yards, and which was under the control of the makers, the part not under their control on the 31st of December last amounting to 30,900 gross tons, which, added to the 596,333 tons above mentioned, makes a total of 627,233 gross tons which were on the market at that date. On the 31st of December, 1890, the storage warrant yards held 52,900 gross tons of pig iron which were not under the control of the makers, making a total of 661,821 gross tons which were then on the market. The difference between the aggregate of unsold stocks at the close of 1890 and 1891 was only 34,588 gross tons.

TOTAL PRODUCTION OF PIG IRON.

States.	Blast furnaces.				Production, Tons of 2,000 lbs. (Includes spiegeleisen).		
	In blast June 30, '91.	Dec. 31, 1891.			First half of 1891.	Second half of 1891.	Total for 1891.
		In.	Out.	Total.			
Maine.....	2	1	1	4,406	5,663	10,069	
Massachusetts.....	2	2	4	11,125	13,303	24,428	
Connecticut.....	3	5	8	161,785	191,130	352,925	
New York.....	13	14	27	66,592	36,997	103,589	
New Jersey.....	5	5	10	1,859,023	2,507,650	4,426,673	
Pennsylvania.....	134	135	269	49,092	88,214	137,306	
Maryland.....	4	4	8	141,908	188,819	330,727	
Virginia.....	12	13	25	1,003	2,600	3,603	
N. Carolina.....	2	1	3	20,401	35,440	55,841	
Georgia.....	3	3	6	376,389	514,765	891,154	
Alabama.....	26	34	60	8,465	12,437	20,902	
Texas.....	2	3	5	20,077	75,990	96,067	
West Virginia.....	2	3	5	18,779	31,446	50,225	
Kentucky.....	3	4	7	145,066	181,681	326,747	
Tennessee.....	10	14	24	445,113	714,102	1,159,215	
Ohio.....	43	40	83	3,208	8,657	11,865	
Indiana.....	1	1	2	544,690	749,506	1,294,196	
Illinois.....	10	13	23	113,376	125,346	238,722	
Michigan.....	11	10	21	91,098	129,721	220,819	
Wisconsin.....	6	7	13	1,373	3,736	5,109	
Minnesota.....	1	1	2	9,102	23,614	32,716	
Missouri.....	1	1	2	13,646	6,614	20,260	
Colorado.....	1	1	2	3,759	6,632	10,411	
Oregon.....	1	1	2	.....	.....	.....	
Washington.....	.....	.....	.....	.....	.....	.....	
<b>Total, 1891.....</b>	<b>294</b>	<b>313</b>	<b>607</b>	<b>3,772,280</b>	<b>5,501,175</b>	<b>9,273,455</b>	
Anthracite.....	89	94	183	1,015,900	1,074,141	2,090,041	
Charcoal.....	52	55	107	290,091	356,109	646,200	
Bituminous.....	153	164	317	2,466,289	4,070,925	6,537,214	
<b>Total, 1891.....</b>	<b>339</b>	<b>311</b>	<b>650</b>	<b>5,107,775</b>	<b>5,199,253</b>	<b>10,307,028</b>	

SPIEGELEISEN.—The quantity of spiegeleisen and ferromanganese made in the first half of 1891 was 49,887 net tons; in the second half, 93,211 tons; total, 143,098 tons. In 1890, 149,162 tons.

PRODUCTION OF PIG IRON IN 1888, 1889, 1890 AND 1891.

States.	Tons of 2,000 pounds.			
	1888.	1889.	1890.	1891.
Maine.....	5,574	5,200	1,200	.....
Massachusetts.....	13,248	7,751	5,531	10,069
Connecticut.....	21,614	24,143	22,552	24,428
New York.....	257,180	297,247	369,381	352,925
New Jersey.....	101,882	121,693	177,788	103,589
Pennsylvania.....	3,589,186	4,181,242	4,945,189	4,426,673
Maryland.....	17,606	33,847	165,559	137,306
Virginia.....	197,306	251,356	327,912	330,727
North Carolina.....	2,400	2,898	3,181	3,603
Georgia.....	39,397	27,559	32,687	55,841
Alabama.....	449,492	791,425	914,940	891,154
Texas.....	6,587	4,514	10,865	20,902
West Virginia.....	95,259	117,900	144,970	96,337
Kentucky.....	56,790	42,518	53,604	50,225
Tennessee.....	267,931	291,655	299,741	326,747
Ohio.....	1,103,818	1,215,572	1,389,170	1,159,215
Indiana.....	15,260	9,839	16,398	8,657
Illinois.....	579,307	601,035	785,239	749,506
Michigan.....	213,251	214,356	288,461	248,673
Wisconsin.....	116,037	148,634	216,237	220,819
Minnesota.....	91,783	86,190	100,550	32,736
Missouri.....	.....	.....	.....	1,373
Colorado.....	20,877	2,678	28,888	20,260
Oregon.....	2,509	9,426	12,305	10,411
Washington.....	4,093	.....	.....	.....
<b>Total.....</b>	<b>7,268,507</b>	<b>8,516,079</b>	<b>10,307,028</b>	<b>9,273,455</b>

PRODUCTION OF BESSEMER PIG IRON IN 1891.

States.	Tons of 2,000 pounds.		
	First half.	Second half.	Total.
New York.....	61,610	86,081	147,691
New Jersey.....	13,475	1,045	14,520
Pennsylvania.....	968,089	1,350,053	2,327,142
Maryland.....	44,800	80,014	124,814
North Carolina.....	1,003	2,600	3,603
Alabama.....	700	.....	700
West Virginia.....	20,977	73,420	94,397
Kentucky.....	1,800	1,313	3,113
Texas.....	1,800	.....	1,800
Ohio.....	195,143	318,912	514,055
Illinois.....	179,788	425,812	605,600
Michigan.....	2,212	2,877	5,089
Missouri.....	6,194	23,634	29,828
Wisconsin.....	.....	7,457	7,457
Minnesota.....	.....	1,373	1,373
Colorado.....	6,661	2,780	9,441
<b>Total.....</b>	<b>1,502,452</b>	<b>2,386,401</b>	<b>3,888,853</b>

TOTAL STOCKS OF UNSOLD PIG IRON.

States.	Tons of 2,000 lbs.			
	June 30, 1890.	Dec. 31, 1890.	June 30, 1891.	Dec. 31, 1891.
New England.....	15,314	11,572	16,230	17,672
New York.....	38,323	64,381	74,325	69,127
New Jersey.....	500	25,068	39,128	22,939
Pennsylvania.....	135,303	204,535	81,400	152,577
Maryland.....	1,890	1,637	3,292	3,915
Va., N. C., Ga., and Texas.....	19,149	28,707	40,733	82,558
Alabama.....	58,717	69,957	41,517	54,356
West Virginia.....	1,080	11,414	.....	2,800
Kentucky.....	8,176	9,413	7,838	8,967
Tennessee.....	11,089	28,142	21,528	14,774
Ohio.....	46,192	116,608	60,776	83,611
Michigan and Indiana.....	18,339	56,432	51,764	72,838
Illinois.....	14,424	19,504	30,732	55,270
Wisconsin.....	13,424	29,434	17,662	15,065
Missouri and Colorado.....	7,304	5,168	5,177	5,934
Pacific States.....	.....	.....	.....	.....
<b>Total.....</b>	<b>389,244</b>	<b>681,692</b>	<b>495,102</b>	<b>667,893</b>
Bituminous.....	196,595	311,303	157,530	289,720
Anthracite.....	83,160	164,301	150,891	139,294
Charcoal.....	109,489	176,388	186,681	238,879
<b>Total.....</b>	<b>389,244</b>	<b>681,692</b>	<b>495,102</b>	<b>667,893</b>

NOTE.—The American Pig Iron Storage Warrant Company held in its yards on Dec 31, 1891, 51,909 gross tons of pig iron, of which 21,000 tons are included in the above tables as being still controlled by the makers, leaving 30,900 gross tons, or 34,608 net tons, of pig iron in other hands, much the larger part being Alabama iron.

**Mannesmann Tubes.**—The annual report of the Mannesmann German-Austrian Tube Works for the past year shows that the value of the material produced was £157,800, and that a profit of £68,400 had been made. The important question as to how certain sorts of Thomas steel could be used in the manufacture of Mannesmann tubes has been solved, which will tend to still further develop the usefulness of this process of tube making.

**A New Coating for Metals.**—To protect metalwork and woodwork from the effects of the weather or of water a coating is recommended by *Wochenschrift des Niederösterreich. Gewerbevereines*, which is based on the remarkable adaptability of cottonseed oil to unite with lead. The process of manufacture is as follows: 5 liters of cottonseed oil are placed in a metallic vessel, and 10 kilogrammes (22 lb.) of lead are melted separately in an iron ladle. When the lead is perfectly molten, which requires a temperature of about 335°, it is poured gradually into the oil, under continual stirring, so that every particle of the lead may be subjected to the action of the oil. The mixture is then allowed to cool. When the oil is poured off, the lead will be found at the bottom, but reduced in weight to 8.5 kilogrammes (18.7 lb.). The remaining 1½ kilogramme (3.3 lb.) has, therefore, been absorbed by the oil. The rest of the lead then undergoes the same process, by which the oil will again take up 1 kilogramme (2.2 lb.) of the metal. When the operation has been repeated five times the net result will be that the oil has absorbed fully 5 kilogrammes (11 lb.) of lead, which appears to be the maximum impregnation obtainable. When quite cold the oil has the appearance of thick varnish, and is ready for application, either with a brush or a sponge. This coating unites quickly and firmly with any material. The first coat should be allowed to dry 48 hours before the second is administered. It has not yet been definitely ascertained whether cottonseed oil would not also assimilate with other metals; but it is certain that other oils either do not possess at all, or only in a very limited degree, the property of lead absorption.

**Railroad Building in the United States in 1891.**—While 1891 has indeed been comparatively a dull year in this respect, says the *Railway Age*, our records now show that new track has been laid in 43 states and territories on 249 lines and branches to an aggregate of 4,168 miles. This increases the railway system of the United States to 171,000 miles. Since the year of our greatest railway building, 1887, when nearly 13,000 miles of new lines were added, the falling off in construction has been very rapid, the new mileage for each of the last five years being as follows: 1887, 12,878; 1888, 7,066; 1889, 5,706; 1890, 5,739; 1891, 4,168. In 1886 there were 8,018 miles added and in the following year the construction increased over 50%; but the four years preceding 1886 showed an era of diminishing railway building more marked than that of the last five years, the new mileage footing as follows: 1882, 11,569; 1883, 6,743; 1884, 3,924; 1885, 2,982. It appears, therefore, that in two only of the last 10 years the addition of mileage was less than in 1891. In those 10 years the increase aggregated 68,800 miles, or an average of 6,880 miles per year. It will be found that the only portions of the country in which no new track was laid are the States of Connecticut, Delaware, Nevada and Mississippi—the latter showing in strong contrast to the other Southern States in which the activity has been notable. The states which have added the greatest mileage are: Pennsylvania, 26 lines, 60 miles; Georgia, 13 lines, 237, and so on. It is notable that the length of line average only 16.7 miles, showing that the work of the year has been chiefly in the building of short extensions and branches, although several main lines of importance have been completed or extended.



PROMINENT MEN IN THE MINING INDUSTRY.

John Wesley Powell, Director of the United States Geological Survey.

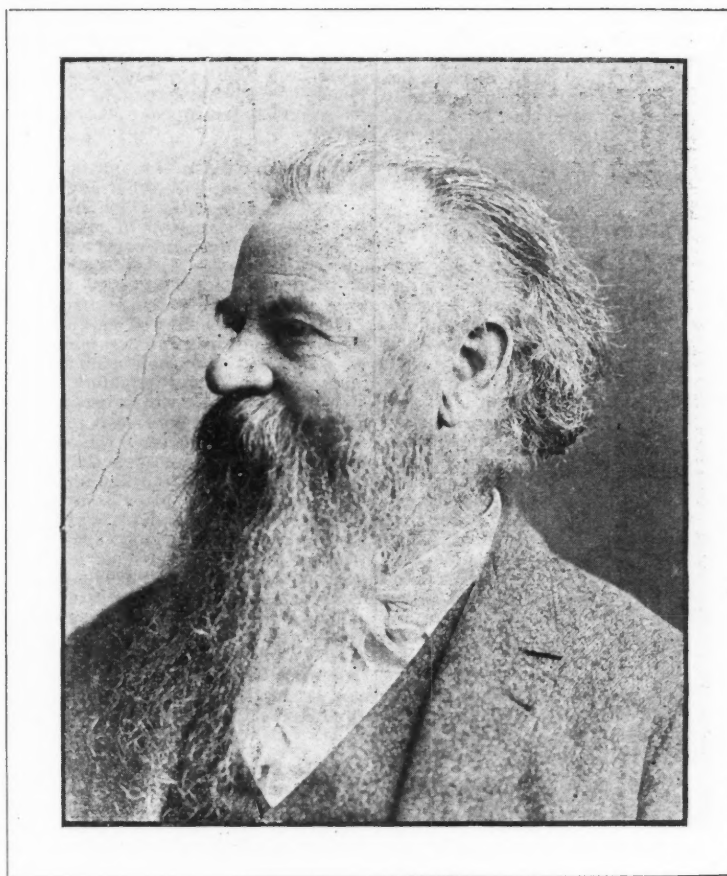
It is universally admitted among geologists that the United States Geological Survey surpasses those of all other countries in the efficiency of its work and the record of its achievements. Under its auspices the study and practice of economic geology have been carried further forward than anywhere else in the world. In the famous monographs of Emmons on Leadville, Curtis on Eureka and Becker on Comstock, prepared for it, are monuments which will never allow its services to the mining industry to be forgotten by mining men. Organized only ten years ago, for one year the survey was directed by that eminent geologist Clarence King; then Major John Wesley Powell, Ph. D., LL. D., was made its chief, and since that time the work has been carried out under him. To him, consequently, fell the duty of perfecting the organization of the survey, and to him is due the most credit for its achievements.

Major Powell was born at Mount Morris, N. Y., March 24th, 1834. He is the son of a Methodist clergyman, and passed his early life in various places in Ohio, Wisconsin, and Illinois. For a time he studied in an Illinois college, and he subsequently entered Wheaton College, but in 1854 he went to Oberlin, O., where he took a special course at the university at that place, also teaching at intervals in the public schools. Major Powell's first inclinations were toward the natural sciences, particularly natural history and geology, and to these subjects he early began to devote most of his attention and study; he spent much of his time in mak-

ing collections relating to them, which he placed in various institutions of learning in Illinois. The value of his work soon began to be recognized, the Illinois State Natural History Society electing him its secretary and extending to him facilities for prosecuting his researches.

Major Powell received the degree of Ph. D. from the University of Heidelberg in 1886, and also during the same year that of LL. D. from Harvard, and he is a member of many scientific societies. In 1880 he was elected to the National Academy of Sciences, and he was president of the Anthropological Society of Washington from its organization in 1879 until 1888. He became a fellow of the American Association for the Advancement of Science in 1875, vice-president in 1879, when he delivered his retiring address on "Mythologic Philosophy," and in 1887 was elected to the presidency. His publications include many scientific papers and addresses, and numerous Government volumes that bear his name, including the reports of the various surveys, the bureau of ethnology, and the United States Geological Survey. The special volumes that bear his own name are "Exploration of the Colorado River of the West and its Tributaries, Explored in 1869-72" (Washington, 1875); "Report on the Geology of the Eastern Portion of the Uinta Mountains and a Region of Country Adjacent Thereto" (1876); "Report on the Lands of the Arid Region of the United States" (1879); and "Introduction to the Study of Indian Languages, with Words, Phrases, and Sentences to be collected" (1880.)

From the beginning of the controversy concerning the geological survey, Major Powell had been the leading advocate of consolidation. In the meantime, however, he had devoted more attention to American ethnology in the prosecution of his work than the other surveys had done. He had collected material on this subject which he had deposited with the Smithsonian Institution, and had already issued three volumes as "Contributions to North American Ethnology." In order to prevent the discontinuance of this work, a bureau of ethnology, which has become the recognized center of ethnographic operations in the United States, was established under the direction of the Smithsonian Institution. Major Powell was given charge of the work, and has since continued at its head, issuing annual reports and bulletins.



JOHN WESLEY POWELL.

ing collections relating to them, which he placed in various institutions of learning in Illinois. The value of his work soon began to be recognized, the Illinois State Natural History Society electing him its secretary and extending to him facilities for prosecuting his researches.

At the beginning of the civil war Major Powell enlisted as a private in 20th Illinois Volunteers. He was soon promoted however, and finally rose to be lieutenant-colonel of the 2d Illinois artillery. He lost his right arm at the battle of Shiloh, but soon afterward he returned to his regiment and continued in active service until the close of the war.

In 1865 Major Powell returned to civil life, accepting an appointment as professor of geology and curator of the museum in the Illinois Wesleyan University, at Bloomington. He held this chair but a short time, however, resigning in order to accept a similar post in the Illinois Normal University. With his class in this institution he visited the mountains of Colorado during the summer of 1867, for the purpose of studying geology in the field, and so began a practice that has been continued by eminent teachers elsewhere, and the work that has made Major Powell famous among geologists the world over. On this expedition he formed the idea of exploring the cañon of the Colorado, through which no white man had ever been, and a year later he organized a party for that purpose. The journey lasted more than three months, and the party passed through numerous perilous experiences, living for part of the time on half rations. No other party went through this cañon, so dangerous was it considered, until in 1889 a railway survey corps attempted it, and only succeeded in going part way, several of the explorers losing their lives.

Major Powell's success in this undertaking resulted in the establishment by Congress in 1870 of a topographical and geological survey of the Colo-

rado River of the West and its tributaries, which was placed under his direction. During the following years a systematic survey was conducted, until the physical features of the Colorado Valley, embracing an area of nearly 100,000 square miles, had been thoroughly explored. This expedition, at first conducted under the auspices of the Smithsonian Institution, was eventually transferred to the Department of the Interior, and given the title of the Geographical and Geological Survey of the Rocky Mountain Region. In 1874 four separate surveys were in the field, and in 1879, after much agitation, the National Academy of Sciences recommended the establishment under the Department of the Interior of an independent organization, to be known as the United States Geological Survey. Action to this effect was at once taken by Congress, and Clarence King, an eminent geologist, was appointed director.

From the beginning of the controversy concerning the geological survey, Major Powell had been the leading advocate of consolidation. In the meantime, however, he had devoted more attention to American ethnology in the prosecution of his work than the other surveys had done. He had collected material on this subject which he had deposited with the Smithsonian Institution, and had already issued three volumes as "Contributions to North American Ethnology." In order to prevent the discontinuance of this work, a bureau of ethnology, which has become the recognized center of ethnographic operations in the United States, was established under the direction of the Smithsonian Institution. Major Powell was given charge of the work, and has since continued at its head, issuing annual reports and bulletins.

OFFICIAL REPORTS.

Granite Mountain Mining Company, of Montana.

According to the report of the directors of this company for the year ending July 31st, 1891, the balance in the hands of the treasurer at the beginning of the year was \$1,208.44. There were shipped during the year 2,299 bars of bullion, containing 3,200,608 oz. silver and 6,468 oz. gold, which sold for \$3,463,815.65, and yielded, after paying express charges, refining charges and commissions, \$3,380,296.54. There were also shipped 16.7 tons furnace slag, containing 9,425 oz. silver and 19.64 oz. gold, which sold for \$9,309.12. In addition, \$57,998.76 was received from the Montana department, making the total receipts \$3,448,742.86. The disbursements were as follows: Montana department, for pay-rolls, supply bills, etc., \$1,318,116.96; Home department, purchases, supply bills, \$182,870.11; insurance, \$9,870; salaries, office rent, and sundry expenses, \$22,049.55; dividends, Nos. 68 to 79 inclusive, \$1,900,000; cash balance July 31st, 1891, \$15,836.24.

**Cost of Mining.**—During the year 85,471 tons of ore were mined and delivered to the mills, at an average cost of \$5,734 per ton, divided as follows: Labor and superintendence, \$4,169; hoisting and pumping, \$0.786; timbers, \$0.323; powder, fuse, caps and candles, \$0.222; tools, \$0.111; miscellaneous, \$0.123.

In driving levels and drifts, the average cost (including timbering) per lineal foot was \$12.67; cross cuts, \$17.17; winzes and raises, \$16.61; sinking Ruby shaft, \$73.99; sinking Cleveland shaft, \$53.95; driving Rumsey tunnel, \$28.14. The cost of prospecting has increased slightly owing to increased depth of working.

**Cost of Milling.**—The three mills crushed 72,622 tons (wet) of ore, or 68,850 tons (dry), and 10,807 tons (wet) of salt, or 10,645 tons (dry). The average moisture in the ore was 51.2%; in the salt, 1.05%. The salt and ore were mixed before crushing. The ore averaged 50.59 oz. silver per ton, and the actual per cent. saved was 90.7. The cost of milling was \$10 per ton (dry), divided as follows: Labor and superintendence, \$3.462; salt, \$1.988; fuel, \$1.644; quicksilver, \$1.123; castings, \$0.632; chemicals, \$0.289; water, \$0.136; miscellaneous, \$0.726.

VALENTINE'S STATISTICS OF THE PRODUCTION OF GOLD AND SILVER IN THE UNITED STATES AND MEXICO IN 1891.

The annual statistics of the production of the precious metals west of the Missouri River, compiled by Mr. J. J. Valentine, vice-president and general manager of Wells, Fargo & Co., which we reproduce herewith estimate the total production of silver in 1891 at \$60,614,004; copper 13,261,663; and lead \$12,385,780. The commercial value at which the several metals have been estimated is as follows: Gold \$31,685,118; silver 98c. per oz.; copper 11c. per lb. and lead \$4.80 per cwt. Mr. Valentine does not report the production of precious metals in ounces, but as he estimated silver at 98c. per ounce the output would be 51,851,025 ozs. We estimated the production of silver in 1891, in our statistical number, January 2nd, 1892, at 59,000,000 ozs., and the production of gold at \$33,000,000.

Mr. Valentine's estimate of the production of the precious metals west of the Missouri in 1889 was, gold, 1,573,526 oz., and silver, 58,945,359 oz., while the census investigation for the whole of the United States gave gold, 1,590,869 oz., and silver, 51,354,839 oz. In 1890 Mr. Valentine's estimates were 60,510,414 oz. (\$62,930,831) silver, and \$31,795,361 gold. The statistics of the Director of the Mint for the same year showed that the actual production of silver was 54,500,000 oz., and gold, \$32,845,000, or 6,000,000 oz. silver less than the amount reported by Mr. Valentine; and we believe our estimate for 1891 is very much nearer the truth than that of Mr. Valentine.

These statistics were once recognized as authoritative, owing to the facilities which Wells, Fargo & Co., then practically controlling the carriage of the precious metals in the West, had for collecting them. Of late years, however, they have become less accurate and authoritative, which Mr. Valentine recognizes, as he prefaces his tables with the following explanation:

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

States and Territories.	Gold Dust & Bullion by Express.	Bullion by other conveyances.	Silver Bullion by Express.	Ores and Base Bullion by Freight.	Total.
California.....	\$9,104,772	\$1,350,716	\$475,745	\$1,284,000	\$12,215,233
Nevada.....	2,679,675	.....	4,086,921	1,979,015	8,745,611
Oregon.....	954,000	50,000	84,000	.....	1,088,000
Washington.....	187,000	30,000	112,000	.....	329,000
Alaska.....	.....	850,000	.....	.....	850,000
Idaho.....	2,520,000	.....	4,800,000	4,275,000	11,595,000
Montana.....	2,840,000	.....	17,012,000	8,159,000	28,011,000
Utah.....	101,636	.....	2,253,045	11,053,752	13,408,433
Colorado.....	4,647,322	.....	19,043,756	4,511,959	28,203,037
New Mexico.....	469,649	100,000	36,821	3,531,270	4,237,740
Arizona.....	759,132	100,000	521,344	4,185,681	5,576,157
Dakota.....	3,196,838	.....	209,133	16,900	3,422,871
Texas.....	.....	.....	264,423	.....	264,423
British Columbia.....	290,876	.....	.....	.....	290,876
<b>Total.....</b>	<b>\$27,750,960</b>	<b>\$2,480,716</b>	<b>\$48,899,188</b>	<b>\$35,106,577</b>	<b>\$118,237,441</b>

The gross yield for 1891, shown above, segregated, is approximately as follows:

Gold.....	27.5%	\$31,975,904
Silver.....	51.2%	60,614,004
Copper.....	11.2%	13,261,663
Lead.....	10.1%	12,385,780
<b>Total.....</b>		<b>\$118,237,441</b>

Deducting amounts from British Columbia and the west coast of Mexico, the value of the total product is given as \$117,946,565, divided as follows: Lead, \$12,385,780; copper, \$13,261,663; silver, \$60,614,004; gold, \$31,685,118.

The exports of silver during the past year to Japan, China, the Straits, etc., have been as follows: From London, \$33,467,075; from San Francisco, \$7,912,370. Total, \$41,379,445, as against \$47,974,309 last year. Pound sterling estimated at \$4.84.

MEXICO.

The statement of the product of gold and silver in the Republic of Mexico, revised and corrected from 1877 to 1891, value upon mintage basis, is as follows:

Years.	Gold.	Silver.	Total.
1877-1878.....	\$747,000	\$24,837,000	\$25,584,000
1878-1879.....	881,000	25,125,000	26,006,000
1879-1880.....	942,000	26,800,000	27,742,000
1880-1881.....	1,013,000	29,234,000	30,247,000
1881-1882.....	937,000	29,329,000	30,266,000
1882-1883.....	956,000	29,569,000	30,525,000
1883-1884.....	1,055,000	31,685,000	32,740,000
1884-1885.....	914,000	32,226,000	33,140,000
1885-1886.....	1,026,000	34,112,000	35,138,000
1886-1887.....	1,047,000	34,600,000	35,647,000
1887-1888.....	1,031,000	34,912,000	35,943,000
1888-1889.....	1,040,000	40,706,000	41,746,000
1889-1890.....	1,100,000	41,500,000	42,600,000
1890-1891.....	1,150,000	43,000,000	44,150,000
<b>Total.....</b>	<b>\$13,539,000</b>	<b>\$458,645,000</b>	<b>\$472,484,000</b>

"The returns from Mexico continue to show a steady forward movement, in full accord with the healthy progress of mineral developments and mining interests in the United States. This result is owing, in great measure, to the liberal and friendly policy of the Federal Government of Mexico, which has afforded enterprises of the kind every reasonable encouragement. The prospects for the future are also very bright."

Old Iron Rails are being used as telegraph poles on the Great Indian Peninsula Railway, according to the *Engineer*. The cost is said to be from eight to ten rupees each, against twenty to thirty rupees for wooden poles.

**Magnesite Slabs.**—A new building material as light and impervious to heat as wood, with the strength of building stone, and as weatherproof, is the magnesite slabs, which are now being successfully introduced by the "German Magnesite Works" at Frankenstein, Silesia, says a writer in *Dingler's Polytechnische Journal*, 282, 96. These are hard solid plates, smooth on one side, having low specific gravity, whose inherent strength is still further increased by an intercalated layer of wire cloth of large meshes. According to tests made by the Royal Testing Laboratory at Berlin, the plates showed a specific gravity of 1.583, and a hardness between that of topaz and corundum. It was demonstrated that they could be drilled with the spoon or lip and center-bit, and that they resisted fire, dampness and frost equally well. Structures in which this material was used were weatherproof and to a considerable degree fireproof. These slabs have been used for ceilings, partition walls, for guard, signal, and switch houses, wagon, boiler, store sheds, machine shops, barracks, offices, country houses, for permanent occupation, but especially for houses for tropical climates. Such buildings are ready for occupancy immediately after completion. As these slabs are secured by screws to the frames they are particularly applicable for sectional houses for transportation. They answer admirably for steps, sills, door and window jambs, wall covering in places exposed to fire, etc., etc. Division walls are very light and deaden sound completely, and are dry and exclude moisture. They are screwed directly to common laths. Fungi cannot grow on them, as the contained chemicals kill all sporadic growth. These slabs have been most extensively used by the Berlin R. R. in the construction of guard and signal houses to replace corrugated iron, as the structures are cool in summer and can be readily heated in winter, and can be built much cheaper. These slabs are made 1/4, 1/2 and 1 1/2 in. thick and can be readily painted with the ordinary paints, and can be polished as readily as wood.

**A Direct Process for Smelting Iron, etc.**—*Chemiker Zeitung* gives an abstract of a paper by N. Lebedieff on a direct process for producing iron and other metals from their ores. According to this method the metallic oxides are brought in contact with a strong base (potash, soda, lime or dolomite) by either melting the two in a finely divided state or by roasting such mixture in furnaces provided with a powerful air blast, stirring the mass frequently. To hasten the process common salt or nitre may be added to the roasted mixture. Some combinations of metallic oxides with alkalies may be produced by the wet process; for example, alkaline aluminates. Abstracting the pure metals may then proceed in cupolas, open hearths, or in crucibles in reverberatory furnaces. To the mixtures prepared as above are added charcoal, coke, etc., as well as a proper amount of silicious materials to produce slag upon the reduction of the metals. In order that furnace walls be not attacked the inner lining is best made of neutral material. In the reduction of iron and other metals easily separated by coal, etc., gas, under proper pressure, containing a sufficient amount of CO<sub>2</sub>, H<sub>2</sub>, or C<sub>2</sub>H<sub>4</sub> may be used instead of coal, etc. Smelting is then carried on in open hearth or reverberatory furnaces. The reducing gases are brought into the molten mass by pipes discharging at a proper height, or by tuyères issuing from chambers in the furnace walls, and connected with pressure generators or gasometers. After properly heating the furnace the carefully mixed oxides and bases, or the oxides previously treated with bases, are introduced and heated until thoroughly melted, when the reducing gases are allowed to penetrate the mass. In proportion to the relative reduction of the metal and separation of the bases a further thin layer of oxides is added. These latter combine readily with the free base and melt, and the gas then again reduces the metal, the base is again separated and thus the process continues. In case the oxides combine readily with the bases by simple smelting the operations can all be carried on in one furnace. Metals melting easily are tapped from time to time as they are produced. Metals which are refractory, such as iron, chromium, etc., can be dosed with materials which lower their melting point (high carbon pig in the case of iron), or else they are treated after a sufficient quantity has been produced and removed from the furnace, with water or acids after cooling, thereby dissolving the alkaline salts, the insoluble metal remaining undisturbed in the shape of small plates.

THE NITRATE TRADE IN 1891.

Messrs. Thomson, Aikman & Co. furnished the London *Statist* with the following statistics concerning the nitrate trade in 1891 and preceding years:

	1891.	1890.	1889.	1888.
Tons.....	790,000	1,035,000	930,000	750,000
The receipts during each year into importing countries are given as:				
United Kingdom.....	122,000	114,000	120,000	103,000
Continent.....	730,000	670,000	673,000	546,000
United States.....	105,000	90,000	90,000	70,000
Tons.....	957,000	874,000	883,000	719,000
Consumption is returned as:				
United Kingdom.....	124,000	119,000	104,000	104,000
Continent.....	705,000	667,000	575,000	532,000
United States.....	95,000	105,000	80,000	65,000
Tons.....	924,000	891,000	759,000	701,000

The visible supply for Europe to meet the demand for active period, January-April, inclusive, is estimated, stocks and afloat together:

	1891.	1890.	1889.	1888.
For January-April.....	540,000	705,000	572,000	404,000

The deliveries for the first four months have been:

	1891.	1890.	1889.	1888.
Four months' deliveries.....	533,000	485,000	485,000	334,000
Average price (spot).....	ss. 6d.	ss. 2d.	ss. 2d.	10s. 9d.

Stocks at ports of consumption were at December 31st as under:

	1891.	1890.	1889.	1888.
United Kingdom.....	23,000	25,000	30,000	14,000
Continent.....	191,000	165,000	162,000	64,000
United States.....	40,000	30,000	45,000	28,000
Tons.....	254,000	220,000	237,000	106,000

The highest and lowest prices, per cwt., during the past four years have been as follows:

	1891.	1890.	1889.	1888.
Highest:	s. d.	s. d.	s. d.	s. d.
January to June.....	9 6	8 6	11 6	10 9
July to December.....	9 4½	8 9	9 0	11 6
Lowest:	s. d.	s. d.	s. d.	s. d.
January to June.....	7 6	7 10½	8 1	8 9
July to December.....	8 6	7 6	8 3	8 9

DIGEST OF CURRENT DECISIONS OF THE SECRETARY OF THE INTERIOR RELATING TO THE MINING INDUSTRY.

Reported for the Engineering and Mining Journal.

**MINING CLAIM—MILL SITE—LIMITS OF LOCATIONS FOR SEC. 2,337 R. S.**  
The mere construction of a tramway or the grading of a roadbed therefor does not constitute such a use or improvement of the land as warrants the granting of a mill site.

An application for a mill site will not be granted where it appears that the improvements made are located upon the line between the two mill sites, where neither location has the requisite improvements independent of each other.

It is not good practice to consolidate cases that have separate records. *In re Hecla Cons'd Mining Co.* [Rendered January 2d, prom., January 18th, 1892.]

ALASKA—SURVEY AND PURCHASE OF LANDS IN NON-MINERAL LAND—ENTRY—OATHS.

The right of any person, association, or corporation to enter non-mineral land in Alaska for purposes of trade or manufactures, is limited to one entry of not exceeding 160 acres of contiguous land lying, as near as practicable, in square form.

In making surveys of Alaskan lands in isolated localities, the authorized deputy-surveyor may administer the requisite oaths to chainmen, assistants, and such other persons as he may have occasion to examine as to corners, boundaries, etc.—[Official letter of Secretary to Clinton Gurnee, San Francisco, Cal., November 25, 1891.]

MINING CLAIM—ENTRY—PAYMENT—RE-LOCATION.

A mineral entry cannot be perfected if the requisite payment is not made on application for patent, though the proof may show due compliance with law in other respects.

If the statutory requirement in the matter of annual work and expenditure is not subsequently observed, the claim becomes subject to re-location.—*Ferguson vs. The Belvoir Mill and Mining Company (Cal.)* [Rendered Jan. 12, prom. 23, 1892.]

MINING CLAIMS—DEFECTIVE PUBLICATION NOTICE.

An application for a mineral patent will not be granted, where the description of the claim in the published notice of application is not in accordance with the official field notes of survey.

The only true and correct foundation for an application for a patent to a lode-claim is the approved official field-notes, and plat prepared by the deputy surveyor.—*Hoffman et al. vs. Venard et al.* [Rendered Jan. 12, prom. 23d, 1892.]

PLACER PATENT—KNOWN LODE—MINERAL ENTRY.

A placer patent for land including a known lode, not specifically described and excluded, operates to convey title to all of said land and to terminate the jurisdiction of the department over the land covered thereby.

An entry of a lode-claim in conflict with a patented placer need not be canceled, but may be properly suspended with due opportunity given for the institution of proceedings looking toward the vacation of the placer patent as to the land in conflict.

In the exercise of its proper supervision over the disposition over the public lands the department may waive questions affecting the regularity of proceedings below, and render such judgment as shall seem just and proper in the case.—*In re Pike's Peak Lode (Mont)* [Rendered Jan. 13, prom. 23d, 1892.]

MINERAL LAND—SURVEYOR-GENERAL'S RETURN—SETTLEMENT—IMPROVEMENT.

When a mineral entry has been allowed on land returned as "agricultural," the presumption as to the character of the land, created by the

return, no longer exists, and the burden of proof will thereafter lie with one who alleges that the land is, in fact, agricultural.

In an issue joined between a claimant under the mineral law and an agricultural claimant, the matter to be determined is whether, as a present fact, the land is more valuable for its mineral than for agriculture.

Settlement and improvement constructively extend to all parts of the quarter-section claimed by the settler.—*Walton vs. Batten et al.* [Rendered January 11th, prom. 26th, 1892.]

MINERAL AND AGRICULTURAL LAND ENTRY—CONFLICT BETWEEN—UNIFORM DEPARTMENT RULINGS—SURVEY—BURDEN OF PROOF.

In case of alleged conflict between prior placer claim and an agricultural entry the actual extent of the claim should be shown by a survey thereof in accordance with the mining regulations.

The present existence of mineral in such quantity as to render the land more valuable for mining than for agricultural purposes must be proven in order to defeat an agricultural entry thereon.

The burden of proof is with the one who alleges the mineral character of the land that is returned by the surveyor general as "agricultural."

The uniform decisions of the department for many years has been to the effect that mineral patents should not be granted unless the existence of mineral in such quantities as would justify expenditure in the effort to secure it is established as a present fact, although the land may contain some measure of valuable mineral.—*Winters et al. vs. Bliss.* [Rendered Jan. 14, prom. 26, 1892.]

MINING CLAIM—PROTEST—APPEAL—HEARING—CANCELLATION OF ENTRY.

The right to be heard on appeal from the decision of the Commissioner of the Land Office may be properly accorded to a protestant, against a mining claim, who alleges an adverse interest, non-compliance with law, and whose application for a hearing on said charge has been denied.

The following allegations proven work a cancellation of mineral entry, to wit: Failure to discover any rock in place bearing mineral—non-expenditure of money in development and improvement—that the testimony upon which entry was allowed was false and fraudulent and that the land was entered not for mining but for other purposes.—*Weinstein et al. vs. Granite Mountain Co.* [Rendered January 16th, prom. 26th, 1892.]

JAMES LEWIS & SONS' COPPER STATISTICS FOR 1891.

James Lewis & Sons, of Liverpool, England, in their annual copper report just issued, estimate the total production of copper in the world in 1891 at 278,000 tons, against 272,000 tons in 1890 and 265,000 tons in 1889. As in former years, the statistics of the ENGINEERING AND MINING JOURNAL for the United States are used in this compilation, but we note that Messrs. Lewis continue to speak of our figures as "estimated," when, as is well known, they are compiled from returns furnished by all the producers. This detracts from the value of Messrs. Lewis' statistics, and does not do justice to us.

Concerning the future value of copper they say: "Unless some arrangement is made between the leading producers of the United States for a limitation of their output, negotiations for which have so far failed, and nothing happens to otherwise diminish the production of which the principal mines are capable, there seems every probability of the present year seeing the total production of the United States increased to 160,000, tons or 32,000 tons more than last year. The close of the civil war in Chili will probably increase the supplies from that country to the extent of about 5,000 tons, and increased shipments from the Rio Tinto mines are promised. Altogether an increased production during 1892 of fully 40,000 tons seems, therefore, quite possible. On the other hand, consumption both in the United States and Europe appears likely to be greater during this year than last; the use of electricity for lighting and motive power will be largely extended and the stocks of sulphate of copper being now very low a considerable quantity of copper will be required for its manufacture."

The imports of copper and copper produce into England and France (with the exception of the imports of precipitate into Newcastle and Cardiff, reliable returns of which can not be obtained, but which appear to vary from 8,000 to 12,000 per annum) are given as follows: In 1891, 126,379 tons fine; in 1890, 127,848 tons; in 1889, 129,741 tons. The total deliveries in England and France, exclusive of pyrites and precipitate at outports, amounted to 119,836 tons fine in 1891; 143,265 tons fine in 1890; 115,876 tons fine in 1889. The total visible supply of copper in England and France is given as 56,315 tons on December 31st, against 65,338 tons on January 1st. The average visible supply in 1891 was 56,968 tons, against 79,644 tons in 1890 and 110,719 tons in 1889. The average fortnightly deliveries in 1891 were 4,997 tons, against 6,014 tons in 1890, and 4,828 tons in 1889.

**Profit in Cinder Pig.**—The common class of crude iron known in South Staffordshire, Eng., as "cinder pig," says the *American Manufacturer*, is made principally out of the slag or cinder from the puddling furnaces of the district, which is supposed to contain an average of something like 40% of metal. It is not a little singular that, until quite recently, this slag or cinder was counted of so little value in the market, that the owners were not only willing to make a present of it to anyone who would take it away, but in some cases they would even pay a trifle per load for its removal. The result is that enterprising pig iron makers have been able to sell cinder pigs at prices which although astonishingly low, have, considering the nominal cost of raw materials, yielded a very fair profit.

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, January 26th, 1892.

- 467,512. Rolling Metals. Daniel K. Miller, Philadelphia, Pa.
- 467,569. Ore Concentrator. George J. Parker and Charley B. Walker, Trinidad, Colo.
- 467,607. Rotary Excavator for Hydraulic Dredging Machines. William P. Humphreys, San Francisco, Cal. Assignor to A. M. Stinson, same place.
- 467,646. Machine for Cutting Sheet Metal. David A. Ritchie, Cambridge, Mass.
- 467,800, 467,801. Process of Tinning Plate. James Gould, Jr., Maywood, Ill.
- 467,833. Magnetic Separator. Francis H. Richards, Hartford, Conn., Assignor of two-thirds to Roswell M. Fairfield, Holyoke, and Oscar S. Greenleaf, Springfield, Mass.
- 467,838. Combined Screen and Conveyor. Micajah T. Singleton, Arcadia, Fla.

## PERSONALS.

Mr. Wm. H. Adams, mining engineer, of New York, has gone to New Mexico and California on professional business.

Mr. W. S. Keyes, mining engineer, of San Francisco, Cal., left that city yesterday (29th inst.) for Mazatlan, Mexico, to examine some mines.

Mr. J. D. McKenzie has returned to the Pratt Mines, Ala., and accepted his former position as agent for the Tennessee Coal, Iron and Railroad Company.

Col. M. J. Keck, of Wilkes Barre, Pa., is en route for Denver, Colo., in the interest of the Yule Creek Marble Company, of which he is a director. He is accompanied by Col. B. F. Stark.

The Academy of Natural Sciences, at a meeting held on the 26th inst. in Philadelphia, voted to place Prof. Angelo Heilprin in charge of the expedition which it is proposed to send to the relief of Lieut. Peary and party, who are now in Greenland.

Mr. Graham Pope, of Houghton, Mich., has been appointed general manager of the Franklin Mining Company. It is rumored that Johnston Vivian will remain in the office of superintendent for some time. The *Marquette Mining Journal* prints the following under date of the 26th inst.: Superintendent Vivian, of the Franklin mine, has been requested by the directors to withhold his resignation for another year as they are very anxious to increase their territory by the purchase of more land and to sink a new shaft.

The famous Regent Street Polytechnic Institute of London proposes to bring over a thousand or more of its young clerks, mechanics and apprentices to visit the Chicago Exposition; and its secretary, Mr. Robert Mitchell, is about to arrive at New York on his way to Chicago for the purpose of making transportation and other advance arrangements. Steamship arrangements have already been made. Mr. Albert Shaw, American editor of the *Review of Reviews*, describes in an illustrated article in the February number, "The Polytechnic and its Chicago Excursion."

Mr. H. H. Supplee, in charge of the editorial department of the *Yale & Towne Manufacturing Company*, of Stamford, Conn., has been connected with that company nearly two years. During this time the two papers published by the company have doubled in size and increased in interest. *Hoisting*, which enters the second year of its existence with the January number, has grown to be a valuable guide on all subjects relating to improved devices for handling materials, while *The Trefoil* is equally interesting to the hardware trade. The editorial page of both these sheets is bright, interesting and practical.

## OBITUARY.

Geo. C. Dickinson, a member of the American Society of Civil Engineers, died on the 24th inst. at his home in Albermarle County, Va.

James T. Furber, vice-president and general manager of the Boston & Maine Railway system, died of pneumonia, at Boston, on the 27th inst.

Robert Stephenson, for many years managing director of the locomotive works at Newcastle-upon-Tyne, England, established by his grandfather, George Stephenson, died in Italy, December 21st.

Thomas T. Tasker, one of the founders of the Pascal iron works, and one of the firm of Morris, Tasker & Co., died on the 27th inst. of pneumonia. He was born in Knottingly, Yorkshire, on May 12th, 1799, and came to the United States in 1819. He retired from active business thirty five years ago.

William Alexander Shannon died at Newark, N. J., on the 27th inst., aged 67. At one time he was chief of the Bureau of Statistics, and at the beginning of the War of the Rebellion he was placed in charge of the Currency Bureau, in which he was instrumental in issuing the new National paper money and placing it on a safe basis. In 1863 Mr. Shannon went to England as the representative of the Treasury Department in a case against forgers of Government securities, and upon his return was appointed Deputy Assistant Treasurer under John J. Cisco. He retired from active business several years ago.

Marcus Hulings died at Oil City, Pa., on the 25th inst. He was born in Crawford County in 1822. When petroleum was discovered in Pennsylvania he was living in Armstrong County. He embarked in the producing business in that vicinity and the wealth he soon acquired—securing \$100,000 for part of his interest in his first venture—made him one of the richest men in Armstrong County. From a single tract in the Bradford field his royalties amounted to nearly \$1,000,000. He was an early operator in all the Pennsylvania fields, and organized and was president of several pipe lines and railroads. He operated extensively in the Macksburg and West Virginia fields. Afterward he engaged in mining enterprises, holding interests in Arizona, California, Idaho, New Mexico and Colorado.

E. H. Hargraves, the first practical discoverer of gold in Australia, died recently at Sydney, Australia, at the age of 75 years. Gold was found both in New South Wales and Victoria long before Mr. Hargraves' discovery, but the latter was the real beginning of the search for gold. Mr. Hargraves had gone from Australia to California to try his luck at the gold diggings there, and it struck him while there that the contour and character of the gold-bearing areas bore a remarkable resemblance to those of a locality well known to him in the Bathurst district, New South Wales. Filled with the idea he returned to Sydney, and in February, 1851, proceeded to the spot he had in mind and found that his surmise was quite correct. Within a few weeks men from all parts of the colony were flocking to the Bathurst diggings. Diligent search was at the same time made in Victoria for gold deposits, and discoveries were made in rapid succession.

Joseph Lovering, A. M., LL. D., Hollis Professor of Mathematics and Natural Philosophy emeritus at Harvard University, died last week at Cambridge Mass., aged 79 years. Professor Lovering had a world-wide reputation as a physicist. He was graduated from Harvard in 1833. In 1836 he was appointed tutor in mathematics and physics in Harvard, and two years later was made Hollis Professor of Mathematics and Natural Philosophy. This chair he held until two years ago, when he became professor emeritus. He was regent of the college from 1853 to 1869. In 1884 he was appointed director of the Jefferson Physical Laboratory at Harvard. From 1867 to 1876 he was connected with the United States Coast Survey, and had charge of the computations for determining transatlantic longitudes from telegraphic observations on cable lines. In 1879 he received the degree of LL. D. from Harvard. He was a member of the American Philosophical Society and of the National Academy of Sciences. In 1854 he was made permanent Secretary of the American Association for the Advancement of Science and edited fifteen volumes of its proceedings, becoming in 1873 its president. He was a member of the American Academy of Arts and Sciences, being its corresponding secretary from 1869 to 1873, its vice-president from 1873 to 1880, and president from 1880 to 1887. Professor Lovering published a volume on "Aurora Borealis" (Boston, 1873), and edited a new edition of Farra's "Electricity and Magnetism."

## SOCIETIES.

The Technical Society of the Pacific Coast held its annual meeting at San Francisco, Cal., on the 15th inst., and elected the following officers for the year 1892: President, John Richards; vice-president, Luther Wagoner; treasurer, Geo. F. Schild; secretary, Otto von Geldern; directors, H. C. Behr, Geo. W. Dickie, W. R. Eckart, C. E. Grunsky, and A. Schierholz.

The Engineers' Society of Western Pennsylvania held its twelfth annual meeting in Pittsburgh on the 19th inst., Mr. T. P. Roberts, the president, in the chair. The secretary's report showed a membership of 370. The following papers had been read during the year: "Slow Combustion Construction of Buildings," by H. B. Chess; "Bridge Designs," by H. J. Lewis; "Steam Economy in Rolling Mill Engine Practice," by D. Ashworth; "Hydraulic Cements," by A. E. Hunt; "Bridge Details," by E. Swenson. The following officers were elected for the ensuing year: President, Alfred E. Hunt; vice presidents, one year, Phineas Barnes; two years, Charles Davis; directors, Robert Munroe, G. W. G. Ferris; secretary, R. N. Clark; treasurer, A. E. Frost.

The Engineering Association of the South held its regular January meeting at Nashville, Tenn., on the 14th inst., Lieutenant John Biddle, U. S. A., presiding. The committee, composed of Messrs. Laudreth, Kirkpatrick and Fairleigh, appointed at the last meeting to consider and report on the feasibility of holding in the spring of 1892, under the auspices of the association, a competitive trial of different kinds of machinery used in highway construction, reported that they had received favorable replies from a large number of manufacturers relative to their taking part in the contest. The committee was continued, and the names of Messrs. W. B. Ross and E. C. Lewis were added, and the committee was directed to prepare and submit to the membership a general plan for carrying out the contest.

The Ohio Institute of Mining Engineers held its twelfth annual meeting at Columbus, O., on the 21st and 22d inst. The following papers were read: "Comparison of the Composition of Certain Coals, with Their Evaporating Powers in Locomotive Boilers," by Prof. N. W. Lord, Ohio State University, Columbus, O.; "The Necessity of Making Break-throughs Even and Uniform at the Mines," by James W. Haughe, Ex. Dist. Mine Inspector, Nelsonville, O.; "Mining Limestone by Underground, Instead of Open Quarrywork," by E. B. Willard, Hanging Rock, O.; "The Harrison County Oil Fields," by Wm. B. Hanlon, Chief Engineer, C. L. & W. R. R., New Philadelphia, O.; "The Use of the Prismatic Compass in Mine Surveying," by E. D. Wileman, Massillon, O.; "The Coal Seams of Jackson County," by Hon. Andrew Roy, Glen Roy, O.; "Split Air Courses vs. Continuous Currents,"

by Prof. F. W. Sperr, Ohio State University, Columbus, O.; "The Original Members of the Institute," by Capt. J. L. Morris, Canal Dover, O.; "The Useful Methods Being Practiced in Mining Coal in Ohio," by R. M. Haseltine, Chief Inspector of Mines, Columbus, O.

The seventeenth annual dinner of the Associated Pioneers of the Territorial Days of California was held on the 18th inst. at Morelos, in this city, in celebration of the forty-fourth anniversary of the discovery of gold at Sutter's sawmill, California. The officers of the society, chosen at the annual meeting on January 9th, are Francis D. Clark, president; Captain Samuel L. Clapp, John M. Pray, James H. Pratt and General Edward F. Beale, vice presidents; Frank Sperry, secretary; Edward R. Anthony, treasurer; and Demas Strong, George B. Roys, Alfred T. Goodell, Richard J. Paulsen and Charles W. Schumann, trustees. All of the officers and trustees were present except Messrs. Pratt, Beale and Roys. There were also present the following members who were among the miners of California in its Territorial days: William Colligan, John H. Welsh, R. G. Berford, Jacob Brinckerhoff, Gardner Q. Colton, John Gault, Cornelius Lydecker, James J. McCloskey, Charles R. Street, William M. Walton, Henry Wilson, James M. Wiltzie, Mark D. Wilber and George F. Kohler. Among the visitors were D. W. Kleinhaus, J. C. Caymond, Nelson Taylor, Jr., Charles S. Dodd, Thomas S. Olive, Dr. William Thurman, W. A. Hedenburg, E. Y. Bell, and the Rev. Dr. Newland Maynard. President Francis D. Clark acted as toastmaster. The toast "California Pioneers and the Golden State" was responded to by E. Y. Bell. He was followed by James J. McCloskey, a "49-er," who told a reminiscence of mining days. Charles S. Dodd then sang the "Song of the Gold Digger in 1849," the whole company joining in the chorus. "The Day We Celebrate" was responded to by Mark D. Wilber, a "50-er"; this was followed by the reading of a poem by Henry Wilson, another "49-er," entitled "The Mining Camp of '49 (then and now)," "Woman—Her Influence and Value" was responded to by Nelson Taylor, Jr.; Mr. Dodd sang a second song, after which Demas Strong responded to the toast "Our Sister Societies of California Pioneers." The toast list was followed by the relating of many reminiscences and anecdotes of life in California in its Territorial days. The whole company then sang the "Song of the Argonauts; or the Days of Forty-nine," which was written by the late Samuel C. Upham, a "49-er," and parted to meet again next year.

## INDUSTRIAL NOTES.

The Roanoke Iron Company's puddle mill with 16 double furnaces has been completed. The plate mill building is also completed and the machinery contracted for.

Final steps were taken on the 23th inst. in the consolidation of the Banwood, the Riverside and the Top mills, all of Wheeling, W. Va. The capital stock of the new concern is said to be \$10,000,000.

We have received from Messrs. Small & Schrader, of this city, the general agents of the Atlantic Dynamite Company, an artistic steel engraved calendar for 1892. Also a handsome calendar from the Niles Tool Works, of Hamilton, O.

The Indiana Steel Company's plant at Muncie, Ind., is being pushed to completion. It will operate a rolling mill and a nut and bolt works employing in all about 500 men. The rolling mill will consist of three buildings, one 224 x 80 ft. and one 150 x 50 ft.

The Hazard Wire Rope Works has elected the following officers: Directors, Charles Parish, Charles M. Conyngham, W. L. Conyngham, S. L. Brown, P. A. Oliver, T. F. Ryman and H. H. Ashley; president, Chas. Parrish; secretary and treasurer, Walter Gaston; superintendent, F. F. North.

It is stated that a number of New York capitalists are organizing a company, with a capital of \$1,000,000, to erect a smelting plant at Denver, Colo. There are already three large smelting works at Denver, all of which are now making or contemplating extensive additions to their plants.

The Association of Iron and Steel Sheet Iron Manufacturers was organized in Pittsburgh on the 26th inst., for the purpose of regulating prices and production. Delegates were present from all parts of the country. J. F. Battel, of Piqua, O., was elected president, and W. C. Cronmeyer, of Pittsburgh, secretary.

The first flask of domestic manufacture for the 100 Whitehead torpedoes for the navy was tested at the works of the E. W. Bliss Company, at Bethlehem, Pa., on the 22d inst. It is 5 ft. long, 17½ in. diameter, with a shell 3/8ths of an inch thick. Having successfully withstood the test the flask was accepted by the Navy Department.

Secretary McCloud, of the McCloud Iron and Steel Company, of Chicago, has secured the right to introduce at one of the mills at Youngstown, O., a process invented by him for manufacturing

cotton ties, hoops, etc., from old steel rails. If the process proves successful, a number of rolling mills in Youngstown have signified their intention of putting in the improvement.

The Denver Steel Rolling Mills Company, of Denver, Colo., has plans already finished for its new plant. The mills will comprise two buildings 180 x 180 ft., two 150 x 150 ft., and one 25 x 40 ft., which, together with storage room, will cover five acres. The company will manufacture barb wire, iron and steel nails, staples and baling wire for hay presses and harrows, and give employment to 300 to 500 men, and will begin operations May 1st.

The Central Iron Works, of Harrisburg, Pa., has placed contracts for the erection of a new universal mill. The buildings to contain the plant are to be of iron, and will be constructed by the Pennsylvania Steel Company, of Steelton, Pa. The mill will be erected by the A. Garrison Foundry Company, of Pittsburg, and the engines for driving same, which will be 30 x 60 in. reversing engines, will be built by Wm. Tod & Co., of Youngstown, O.

A Pittsburg dispatch says that a general strike may be the result of a recent order of the United States Glass Company (the flint glass combination) requiring all employes to remain in the factories four hours and a half in order to constitute a full turn. The men claim that they can make a turn in three and a half hours, and that it is needless to have them wait about the shop in idleness for one hour. Seven factories closed on the 23rd inst., and 2,000 men are now idle.

On the 25th inst the reduction in the wages of the employes of the Brooke Iron Company, at Birdsboro, Pa., took effect. All the employes continued at work, excepting some of the nail feeders. The latter are employed and paid by the nailers. They refused to accept their share of the reduction, and since they went out some of the nailers are feeding their own machines. It is believed that the matter will be adjusted, and the feeders return to work in a few days. The company employes in all departments nearly 400 hands.

From present indications there will be no conflict between the employes and management of the Homestead Steel Works, at Braddock, Pa., over the working scale of 1893. Several days ago General Manager Potter called a meeting of the officers of the eight local lodges of the Amalgamated Association of Iron and Steel Workers and proposed that they go into a discussion of the new scale. The officers were pleased at this proposition and submitted it to their lodge. The decision of the workmen in the matter will be known by to-day, when the Mill Committee will wait upon Mr. Potter. The outlook is said to be entirely favorable.

The Retail and Wholesale Marble Dealers' Association of New England and the provinces held their annual meeting at Boston on the 27th inst. Officers were elected for the ensuing year as follows: President, William G. Garmon, of Manchester; treasurer and secretary, Jas. F. Brennan, of New Hampshire; vice-presidents, Jonathan Henna, Connecticut; James E. Stanton, New Brunswick; O. M. Wentworth, Massachusetts; Jonathan S. Neat, New Hampshire; Charles H. Glidden, Vermont; A. F. Barnum, Rhode Island; Samuel Bryant, Maine. Five directors from each New England State and the provinces were elected. It was voted to hold the semi-annual meeting in Boston in July next.

The extensive plant of Borne, Scrymser & Co., lubricating oil manufacturers, at Elizabeth, N. J., was almost entirely destroyed by fire on the 26th inst by an explosion of one of the stills. There was a lack of water supply, which made efforts to quench the flames ineffectual. Still after still exploded, the blazing oil floating out on the surface of Staten Island Sound. The Staten Island meadows were fired and ignited the trestle of the Baltimore and Ohio Railroad bridge which spans the Sound near this point. The oil works covered ten acres, with 450 ft. frontage on the Sound. The wharves along the full length of this frontage were consumed, also the cooper shop and the barreling, filter and pump houses. Forty five thousand new barrels, many thousands of barrels of manufactured oil and six stills were destroyed as well, the loss aggregating \$300,000; partly insured. The works were established in Brooklyn in 1879, and removed to Elizabeth in 1883. About 400,000 barrels of oil were produced annually. The buildings on the grounds were a big cooper shop, a barreling house, a filter house, a pump house, a house for bleaching oils and the press-house, fitted up with machinery to extract the paraffine wax from the oil. There were 65 iron storage tanks, with a capacity ranging from 75 to 5,000 barrels. There were eight stills, with a capacity of 125 to 600 barrels. An intricate system of pipes connect with all parts of the works. Over 100 grades of lubricating oils were manufactured in the establishment, which furnished employment to about 200 men. There were two boiler houses, and four engines of 500 H. P. The firm had a fine pier, with ample shipping facilities. Its export trade was large, and it had agencies in Australia, South America and Japan. The works could turn out over 1,200 barrels of finished oils daily.

**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**  
2,539. Punch with shear attachment to punch tube holes up to 3 inches; also bending rolls. Tennessee.

2,540. An 18 or 20-in. swing lathe, 7½-ft. bed from center to center, a 24 in. swing back geared and power feed upright drill, a wood lathe, a saw, a power punch, an emery wheel, smith's tools, etc. West Virginia.

2,541. An outfit for ginning cotton, and grinding corn; including an engine, boiler, 80 saw cotton gin, feeder, condenser, etc. Arkansas.

2,542. Corrugated Iron. Alabama.

2,543. Equipment for brewery and ice factory. West Virginia.

2,544. A 20-H. P. saw mill complete; also a good planer and matcher. Virginia.

2,545. A lot of shoemakers' lasts. North Carolina.

2,546. A complete outfit of the latest improved machinery for metallic paint mill, to grind "Red Fossil ores," about 20 tons daily capacity including engine and boiler, mills, conveyors, dryers, with pans of the most conveniently arranged outfit. Alabama.

2,547. Complete outfit of the latest improved machinery for mining, washing, drying and handling land and river "pebble" phosphate. The land "pebble" is imbedded in clay or mud. Capacity required about 400 tons gross material per day—yielding about 100 tons dried "pebble." Alabama.

2,548. A 40-H. P. engine, a 50-H. P. boiler, and elevator for seed cotton, a cylinder cotton press, etc. Alabama.

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.

2,552. 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, bark mill, pump and other material generally used in the construction of a tannery. Texas.

**AMERICAN GOODS WANTED ABROAD.**

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

2,518. A machine for bending ½-in., ¾ 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.**

**ST. LOUIS ORE AND STEEL COMPANY.**—In the United States Circuit Court sitting at Springfield, Ill., a decree of foreclosure was rendered on the 26th inst. in the case of the Farmers' Loan and Trust Company, of New York, against the St. Louis Ore and Steel Company, of St. Louis, Mo., for \$600,000. The mortgages were on lands in Jackson and William counties, Illinois.

**ARIZONA. PIMA COUNTY.**

**CROCKER MINING COMPANY.**—At the annual meeting of this company 84,912 shares were represented and the following officers elected: William S. Lyle, president; George Wallace, vice-president, and J. B. Low, C. H. Fish and Samuel Frank, directors. Augustus Waterman was re-elected secretary and Wm. Pickett superintendent. The secretary's financial statement showed a credit of \$571.70, with an assessment being collected.

**PEER MINING COMPANY.**—The Board of Directors of this company met on the 21st inst. to discuss the advisability of adopting some new and more economical method of handling the ore now ready for extraction from the mine. It was shown that since the discovery and development of the ore in Peer on the surface, it had been necessary to handle the ore by hand about six times before it reached the mill. It had first of all in working down to be extracted by hand and then hoisted by winch to the surface, conveyed on a trainway to the Peerless shaft, where it was dumped down to the 600-ft. level, and again run through a drift some 1,500 ft. before it could be run down to the mill, entailing a heavy expense. In view of this it was deemed advisable in the interest of the shareholders that after the ore now out had been worked at the mill to suspend further extraction until a tunnel could be run for about 100 ft. in Peer ground at a depth of 400 ft. This will give ore backs of over 480 ft., and by working up the ore can be thrown down and run to the mill by tramway.

**CALIFORNIA. FRESNO COUNTY.**

The quarries of Fresno County yielded 10,607,000 lbs. of stone in 1890, and 16,044,000 in 1891, according to the *Mining and Scientific Press*.

**MONO COUNTY.**

**BODIE CONSOLIDATED MINING COMPANY.**—The last letter from the superintendent reports that stoping has commenced on ore above raise from 500-ft. level. It is fair milling ore and will average about 9 in. in width. Satisfactory progress is reported in the Mono workings.

(From our Special Correspondent.)

**BULWER CONSOLIDATED MINING COMPANY.**—Bullion valued at \$4,252.20 has been received from the mine. The stopes keep the mill running full time. The average battery samples for the week were \$46.01; tailings, \$12.40.

**NEVADA COUNTY.**

**GRASS VALLEY GOLD EXTRACTING COMPANY.**—At the annual meeting of the stockholders of this company held in Grass Valley recently the following directors and officers were chosen: W. L. Holms, of Grass Valley, president and general manager; William Holms, of Edinburgh, Scotland, vice-president; T. L. Lockhart, of Grass Valley, secretary and treasurer; Thomas Menzies, of San Francisco, and Martin Wallace, of Grass Valley, directors. Of 1,000 shares of capital stock 970 shares were rep resented.

**TUOLUMNE COUNTY.**

(From our Special Correspondent.)

**CONSOLIDATED GOLDEN GATE AND SULPHURET MINING COMPANY.**—This property is about to be made the subject of a law suit. The complaint was filed in December last. H. E. Hall was appointed receiver of the property. He took charge after having obtained an order of the court enjoining the parties to the suit from interfering with him in his duties. On December 11th, however, Chas. J. Behlow, one of the plaintiffs, with his attorneys, commenced another suit against J. A. Fischer, et al., the same defendants, in the Tuolumne Superior Court, and had R. B. Lane appointed receiver. The last named court issued an order of injunction against Receiver Hall, restraining him from interfering with Receiver Lane. Hall claims that Lane and plaintiff's attorneys are in contempt, having interfered with him, and upon his showing citations for contempt have been issued from the San Francisco court against Receiver Lane, C. J. Behlow and his attorneys.

**COLORADO.**

Negotiations are said to be pending for the consolidation of the coal interests of the Colorado Coal & Iron Company and the Colorado Fuel Company, the two wealthiest corporations engaged in mining coal in Colorado. The Colorado Coal & Iron Company has a capital of \$10,000,000 and \$3,000,000 bonds; the Colorado Fuel Company has a capital of \$5,000,000 and \$1,500,000 bonds. Six thousand men will be brought under one management if the deal is consummated.

**LA PLATA MINES, LIMITED.**—The receipts from the mines at Leadville during December were \$4,730; from the smelting works \$500. The profit realized by the company for the month was \$1,000. The Montgomery mine has been leased and it is expected that the returns of the company will be thereby increased during the present year. The outlook at the White Cloud mine in the Red Mountain district is said to be very good.

**ARAPAHOE COUNTY.**

**DENVER PUBLIC SAMPLING WORKS.**—During the year just closed these works handled 3,100 cars of ore, containing 40,500 tons, or an average of 130

tons for every working day in the year. The miners received for this ore the sum of \$3,527,862, and the average value of the ore was \$87.54 per ton.

#### DOLORES COUNTY.

It is reported that the Blackhawk and C. H. C. group of mines will change ownership shortly. According to the *Rico News*, Mr. Otto Mears, president of the Rio Grande Southern Railroad, Mr. O. P. Posey, the well known mining man, and Mr. J. F. Mitchel, mining engineer, examined the properties recently. It is said that the party made an offer for the C. H. C. group which had been accepted. The amount of the two sales is said to be nearly \$325,000.

#### GILPIN COUNTY.

**NEW CALIFORNIA, LIMITED.**—The production of this company from November 14th to December 11th, inclusive, was 504 tons, yielding \$2.92 a ton in free gold and concentrates. The manager, Mr. Alfred Rickard, says that the decrease in production was due to the playing out of the ore chute between the 1,900-ft. and 2,000-ft. levels.

The receipts from all sources, including custom milling, in the period mentioned above, were \$4,209.75, the expenses being \$6,458.04.

#### HINSDALE COUNTY.

According to the *Phonograph* the value of the gold, silver, lead and copper sent from Lake City in 1891 will exceed \$600,000.

#### LAKE COUNTY.

(From our Special Correspondent.)

**BANGKOK-CORA BELLE MINING COMPANY.**—The ground on the opposite side of Big Evans gulch from main working shaft is still being prospected by diamond drill, which is now down 480 ft.

**CHESTNUT AND WALNUT.**—These two claims lie between the Pyrenees and the Cumberland, on the western slope of Iron Hill and west of the Iron fault. Arrangements are now being made with some prominent mining men from Clear Creek County to take hold of them under a lease. The Pyrenees drill caught the fault plane at a point 1,04 ft. from the surface, striking white limestone. The Chestnut and Walnut being so much nearer the fault ought to catch the first bench on the blue carboniferous limestone much sooner.

**LEO.**—The strike recently made in this mine did not amount to much, being only a pocket in the pyritiferous porphyry of that region. The north-west drift is being steadily carried forward, the ground rapidly rising to the north. No attempt to sink the shaft will be made, as the drifting attains sufficient depth, geologically, to determine the value of the ground.

**NISI PRIUS MINING COMPANY.**—The Crown Point workings of this company are now looking well, the drifts from the top of the raise having met with quite a body of good ore, though the main ore chute has not, as yet, been encountered.

**PILOT-PRINTER BOY.**—Printer Boy mill is soon to be the scene of considerable operations, a consolidation of the Pilot, Printer Boy and other claims being almost completed. This ground has been hitherto worked for gold only, but the lower workings disclose the fact that a good body of sulphide ore exists at that point, and this sulphide is to be the objective point of future development.

**SILVER CORD COMBINATION MINING COMPANY.**—The attention of the company is devoted to the driving of the long tunnel from California Gulch, which has already attained a total length of 1,250 ft., and is going forward rapidly. Steam and hand drills are being used, and as the inner heading has also attained a height of 1,260 ft. there is only about 300 ft. more to run to make connection. There are about 300,000 tons of low grade sulphide already blocked out in this property, and the concentrating mill is rapidly approaching completion so as to be immediately available when the connections are made.

**UNION PROSPECTING COMPANY.**—The organization of this company means a great deal to the basin between Fryer and Yankee hills, the consolidation consisting of the Olive Branch, El Paso, Lickscumdricks, Clyde and the Alpha claims, in which a great deal of ore had been disclosed prior to the drowning out of the Sulphite Mining Company, in the Olive Branch shaft, in August, 1890. This was caused by a drift having been run to connect with the El Paso workings, the latter having been filled with water for more than a year. The officers and directors of this company are Messrs. John Harvey, Seeley W. Mudd and Robt. Estey, men than whom no better exist in this district, and they have all of the capital required to see that the work is done properly. It is, without doubt, one of the best consolidations, on the best piece of ground, that could be made, and as the Lee Basin, Denver City, and Shamus O'Brien adjoining have been taken under a long lease by one of the most prominent mining men here, who intends opening them up at once, this part of the district will be heard from to some purpose ere long.

#### OURAY COUNTY.

**RED CHIEF.**—A cave was struck in this mine recently, from which decomposed material, assaying 7 ounces in gold, was taken.

#### PITKIN COUNTY.

**ASPEN.**—A dispatch from Denver, dated January 27th, says that Judge A. W. Rucker has recovered

judgment in the District Court against Harvey Young, J. B. Wheeler, of New York, and others, for a sixth interest in the famous Aspen mine, at Aspen, Colo., and a sixth of the proceeds of that mine since November, 1884, amounting to over \$12,000,000. On October 20th, 1884, Rucker received from Harvey Young an option for a sixth interest in the mine. The option was for \$15,000, and upon the payment of that sum by Rucker in 30 days Young was to deed him the interest in question. Rucker asserts that on November 19th, 1884, and before his option expired, he tendered Young \$15,000 and demanded his deed, which Young refused to make; that within 30 days Young deeded the interest to J. B. Wheeler; that Wheeler not only knew of the existence of the option and of Rucker's offer to perform and Young's refusal, but it was through his influence that Young failed to keep his contract.

Mr. J. B. Wheeler, when seen at his office, 54 Wall street, declined to say anything concerning this matter.

#### SAN MIGUEL COUNTY.

**UNITED STATES GOLD PLACERS, LIMITED.**—Under a winding-up order made against this company a statement of affairs has been submitted by the liquidator and one of the directors, showing liabilities \$20,700, and assets to the same amount; but, as regards contributories, the deficiency is returned at \$142,836. From the observations of the Official Receiver (Mr. C. J. Stewart), says the *Mining World*, it appears that Mr. Thomas Gilbert, the chairman of the board of directors, was required to concur in the statement, but he has been unable to do so in consequence of pending legal proceedings. The company was registered on March 13th, 1886, and was formed, in the words of the prospectus, "for the purpose of acquiring the Cottonwood Placer, consisting of 800 acres of auriferous gravel on the banks of the River San Miguel, Colorado, United States of America, which, on the patents to be obtained from the United States Government, will form a freehold estate free from any rent or royalty." The property comprises five claims, known as the Wall Street, Lanar, Rockford, Monitor and Square Deal. The nominal capital of the company was £150,000, divided into 150,000 shares at £1 each, of which 120,000 were allotted as part of the purchase-money and 22,836 appear to have been issued to subscribers, of whom there are 650. The failure of the company has been attributed variously by officers of the company to "want of capital" and to "failure of operations at the mine," the results of the washings having proved disappointing. The official receiver states that the deficiency is explained very imperfectly and unsatisfactorily in an account which has been filed, and that, as regards an item of £135,000, under the head of "depreciation," mentioned in the account and appearing as paid to the vendor, it is not clear what cash payments have been made, or that the purchase of the property was even completed. The details of the item "remittances for working expenses at mines" (£39,824) are not forthcoming, and no reference is made in the deficiency account to alleged defalcations, on which stress was laid in a circular purporting to be issued by the directors on April 12th, 1889. The books of account are of a very imperfect character. They have never been balanced or audited (as directed by the article of the association), and the only statement of account which appears to have been prepared was not issued by Mr. Thomas Gilbert until December, 1890, and was marked "subject to audit." The official receiver has had great difficulty in obtaining information regarding the affairs of the company, and he asserts that the whole circumstances attending its promotion, formation, business and liquidation calls for a very full investigation, and it is his intention to report to the Court to that effect.

#### FLORIDA.

##### ALACHUA COUNTY.

**TRENTON PHOSPHATE COMPANY.**—Mr. W. A. Fulton has sold 3,000 acres of land lying near Trenton on the Suwannee River for \$80,000. The purchasers will incorporate under the name Trenton Phosphate Company.

##### IDAHO.

All the mines on the Cœur d'Alenes district closed on the 15th inst. and will so remain until the question of freight rates is settled. The step was taken by the mine owners' association, which appointed a committee to go to Chicago, Ill., for the purpose of having a conference with the Northern and Union Pacific officials. The committee consists of Mr. Patrick Clark, of the "Poorman;" George B. McAuley, of the "Granite," "Stem Winder" and "Sierra Nevada;" A. M. Esler, of the "Badger" and "San Francisco;" B. A. Cox, of the "Hunter," and A. B. Campbell, of the "Gem." Besides these mines mentioned the following are closed: Bunker Hill and Sullivan the largest producer in the Cœur d'Alene, Last Chance and Emma, Tiger, Custer and several others of less note.

Mr. Clark in an interview with the *Butte Intermountain* stated that the miners understand the situation thoroughly, and are in perfect harmony with the companies. The question of wages does not enter into the situation. "The step has been taken not to compel a cut in rates, as is commonly supposed, but to resist a raise. One year ago January 1st, the Northern Pacific and Union Pacific

railroads served notice that thereafter rates on ores to Missouri River points (which points, be it understood, virtually determine the rates to all other points, at least as far as the Cœur d'Alene is concerned) would be \$18 per ton instead of \$16 per ton, the rate in effect during the entire year of 1890. This action on the part of the railroad was undoubtedly prompted by the then prevailing high prices for both lead and silver, which for several months, owing to the agitation of the silver question and the tariff, were very good; silver averaging \$1.10 per ounce, and even going as high as \$1.20; and lead remaining almost steady for several months at \$5.25 per cwt., thus giving the miners of the Cœur d'Alene a good profit."

"The concentrates of the Cœur d'Alenes contain about 60% lead and 30 oz. of silver. The smelters guaranteeing 90% of the lead and 95% of the silver, it will be seen by comparing the above figures that the ore or concentrates for 1891 brought \$13.84 less than in 1890. At the time the railroads raised the rates, in addition to the \$13.84 must be added, of course, the \$2 raise, making a total of \$15.84 per ton, and all off the net proceeds.

"It may be asked why this injustice was not presented before now. This is very easily explained. When the raise occurred, owing, as before stated, to the high prices, we did not feel it. Besides, we had no organization. Since then, however, we have organized what is known as the Mine Owners' Association, for the mutual protection of our interests, they being so nearly identical that what affects one affects all, and it took most of the year to get thoroughly organized, so as to act together.

"In asking for a reduction of \$2 per ton we ask for only that to which we are entitled. The railroad charges \$360 per car of ore and hauls wheat several hundred miles farther to Chicago for \$175. We furnish a non-perishable freight and ship the year around, whereas the farmers only ship for a few months. We find no fault with the rates accorded the farmer, but want to get the same for our own product."

**IDAHO, IMPROVEMENT AND DEVELOPMENT CO., LIMITED.**—This company has been organized with an authorized capital stock of \$300,000, divided in shares of \$1 each, of which 100,000 are now issued for the purpose of developing mining properties in Idaho. The officers of the company are Norman B. Willey, president; James H. Hawley, vice-president; W. E. Mitchell, treasurer; R. D. Wolterheck, secretary. These, together with George Ainslie, James Baxter, E. R. Mills, A. J. Pinkham, C. A. Stein, Milton G. Cage and John Krall, constitute the board of directors. The shares are offered at par until February 24th, on which date the subscription books may be closed. The terms of payment of the stock are as follows: 10 per cent. on allotment, 15 per cent. on March 22, and 25 per cent. before July 2d, 1892; and if necessary to carry out the objects of the company 25 per cent. on or before January 2d, 1893, and 25 per cent. July 2d, 1893.

#### BINGHAM COUNTY.

**BIRCH CREEK MINING COMPANY.**—A strike is reported to have been made in the Cleveland mine, owned by this company. Some years ago a shaft was sunk 60 ft. on this vein, and a cross-cut of 7 ft. made. This was thought to have cut the vein, and as the rock only assayed from \$4 to \$10 a ton the mine was abandoned. The property was purchased a few years ago by its present owners. Recently the cross-cut has been extended 27 ft., all in vein matter, and on the hanging wall about 6 ft. of good ore has been found.

#### ILLINOIS.

**BRACEVILLE COAL COMPANY.**—This company was fined \$100 and costs recently for violating the State mining law in screening miner's coal before it was weighed and for non-conformance with the weekly payment clause. The cases have been appealed to the State Supreme Court.

#### MICHIGAN.

##### COPPER.

**QUINCY MINING COMPANY.**—The hearing in the Pewabic mining suit comes before the United States Supreme Court at Washington, D. C., March 15th.

##### IRON—GOGEBIC RANGE.

The annual election of officers of the Comet, the Superior, the Aurora and the Palms Mining companies were held in Milwaukee, Wis., recently. In each case the old board of directors was re-elected. The directory of the Aurora mine is composed of Charles L. Colby, Edwin H. Ahhot, Colgate Hoyt, W. J. Olcott, Charles H. Ropes, L. H. Severance and Joseph L. Colby.

**BROTHERTON IRON MINING COMPANY.**—At the annual meeting of the stockholders of this company held in Milwaukee, Wis., the following board of directors was elected: H. A. Cooper, E. Niedeecken, H. Niedeecken, W. S. Morton, Joseph Sellwood, W. J. Luther and J. P. Channing. The directors re-elected Joseph Sellwood, president; H. Niedeecken, vice-president; E. Niedeecken, secretary, M. J. Luther, treasurer. A dividend of 50c. a share on 80,000 shares was voted, 25c. a share to be paid February 1st and 25c. a share April 1st. This is the first dividend that has ever been declared by the company. Reports presented showed the mine to be flourishing. The ore on hand January 1st, 1891, amounted to 13,015 tons. During the year 1891 67,200 tons were mined, and 48,800 tons

shipped, leaving the balance on hand of 31,406 tons January 1st, 1892. It is expected that 135,000 tons will be mined this year. The product of the Brotherton is largely sold to the Illinois Steel Company.

**METROPOLITAN LAND AND IRON COMPANY.**—This company, operating the Norrie, East Norrie and Pabst mines, at a meeting recently held in Milwaukee, Wis., elected the following officers: S. S. Curry, president; H. S. Hazelton, secretary and treasurer; L. J. Pettit, treasurer. It is said that this company will supply a portion of the tonnage—or about 600,000 tons—recently purchased by the Illinois Steel Company and the Carnegie interests.

**NORTH PABST MINING COMPANY.**—Since the boiler explosion (see ENGINEERING AND MINING JOURNAL, January 16th) operations at this company's mine have been suspended. The one shaft on the property, 580 ft. deep, is half full of water. It has not yet been decided what will be done in the way of again operating the property.

**IRON—MENOMINEE RANGE.**  
**CHAPIN MINING COMPANY.**—This company, at a recent meeting held in Milwaukee, Wis., elected a board of directors as follows: M. A. Hanna, of Cleveland; George H. Kent, of Cleveland; H. McKay Twombly, of New York, and J. H. Van Dyke and Ferdinand Schlesinger, of Milwaukee. M. A. Hanna was re-elected president and George H. Kent, secretary. The annual reports showed that the past year had been a prosperous one for the company and that 500,000 tons of ore had been mined. The mine now has a working force of about 1,000 men, and the daily output averages about 1,800 tons.

**LUDINGTON AND HAMILTON.**—The Norway Current contains the following relative to the water trouble in these mines: "There has been no change during the past week. At the Hamilton, the machinery at No. 2 will not be ready for duty inside of three weeks. The bailers are well under way. The water in this shaft has been slowly rising (perhaps one foot per day) and is now within 205 ft. of the top. The walls of the stone engine house at No. 1 are cracked and out of plumb in many places and the engine foundations have dropped at one end enough to throw the engines much out of line and make it impossible to use them at present. The water in No. 1 shaft is at the same height as in the Ludington mine. At the Ludington the water on the 21st inst., noon, was 18 in. deep in the 7th level. The combined work of pumps and bailers lowered the water 1½ ft. on the night of the 20th. About 1,300 galls. per minute are being raised.

**PEWABIC MINING COMPANY.**—In the Old Keel Ridge workings, the main shaft 280 ft. deep, has been unwatered and repaired. The present work is confined to exploratory drifting and cross-cutting, and preparations to take out some small bodies of ore which remain from the old stoping. It is probable that the shaft will soon be sunk at least another level. An entire new surface equipment is being put in. It has been ascertained that the cave from surface, which occurred in 1883 and which caused so many deaths, did not extend to the lower levels and most of them are intact. The grade of ore at the Keel Ridge is very satisfactory, being a high grade Bessemer.

In the new mine the shaft is 600 ft. deep and will be continued 100 ft., and a drift run east. At the third level the drift is blasted 725 ft. east of the shaft. A cross-cut south from this point passed through an 18-ft. lense of ore in which a 45 ft. raise has been made without clearing the body. Concerning the formation in this mine the Norway Current says: The ore body since it was first struck at the 350-ft. level has been capped by sandstone which pitches to the southeast, cutting off the ore in its general course. About 600 ft. east of the shaft at the 500-ft. level this downward course of the sandstone seems to end after having entirely cut off the ore. About 130 ft. to the east of this 18-ft. lens of ore mentioned above was struck and the "raise" which was being made seems almost conclusive evidence that the roof-like course of the sandstone has ended and that the ore will be found to raise to the east henceforth.

**MINNESOTA.**

**IRON—VERMILION RANGE.**

**CHANDLER IRON COMPANY.**—This company is hoisting 1,500 tons of ore daily. The stock piles now contain 125,000 tons, an amount, which it is said, will be doubled before the opening of navigation.

**MISSOURI.**

**JASPER COUNTY.**

(From our Special Correspondent.)

Joplin, Jan. 25.

Saturday evening closed almost the dullest week in the history of this lead and zinc belt. It was almost a complete freeze out; the temperature reached 14° below zero and as a result pumps and wash places were frozen up so that the small operators were compelled to abandon their mines and wait for warmer weather. A number of the large large plants that had their works enclosed ran steady and made an average production. Following are the sales from the different camps as far as reported:

Joplin mines, 530,920 lbs. zinc ore and 85,430 lbs. lead; value, \$7,805.

Webb City mines, 166,250 lbs. zinc ore and 43,580 lbs. lead; value, \$2,807.10.

Carterville mines, 647,500 lbs. zinc ore and 35,980 lbs. lead; value, \$7,950.

Zincite mines, 47,170 lbs. zinc ore; value, \$542.50.

Oronogo mines, 40,070 lbs. zinc ore and 28,520 lbs. lead; value, \$735.

Carthage mines, 292,500 lbs. zinc ore; value, \$3,453.55.

Galena, Kan., mines, 89,000 lbs. zinc ore and 15,000 lbs. lead; value, \$1,155.

District, total value, \$24,448.15.

Col. H. H. Gregg is still pushing development at his Scotia mine, southwest of Joplin, and is opening up some fine ore bodies from which he is producing from 15 to 20 tons of clean ore per week. This development has induced other parties owning land to the north to open up their property, and, notwithstanding the cold weather of last week, the prospectors struck the ore at a depth of 40 ft. near the north line of the Colonel Gregg tract. There are a number of prospectors locating in this new field, and if new finds are made to the west there will be almost a continuous line of mines from Galena, Kan., to Joplin. The line of development is almost continuous from Joplin to Webb City and Carterville to the northeast.

The Carthage mines are showing up this year very well. Last week the Porter Mining Company sold five car loads of zinc ore and the Pacific Mining Company two car loads. The Pacific Mining Company is said to be stoping on a large face of zinc ore in its mine from which it can make a very large output.

**MONTANA.**

**BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.**—Butte papers say that it is highly probable that within the coming six months the two smelters owned by this company at Meadville will be closed permanently. The reason for this is due to the treatment the company received at the hands of the people at the time the roast beaps were burning. The new works at Great Falls are pushing to completion as fast as possible. The electrolytic plant will be added after the main works are started. The construction of the railroad tracks from the main line of the Montana Central to the ore bins of the mines is under way, and it will require only a short time to complete them. The plant will be ready for use some time in March.

**DEER LODGE COUNTY.**

**BI-METALLIC MINING COMPANY.**—The breakage of a reel shaft has necessitated a temporary suspension of operations on this company's mine.

**BLACK ROCK.**—A fine strike of rich ore is reported to have been made in this mine on the 16th inst. The ground is under lease by H. G. Valiton, Lee Mantle, Dr. Mussigbrod and others, who have a force of men at work. It is owned by Messrs. Gumache and Chatelle, of Helena, Mont.

**GRAND REPUBLIC MINING COMPANY.**—Reports received tend to confirm the recent reports of the discovery of a large body of shipping ore in the Lilly mine, one of the properties of this company. The ore body has been traced, in level and cross-cuts, a distance of over 120 ft., and over 100 ft. on its vertical trend. At the point where first encountered and for a distance of over 70 ft. along the vein the ore body is a compact streak of galena and iron over 30 in. in width; samples of this ore have run \$6.80 in gold, 45 oz. silver and 34% lead, another sample \$7.60 gold, 119½ oz. silver and 50-7% in lead.

**GALLATIN COUNTY.**

**GALLATIN ASBESTOS MINING COMPANY.**—This company filed articles of incorporation on the 20th inst. at Helena to mine asbestos and carry on its manufacture at Bozeman, and at the mines on the West Gallatin River. The capital stock is \$250,000. The incorporators are Edward D. Ellis, Theobold Schweitzer, George W. Ellis, Thomas J. Davidson and J. Myron Gray.

**MEAGHER COUNTY.**

**CUMBERLAND MINING AND SMELTING COMPANY.**—This company has purchased the Yellowstone's 30-ton blast furnace, and has moved the same to its plant. This will double the capacity of the Cumberland works.

**OMAHA.**—A company has been organized to operate this group of claims on Carpenter Creek, in the Neihart district. The capital stock of the company is to consist of 500,000 shares, 100,000 of which remain in the treasury. Ore in the Omaha is said to be of good grade, running as high as 80 oz. silver a ton.

**SILVER BOW COUNTY.**

**AMY & SILVERSMITH.**—On the 19th inst. the shaft-house of this mine was burned. Indications point to an incendiary origin. The 1½-in. cable was cut. The cage thus released was caught within a few feet from the surface by safety clutches. Two miners who were in the mine at the time escaped through another opening. The main shaft is 500 ft. deep. The property was recently leased to Messrs. A. J. Davis, H. L. Haupt and Frank Grimes.

**NEVADA.**

**HUMBOLDT COUNTY.**

The Silver State says the mining outlook in this county is better than it has been for years. The bullion mine at Spring City is showing up well with a 6-ft. vein of ore, which increases in size as

work progresses. The Paradise and Wild Goose properties are also showing up well. A large body of ore has been struck in the south end of the Cliff mine. Mr. Weighel is jubilant over the output of the Julia. His assays ran up in the hundreds. He has two shifts running a tunnel, and ore is encountered as work progresses. George Lovelock, Jr., has nine men at work at Stone, Timlow & Co.'s mines in Arabia. The ore is shipped from Orono to Contra Costa County, Cal., where it is milled.

**STOREY COUNTY—COMSTOCK LODGE.**

**BELCHER MINING COMPANY.**—Following is the latest official letter from the superintendent of the Belcher mine: "We are stoping from the fourth floor of the 300-ft. level raise of Belcher, and saving from 15 to 20 carloads per day of fair milling ore from it. On the 1,300-ft. level a considerable portion of the week has been occupied in timbering in the south raise. In stoping from the fourth and fifth floors since last report the pay has become somewhat narrower and of lower grade. Have done nothing on the sixth floor during the week. Have shipped to the Brunswick mill for reduction 267 tons of ore, the average battery assay of which was \$24.16."

**CROWN POINT INCLINE.**—Following is the official report of the pumping operations in the Crown Point incline for the week ending January 16th: "The pumps have been running continuously during the week and the flow of water through the drill holes in the bulkhead remains about the same as at last report. We expected to be able to drill another hole through the bulkhead by this time, but the flow of water is still too much for the sinking pumps. The surface of the water in the Belcher incline is now 135 ft. below the floor of the 1,600-ft. station. The water in the vertical shaft of the Overman mine is 50 ft. below the 1,400-ft. station."

**SIERRA NEVADA MINING COMPANY.**—The annual meeting of this company was held in San Francisco the 20th inst. The number of shares represented was 98,724. The old managers found no difficulty in obtaining control, says the San Francisco Report, and the best the opposition party could do was to elect one director—George W. Cope—who was in every way acceptable to the old managers, and was even welcomed by them. The directors are as follows: Charles H. Fish, Charles Hirschfeld, A. K. P. Harmon, Herman Zadig and George W. Cope. Charles H. Fish was reappointed president, Charles Hirschfeld, vice-president; E. L. Parker, secretary; William McPherson, assistant secretary, and A. McDonell, superintendent.

(From our Special Correspondent.)

SAN FRANCISCO, Jan. 21.

The following is the weekly statement of ore extracted from Comstock mines and milled, with the average battery assay values:

Mine.	Tons extracted.	Tons milled.	Assay.	Values.
			Jan. 16.	Jan. 9.
Belcher.....	140	267	\$24.16	\$31.33
Con. Cal. & Va.....	999	980	27.43	22.95
Chollar.....	.....	354	16.67	.....
Hale & Norcross.....	.....	240	19.60	.....
Overman.....	.....	1475	16.06	17.56
Savage.....	653	682	20.69	19.70
Yellow Jacket.....	1245	.....	.....	.....

\* Cars. † Car sample, \$18.90.

‡ Shipped to the Vivian Mill.

**CHOLLAR MINING COMPANY.**—A strike was reported early in the week in the joint west cross-cut on the north line from Hale & Norcross, 1,640-ft. level, which is out 75 ft. It is of no importance, however, being simply a two-inch streak of ore.

**CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.**—Bullion valued at \$16,722 has been shipped to the Carson mint. The weekly report contains only a resumé of routine work done, but the report is current that a development has been made between the 1,500 foot and 1,800-ft. levels that promises very favorably.

**HALE & NORCROSS MINING COMPANY.**—On Monday next the suit of M. W. Fox vs. this company will again come up before Judge Hibbard in the Superior Court. News of a most startling character is to hand to-day from the mine. On Monday a full force of men was put to work in the Norcross and Savage workings. The Nevada Mill, of unsavory memory, with its "little joker" annex, is running to its full capacity night and day.

The 60 stamps are dropping almost entirely on Norcross ore and the purpose of this spurt of energy is said to be that all the rich ore may be extracted from both mines before the election day comes round. In view of the terrible exposé made in the suit now at bar the directors of the two companies, it is reported, realize that their tenure of office will cease, and are gutting both mines of the rich ore so as to keep the "little joker" in full operation while they can.

**SAVAGE MINING COMPANY.**—An ore development has been made about 50 ft. above the 800 level, which is said to look well, but which has not been officially made known. It extends for nine sets of timbers, or 54 ft. and is good ore, as saying well.

**NEW MEXICO.**

**SANTA FE COUNTY.**

**SANTA FE COPPER COMPANY.**—The Boston Herald publishes the following concerning the affairs of this company: The company has shipped 52 lots

of matte East within less than a year. The shipments have ranged from about 19,000 to 41,000 lbs. of matte, averaging 37,000 to 38,000 lbs., running more than 50% fine copper. It has sold 28 lots of copper since April 1st, 1891, in all about 1,150,000 lbs. at an average of about 11c. The last sale was at 10 $\frac{1}{2}$ c. Jan. 21st, for March, April and May delivery. This is not the net price, as some charges are to be deducted. The management is disappointed in the Fort Scott concentrator, which was expected to treat 100 tons per day, and only treats 40 tons. Negotiations are on for a 100-ton concentrator from Chicago. The Lührig test concentrator did not treat the Santa Fe ore in a way to justify purchasing a large one. The management has arranged to have its ores treated by the electrolytic process, the silver and gold therein to pay for the treatment.

#### NORTH CAROLINA.

##### RANDOLPH COUNTY.

**NEW HOOVER HILL GOLD MINING COMPANY, LIMITED.**—The production of this company amounted approximately to \$540 in October and \$870 in November. Notwithstanding this lack of success, the directors propose to exploit the mine still further, and will shortly levy an assessment. The mine has yielded about \$250,000 in the past.

#### OREGON.

A dredger at work pumping gravel from the bottom of the Willamette River has brought to light opals in great numbers. Most of the stones are "cloudy," but about one dozen are of rare quality. In Multnomah County, also, opals are found in considerable quantity. At Woodlawn quite a mine has been opened, and as much as \$600 has been obtained for one stone in the rough.

#### PENNSYLVANIA.

##### COAL.

A new culm separator and washer has been put in operation on the culm dumps of the old Washington Colliery, near Plymouth.

The West Lehigh mine fire which has been raging for some time past, and threatened to destroy the entire Mammoth vein, is now under control.

At a depth of 17 ft. a seam of anthracite coal was recently struck near Rohesonia. It is said to be the first coal deposit found in Berks County.

The miners in the Clearfield region have demanded an advance in wages for mining "low coal." The operators say they will refuse the advance and close the mines if necessary.

It is stated that the commission appointed about two years ago by the Governor of the State for the purpose of determining a plan for the utilization of culm is about ready to report. This body consists of three members. Heber Thompson has charge of the geological part of the investigation on the determination of the amount of such coal available. Col. J. A. Price is inquiring into the respective merits of the various arrangements designed for its utilization, while Hon. Eckley B. Coxe's duties consist of a determination of the most profitable market for the material. In a recent interview this last named gentleman stated that there is about 70,000,000 tons of this material, most of which is available.

It is the intention of the Scranton syndicate which purchased the St. Clair coal tract in Schuylkill County to lease the land to coal operators, and several offers for the tract or portions of it have already been received. The company is composed mainly of Scranton capitalists and has a capital stock of \$350,000. The stockholders are Benjamin Hughes, T. H. Dale, M. H. Dale, A. B. Williams, Daniel Williams, T. H. Jones, H. M. Edwards, R. G. Brooks, A. W. Dickson, Frank L. Phillips, J. B. Stone, C. P. Matthews and Simpson & Watkins, of Scranton; Rev. Dr. J. W. Williams, of Wales; J. D. Stocker, of Jermyn; R. M. Stocker, of Honesdale.

**PARRISH COAL COMPANY.**—This company recently elected officers as follows: Charles Parrish, president; H. H. Ashley, treasurer and general superintendent; Geo. P. Lindsay, secretary. Directors: Charles Parrish, J. C. Phelps, C. M. Conyngham, H. H. Ashley and C. P. Hunt.

**PHILADELPHIA & READING COAL AND IRON COMPANY.**—The statement of the Philadelphia & Reading Coal and Iron Company for December, 1891, shows gross receipts, \$1,784,422.97; gross expenses (including operating expenses, \$1,023,942.87; colliery improvements, \$74,392.06; permanent improvements, etc., \$13,764.08), \$1,712,099.01; profit from mining, \$72,323.96. Against this is charged \$65,500 as one-twelfth of the current year fixed charges, thus showing a surplus for the month of \$6,823.96, an increase of \$64,955.97 over December, 1890, when there was a deficit of \$58,132.01.

**SCHUYLKILL ANTHRACITE COAL COMPANY.**—This company, which is a corporation chartered by the State, has purchased the Chamberlain coal tract, situated in East Norwegian and Norwegian townships, which extends from the west side of the Philadelphia & Reading road leading to East Mines, across to the other side of Mill Creek. The amount paid for the tract by the company is \$160,000. It is understood that the company is negotiating for the purchase of the coal lands in the vicinity of Pottsville and adjacent townships.

**WEST END COAL COMPANY.**—This company has

elected officers as follows: C. M. Conyngham, president; A. A. Sterling, vice-president; John Teasdale, general superintendent; William C. Allen, secretary; M. H. Arnold, treasurer. Directors: Geo. F. Baker, F. A. Potts, C. M. Conyngham, John Teasdale, and A. A. Sterling.

#### SOUTH DAKOTA.

##### LAWRENCE COUNTY.

**BRISTOL.**—This mine, situated near Galena, Bare Butte district, is making excellent returns through the D. & D. smelter. The owners have entered the property, consisting of the Lena and Occidental lodes, for United States patents.

**SILVER QUEEN MINING COMPANY.**—The property of this company is situated in Bare Butte district near Galena, and consists of five locations, development work on which has been continuous. Last year, in doing the annual assessment work, a large new body of ore was uncovered, assaying 38 ozs. silver, and from 12% to 15% lead per ton, 100 tons of which are now on the dump, and 25 tons of it have been delivered to the D. & D. smelter. As soon as a local market is assured for the output of the mine, the present force of miners will, it is said, be largely increased.

#### TENNESSEE.

**TENNESSEE COAL, IRON AND RAILROAD COMPANY.**—The output of Tracy City Division of this company for December, 1891, was 32,864 tons coal. For the year of 1891 the output was 400,520 tons. Shipments for December were: Coal, 12,711 tons; coke, 12,057 tons; total, 24,768 tons. Shipments for 1891 foot up as follows: Coal, 192,363 tons; coke, 130,735 tons; total, 323,098 tons.

#### UTAH.

**HORN SILVER MINING COMPANY.**—The ore shipments of this company during the first 20 days in January aggregated 1,500 tons. Ore is being extracted from all the levels from No. 1 down to No. 10. The superintendent reports that the mine is looking as well as it ever did.

#### SALT LAKE COUNTY.

**NAST CONSOLIDATED MINING COMPANY.**—This company has filed articles of incorporation recently. The capital stock is to be divided into 1,000,000 shares. The directors are A. J. Varney, J. F. Jack, C. B. Jack, W. B. Andrew and W. M. Christie. The capital stock is represented by the following named property, situated in West Mountain Mining district: The Nast, Nast No. 2, Mayberry, Benton, Smuggler and Red Cross and a lease upon the Saturn. All these claims are situated in the West Mountain district.

#### SUMMIT COUNTY.

**ANCHOR MINING COMPANY.**—On the 21st inst., this company's concentrator closed down for the purpose of putting in the new 16,000 pound rock breaker and to generally overhaul and repair the entire works. These alterations will increase its capacity to 150@175 tons daily, and enable it to make an output of 400 tons of concentrates per month.

**GENERAL LOGAN.**—A six-foot vein of ore is said to have been uncovered in this mine at a depth of 165 feet. No assay has been received from this last strike, but a previous one made of rock not nearly as good, ran 20 ounces in silver, 20 per cent lead and a trace of gold.

#### WASHINGTON.

##### SPOKANE COUNTY.

(From our Special Correspondent.)

The following officers of the Spokane Mining Exchange were elected for the ensuing year: A. M. Cannon, president; Geo. K. Stocker, vice president; John C. Fisher, secretary; F. E. Goodall, treasurer; C. M. Fassett, official assayer. A prospectus outlining the plans for the coming year is now underway by Secretary Fisher. One of the features of the coming year will be the appointment of vice-presidents in each of the mining districts, the collection of reliable data as to the output and value of the several mining centers, and the publishing of the same in a neat and attractive form for circulation. A mining journal may also be published containing valuable current news from the various localities.

**BONANZA MINING AND SMELTING COMPANY.**—At a recent meeting of shareholders in this company the following officers were elected: R. S. Oakley, president; Chas. H. Armstrong, secretary; W. A. M. rick, vice-president, and Samuel Amster, treasurer. Directors: John M. Seders, John Anderson and H. C. Walters.

**COPPER KING MINING COMPANY.**—The following officers have been elected for the coming year: President, H. L. Weed; vice-president, E. W. Shiveley; secretary, S. P. Donner; treasurer, W. S. McCrea.

**KEYSTONE MINING AND MILLING COMPANY.**—This company has just been incorporated with a capital stock of \$1,000,000, divided into 1,000,000 shares of \$1 per share. The object is to purchase and develop mines, etc. The trustees are Wm. Harris, P. T. Murray, M. H. White, A. C. Libby and J. J. Thomas.

**RED JACKET AND LITTLE FALLS.**—A shaft is being sunk on the ore body on the dividing line of those two claims. The vein is some 3 ft. wide and is composed of free milling quartz averaging \$100

to the ton, and can be traced the entire length of the claims.

#### STEVENS COUNTY.

**BLUE BIRD—MAYFLOWER—BFOAD GAUGE.**—These prospects are likely to change hands and become the property of Chicago parties represented by Mr. Goodhue, who is now negotiating for them. They are all galena and silver propositions. If the sale is made work will be commenced in the spring to develop them. If the syndicate secures these and other claims at least \$100,000 will be spent this year in development work.

**WASHINGTON DECORATIVE MARBLE COMPANY.**—This company has been organized to develop the Ophir-Onyx marble claim, about two miles from Watslake. The marble blends all colors but white, black, green and yellow predominate, and is of excellent quality. The officers of the company are John Rigby, president and general manager; J. N. Squire, vice-president; Thomas H. Cavanagh, secretary, and Jacob Hoover, treasurer. Machinery has been purchased, and work will be commenced as soon as the weather permits.

#### WEST VIRGINIA.

##### FAYETTE COUNTY.

By the premature explosion of a blast at the Rush Run coal mines, Thursday, five men were killed and five wounded, all colored laborers. The coal mine is owned by Howard & Effinger.

##### MARION COUNTY.

**WEST FORK COAL & COKE COMPANY.**—This company has been reorganized by the election of R. L. Martin, president, and Paul Furnam, of Philadelphia, secretary and treasurer. The company will operate at Farnum, on the Monongahela River Railroad.

#### FOREIGN MINING NEWS.

##### CANADA.

##### PROVINCE OF NOVA SCOTIA.

**INTERNATIONAL COAL COMPANY, LIMITED.**—In our issue of January 16th, in a table giving the coal production of Nova Scotia in 1890 and 1891 we credited this company with an output of 130,000 tons against 133,000 tons in 1890, an apparent decrease of 3,000 tons. We are informed that in addition to the coal mined the company also purchased and placed on the market 93,000 tons, the total volume of its business in 1891 thus being about 220,000 tons.

(From our Special Correspondent.)

##### COAL.

The Cumberland mines are working regularly, although the unusually mild winter has lessened the demand both here and in Pictou County. In Cape Breton, on the contrary, the collieries have continued their shipping to an unusually late date.

##### GOLD.

Mining continues quiet. At Montagu the Armand mines are reported sold to an English company for \$150,000. The Lake Lode mine, of Caribou, and the Minneapolis and Malaga have been attached.

The Rhode Island Mining Company has purchased a property at Oldham, adjoining Mr. Hardman's mine, and will open it at once. The returns of the latter during the past season show 2,850 ounces from 1,855 tons of quartz.

The Kempt mine, Yarmouth County, has been refitted by W. H. Nash, who has taken the mine on tribute. This district, although not yet productive, is believed to promise well. Returns from the Thompson mine, Mount Uniacke, for part of last year, show 1,938 oz. from 156 tons of quartz.

##### IRON.

The Pictou Charcoal Iron Company has nearly completed its establishment at Bridgeville, in that county. About 3,000 tons of ore have been mined, and their level has been driven 300 ft. in a bed of good limonite ore 15 ft. thick.

##### PROVINCE OF ONTARIO.

(From an Occasional Correspondent.)

The Gene Mine, at Gould Lake (phosphate and mica) is to be reopened as soon as the burned buildings and plant are replaced. A level will be driven to connect the four western shafts so one hoisting plant will answer for all. This is one of the greatest producers of high grade phosphate in the district. Its amber mica is also good, but is not equal to that of the old Lacy mine.

The new American phosphate mining company on the Openicon, has its steam plant in, and a shaft down 75 ft. on a 25-ft. vein. It intends to increase its force and plant in the spring, and open up new ground.

The Rock Lake phosphate mine made its final shipment of 900 tons on the close of the canal for the season. A portion of the low grade, 70% 75%, went to Cleveland. This company pays \$2 per ton royalty, and has considerable pumping to do, being down over 400 ft.

Several properties in Loughboro have been opened recently for amber mica near Frontenac. A favorable exposure of fine, tough, green mica has been discovered.

There is prospect of the Bedford graphite property being put into producing shape shortly.



MEXICO.  
DURANGO.

Daniel M. Burns, police commissioner of San Francisco, was arrested in Mexico last week, and thrown in Belem prison on a charge of irregularities concerning the Candelaria mine, under the Mexican law. Burns and Columbus Waterhouse, of San Francisco, came into possession of this mine, the vicissitudes of which have been recounted in previous volumes of the ENGINEERING AND MINING JOURNAL, in 1883. In 1886 Waterhouse withdrew, and shortly afterwards Burns made a rich discovery in a claim which he had located upon the same vein. Then Mark Birmingham, or Brumagim, formerly of San Francisco and latterly of New York, came forward and claimed a one twenty-fourth interest in the Candelaria property, by virtue of a life interest, or *baravonda*, said to have been acquired from one of the former owners, Leveaga by name, which had not been included in Burns' purchase. Birmingham endeavored to sell this interest to Burns for a large amount, but the latter laughed at his claim, which then became the subject of litigation. Birmingham now claims that, being an owner of an interest in the Candelaria mine, he is entitled to an interest, under the laws of Mexico, to the mine which Burns located on the same vein, 1,000 ft. away, and that Burns can be punished for violation of the law. Burns was arrested at the Hotel Iturhde, City of Mexico, under a decree from the Minister of the Interior, dated December 17th, 1891, which states that the location of the Candelaria mines were made by Burns in 18 6 and 1883, and that in the entries there were "irregularities." It is asserted that this is only another move of the Birmingham clique which has attained, undue influence with the Mexican officials.

SOUTH AFRICA.

According to statements made by the African Gold Recovery Company, which is using the McArthur-Forrest cyanide process, that process has recovered during the month of December, 1891, some 8,300 oz. of gold out of a total production of 80,312 at the Randt.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 29.

**Heavy Chemicals.**—The dullness reported in our last issue continues in this market, which, while not weak, is not what dealers would like to see it. In caustic soda a slightly greater activity has been experienced, and agents here are looking forward to a better trade in the near future. The demand is still light and the arrivals have been heavy, but the article is not weak. 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.**—The position of this market has not changed. There is a noticeable absence of demand, and few sales are reported. Quotations are: B. M. & Co., 48%, 1-55@1-60c.; 58%, 1-50@1-55.

**Alkali.**—There is no feature of special interest in the market for this article. There have been a fair number of arrivals, but there is no marked accumulation of stocks. Some sales are reported for future shipments at 1-55c. for B. M. & Co. 48%. The 58% variety is quoted at 1-45@1-50c.

**Bleaching powder.**—Stocks continue light and prices steady at 2-12½@2-20c. as to quality, quantity and time of delivery. There is a better inquiry for future shipments.

**Sal Soda.**—There has been but little demand for this article during the week, and consequently but little business is reported. We quote 1-12½@1-15c. for English and 95@1c. for domestic.

**Acids.**—The general features of this market continue as last reported. The volume of business, notably in the case of sulphuric acid, has been very good, and some makers are reported to be short of acid just now. We quote for 100 lbs. in New York in lots of 50 carboys or more: Acetic, \$1.60@2, according to quality; alum, lump, \$1.50@1.75; muriatic, 18°, \$1.20; 22°, \$1.25; nitric, 40°, \$4.42; \$4.50@4.75; sulphuric, 90c@1.12½; oxalic, \$7.2@7.75. Blue vitriol is quoted all the way from \$3.25 to \$4.

**Brimstone.**—This market continues quiet. Quotations for spot brimstone are slightly lower, as follows: Best un-mixed seconds, \$28.50; best un-mixed thirds, \$27.50; Mr. Alfred S. Malcomson, the well-known dealer, has compiled the following interesting statistics of brimstone:

EXPORT FROM SICILY.			
To	1891.	1890.	Decrease.
	Tons.	To us.	
United States ..	97,520	105,656	9,133
France ..	56,168	71,790	15,722
Italy ..	42,212	40,231	1,981
United Kingdom ..	23,408	26,213	2,805
Russia ..	11,350	17,158	5,828
Portugal ..	11,439	16,935	5,275
Germany ..	10,629	15,703	5,074
Austria ..	10,575	8,746	1,829
Greece, Turkey ..	14,414	22,334	7,920
Belgium ..	5, 89	7,279	2,190
Spain ..	3,845	5,679	1,834
Sweden, Norway, Denmark ..	2,552	3,714	1,162
Other countries ..	3,542	2,565	977
	293,223	344,763	51,540

\* Increase.

Shipments and quality divided as follows:

	B. u. 2 ds.	Best -3ds.	Total.	
			1891. Tons.	1890. Tons.
New York ..	29,358	19,665	49,023	37,390
Baltimore ..	4,510	6,855	11,365	16,700
Philadelphia ..	450	6,406	6,856	11,094
Charleston ..	17,196	4,450	21,646	27,563
Boston ..	1,300	650	1,950	2,500
Savannah ..	850	700	1,550	5,920
Wilmington, N. C. ..	1,900	700	2,600	1,309
Providence ..	.....	.....	.....	650
Pensacola ..	.....	.....	.....	1,390
Mobile ..	.....	.....	.....	740
New Orleans ..	1,200	.....	1,200	830
Port Royal ..	.....	700	700	600
Del. Breakwater ..	.....	630	630	.....
	56,764	40,751	97,520	106,653

Stock in Sicily at the end of December, 1891, 117,037 tons, 1890, 106,770 tons.

**Fertilizers.**—This market continues without interesting features. There has been a fair demand for certain chemicals, but, on the whole, the market is quiet. Prices show but little change. We quote: Sulphate of ammonia, 3@3-05c. on the spot and 3-10c. for shipments. Dried blood, \$1.90@1.95 per unit. 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@1-23½c.; 90-95% 2-18@2-23½c.; 96-99%, 2-21@2-23½c.

**Kainit.**—The trade has settled itself to its usual midwinter inactivity. No business is doing. Prices remain \$8.75@9.50, according to quantity, time of delivery, etc.

**Muriate of Potash.**—Nothing of special interest is doing in this article. During the week 450 tons arrived.

**Phosphates.**—The market for phosphate rock continues weak and dull. Charleston prices remain \$6 for dried and \$5 for undried, with freights at \$1.90@2. Messrs. Couper, Miller & Co. send us the following report on the fertilizer market of the United Kingdom: "The attention of the trade is, and has for many months been directed to Florida, which doubtless will regulate the phosphate market in the future; indeed, it has already had a too marked effect on prices. The supplies available there are immense, but the competition of the hard rock producers has been so severe, it is a question if prices obtainable now are remunerative. The best proof of this is important affairs closing down and the effort that is being made to form a combination to regulate price and output, for too much has been pressed on the market. It seems a question of the 'survival of the fittest,' but there must be many disappointments and much money lost in this branch of the industry." In regard to the effort to form a combination of Florida phosphate miners alluded to above, it is interesting to note that the pebble men of South Florida held a meeting recently at Jacksonville for the purpose of incorporating. According to the local press, papers are being prepared. The capital stock is said to be subscribed, and a meeting will be held shortly to perfect the organization, which is reported to have been named the "Peace River & Alafia Pebble Phosphate Agency." None but pebble miners will be allowed to enter. As usual with "combinations" of all sorts, this will endeavor to prevent cuts in prices and the demoralization of the market, and will "thoroughly systematize the business"—whatever that may mean.

**Mr. M. F. Knudson,** of the Peace River Phosphate Company, was interviewed on the subject by a representative of the ENGINEERING AND MINING JOURNAL. He said: "The details are private, but it looks now as if the arrangements already made would lead to some good. The meeting at Jacksonville was attended by all the miners on the river, and was very harmonious; but nothing has been settled definitely as yet. In regard to the name I may say that a half dozen were proposed but none has been agreed upon. We think that it will be a good thing for all concerned, but I can not give any details."

**Apropos of the subject of Florida phosphate,** we are in receipt of the news that at the meeting of the Southern Railway and Steamship Association in Atlanta, Ga., recently, South Carolina phosphate miners protested against what they considered a discrimination in freight against them and in favor of Florida producers, and demanded that the rates on Florida roads be advanced to a point that will equalize freight from Florida and South Carolina mines to competing manufacturing centers. The association passed a resolution requesting the Florida lines to comply with the demand.

**Nitrate of Soda.**—This market continues quiet and dull. Quotations for nitrate on the spot are \$1.95@2; future shipments, \$1.85@1.87½. All belief in a war with Chili now being at an end there is no need to feel any disquietude concerning the future. To the credit of dealers in nitrate be it said that this belief never was accepted by the trade.

NOTES OF THE WEEK.

The Martin Kalhnefisch's Sons Company held its annual meeting on the 25th inst. The old officers were re-elected. Details of the meeting were not given for publication.

Liverpool. Jan. 20.

(Special Correspondence of J. P. Brunner & Co.)

The position of heavy chemicals is practically unchanged. There is a fair volume of trade passing, although the market is not active and soda ash in fair request for first class brands and rather difficult to get delivery at the moment. For the commoner qualities minimum spot values are as follows, all net cash: Caustic ash, 48%, 45 6s. 3d. per ton; 57 and 58%, 46 7s. 6d. per ton; carb. ash, 48%, 45 9s. 9d. per ton.; 58%, 46 12s. 9d. per ton; ammonia ash, 58%, 46 7s. 6d. per ton, and for special brands a handsome premium on above figures has to be paid.

Soda crystals continue in fair request at 43 12s. 6d. @ 43 15s. per ton, less 5%.

Caustic Soda.—The Union reports a good demand for this article and spot quotations for export orders are as follows, all net cash: 60%, 49 2s 6d. per ton; 70%, 410 5s. per ton; 74%, 411 5s. per ton; 76%, 412 10s. per ton and upward. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching powder is unobtainable for early delivery, and hard work packages are firm at 47 15s. @ 48 per ton, net cash.

Chlorate of potash is strong at 5½d. per lb., less 5%.

Bicarb. Soda in fair demand at 46 15s @ 47 per ton, less 2½%, for one cwt. kegs. according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia is not moving off very freely, but quotations are pretty steady at 410 15s. @ 410 17s. 6d. per ton for good grey 24%, and 411 @ 411 2s. 6d. per ton for 25%, both in double bags, less 2½% f. o. b. here. Holders generally are pretty firm, while buyers are trying to get in at about 2s. 6d. per ton under the lower quotations we have named.

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 172 and 174.]

NEW YORK, Friday Evening, Jan. 29.

After the gloom of long months of dullness a beam of cheerful light has been thrown upon the mining market. During the week under review the total sales aggregated 137,740 shares, against 42,205 last week and 21,740 the week before, truly a good increase in the volume of business. It may be stated, as a portent of better times to come, that many sales have been made at the Exchange and not recorded in the official lists. Considering the suddenness of the rise prices have held their own pretty well. Advices from San Francisco are rather encouraging, albeit a slight slump took place on Thursday. At the close the market is fairly firm for the reputable stocks, although not quite so active as earlier in the week.

The Comstocks have been in better demand during the week than for some time past, although at the close they show a general decline in prices. There were sales of 900 shares of Alta at 50@60c., and of 770 shares of Best & Belcher at \$2.25@3.50. Of Bullion, 400 shares changed hands at \$1.65@2, as well as 200 shares of Chollar at \$1.50. Comstock Tunnel stock appeared in some demand, 10,500 shares being disposed of at 13@22c. There was a sale of 200 shares of Exchequer at \$1.65, and of 600 shares of Mexican at \$1.40@2.50. Overman was rejected at \$1.60. Potosi declined from \$2.25@ \$1.95 with sales of only 250 shares.

Scorpion shows a solitary transaction of 200 shares at 30c. Segregated Belcher was quiet at 75c@81, as was also Union Consolidated at \$1.70 @82. Trading in Utah amounted to 1,000 shares at 50c@60c. We note sales of 3,000 Comstock Tunnel bonds at 30c. Consolidated California & Virginia was dealt in to the extent of 710 shares at \$5@6. There were sales of 930 shares of Crown Point at \$1.40@1.70, and of 780 shares of Gould & Curry at \$1.50@1.90. Hale & Norcross was stationary at \$2. Ophir was steady at \$3.25@3.75. Other sales were: 500 shares of Savage at \$1.30@1.95; 300 shares of Sierra-Nevada at \$1.90@2, and 600 shares of Yellow Jacket at \$1.25@1.40.

Among the Tuscarora stocks we note sales of 550 shares of North Commonwealth at 55c., and 400 shares of Del Monte at 55c@60c.

There was a sale of 10 shares of Eureka Consolidated at \$2. Trading in Mount Diablo amounted to 200 shares at \$1.75.

The feature of the week has been the trading in Phoenix, of Arizona, of which 43,795 shares were sold. The price advanced from 45c. to 81c. The movement in the stock is due, no doubt, to the encouraging reports which have been received from this company. The old simile that Phoenix "has risen from its own ashes," no longer can be used with propriety, inasmuch as it did the rising shortly after the present management took the mine in hand. It may interest those persons who follow the affairs of the company to know that Messrs. E. R. Johns and P. B. Weaver have entered the Board of Directors. We are reliably informed that the largest interests connected with the company have united upon a plan by which the water power will be brought to the mill forthwith. Application has been made to responsible firms to contract for the completion of the dam and pipe line. When that is done the company

will be in a position to increase the capacity of its mill to 100 stamps, which is the present intention of the management.

This property has an immense body of low grade ore, and a valuable water power on Cave Creek which will suffice to run a 100-stamp mill during the greater part of the year. The cost of both mining and milling will then be probably the lowest of any large mine in this country and will leave a very satisfactory profit on the average ore of the mine. The administration of the company is in hands that will see the stockholders fairly and honestly treated.

Of the California stocks there were sales of 1,600 shares of Belmont at 60@61c. and 11,100 shares of Brunswick at 5@11c. Plymouth Consolidated was quiet, only 300 shares being sold at \$2.25@2.35. Standard was in considerable demand, 1,900 shares being sold at \$1.25@1.60.

Among the Colorado stocks Leadville was by all odds the most prominent. The total number of shares sold was 41,800, and the price advanced from 22c. to 33c., closing steady at 25@26c. Little Chief shows sales of 900 shares at 29@30c. Of Robinson Consolidated, 1,100 shares changed hands at 48@50c. Silver Cord was stationary at 30c., with sales of 500 shares. There was a single transaction of 50 shares of Adams Consolidated at \$1.75.

Chrysolite for some reason or other appears to be in some demand, 1,500 shares being sold at 18@20c. There were sales of 400 shares of Colorado Central at \$1.20@1.25. American Flag still seems to have some misguided follower. There was a sale of 100 shares at 2c., a price which we cannot refrain from considering too high.

Among the Black Hills stocks there was a sale of 200 shares of Caledonia at 60c., and of 100 shares of Deadwood Terra at \$2.10.

Horn Silver shows sales of 550 shares at \$3.60@3.65. No other Utah stock was dealt in during the week.

Moulton, which had not been dealt in for a considerable length of time, shows a transaction of 200 shares at 15c.

Silver Mining of Lake Valley was dealt in to the extent of 700 shares at 45c.

Kingston & Pembroke, another stranger, shows sales of 700 shares at 45@50c.

Rappahannock, of which a sale had not been made for some time past, this week was dealt in to the extent of 2,000 shares at 1@2c.

Of Shoshone 2,500 shares changed hands at 2c. There was a sale of 100 shares of El Cristo at 85c.

**Boston.** Jan. 28.

(From our Special Correspondent.)

The market the past week has not afforded much comfort to those who have been anticipating higher prices for copper stocks. There is a disposition to sell whenever an opportunity offers, and concessions have to be made in order to market stock. The continued decline in ingot copper both at home and abroad makes it certain that a few of the mining companies only will be able to produce copper at a profit, and hence it is argued that dividends will be reduced, or passed altogether, until such times as conditions improve.

In the week under review Calumet & Hecla is the only stock on the list which has maintained its price; and as this company can make money and pay dividends even at the present or a lower price for the metal, investors are ready to take all the market offers at \$263@266, which are the prices ruling this week.

Boston & Montana continues to decline under the pressure of stock on the market, and the rumors of a possible passing of the next dividend. The stock sold down to \$34½, a decline of \$1½ per share for the week. The rights also declined from 11c. to 5c. Butte & Boston has been rather firmer, and sales ranged from \$14½@15½.

Tamarack on small lots sold at \$158 early in the week, but later declined to \$155½.

Osecola was forced down to \$26 after selling at \$27½ in the early dealings. Centennial declined to \$9½, with later sales at \$9½, and seems to be fairly steady at these prices. Kearsarge sold down to \$11 and Atlantic dropped to \$9½.

Franklin sold at \$12½@13 ex-dividend. There was more activity in Alouez this week, at a decline to \$1½ with a slight rally to \$1½. Wolverine sold at \$3½, same as last week.

Santa Fe sold at 27½c. There was rather more doing in silver stocks this week, with sales of Catalpa at 20c., Crescent at 12c., Breece at 30c., and Dunkin at 40c.

Napa quicksilver sold at \$4½@4½.

3 P. M.—Afternoon sales of Atlantic at \$9½, buyer 60; Boston & Montana at \$35, Butte at \$15½, Tamarack at \$156, Osecola, \$26½, Franklin, \$12½ and Kearsarge at \$11.

BOSTON, Jan. 29—1 P. M.—The market for the copper stocks to-day was soft all round. Boston & Montana declined from 34½ to 33½; Osecola from 26½ to 25½; Centennial from 9½ to 8½; Butte & Boston 14½; Kearsarge off ½ to 10½; Calumet & Hecla firm at 266.

**San Francisco.** Jan. 22.

(From our Special Correspondent.)

The Pine street brokers who have been crying out for reform have not made a very successful attempt at opposing the manipulations of office-holding directors. This week, at the annual election of the Sierra Nevada Mining Company, it was anticipated that the old board would

have been ousted, but at the last moment two or three brokers, who had pledged themselves to the opposition, were seduced from their allegiance and threw their proxies to sustain the old directors. Out of the 98,724 shares represented, only 24,640 shares were in the hands of the reform party. G. W. Cope was elected a director as a representative of the opposition.

During the past week trading has been fairly active at advancing prices. While nothing has been definitely known the report of an improvement in Consolidated California & Virginia advanced that stock from \$3.75, the ruling rate a week ago, to \$5, the highest quotation to-day. Ophir at \$4.45, Mexican at \$2.15, Union Consolidated at \$1.85, and Sierra Nevada at \$1.80, also sold freely at better rates.

In the middle group of Comstock a reported strike in Chollar temporarily advanced the stock to \$1.45, an advance of 50 cents during the week. The development has proved to be unimportant, but there is more substantial truth regarding the development in Savage, the stock of which sold to-day at \$1.75, an advance of only 35 cents during the week. Best & Belcher has been active at \$2.95; Gould & Curry at \$1.70; Hale & Norcross at \$1.90, and Potosi at \$2.

While the South End and Gold Hill stocks have not been selling as fairly as the balance of the list, the sales have been quite considerable, particularly of the smaller priced stocks. Alpha ruled at 55c.; Belcher, \$2.20; Bullion, \$1.40; Crown Point, \$1.45; Exchequer, 40c.; Justice, 35c.; Kentuck, 25c.; Occidental, 45c.; Overman, \$1.15, and Yellow Jacket, \$1.30.

The outside stocks have not commenced to move with any freedom, the only sales recorded to-day being Bulwer, at 45 cents, and Commonwealth at 20 cents. Despite the fact that the Tuscarora and Quijotoa camps are flourishing and the mills running full time, the stocks of the respective mines are not in demand.

SAN FRANCISCO, January 29th. [By telegraph.] Opening quotations to-day were as follows: Best & Belcher, \$2.85; Bodie, 60c.; Belle Isle, 25c.; Bulwer, 50c.; Chollar, \$1.20; Consolidated California and Virginia, \$5.25; Eureka Consolidated, \$1.75; Gould & Curry, \$1.35; Hale & Norcross, \$1.70; Mexican, \$1.85; Mono, 80c.; Ophir, \$3; Savage, \$1.25; Sierra Nevada, \$1.65; Union Consolidated, \$1.55; Yellow Jacket, \$1.10.

**Denver.**

Prices and sales for the week ending January 23d, 1892:

Company.	Open- ing.	H.	L.	Clos- ing.	Sales.
Mines.					
Allegany.....	02	03	02½	02	5,100
Amity.....	02	03	02½	02	9,100
Bangkok C. B.....	*05¼	*06½	05¾	05¾	20
Bates-Hunter.....	15¼	16	15¾	15¾	9,300
Brownlow.....	05¼	*06¼	05	05	100
Calliope.....	14	16	15¾	15¾	36,000
Claudia J.....	*04¼	*05¼	04¼	04¼	100
Cash.....					9,000
Clay County.....					3,000
Emmons.....	150a	148	145½	145½	400
Gettysburg.....	27	*30	27½	27½	300
Gold Rock.....	57	59	56	56	1,300
Leavenworth.....					490
Little Rule.....	115a				37½
Lexington.....	37	38¼	37	37½	300
May-Mazappa.....	75				75
Matchless.....	300				01¼
Oro.....	75				01¼
Pay Rock.....	01¼				10
Puzzler.....					42
Paul Gold.....	10½				81
Reed-National.....	70a				133
Rialto.....	111a				30
Running Lode.....	133	30	30	133	200
Whale.....					24a
Bal. Smuggler.....	25a				20
Sutton.....	16	20	20	20	1,500
Prospect.....					09
Argonaut.....					05¼
Big Indian.....	10a				10½
Big Six.....	05				10½
Century.....	10	10	10	10½	6,000
Diamond B.....	03¼	01¼	03¼	04¼	6,000
Nat. G. & Oil Co.....	07	109½	08	08	1,000
Golden Treasure.....	166	182	182	61	6,000
Ironclad.....	*15¼	*15¼	14	15	9,100
John Jay.....	01	01¼	01	01	17,400
Justice.....	122	122½	17½	18½	46a
Morning Glim.....					14
Park Consolidated.....	04				01¼
Potosi.....	01¼	01½	01½	01¼	1,900
Total.....					120,400

\* Buyer 30. † Buyer 60. ‡ Seller 60. § Seller 30. a Asked.

**St. Louis.** Jan. 27.

(From our Special Correspondent.)

Business has been quiet all the week, total sales not going above 10,000 shares. Notwithstanding this prices on nearly all stocks improved and the market generally is stronger. Mine news was for the most part encouraging, especially from the Elizabeth. It was rumored that the miners of the Silver Age intended to force the sale of the property so as to secure back pay, the company being a good deal behind in its payments. News also that the Mickey Breen was being advertised under the mortgage reached this city. The sale will be made February 6th.

Elizabeth opened the week well with a sale of 1,500 shares at 70c., but broke later on and fell to 61½c. on sales amounting to 2,300 shares. The following day 63½c. was the best price, at which

300 shares were sold Saturday, and 400 shares the next day. On Monday the stock went up to 66½c. on a sale of 1,800 shares. Tuesday the market was weak and fell to 63½c. at which figure it closes. Sales on Tuesday amounted to 1,300 shares.

Granite Mountain had an active market and several transactions were made during the week. Opening at \$16.25, 70 shares were sold at \$16.25 @ \$16.50 on Friday. On Saturday 80 shares changed hands at \$16.50 and on Tuesday 20 shares brought \$17.00, the market closing firm at \$17.00 asked, \$16.75 bid.

Little Albert opened at 6c. and closes at 5½c. Only one sale of 200 shares at 6c. was made. The stock was very dull, with little or no demand.

Montrose opened at 4c. and closes to-day at 4½c. One sale of 1,000 shares was made at 5c. There is a fair demand only, but the market is steady.

Yuma opened at 10c., and remained quiet through the week until Tuesday when a bid of 15c. brought out 100 shares; it closes firm at 14c.

American & Nettle opened at 90c. and closes firm at \$1 bid. Small Hopes opened at 70c. and closes strong at 87½c. No sales.

Central Silver was very quiet this week and shows at the close a straight decline from opening figures, 13c., closing at 11c.; sales were 400 shares at 11c. Bimetallie is quoted at \$20.50.

**MEETINGS.**

Batopilas Mining Company, at the office of the company, room 102, Columbia Building, No. 20 Broadway, New York, February 23d, at 12 o'clock noon.

Daly Mining Company, at the office of the company, No. 125 South Main street, Salt Lake City, Utah, February 15th, at 2 P. M.

Santa Juliana Mining Company, at the office of the company, No. 54 William street, New York City, February 1st, at 11 A. M.

**DIVIDENDS.**

Brotherton Iron Mining Company, dividend Nos. 1 and 2 of 25 cents per share, \$20,000, payable February 1st and April 1st, at the office of the company, in Milwaukee, Wis.

Colorado Coal and Iron Company, coupon No. 24, due February 1st on the bonds of this company, will be paid on and after the above date on presentation at the office of the company, Nos. 45 and 47 Wall street, New York.

Mollie Gibson Consolidated Mining and Milling Company, dividend No. 19 of 10 cents per share, \$100,000, payable February 15th at the office of the company, in Colorado Springs, Colo. Transfer books close February 8th and reopen February 16th.

**ASSESSMENTS.**

COMPANY.	No.	When levied.	D't'nt' in office.	Day of sale.	Amt. per share.
Alliance, Utah.....	16	Nov. 16	Jan. 9	Feb. 2	.50
Alta, Nev.....	41	Jan. 5	Feb. 9	Feb. 29	.10
Bevan, Utah.....	4	Dec. 9	Jan. 16	Feb. 4	.20
Challenge, Con. Nev.	10	Jan. 14	Feb. 17	Mar. 9	.25
Chollar, Nev.....	32	Jan. 8	Feb. 11	Mar. 3	.50
Cons. St. Gothard					
G. Cal.....	4	Dec. 29	Feb. 6	Feb. 23	.05
Convention G., S. Dak.....	1	Jan. 16	Feb. 20	.....	.901
Crocker, Ariz.....	11	Dec. 15	Jan. 19	Feb. 11	.10
Exchequer, Nev.....	32	Jan. 22	Feb. 25	Mar. 17	.25
Gen. Merritt, S. Dak	4	Jan. 2	Feb. 8	Feb. 29	.00¼
Gold Mountain, Cal.	1	Jan. 4	Feb. 8	Feb. 27	6.00
Goodyear, Mont.....		Dec. 8	Jan. 14	Feb. 20	.01
Gould & Curry, Nev.	68	Jan. 5	Feb. 8	Mar. 1	.30
Hale & Norcross, Nev.....	100	Jan. 5	Feb. 8	Feb. 18	.50
Justice, Nev.....	49	Dec. 23	Jan. 28	Feb. 17	.25
Keystone, S. Dak.....	1	Jan. 10	Feb. 16	Mar. 2	10.00
Mexican, Nev.....	44	Jan. 14	Feb. 17	Mar. 10	.25
Middle Creek Gold, B. Col.....	2	Jan. 16	Feb. 10	Mar. 22	.05
Northwestern G. & S. B. Col.....	4	Jan. 15	Feb. 24	Mar. 16	.25
Occidental Con., Nev	9	Jan. 11	Feb. 16	Mar. 10	.25
Potosi, Nev.....	37	Dec. 10	Jan. 13	Feb. 4	.50
San Jose, Nev.....	20	Nov. 16	Jan. 2	Feb. 10	.04
Scorpion, Nev.....	3	Dec. 15	Jan. 22	Feb. 15	.05
Siskiyou Consol.					
Quicksilver, Cal.....	2	Dec. 22	Jan. 28	Feb. 19	.02
Empire G. & S. Ore	4	Dec. 16	Jan. 25	Feb. 15	.01¼
Union Con., Nev.....	45	Jan. 6	Feb. 11	Mar. 2	.25
U. S. Grant, S. Dak.	4	Dec. 23	Jan. 30	Feb. 15	.00¾
Vulcan, S. Dak.....	3	Oct. 19	Dec. 18	Feb. 8	.003

**PIPE LINE CERTIFICATES.**

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.					
	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 23.....	63	63	63	63	15,000
25.....	62½	62¾	62½	62½	15,000
26.....	62½	6¾	62½	62½	6,000
27.....	62½	62¾	62½	62½	10,000
28.....	62½	62¾	62	62	32,000
29.....	62½	62	62	62	32,000
Total sales in barrels.....					110,000
NEW YORK STOCK EXCHANGE.					
	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 23.....	62¾	62¾	.....	62¾	5,000
25.....	62¾	62¾	.....	62¾	15,000
27.....	61½	61½	61½	61½	15,000
28.....	61½	61½	61½	61½	15,000
29.....	62	61½	61½	61½	43,000
Total sales in barrels.....					63,000

**COAL TRADE REVIEW.**

NEW YORK, Friday Evening, Jan. 29

PRODUCTION OF BITUMINOUS COAL for week ending January 23d, and year from January 1st.

**EASTERN AND NORTHERN SHIPMENTS.**

	1892.		1891.
	Week.	Year.	Year.
Phila. & Erie R. R. ....	1,515	4,563	11,772
Cumberland, Md. ....	7,729	151,512	207,600
Barelay, Pa. ....	14,371	17,913	10,387
Broad Top, Pa. ....	12,640	39,622	39,250
Clearfield, Pa. ....	63,795	240,307	328,228
Allegheny, Pa. ....	24,184	72,811	87,745
Beach Creek, Pa. ....	147,315	144,173	174,727
Poehontas Flat Top. ....	49,990	152,744	135,430
Kanawha, W. Va. ....	57,661	92,529	48,873
Total ...	336,500	915,974	1,344,072

**WESTERN SHIPMENTS.**

	1892.		1891.
	Week.	Year.	Year.
Pittsburg, Pa. ....	30,126	92,227	91,484
Westmoreland, Pa. ....	32,501	112,760	142,512
Monongahela, Pa. ....	7,273	27,411	48,333
Total ...	69,703	232,398	282,429
Grand total....	406,203	1,148,372	1,326,501

\*Week ending January 14th.  
†Estimated.

PRODUCTION OF COKE on line of Pennsylvania R. R. for the year ending January 23d, 1892, and year from January 1st, in tons of 2,000 lbs.: Week, 115,884 tons; year, 371,175 tons; to corresponding date, in 1891, 334,605 tons.

**Anthracite.**

A truce has been declared, and what threatened to be a sharp dividend-destroying coal war has, through the agency of another agreement, resolved its life into peace. The cut rates made 10 days ago by the Lehigh & Wilkesbarre Coal Company were adopted by all the companies which sold coal at these figures up to to-day. It is said, however, that with the exception of some few, they were not seekers for business.

The demand because of the light stocks in second hands, and the excessively cold weather, has been very good, but owing to the suspicious nature of the retailer, whose mind is in continuous expectation of a further reduction, very little tonnage was purchased beyond immediate requirements. But the order of things was all changed yesterday. The sales agents at a monthly meeting advanced prices 25c. on the Lehigh & Wilkesbarre cut circular, making them as follows, f. o. b. tidewater, with 20c. added alongside in New York: Broken, \$3.45; egg, \$3.60; stove, \$3.75; chestnut, \$3.25. Whether this was a prearranged programme it would be unfair to say. The belief in certain sections of the trade is that a higher power than the sales agents ordered the action, in order to keep the companies from cutting one another's throats pending a settlement. This gives color to the report which was spread broadcast last Saturday, in effect that a settlement had been reached. Be that as it may, there are other and graver questions which will soon demand attention, viz., the allotment issue in its different phases. This was not brought up at the sales agents' meeting, it having come up a week before and been dismissed on the ground that it was not a question with which that body was competent to deal.

The hand to mouth buying which ruled during the days of the cut has left the trade, from the wholesalers' standpoint, in excellent shape. The new prices took effect on and after their adoption, and inasmuch as all the companies pledge themselves to adhere to them, and that they are too low even for the independent operator to cut, it is fair to presume that they will rule. This latter class are jubilant over the situation, claiming that they are one more on their feet. Under the old régime, a number had commenced to curtail operations and none were seekers for business. In fact, the only dissatisfied element of the trade is the retailer, who failed to profit when he might.

The Lehigh Valley Railroad Company, on Thursday morning, before the sales agents' session—called a meeting of the general freight agents of the anthracite carrying roads, for the purpose of considering the subject of eastbound freight rates on coal. The inquiry was started in the interest of independent operators, for whom it was claimed no profit existed under ruling rates. These officials evidently had a premonition of what might occur in the sales agents' meeting, and after a thorough discussion of the situation solemnly declared that there was more money for all concerned in selling coal for 25c. advance than making a reduction of 25c. in freight rates. Thereupon they adjourned for two weeks.

**Bituminous.**

Notwithstanding the cold weather of the past week the situation in the bituminous coal market has not changed for the better. Business is, if anything, growing gradually duller. The demand is almost entirely that of a contract nature, and is satisfied with a light tonnage. The new business offering is very small and is regarded by the trade as comparatively insignificant. Transportation facilities, while none the best, are adequate to meet all the demands made upon them. Ocean freight rates do not show any change during the

week and are quoted as follows: Philadelphia to Boston, 90c; to Sound ports, 70c. From Baltimore and Norfolk, 5c. additional.

**NOTES OF THE WEEK.**

The annual dinner of the Retail Coal Exchange of New York City will be held on the 25th prox.

One hundred and fifty thousand bushels of coal, in six barges, were dumped into the Ohio River on the 26th inst. at Cairo, Ill., through a collision with Pier No. 2 of the Illinois Central bridge. The loss will reach \$20,000. The fleet was the property of S. S. Crump & Co., Pittsburg.

**Boston.** Jan. 23.

Since the cut which took place a week ago in anthracite coal the market here has been demoralized. The retail dealers buy just enough to keep their stock up and that is all.

We quote f. o. b. net prices at New York: Stove, \$3.50; egg, \$3.35; broken, \$3.25; chestnut, \$3; Lykens Valley: broken, \$4.90; egg, \$5; stove, \$5.40; chestnut, \$4.50.

Trade in bituminous is very quiet. The rate of coal on cars is \$3.80. There is plenty coal coming forward for all demands.

Freights on soft coal are easier and lower owing to the light demand. On hard coal there is also a falling off in rates. We quote: From New York to Boston, 60c.; from Philadelphia to Boston, 80c.; from Philadelphia to Portland, 80c.; to Bath, \$1; to Providence, 75c.; from Baltimore to Boston, 90c. @ \$1; Newport News to Boston, 85 @ 90c.; Sound points, 75c.

The retail trade is very good owing to the cold weather. The retail dealers are likely from this out to be very busy. A great many have run out of their fall supplies and are now stocking up again. It seems probable that there will be considerable activity in the market until March 1st, and it goes without saying that that month will be an active one with its high winds.

Retail prices are firm. We quote: Stove, \$5.50; nut, \$5.50; egg, \$5.25; furnace, \$5.25; Franklin, \$6.75 @ 7.00 all sizes; Lehigh egg, \$5.50; Lehigh furnace, \$5.50. Wharf prices are 50c. less.

The receipts of coal at this port for the week ending January 23d were 50,331 tons of anthracite and 11,830 tons of bituminous, against 11,379 tons of anthracite and 25,083 tons of bituminous for the corresponding week last year. The total receipts thus far this year have been 94,832 tons of anthracite and 31,900 tons of bituminous, against 74,726 tons of anthracite and 57,158 tons of bituminous for the same time last year.

**Buffalo.** Jan. 28.

(From our Special Correspondent)

The retail demand for anthracite coal continues good, and if the present zero weather continues our coal dealers will be happy if consumers are not. There is also a moderate supply of out of town orders being filled. The schedule of quotations is unchanged.

Bituminous coal is fairly active, and notwithstanding the heavy snow of a few days since, which hindered rail transportation, the supply is fully adequate to the demands. Prices are unchanged.

It is too early to say definitely what the lake freights on coal will be on the opening of next season's navigation; figures are named, but there is no reliability to be placed on them. The ice extends for miles out on Lake Erie from our harbor and breakwater; a sight that has not been seen for three years. Vessel repairing is active among the very large fleet which is wintering here.

Coke is quiet and unchanged. There is a coal fight in Lockport, N. Y., 20 miles from this city. Some persons connected with the Exchange have failed to keep their promises, and have cut prices. The Messrs. Ferrin Bros. Company have withdrawn from the Association, and quotations have tumbled 25 @ 50c. per ton.

Mr. John M. Brinker, of the well known coal firm of Brinker, Jones & Co., of this city, has been made a director of the Buffalo Crosstown Railroad.

In the Car Service Association rules all cars of coal and coke received in Buffalo are allowed three days for detention; before the Association was formed the average detention of cars here was 4 1/4 days, now reduced to 2 @ 2 1/4 days.

The prices of bituminous coal to consumers on track at this city, per 2,000 lbs., range from \$1.50 to \$2.45, according to size, etc.

The Bell, Lewis & Yates Coal Company, of this city and Rochester, N. Y., intend constructing a monster tippie for coal at Walston, Pa. The cost will probably exceed \$20,000.

**Chicago.** Jan. 2.

(From our Special Correspondent.)

There is very little doing so far as new business goes. Of course the cold weather has some effect in stimulating business, but as soon as a change comes it relapses into apathy, which condition exists to-day. Many of the shippers are speculating as to the outcome of the presidents' meeting, but all agree that if the companies have any desire to maintain or hold up the circular rates they must restrict the output. All-rail coal is coming forward as freely as ever, and to move it agents are making big cuts in the circular.

Bituminous coal of all grades is plentiful, super-

abundant is the correct term, especially of the better classes of eastern coal. Demand is comparatively light and prices weak. Concessionary rates are obtainable on all steam and domestic coal, excepting Indiana block, which is still scarce and most shippers are behind with orders. The price on this latter holds firm at \$1.50 @ \$1.60 at mine, the only exception to this rule being those who have old contracts Illinois coal drops a peg or two on February 1st, and is heavy on the market. The Interstate Commerce Commission has rendered an important decision regarding demurrage charges. Railroads are liable for damages for refusal to deliver loaded cars to consignee, when demurrage charges have not been paid, that being an after consideration.

Coke is in fair to good demand and prices on standard grades are steady. The rumor that Connellsville coke would be shortly advanced appears to be without any foundation. 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 block, \$1.90 @ \$2; Brazil block, \$2.50.

**Pittsburg.** Jan. 28.

(From our Special Correspondent.)

Coal.—The local market continues firm, with a good demand, which, from present indications, will soon increase. Pittsburgers have been great sufferers on account of the scarcity of natural gas during the past week. Local coal dealers have all the business they can attend to, and prices are on the up grade. Coal mining in the pools is about over until the weather moderates; the ice prevents boats being moved. There have been no shipments to the lower ports since our last. The lower markets are abundantly supplied. A leading dealer said: "Yes, I should certainly say that there will be a sharp advance, and all who need coal should get it now or leave their orders for future delivery." An experiment with Lima crude oil is being made at the steel mill of Howe, Brown & Co.; so far it has been found to work well.

Coke.—The market shows but little change. Shipments are on the increase; purchasers remain in good spirits and are looking daily for increased demands. All signs point to a good business in the Connellsville region. The large stock of coke in the yards is being steadily reduced and will soon disappear; then we may look for a full six-days run at all the plants. About 20% of the ovens in the region are still idle, viz.—13,820 ovens are burning and 3,385 are idle, making a total of 17,205 ovens in the region. Of this number of idle ovens only 264 are owned by furnace operators; 1,207 are owned by independent operators, while the remainder are divided. Shipments for the week amounted to 127,638 tons, an increase of 1,278 tons. The shipments were distributed in cars as follows: To Pittsburg, 1,645 cars; points west of Pittsburg, 3,816; east of Pittsburg, 1,630; total, 7,091 cars. Prices are unchanged—the same as have ruled since January 1st, 1891.

**METAL MARKET.**

NEW YORK, Friday Evening, Jan. 29.

**Prices of Silver Per Ounce Troy.**

Jan.	Sterling Exch'ge.	London Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	London Pence.	N. Y. Cts.
23	4.85 3/4	42 3/8	92 3/4	27	4.85 3/4	41 3/4	90 3/4
25	4.85 3/4	42 3/8	92 3/4	28	4.85 3/4	42	91 3/4
26	4.85 3/4	*	91 3/4	29	4.85 3/4	42	91 3/4

\* 42 1/8 @ 42.

The market in London dropped, on the 26th, 3/4d; at 42d. India became a buyer, and about 500,000 oz. have been engaged for shipment Saturday and Wednesday; 41 3/4d. is the lowest point reached in about four years. As the Government purchases will support the market, beginning with Monday, we do not look for much further decline at present.

The United States Assay Office at New York reports the total receipts of silver for the week to be 123,000 oz.

**Domestic and Foreign Coin.**

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

	Bid.	Asked.
Trade dollars.....	72	75
Mexican dollars.....	71	72 1/2
Peruvian soles and Chilean pesos.....	68	70
English silver.....	4.75	4.85
Five francs.....	93	95
Victoria sovereigns.....	4.84	4.89
Twenty francs.....	3.84	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 3/4	92 3/4

Silver Bullion Certificates.

	Price.		Sales.
	H.	L.	
Jan. 23.....	92.88	92.75	30,000
Jan. 25.....	92.63	92.50	40,000
Jan. 26.....	91.38	91.13	25,500
Jan. 27.....	91.50	91.00	506,000
Jan. 28.....	91.88	91.63	147,000
Jan. 29.....	91.75	.....	57,000
Total sales.....			805,500

**Copper.**—The market is rather flat, there being but little life. Under the circumstances transactions have been rather restricted, but we cannot hear that copper is offered any cheaper than lately reported. The Calumet & Hecla is holding very firmly for 11c; some of the other larger Lake companies are entirely sold out, and from only the smaller ones and second hands can lots be purchased at from about 10½@10.85c., but nothing is pressed for sale. Casting copper remains very scarce, and easily brings 10½@10c. Arizona copper is held by all the producers above actual market value. Exports of late have again been very heavy. Furnace material is scarce as the Anaconda is not in the market.

The foreign market is rather flat, and prices for G. M. B.'s have slightly declined to £44 10s. for spot and £45 for three months, transactions being rather limited. In view of the declining tendency of the market, consumers are not willing to buy much, and it is reported that business is rather quiet. For India there is continually a good demand for copper. The finer grades of copper are also better inquired for, the consumption for electrical purposes appearing to be largely on the increase in Europe. We quote: English tough £47 10s.@£48; best selected, £48 10s.@£49; strong sheets, £57; India sheets, £54.

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

To	Copper Matte.	Lbs.	
S. S. Gallia.....	1,751 bags.	200,500	\$14,000
" Anglia.....	4,618 bags.	602,823	42,900
To Hamburg.....	Copper.	Lbs.	
S. S. Saale.....	314 pigs.	100,970	\$10,200
" Amafi.....	36 casks.	45,000	5,700
To London.....	Copper Matte.	Lbs.	
S. S. Ebro.....	2,164 bags.	238,040	\$16,000
To Antwerp.....	Copper.	Lbs.	
S. S. Olympo.....	35 casks.	28,013	\$3,642
To Bristol.....	Copper Matte.	Lbs.	
S. S. Brooklyn City.....	655 bags.	67,000	\$6,000
To Havre.....	Copper.	Lbs.	
S. S. La Gascogne.....	681 casks.	214,286	\$24,643
To Amsterdam.....	Copper.	Lbs.	
S. S. Edam.....	169 bags.	51,198	\$4,800

Messrs. James Lewis & Son's circular of January 18th, contains the following:

The Calumet & Hecla Company of Lake Superior, being free after the 31st ultimo to offer their copper in Europe, have placed a considerable quantity in Birmingham—probably 1,500 to 2,000 tons—at the equivalent of 25¢ per ton, less 2-½¢ delivered there, and we understand they are still sellers at this price of cakes, ingots or wire bars with delivery as required. This price is equal to about 10½¢ cents per pound f. o. b. New York, where the nominal quotation for Lake copper is 11 cents.

Montana matte offers at 9s. 1½d. per unit, but the Anaconda Company have not yet commenced to sell their matte, having still 1,500 tons to deliver under their contracts of May last.

As the cost of production of copper from the mines in Montana has an important bearing on the probable extent of supplies from thence, the following items taken from the report of the Boston & Montana Company for the year ending June 30th, 1891, will be of interest:

	Cents per lb.	Per unit.
Prices obtained for 26,653,842 lbs. of fine copper.....	= 11'00	= 11s. 0d.
Prices obtained for 285,865 ozs. of silver.....	= '60	= 0s. 7d.
Total gross receipts.....	11'60	= 11s. 7d.
Expenses at mine, freight, charges, etc.....	7'88	= 7s. 10d.
Mining profit.....	3'72	= 3s. 9d.
Cost of production per unit of copper.....		7s. 3d.

The officers of the Calumet & Hecla Company, in this country, at the time, when the above quoted offers were cabled over here, officially denied that they had made similar offers, and as we understand that this company is well sold out for some time to come, there is not any reason for their doing so. Meanwhile, reports have already reached here that no such offers have been made in Birmingham, and at the outside, but 100 or 200 tons have been sold from second hand lots, and it is even doubted if such low figures as the above have been accepted.

We are sorry to feel compelled to criticise the circular of a firm of such high standing and usually so well informed about everything in the copper market, but their report regarding cost of production of copper from Montana mines is the most misleading statement we have seen for a long time, and we can hardly see how such authorities as Messrs. James Lewis & Son can lend their names to similar statements. The "mining profit" is given as 3'72c. per pound of fine copper produced, but they evidently judge that the stockholders and bondholders calculate their money for nothing.

According to the report of 1891, the construction at mines amounts to about 0'39c. per lb. of fine copper; the interest on bonded debts, etc., to about 0'41c.; redeemed and canceled bonds, 0'53c.; alto-

gether, 1'33c.; and deducting this amount from the above mentioned "mining profit" there is a balance of 2'39c. left; considering that heavy sales have been made on the parity of 9c. per lb., or a difference of 2c. against last year's prices, there is left less than half a cent. A new issue of bonds has taken place against the new smelting works in course of erection at Great Falls, and this will, for some years at least, rather increase than diminish the interest charges, but independent of this item it will readily be seen that hardly any dividends can be paid to the stockholders as long as present prices for copper continue. For the calendar year 1891 the stockholders received four dividends of \$1, or altogether \$4, which represented really only a fair interest on mining investments; unless prices of copper improve not more than \$1 per share could he paid this year.

Any close observer will have noticed that for some time past the copper market in London has been manipulated for stock exchange and other purposes, all detrimental to the trade, and what good statements, like the foregoing, which can only be misleading to the outside public, can do, it is hard to see.

**Tin** continues rather unsatisfactory. In the beginning of the week London showed a hardening tendency, but the lower prices for silver prevented that being maintained. Our market has closely followed the fluctuations on the other side, and closes at \$19.90 for spot and February and \$19.95 for March and April.

In London prices advanced early in the week to £83 17s. 6d. to £90 for spot, but afterward declined, and are closing at £89 12s. 6d. for spot and £89 15s. for futures.

The shipments from the East for the month of January are estimated at about 3,000 tons, but are likely to be much smaller during February on account of the Chinese holidays.

**Lead** ruled rather firm early in the week, but since then prices have eased off somewhat as Western smelters are freer sellers. From advices received from the Idaho district, it appears that nearly all the producers there have now closed down, and unless a settlement is reached, enabling a resumption of work, this must soon be felt on the market. Considering the low prices for lead and that nowhere are there any stocks worth mentioning, consumers ought to be on their guard. We have to quote 4'175@4'20c.

The foreign market has suffered a serious decline during the week, as the English market is rather overstocked with lead, and shipments from Australia and Mexico continue very heavy. Prices yesterday declined to £10 7s. 6d. for Spanish lead, and £10 10s. for English, and these prices are within 5s. of the lowest point ever touched. The very low prices now ruling for silver, as also for lead, cannot but make themselves felt very soon in the production of lead bullion.

**Chicago Lead Market.**—Messrs. Everett & Post telegraph us as follows: "Market quiet. Sales, 300 tons. Prices: Missouri, 3'95c.; demand only nominal. Desilverized held at 4c."

**St. Louis Lead Market.**—The John Wahl Commission Company telegraph us as follows: "Lead firm and offerings light at 3'92c. At the close 3'92c. bid and 3'95c. asked."

Everett & Post, a large pig lead and spelter commission house, of St. Louis, Mo., and Chicago, Ill., has assigned to Edward Buettel. The schedule filed shows assets of \$57,995, made up chiefly of lead and spelter on hand and stock in the Boynton-Strong Company, and liabilities of \$113,745. One of the firm's creditors says the assignment was against the wishes of the creditors, and was unnecessary; that the firm was unable to release some money which was tied up, and resorted to the courts for the settlement of the difficulty, and that it will resume operations within a few days. The direct cause of the failure is said to have been a drop in the market during the existence of extensive outstanding contracts.

**Spelter** is irregular, but, if anything, closes somewhat firmer. Early in the week some parcels for prompt shipment were sold at rather low figures, about 4½c., but since then better prices have been obtainable, and we have to quote 4'65@4'70c.

Abroad good ordinaries are quoted at £22, and specials at £22 5s.

**Antimony** is quiet but steady; Cookson's 16c., L. X. 12½@12c., and Hallett's 11½@11½c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 29.

The iron market during the past week in no wise has differed from what has been reported for a month back. The demand for most grades of iron has been light, and whatever trading has been done has been in small quantities just sufficient to meet the current requirements of consumers. Stocks in all probability are accumulating, and the belief entertained by a few optimistic dealers that prices would go up in the near future does not seem based on the logic of present affairs in

the iron market. Consumers hitherto have adhered to the opinion that the price of iron would not rise, and, feeling no anxiety concerning the future, they have very naturally refrained from heavy buying at present figures.

**American Pig Iron.**—The event of the week has been the reduction by the Thomas Iron Company of 50c. per ton in the price of pig iron, its figures now being \$17.50 and \$16 for Nos. 1X, and No. 2X respectively. This is scarcely a criterion of the state of the market for it is well known that good iron has been for months sold below the prices quoted by the Thomas Company. Mr. B. G. Clarke assured us that he had already booked orders for 20,000 tons at these prices. We quote this week: Northern, No. 1X, \$17@17.50; No. 2X, \$15.50@16; Southern, No. 1X, \$16@17; No. 2X, \$15@16.

**Scotch Pig Iron.**—During 1891 about 7,000 tons were imported into this port, and about 14,000 tons to all ports in the United States. Latest advices from Scotland are to the effect that the stocks of Scotch pig are controlled by a London syndicate. The situation has reached a point where the large Glasgow operators have ceased to buy or sell, and for some days no transactions have taken place on the exchange, the syndicates having placed the price at 47s.

**Spiegeleisen and Ferro-Manganese.**—This market continues dull and uninteresting. No sales of any consequence have occurred during the week. Quotations are nominally as follows: 20% spiegeleisen, \$26.50@27; 80% ferro-manganese, \$62@62.50.

**Steel Rails.**—No sales worthy of mention have occurred during the week, and the rail market continues in the same state of dullness which has been reported for some time past. Prices remain unchanged at \$30 f. o. b. mill and \$30.70 tidewater.

**Rail Fastenings.**—Nothing of any interest is doing in this market. 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 very good business is reported in this market, notably in the case of the higher grades. The lower grades are not in so good a condition. We quote this week as follows: R. Musket'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 Pipe.**—An ordinary business is doing in this market. Prices are unchanged. We therefore quote ruling discounts as follows: Butt, black, 57½%; butt, galvanized, 47%; lap, black, 67½%; lap, galvanized, 55%; boiler tubes, under 3 in. and over 6 in., 55%; 3 in. to 6 in., 60%.

**Structural Material.**—A fair business is doing in structural iron and steel, although manufacturers complain that prices are not what they ought to be. Quotations at dock, New York, are: Universal plates, \$2.10; bridge plates, \$2.10; tees, \$2.60.

**Old Rails.**—Great dullness prevails in the market for old rails. No sales are reported. Nominal quotations are as follows: Old tees, \$20 @21; doubles, \$22@23. Wrought iron scrap is quoted at \$19@20.

NOTES OF THE WEEK.

Reports from Utica, N. Y., state that judgments aggregating \$72,279 have been obtained against the Kirkland Iron Company. They were on protested notes and were in favor of the following creditors: Oneida National Bank, \$36,834; Bank of A. D. Matthews & Co., \$24,202; A. J. Williams, \$11,243. The company has been in business over 10 years, and had a paid-in capital of \$50,000.

The purchases of Lake Superior iron ore made in Cleveland two weeks ago by one or two large iron interests seem to have developed into a very general buying movement, which even at this early day can be characterized as an active market. The establishment of lake freight rates, a movement which was started by companies owning carriers and followed a little later by independent vesselmen, has furnished the needed pedestal for a market. These rates now rule as follows: From Ashland and Two Harbors, \$1.25; Marquette, \$1.15; Escanaba, \$1; all to Lake Erie ports. Transactions up to date have been mostly for high grade ores of the Bessemer variety, although sales of a considerable amount of non-Bessemer ore are reported on a basis of \$3.85 @3.90. The prices are all higher than they were last year by 35 or 40c. Owing to the large number of inquiries which are now afloat in the market, and negotiations which are being held, it is impossible to estimate the tonnage which has been placed. Indications point to as heavy a consumption in 1892, or about 9,000,000 tons.

**Chicago.** Jan. 27.

(From our Special Correspondent.)

The activity in crude iron continues, but for some reason it is not reflected in the finished material. The large sales which have been made of pig iron since the commencement of the year are rapidly reducing the surplus stocks which accumulated at furnaces during the holidays, but nowhere are there any indication of advanced prices in the very near future. It is, beyond a doubt, that higher values will prevail for non-Bessemer ores, as Bessemer has sold at 35¢@50¢ advance, according to grade, over last year's prices, and as there is a rumor of an advance in coke, prices on pig iron may appreciate earlier than we anticipate. Manufactured iron is not as active as it should be considering the large quantity of new rolling stock orders which have been placed; improvement, though, is expected during February. Structural are in good inquiry and the outlook is excellent. Merchant steels are in good demand, but old material and scrap are dull.

**Pig Iron.**—Local and Northern coke iron are moving freely and consumptive demand is active. A good tonnage was entered last week, many of the orders being for 1,000 to 1,500 for long scattered delivery; some furnace agents are now endeavoring to restrict shipments to July 1, but others continue to accept contracts for the whole year. It is very certain that pig iron will cost anywhere from 50 to 75¢ per ton more when furnaces commence on their new ore. Having this in view the wisdom of long scattered deliveries at current rates is doubtful. Buyers are evidently taking advantage of this and many have duplicated orders for coke iron. There is more demand for lake charcoal iron and fewer sellers at less than \$17. Southern foundry coke iron is making poor progress here, but there is a fair demand for Nos. 1 and 2 soft iron. The largest makers refuse contracts where delivery extends beyond July 1st.

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 amount of work in sight is very large, and a big share of it will be placed at an early day. Quite a good deal of alterations are being figured on to be completed by May 1. Quotations for car lots f. o. b. Chicago are as follows: Angles, \$2@2.15; tees, \$2.40@2.50; universal plates, \$2.15@2.25; sheared plates, \$2.20@2.30; beams and channels, \$3.20.

**Plates.**—As yet there is only a fair inquiry for mill lots, though the outlook is promising. Warehouse business is moderate, and prices remain very low. 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, 2 1/2 in. and smaller, 65%; 7 in. and upward, 65%.

**Merchant Steel.**—Carload orders are frequent from manufacturing consumers and large dealers, and mills are well booked up. Tool steel is more active from agents' warehouses. We quote \$6.75@7 and upward; tire steel, \$2.30@2.50; toe calk, \$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, \$2.50@2.75; crucible spring, \$3.75@4.

**St. L. Rail.**—Some of the Western railroads with terminals at this point are quietly duplicating their already large orders for heavy sections, and several are inquiring for extra heavy sections for relaying track within a radius of 25 miles where their traffic is heaviest. General demand is good for small quantities from 1,000 to 3,000 tons; several large contracts are pending, and the outlook is very encouraging. The steel company here now quotes \$32@33 on anything but round lots. Demand for light sections continues active. Track supplies are in excellent inquiry, and large orders more frequent. Regular quotations are: 1'80@1'85e. for steel or iron; spikes at \$2.15@2.25 per 100 lbs.; track bolts, hexagonal nuts, \$2.70.

**Galvanized Sheet Iron.**—Demand is well maintained, though not so heavy as it was in December and agents are enabled to stock up to some extent. Discounts remain steady at 6 1/2% off on Juniata and 6 3/4% and 5% off on charcoal in large lots. Small quantities are quoted at 6 1/2% and 10% from list.

**Black Sheet Iron.**—Demand has quieted down considerably and mill quotations are a little irregular at \$2.85@2.90 Chicago for No. 27 common. Jobbing price is 3'10e. from store.

**Bar Iron.**—There is quite a disparity in prices as quoted by Ohio mills. Agents for Youngstown mills decline to quote less than 1'55e. at mill, equal to 1'70e. Chicago, but there are others who are taking business at 1'60@1'65e., delivered here any time within three months. Inquiry and demand are only fair, but the large car orders placed will soon improve the situation. Dealers quote 1'80@1'90e., according to quality and quantity, and demand improving.

**Nails.**—Wire nails continue to improve both in demand and price, and \$1.80 Chicago is now bottom on mill lots. Jobbers are firm at \$1.90 in small lots. The consolidation of the Tap Mill, Riverside and other iron and steel works at Wheeling will soon affect the price of steel cut nails, and prices are already hardening. Carloads are \$1.65 @ \$1.70 Chicago, and \$1.75 from stock.

**Scrap.**—Demand has eased up for everything but the cheaper grades and prices are nominal only: No. 1 railroad, \$19; No. 1 forge, \$18; No. 1 mill, \$13; fish plates, \$20.50; axles, \$22; horseshoes, \$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 sold here at \$22.25 last week, 1,200 tons going to a nearby consumer; 500 tons of old car wheels sold at \$16.25, and car lots to 50 to 100 tons bring \$16.50. Steel rails are dull at \$15.50 for long, and \$14 for short, with some few sales of the latter.

**Louisville.** Jan. 23.

(Special Report by HALL BROTHERS & Co.)

There has been a fair inquiry during the past week, but no large sales have been recorded. A few transactions have taken place for amounts up to 500 tons, but generally sales have run in smaller quantities. Prices have continued to rule about the same. Deliveries have mostly run for four to six months, but quotations have been made for delivery through the whole year, where buyers wanted such long delivery. 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.** Jan. 28.

(From our Special Correspondent.)

**Pig Iron.**—Out of all the talk and discussion heard in reference to the present and prospective condition of the iron trade, there is not a single statement to make in addition to what has been made. Prices are steady; business is moderate; prospects are good, and consumption keeps up at its average. Some Southern iron is coming in, and some selling for delivery at thirty to sixty days. There is a moderate inquiry for No. 1 and No. 2 foundry, but very little inquiry for forward deliveries of forge. This represents the whole situation in a nutshell. Bessemer is active at \$16.50@18.50, according to quality.

**Foreign Material.**—Several offers of ferro-manganese, 80%, have been made at \$61.

**Slabs and Billets.**—Manufacturers are responsible for the dullness in this market, having practically withdrawn their lowest quotations, and insisting on the highest. Buyers are ready to close contracts for both March and April deliveries, but cannot get figures to suit them. Hence, very little business is being done.

**Muck Bars.**—Quotations average from \$26 to \$26.50 delivered, but several buyers will do no more than keep enough stock in hand for immediate wants at these figures.

**Merchant Iron.**—Most of the iron that has been sold this week has been sold at \$1.65. Higher prices are charged for small lots from mill. Some capacity has been restricted within a few days because of accumulating stocks. The situation is far from satisfactory.

**Nails.**—Nails continue at \$1.55@1.60. Very little demand.

**Sheet Iron.**—Apart from three or four large transactions, nothing has been done. Manufacturers look for a spurt in demand early next month. There is a good deal of business to come, but consumers seem indifferent about placing it.

**Wrought Iron Pipe.**—Very little business has been done in large pipe, but a good retail business is being done in tubes.

**Plate and Tank Iron.**—Two or three large orders have been placed for plate iron and steel. Quotations are shaded a little in order to induce large buyers who have orders to place to close them. It is not known up to present writing that the concessions have led to business. One lot of plate sold at 1'75e. for iron and 1'80e. for steel. Refined is quoted at 2'10e. and sold at 2c. Flange is quoted at 2'30e. for steel.

**Structural Material.**—A number of large orders were expected this week, but builders and contractors show a disinclination to buy more than enough material to keep operations going. Quotations therefore are irregular, especially for large lots. Angles and plates, \$1.90; tees, \$2.50; beams, \$3.10.

**Steel Rails.**—Western roads have placed liberal orders, but Eastern requirements are not coming forward. It is said there is fair inquiry, but what this means we do not know. Makers are evidently disappointed at the volume of business done for January thus far. Quotation, \$30.

**Old Rails.**—The average price on old rails is \$21.50; steel, \$17.

**Scrap.**—Railroad is wanted at \$19; steel scrap, \$17.50. Best machinery is quoted at \$14.

**Pittsburg.** Jan. 28.

(From our Special Correspondent.)

The iron and steel trade have not improved during the past week. Prices are weaker and in some instances a shade lower, while the volume of transactions shows a material falling off. As usual there is much difference in the views of leading dealers; one party argues that the present dullness is only temporary, and that as the late heavy purchases of raw iron is consumed buyers will have to replenish their supplies. This fact will cause sellers to demand more money for their iron. The sales of Lake Superior ore, reported for this year's delivery, means an increase of \$1 per ton in the cost of making Bessemer steel, but as there is every prospect of a good year in the rail trade this factor ought not to have any important bearing on the course of the trade. On the other hand, certain consumers are of the opinion that prices will soon exhibit a further decline.

There are sellers in the market whose weekly sales generally range from 10,000 to 12,000 tons, who refuse to accept present figures offered for Bessemer and grey forge, having an abiding faith that they will not have to wait long for an improvement in values. A well informed dealer says: "The immense capacity for production in connection with the indisposition to anticipate future wants has kept the market so continuously full of material that prices have had no chance to stiffen, until at last consumers have about settled down to the idea that it is not worth while to do more than cover requirements as they mature. Other reasons may also be given, such as the postponement of demand for steel rails and architectural work. All these were confidently figured on for distribution after the holidays, but at the moment there are no signs of anything more than the ordinary routine demand. That all the projects will mature after a while there is not the slightest reason to doubt, but what the trade want to see is something to give an immediate stimulus."

The most significant event the past two weeks has been the heavy purchases of Lake Superior iron ore by the large Bessemer steel manufacturers: most of the large consumers have covered their requirements for this year, and the prices named show an advance of about 50¢ per ton over the cost of ore last year. This is due in part to higher freight charges on the lakes, and in part to an advance in price by the mining companies. Old iron and steel rails are very dull; sales show a further decline, although the stock in first hands is light. Steel billets and slabs are dull, with a light demand; sales show no change in values. Ferro-manganese, 80%, imported, declined 50 cents per ton. Muck bar is dull, with more sellers than buyers; holders refuse to make concessions. The prices of steel wire rails are maintained. New steel rails are steady, with sales at mill, \$30 per ton.

**Coke Smelted Lake and Native Ores.**

2,500 Tons Bessemer February, March	15.65 cash.
2,000 Tons Bessemer, February, March	15.30 cash.
1,500 Tons Grey Forge, February, March, April	13.50 cash.
1,500 Tons Grey Forge, next 3 months	13.45 cash.
1,000 Tons Bessemer, February, March	15.50 cash.
750 Tons Grey Forge	13.50 cash.
700 Tons Bessemer, spot	15.65 cash.
500 Tons No. 1 Foundry	16.00 cash.
500 Tons Grey Forge	13.50 cash.
500 Tons Grey Forge, spot	13.50 cash.
300 Tons Southern Grey Forge	13.25 cash.
300 Tons No. 1 Foundry	16.25 cash.
250 Tons, off mill	13.00 cash.
200 Tons No. 1 Foundry	15.75 cash.
100 Tons No. 2 Foundry	14.75 cash.
100 Tons Grey Forge	13.50 cash.
50 Tons No. 2 Foundry	14.75 cash.
25 Tons No. 1 Foundry	16.00 cash.
25 Tons No. 2 Foundry	15.00 cash.

**Charcoal.**

100 Tons No. 1 Foundry	21.00 cash.
100 Tons Cold Blast	25.50 cash.
100 Tons Warm Blast	19.50 cash.
50 Tons Cold Blast	26.50 cash.

**Steel Slabs and Billets.**

1,000 Tons Ste 1 Billets del. next three mo's.	25.40 cash.
1,000 Tons Steel slabs, March, April	25.00 cash.
500 Tons Steel Billets at Mill	25.00 cash.
500 Tons Steel Billets at Mill	25.00 cash.

**Muck Bars.**

1,000 Tons Neutral	25.75 cash.
500 Tons Neutral	26.00 cash.
400 Tons Neutral	26.00 cash.

**Ferro-Manganese.**

150 Tons 80%, Foreign, del.	63 00 cash.
125 Tons 80%, Domestic	63.00 cash.
50 Tons 80%	62.50 cash.

**Steel Wire Rods.**

500 Tons American Eyes, at Mill	33.50 cash.
---------------------------------	-------------

**Bloom and Rail Ends.**

1,000 Tons Bloom and Rail Ends	18.00 cash.
--------------------------------	-------------

**Skelp Iron.**

350 Tons Narrow Grooved	1.60 4m.
300 Tons Wide Grooved	1.62 1/2 4m.
200 Tons Sheared Iron	1.80 4m.

**Iron Ore.**

12,300,000 tons for delivery during 1892 sold at prices from 25 to 35 cents per ton above last year's figures.

**Old Iron and Steel Rails.**

500 Tons Mixed Lengths Steel Rails	17.25 cash.
250 Tons Short Steel Rails	17.50 cash.
250 Tons Old Iron Rails	22.50 cash.

**Scrap Material.**

500 Tons Heavy Melting Stock, net	17.25 cash.
150 Tons No. 1 W. R. R. Scrap, net	19.00 cash.
100 Tons Coil Spring Steel, gross	19.00 cash.
100 Tons Leaf Spring Steel, gross	20.50 cash.
100 Tons Cast Borings, gross	9.50 cash.

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

Main table of New York Mining Stocks Quotations, including columns for Name and Location of Company, dates from Jan. 22 to Jan. 29, and Sales. Lists various companies like Adams, Alcoa, and American Flag.

Ex-dividend. †Dealt at in the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. ‖Dividend shares sold, 58,030. Non-dividend shares sold † 79,710. Total shares sold, 137,740.

BOSTON MINING STOCK QUOTATIONS.

Main table of Boston Mining Stocks Quotations, including columns for Name of Company, dates from Jan. 22 to Jan. 28, and Sales. Lists companies like Atlantic, Bodie, and Bonanza Development.

Dividend shares sold, 11,567. Non-dividend shares sold, 3,375. Total shares sold, 14,942.

COAL STOCKS.

Table of Coal Stocks Quotations, including columns for Name of Company, dates from Jan. 23 to Jan. 29, and Sales. Lists companies like American Coal, Cambria Iron, and Cameron Coal.

Total shares sold, 475,176.

San Francisco Mining Stock Quotations.

Table of San Francisco Mining Stock Quotations, including columns for Names of Stocks, dates from Jan. 22 to Jan. 28, and Sales. Lists companies like Alpha, Alta, and Belle Isle.

DIVIDEND-PAYING MINES.

NON-DIVIDEND PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company, Capital Stock, Shares, Assessments. Includes entries for Adams, s. L. C., Alice, s. g., Alma & Nel Wood, g, Amador, g, American Bell, s. g, etc.

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 Bea...

STOCK MARKET QUOTATIONS.

Aspen. Jan. 23. The closing quotations were as follows: Agnes C., Argentum Junista, Aspen Deep Shaft, Aspen Contact, Best Friend, Bimetallic, Bushwacker, Carbonate Chief, Della S., Homer & Alta, Justice, Little Annie, Mollie Gibson, Nollan Creek, Park, Mamie & Queen, Pontiac, Sheep Mountain S. & M. Co., Smuggler, St. Joe & Mineral Farm, Yellow Boy.

Baltimore, Md. Jan. 28. 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 Jan. 22. COMPANY. Allegheny Gas Co., Bridgewater Gas Co., Cbartiers Val. Gas, Columbia Oil Co., Consigne Mining Co., Consolidated Gas Co., East End Gas Co., Fisher Oil Co., Forest Oil, Hazlewood Oil Co., Hidalgo Mining Co., La Noria Mining Co., Luster Mining Co., Mansfield C. & 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 Gas, 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., Wmoreland & Camb., Wheeling Gas Co., W'house E. Light, W'house Air Brake Co., W'house Brake Co., Ltd.

St. Louis. Jan. 27. CLOSING PRICES. Bid. Asked. Adams, Colo., American & Nettie, Colo., Bi-Metallic, Mont., Central Silver, Elizabeth, Mont., Granite Mountain, Mont., Little Albert, Montross Place, 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. 23, 1892. Bald Butte (Mont.), California (Castle), Mont., Champron (Deer Lodge), Mont., Combination (Philipsburg), Mont., Copper Bell (Cataract), Mont., Cumberland (Castle), Mont., Elizabeth (Phillipsburg), Mont., Florence (Neihart), 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 (Coeur d'Alene), Idaho, Queen of the Hills (Neihart), Southern Cross (Deer Lodge), Mont., Yellowstone (Castle), Mont.

Trust Receipts. Sales at the New York Stock Exchange for week ending Jan. 29. 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 Jan. 29: CERTIFICATES. Am. Cotton Oil, Am. Sugar Refineries, Distillers & Cattle Feeders, Linseed Oil, National Cordage, National Lead Trust cfs., Standard Oil, W. U. Beef Co.

Foreign Quotations. London. Jan. 15.

Amador, Cal., American Belle, Appalachian, N. C., Can. Phosphate, Colorado, Cons. Esmeralda, Nev., De Lamar, Idaho, Dickens Custer, Idaho, East Arevalo, Idaho, Elkborn, Mont., Elmore, Idaho, Emma, Utah, Flagstaff, Utah, Garfield, Nev., Golden Feather, Golden Gate, Cal., Golden Leaf, Mont., Golden River, Cal., Jay Hawk, Mont., Josephine, Cal., Kohinor, Colo., La Luz, Mex., La Plata, Colo., La Valera, Mex., Maid of Erin, Colo., Mammoth Gold, Ariz., Montana, Mont., New California, Colo., New Consolidated, Nev., New Eberhardt, Cal., New Gold Hill, N. C., New Guston, 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 Christian, N. C., Sierra Buttes, Cal., Plumas Eur., Cal., United Mexican, Mex., U. S. Placer, Colo., West Argentine, Colo., Yankee Girl, Colo.

Paris. Jan. 14. Francs. 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, Hyd. fluoric, Carbonic, liquefied, Chromic, chem pure for batteries, Hydrobromic, dilute, U. S. P., Hydrocyanic, U. S. P., Alcohol-95%, Absolute, Ammoniated, Alum-Lump, Ground, Powdered, Lump ton, Liverpool, Aluminum-lb., Aluminum Chloride-Pure, Amalgamating solution, Sulfate, Ammonia-Sul. in bbl. lots, Carbonate, English and German, Muriate, white, in bbls., Aqua Ammonia-(in chys) 18%, 20%, 26%, Antimony-Oxymur, Regulus, ton, London.

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, Californian, at mine, at San Francisco, Barium-Carbonate, pure, Chloride, commercial, Iodide, pure, Nitrate, powdered, Sulph., Am. prime white, Sulph., foreign, floated, Sulph., off color, Carb. lump, f. o. b. L'pool, No. 1, Casks, Runcom, No. 2, bags, Runcom, Bauxite, ton, Blebromate of Potash-Scotch, American, Bichromate of Soda, Borax-Refined, San Francisco, Concentrated, in car lots, Refined, Liverpool ton, Bromine, Cadmium Minion, Cadmium Iodide, Chalk, Precipitated, China Clay-English, Southern, Chlorine Water, Chrome Yellow, Chrome Iron Ore-Franco, Chromalum-Pure, Commercial, Cobalt-Oxide, Copper-Sulph. English Wks. ton, Vitriol (blue), ordinary, Nitrate, extra, Copperas-Common, Best, 100 lbs., Liverpool, ton, in casks, Flour, lb., Cryolite-Powdered, Emery-Grain, Flour, lb., Epsom salt, Feldspar-Ground, Crude, Fluorspar-Powdered, No. 1, French Chalk, Fuller's Earth-Lump, Glycerine, Glass-Ground, Gold-Chloride, pure crystals, pure, 15 gr. c.v., doz, liquid, 15 gr. g. s. v., doz, Chloride and sodium, Oxide, oz., Gypsum-Calcined, Land Plaster, Iodine-Resublimed, Iron-Nitrate, 40%, Kaolin-See China Clay, Kieserite, Lead-Red, White, English, Acetate, or sugar of, white, Granulated, Nitrate, Lime Acetate-Am Brown, Litharge-Powdered, English flake, Magnesite-Crude, Calcined, Brick, ton of 1,015 kilos, Manganese-Ore, per unit, Oxide, ground, per lb., Mercuric Chloride-Corrosive, Powdered, Marble Dust, Metallic Paint-Brown, Mineral Wool-Ordinary slag, Ordinary rock, Ground, Mica-In sheets according to size, 1st quality, Naphtha-Black, Nitric Acid, Ocher-Rochelle, Washed Nat Oxfrd, Powder, Golden, Domestic, Oils, Mineral-Cylinder, light filtered, Dark filtered, Extra cold test, Dark steam refined, Phosphorus-Precip., white, Plumbago-Ceylon, American, Potassium-Cyanide, Bromide, domestic.

Chlorate, English, Chlorate, powdered, English, Carbonate, by casks, Caustic, 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, Kotten Stone-Powdered, Original cks., Rubbing stone, Sal Ammoniac-lump, in bbls., Salt-Liverpool, ground, sack, Domestic, fine, Common, fine, Turk's Island, Salt Cake-ton, Saltpeter-Crude, Soapstone-Sodium-Prussiate, Phosphate, Stannate, Tungstate, Hyposulphite, in casks, Strontium-Nitrate, Sulphur-Roll, Flour, Sylvinit, 23%27%, S. O. P., per unit, Talc-Ground French, Terra Alba-French, English, American, No. 1, American, No. 2, Tin-Crystals, in kegs or bbls., Muriate, single, Double or strong, Oxy. or nitro., Tin Plates-box, Swansea, best 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, Germanium-(Metallic), per gram, Indium-(Metallic), per gram, Iridium-(Metallic), per oz., Lanthanum-(Metallic), per gr., Lithium-(Metallic), per gram, Magnesium (Powdered), per lb., Manganese-(Metallic), per lb., 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 gm., Rbodium-(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, 1,000, Croton, Wilmington, Philadelphia, Trenton, Baltimore, Building Stone-Amherst freestone, cu. ft., Brownstone, Portland, cu. ft., Granite, rough, cu. ft., Cement-Rosendale, bbl., Portland, American, bbl., Portland, foreign, bbl., Portland, special brands, Roman, bbl., Keene's coarse, bbl., Keene's fine, bbl., Slate-Purple and green roofing, square, Red roofing, square, Black roofing, square, Lime-St. Johncom. and finish, bbl., Glens Falls, com. and fin., bbl.