

# THE ENGINEERING AND MINING JOURNAL



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

Vol. LV.

MAY 20.

No. 20.

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

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

SOPHIA BRAEUNLICH, Business Manager.

THE SCIENTIFIC PUBLISHING CO., Publishers

**SUBSCRIPTION PRICE:** For the United States, Mexico and Canada, \$5 per annum; \$2.50 for six months; all other countries in the Postal Union, \$7.

ADVERTISING RATES furnished on application.

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.

NOTICE OF DISCONTINUANCE—The ENGINEERING AND MINING JOURNAL is sent to subscribers until an explicit order for its discontinuance is received by us, and all payment of arrears is made, as required by law. Papers returned are not notices of discontinuance.

## THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS: R. P. ROTHWELL, Pres. & Gen'l Mgr. P. O. BOX 1833.  
SOPHIA BRAEUNLICH, Sec'y & Treas. 27 Park Place, New York.

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

CHICAGO OFFICE: "The Rookery," Room 531.

## LONDON OFFICE:

20 Bucklersbury (Room 368), London, E. C., England.  
Edward Walker, Manager.

## CONTENTS.

	Page.
Electric Traction on the New York Canals.....	457
Forestry Reform.....	457
Steel Companies in Difficulties.....	457
Reading Operations in Stocks.....	457
Mine Accidents.....	457
Prices of Iron Ore.....	457
Prices of Sheet Copper.....	458
Annual Reports.....	478
The Stock of Gold and Silver in the United States.....	459
New Publications.....	459
Books Received.....	460
The Bialharz Percussion Table.....	460
Automatic Roasting Furnaces for Copper Matte.....G. W. Whyte	460
"The Mineral Industry" for 1892.....	460
*The Warwhop Bauxite Bank, Alabama.....W. M. Brewer	461
Reports of the Mine Inspectors of Pennsylvania for 1892.....	461
Mineral Production of New South Wales.....	462
*The Brown & Allen Improved O'Harra Roasting Furnace.....	463
Abstracts of Official Reports.....	463
*Mining at the Columbian Exposition.....	464
Recent Decisions Affecting the Mining Industry.....	465
Mineral and Metal Production of the United States, 1890-1892....	466
*A Duplex Electric Sinking Pump.....	467
Patents Published in Great Britain.....	467
Patents Granted in the United States.....	467
Notes: A Geological Expedition, 460—Prices of Coal in Great Britain, 460—Argentine Trade, 462—Amber, 465—Steel Armor-Piercing Projectiles, 467—The Largest Ore Carrier, 467.	

\* Illustrated.

MINING NEWS.	South Dakota.. 471	MINING STOCK	MINING STOCK
Alabama..... 439	Tennessee..... 471	MARKETS:	TABLES:
Arizona..... 439	Utah..... 471	New York..... 472	New York..... 478
California..... 469	Washington..... 471	Boston..... 473	Boston..... 478
Colorado..... 469	FOREIGN.	San Francisco..... 473	San Francisco..... 480
Florida..... 470	Brazil..... 471	Dividends..... 473	Coal Stocks..... 480
Georgia..... 470	Br. Columbia..... 471	MEETINGS..... 473	Colo. Springs..... 480
Idaho..... 470	Mexico..... 471	MARKETS:	Rico..... 480
Illinois..... 470	New Caledonia..... 472	METALS..... 473	Baltimore..... 480
Maine..... 470	New So. Wales..... 472	IRON:	London..... 480
Massachusetts..... 470	Nova Scotia..... 472	New York..... 474	Paris..... 480
Michigan..... 470	Ontario..... 472	Buffalo..... 474	Aspen..... 480
Minnesota..... 470	Queensland..... 472	Chicago..... 474	St. Louis..... 483
Missouri..... 470	Quebec..... 472	Louisville..... 474	Indianapolis..... 480
Montana..... 470	Russia..... 472	Philadelphia..... 474	Denver..... 480
Nevada..... 470	San Domingo..... 472	Pittsburg..... 474	CHROMIUMS AND
New Mexico..... 470	South Africa..... 472	COAL:	MINERALS..... 478
New York..... 471	Tasmania..... 472	New York..... 475	CURRENT PRICES:
Ohio..... 471	Wales..... 472	Boston..... 476	Chemicals..... 477
Oregon..... 471	Colorado Ore	Buffalo..... 476	Minerals..... 477
Pennsylvania..... 471	Market..... 472	Chicago..... 476	Rarer Metals..... 477
		Pittsburg..... 476	ADVT. INDEX..... 19

WE have before referred to the bill passed by the New York State Legislature at its last session making an appropriation for the purpose of experimenting with electrical traction on the state canals. Mr. HANNAN, Superintendent of Public Works, has now issued an order directing that all parties who wish to submit devices for electrical traction for boats must file their applications for authority to test them at the Canal Department in Albany, before June 5th. The tests will be made, if possible, during the present season of navigation.

THE Forestry Division of the Agricultural Department has issued a new circular calling the attention of lumbermen, miners and others to the necessity of avoiding waste in cutting lumber, and especially to the need of precautions against forest fires. The circular embodies also a draft of a proposed law for the preservation of our forest resources. The general purpose is good and the warnings of the circular are timely, but the machinery of the proposed law seems to be somewhat complicated and to involve too many officials to make its adoption advisable without some changes.

THREE steel companies during the past two weeks have followed the example of the Pennsylvania Steel Company in passing into the hands of receivers—the Premier Steel Company, of Indianapolis, the West Superior Steel Company and the Belleville Steel Company, at Belleville, Ill. The last-named is one of the smaller concerns and its troubles are said to be only temporary. The failure of the Indianapolis company seems to have been due to an attempt to build up a large modern plant and a great business on an insufficient capital, the receivership coming in when the local banks would not or could not carry the company any longer. The embarrassments of the Duluth concern come from a different source, the defalcation of one of its officers, who has fled the country.

THE Reading stockholders are beginning to realize the cost of a brilliant management. A preliminary report from Mr. ISAAC L. RICE, the expert who is examining the company's books, shows that the losses saddled upon the company in the stock transactions intended to secure control of the Boston & Maine and the New York & New England railroads amounted to \$1,503,000; in other words that amount of the securities of the company was wasted in operations which utterly failed of their proposed object, and which were, moreover, entirely inexcusable in themselves. Nothing could have been gained by them which could not have been secured to the Reading by simple traffic agreements, and the attempt to make the road a "great trunk line" by a series of sensational stock operations ended only in increasing the weight of its final load in bankruptcy.

Two mine accidents involving loss of life are recorded in our news columns this week, the first due to an explosion of gas in an Illinois coal mine, and the second to the fall of a hoisting cage in the deep shaft of the Calumet & Hecla copper mine, in Michigan. Concerning the latter we have no particulars, but the dispatch seems to show that it was from overwinding due to the carelessness of the man in charge of the hoisting engine, and perhaps also to the lack of safety appliances. Both serve to emphasize once more the old lesson of the need of continual care to prevent accidents of similar nature. They do not indicate, as some seem to think, that mining is an occupation hazardous above all others. A study of the columns of the daily newspapers will show at least twenty fatal railroad accidents recorded for one of the same class in a mine; and making all allowances for the relative number engaged in mining and railroading, there is no doubt that the risks in the latter are much greater than in the former occupation.

THE lake shipments of iron ore thus far are very light, under the combined influence of the unusually late opening of navigation, the still unsettled controversy over ore prices and the somewhat uneasy condition of the iron trade. The production of pig iron, however, continues to be large with prices low and no prospect of any advance in them at present in sight. The Mesaba mines of Minnesota have not yet become important shippers, and though a few of them can undoubtedly produce cheaply ore of better average quality than it was at first believed they could, yet the estimates of average cost of mining in that district are already being revised and increased. There are mines in each of the Michigan districts that produce a 61 to 63 per cent. ore at a cost of from \$1 to \$1.25 per ton exclusive of royalty and with shorter distance to lake shipping ports, so that the superiority of the Mesaba is not so great as many supposed.

The cost of mining is now very low everywhere, and further reductions in the prices of ore must be looked for in reductions in royalties, which are far too high (and should not in any case exceed 25 cents a ton); and in railroad charges from the mines to shipping ports, which have long been excessive. If these items were brought down to fair rates the selling price of ore could still be reduced at lake ports and leave a better margin for the mines. The present and prospective financial conditions of the country are such that no high prices for anything can be expected for some time to come, and it is the part of wisdom for producers to study

closely their cost sheets with the object of finding their profits in reducing them rather than to look to an advance in the market. In iron ore reductions in royalties and freight rates would be just and are necessary. Can they not be secured by organized effort?

#### THE PRICE OF SHEET COPPER.

The statement made in "The Mineral Industry," page 128, concerning the ill effects of the high sheet-copper prices, has been promptly and emphatically protested against by some of the chief copper manufacturers, as shown in the following letter:

"There is a paragraph in the copper article of 'The Mineral Industry' which conveys a false impression. You say: 'The combination of sheet-copper manufacturers has continued throughout the year to exact prices for their product far above what the price of ingot justified. This combination has for years been a great injury to the producer, the high prices demanded limiting the growth of consumption.'

"I am sure I am correct in saying that while the Association of Copper Manufacturers retains its organization as a consulting body, it has not for at least two years past fixed the net price of manufactured copper, nor controlled its members in the matter of discounts. There is, as all the metal dealers' circulars show, a scale of prices of sheet and rolled copper adopted by the Association of Copper Manufacturers of the United States, but the list price, which remains fixed, is subject to as varying and wide a range of discounts as the price list of tubing and some other manufactured articles.

"At the present time the jobbing discount given by some houses is 35 and 5 per cent., and the goods are delivered free to points east of the Mississippi River. The mills, therefore, must allow a considerably higher discount than even that. If, therefore, you take the list price at 22 cents per pound as that of 64-oz. sheets, and deduct 35 and 5 per cent., you have left 13.59 cents.

"As Lake copper, out of which goods now being sold are manufactured, must have cost in the neighborhood of 11.50 cents, the manufacturer's margin, therefore, to cover the cost of manufacturing and the discount to the trade, does not exceed two cents. When it is borne in mind that these are not India sheets roughly rolled into standard sizes, but sheets cut to order and sometimes into intricate shapes, and therefore, that the mill has to bear the cost of re-smelting all the scrap, I am sure you will admit that the copper manufacturers are not by their exorbitant charges repressing the growth of consumption.

"There have been times in the past when prices were fixed by the Association, but I have every reason to know that the following statement made to me by a copper manufacturer is correct: So far from there being a combination of sheet-copper manufacturers to 'exact prices for their products far above what the price of ingot justified,' the truth is, that for the past two years there has been no effort on the part of any combination of the manufacturers to exact or ask any uniform price, every one of the mills engaged in the manufacture of sheet copper being conducted entirely independent of all the others, and making their own prices, their only object apparently having been for each one to sell a little lower than his neighbor. At all times during the period named the base price of sheet copper has been very close to the market price of Lake ingot, and every decline in ingot copper, even to the fraction of a cent, has been followed immediately (and usually anticipated) by a corresponding decline in the price of sheet copper."

We are pleased to record the correction made in this letter, but at the same time it may not be amiss to say that there is still some justification for the objectionable statement.

There can be no question but that the "card prices" that are still quoted would, if exacted, be injurious to the copper industry. They were exacted up to a few years ago. It is true the manufacturers now "cut" or "shade" these card rates to a heavy, variable extent, depending on the exigencies of each case. It is also true that some of the small dealers and many of the consumers are ignorant of the fact that the Association list prices are not "copper fastened" and unchangeable, and many others do not know to what extent they may be shaded.

The consequence is that consumers are frequently charged by dealers exorbitant prices, and thus the consumption is restricted, while the manufacturers may be selling on a very close margin. This seems to us to be a very shortsighted policy, and since the manufacturer's price varies with every change in the price of ingot, and is in most cases actually very reasonable, it would surely be to the advantage of the manufacturers to get credit for this moderation and to stimulate consumption by making the card rates something near the selling prices instead of allowing it to be used by middle-men to exact, in not a few cases, unduly high prices. The public has a pretty general belief that nearly everything is controlled by a "Trust," which can exact any price it wishes for anything. The issuing of lists of exorbitant prices is to the public mind a proof of this and of the desire and intent of the manufacturers. Any concession or discount allowed from this price is credited to the shrewdness of the buyer, or the necessities, of the seller and not at all to his desire to ask only a fair and moderate price for his goods. They are, therefore, injurious in many ways and advantageous in none—why not cut them down openly?

#### ANNUAL REPORTS.

The periodical reports of companies, which ought to constitute a valuable contribution to mining literature, are too often provoking documents to a degree which can be appreciated only by those upon whom devolves the duty of comparing and analyzing them. Generally, it may be said, their faults are sins of omission; they do not give the facts which they ought to give, and are useless because of their incompleteness. Quite frequently, however, there are sins of commission also; facts are given, but in such a confused and haphazard way that the reader has to dig them out, as it were, and then does not always feel quite sure that he has them

correctly. Sometimes this is due to lack of skill in presentation, but more often probably to a desire to hide as far as possible the real conditions of affairs from those who are interested in knowing it. English stockholders usually are more interested and more prone to ask for information than their American brethren, but faults of the same kind, and almost to the same degree, are found in the reports of English companies as in those of our own. With a few notable exceptions, it is the custom here for companies to submit reports periodically to their stockholders, but the manner in which it is done differs very widely.

It is frequently urged that a corporation is a business concern, and that it is not good policy to make public its operations or to publish them in such detail that its rivals may take advantage of the information given to their own gain; but this seems to us to have little force. The cases in which publicity may injure the business of a company are really so few that they might be altogether disregarded in view of the benefits which are sure to result from the opposite course. Moreover, a corporation has certain duties and obligations differing entirely from those of a private enterprise. When a business is conducted by an individual or a private firm, no outsider has a right to demand information as to its workings, as long as all obligations are met and the business is so conducted as not to work injury to the public or any part of it; but a corporation stands on a different footing. It asks the public to invest in its securities, and it thus gives the public the right to know something of the actual value of its stock, and its stockholders have an undoubted right to know fully how the directors who are their trustees are managing their interests. In the case of railroads and some other corporations, such a course is required by law in many States, though it may be said that the law often fails in its object through lack of proper knowledge and experience on the part of those who framed it, or those to whom its execution is intrusted. That does not affect the general principle, however, that publicity is and should be required; it is part of the return exacted by the State for the protection given to the use of associated capital by its corporation laws.

The information which the report of a company ought to give and which the stockholder is entitled to demand, is, first as to its financial standing, the amount and nature of its stocks and other securities, the amount of its permanent investments, with a full description of the property, and the amount and nature of its current debts and assets, all the facts, in a word, necessary to an estimate of its business standing; second, a full and clear statement of the earnings and the sources from which they are derived, of the expenditures required to make those earnings and of the disposition of the net receipts or surplus of earnings over expenses; third, a statement of the cost of working or doing business and of the returns, brought down to particulars; if a railroad company, for instance, the receipt and cost per unit of traffic, per ton-mile and per passenger-mile; if a coal company the cost per ton of mining, preparing and marketing coal and the average price obtained; if a silver mining company, the cost per ton of mining and milling ore, the assay value and average extraction per ton so on. These are essential to that understanding of the business and the manner in which it is conducted to which a part owner of the property is entitled, and which cannot be obtained from a mere general statement of receipts and disbursements. Fourth, there should be a full statement of improvements and new work done on the property. There is a wide difference of opinion as to the manner in which these last should be treated; it seems to us the best rule that all so-called improvements which are necessary to keep up the work of a company, as development work and extension in a mine, are fair charges to income.

The information included in the third head we have mentioned—the cost per unit of product, whatever that may be—is, of course, that which is most valuable to the editor, the engineer or manager, and that which he is most anxious to obtain and compare with that of other companies. It is also that which is most often omitted altogether or given in an incomplete or unsatisfactory way. It is much the most valuable also to stockholders, as it is really the final test of the earning power of his property, and also of the excellence or otherwise of its management.

A sermon is not complete without an illustration, and there are one or two at hand. The last report of the Philadelphia & Reading Coal and Iron Company, a summary of which may be found in another column, is an example of what a report ought not to be. It is a mere statement of earnings and expenses, of debt and assets, without particulars. We are informed that the liabilities are so much, the assets so much, but as to the items which go to make up the amounts, the various properties included, their value, the tenure under which they are held and the share they contribute to earnings or add to expenses, there is nothing said. Some brief statements of total tonnage are given, but nothing as to cost of working, cost of producing or handling coal, or of the reasons why the net return of the company's great estate should be practically nothing. No analysis of the report is possible, because there are not facts enough given to analyze, and a report which ought to be a mine of information is really useless.

A fair example of a report of the other kind, which may be found in the same column, is that of the Standard Consolidated Mining Company,



in which the information given as to the property is full and clear, the details of its working are explained, and the stockholder has full opportunity to judge of the condition of the company for himself and to analyze the results obtained. Instances of both kinds might be multiplied, but the two cited must be sufficient for the present; we hope, however, to return to this subject hereafter.

#### THE STOCK OF GOLD AND SILVER IN THE UNITED STATES.

The enormous exports of gold from this country since January 1st, and the consequent depletion of the amount held by the Treasury, invite attention to what may be called our metallic money stock. Some time ago, before it became necessary to entrench upon the \$100,000,000 in gold, popularly supposed to be held for the redemption of the old legal tender notes, the Treasury made vigorous efforts to secure gold from the national banks and other sources. To support these efforts it was asserted that there was plenty of gold in the country, the total amount being announced at \$740,000,000.

This is manifestly erroneous. Since July 1st, 1892, when the Director of the Mint reported the gold stock at \$664,345,000, the net exports of gold have been not less than \$70,000,000. The stock, however, has not been decreased by that amount, as the Treasury has received some of the product of our mines during that time. May 1st, 1892, the stock was reported to the Treasury Department to be \$612,018,865. There is reason to believe that this estimate is too large by at least \$100,000,000. To make this clear, it is necessary to understand the method of calculating this stock. In 1872 Mr. LINDERMAN, then Director of the Mint, added to the \$115,000,000 in gold known to exist in the United States Treasury and national banks the sum of \$20,000,000, estimated to be in circulation in the Pacific Coast States, and called the aggregate the "gold stock of the United States." At the same time he estimated the stock of silver at \$5,000,000.

At this time there was no gold coin in active circulation except on the Pacific Coast, and Mr. LINDERMAN in his report for 1873 declared the time to be especially favorable for arriving at a correct estimate. Since that date the official "stock" from year to year has been compiled by adding to the actual visible stock on June 30th, the close of the fiscal year, the gold coinage during the year and the gain by imports of United States coin as registered at the Custom House, subtracting the amount of old coins recoined and the loss of coin by export, and then allowing for the melting of gold coin for use in the industrial arts, the allowance being based upon three censuses of the jewelry trade taken by the Bureau of the Mint.

Certain corrections have been made from time to time. In 1885 Director KIMBALL deducted from the estimated stock the sum of \$30,000,000, as between 1873 and 1880 no allowance had been made for the use of gold coin in the arts. Again, in 1886, a deduction of \$15,669,981 was made for the bullion existing in the Treasury at the time of Director LINDERMAN's initial estimate, as this was subsequently coined and counted twice. In the same year a further correction was made by deducting \$4,654,714, an error of this amount being made in the statement of imports for 1874. These are the only special corrections that have been made in the estimates of the gold stock.

The silver stock is estimated in a similar manner to that of gold, the basis being the \$5,000,000 estimated to be in existence in 1873. To this there has been added the coinage since 1878, the subsidiary coinage, and the annual gain or loss by import or export, with an annual allowance for the melting of coin for use in the industrial arts. The following table shows the calculated stock at the end of each fiscal year.

Year.	Stock of gold.	Stock of silver.
1873.....	\$135,000,000	\$6,149,305
1874.....	147,379,493	10,555,178
1875.....	121,134,906	19,367,995
1876.....	130,056,907	36,415,932
1877.....	167,501,472	54,764,427
1878.....	213,199,977	88,047,907
1879.....	245,741,837	117,526,341
1880.....	351,841,206	148,522,678
1881.....	478,484,538	175,384,144
1882.....	505,757,715	213,217,124
1883.....	542,732,063	233,007,985
1884.....	545,500,797	255,568,112
1885.....	588,697,035	283,478,787
1886.....	590,774,461	312,252,813
1887.....	651,520,335	352,993,506
1888.....	705,818,855	389,450,920
1889.....	630,633,505	420,628,177
1890.....	695,583,029	456,871,220
1891.....	646,582,852	515,237,020
1892.....	664,345,446	567,269,118
1893*.....	613,042,879	606,901,216

\* May 1st.

From this table it would appear that although the gold stock has suffered a serious diminution since the passage of the Silver Purchase Act, there is still a very large sum in the country; on the other hand no allowance has been made for certain elements of loss which may have seriously affected the correctness of the estimate. For example on July 1st, 1892, the gold stock amounted to \$664,275,335, of which \$255,706,511 was in the United States Treasury. Of the \$408,568,824 remaining, \$96,723,083, was held by 3,759 national banks, and \$8,889,370 was held by 5,579 State

savings and private banks and by the loan and trust companies. These latter also reported specie holdings of \$22,119,226; allowing that \$15,000,000 of this sum was gold, the total bank holdings at that date amounted to only \$120,612,453. This still leaves \$287,956,371 to be accounted for.

If we allow \$25,000,000 as being in circulation in the Pacific Coast States, there still remains \$262,956,371, the whereabouts of which is unknown. According to the Treasury, this sum is in circulation, but, as we all know that there is little gold in active circulation, the further explanation is made that this sum is hoarded by those who fear that this country is rapidly drifting to a silver basis, when their gold will command a premium. The truth of this explanation cannot be denied with certainty, but it seems highly improbable that any material part of such a large sum could be hidden so well that its whereabouts would not be known.

It is more than likely that most of this sum has left the country, a large part having been taken abroad by travelers, a part lost by wrecks and fire, and a portion used in the arts. The latter two causes of loss are indefinite, and nothing more than a mere guess could be made of the amount they have absorbed, but the amount carried abroad by travelers admits of an estimate.

Since 1873 about 3,750,000 passengers or travelers have departed from the United States, and every one of these probably carried some gold coin for immediate expenses. Some carry English or French coin bought at the port of embarkation, but it is safe to say that, as American gold is good the world over, the greater number content themselves with it. The average traveler will probably take out \$25 more in coin than he brings back. Taking this, then, as the average, we have, since 1872, a loss of coin equal to \$93,750,000; and this sum should, we think, be deducted from the "gold stock."

The Director of the Mint is not unaware of this annual loss, but as yet no allowance has been made for it. For these reasons it seems altogether probable that no such sum as \$287,956,371 should be allowed for the amount in active circulation, in making any new estimate of the stock of gold coin in the country. Under these assumptions our gold stock does not probably exceed in round figures, say, \$500,000,000.

#### NEW PUBLICATIONS.

THE RUINED CITIES OF MASHONALAND. By J. Theodore Bent (with a chapter on the Mensuration of the Temples, by R. M. W. Swan). London and New York: Longmans, Green & Co. Pages 376. Illustrated.

In this book the author has given an account of a journey in search of the ruined cities, the existence of which had for many years been indicated to the British colonists of South Africa by native rumors, and which had more recently been positively affirmed by hunters who had actually seen them. The expedition was made possible, and, indeed, comparatively easy, by the extension of English influence and authority so far northward as to insure the comparative safety of the explorers from attack; and this book is notable among the records of African exploration in containing no account of armed conflict with any of the various tribes encountered.

It is divided into three parts; the first an account of the journey to Mashonaland; the second, a description of the ancient ruins found there, and the third a record of the return to the coast. The second part is the longest and most important, and we hope to refer again and at greater length to the careful accounts which it gives of the explorations and their results. The examination made of the ancient cities discovered seems to have been as careful and thorough as time and means permitted.

Mr. Bent has given us in this volume a very interesting book, because he has made it a record of what he saw and found in his explorations, without any attempt to distort his facts in support of a preconceived theory. It is true that he has a theory concerning the mysterious ruins of Mashonaland, but he has built it up on what he saw, and has, so far as we can judge from the book, made no attempt to bias or force the reader's judgment. The style is not always polished, and there is a little of the inevitable tendency of a traveler to enlarge too much on his personal experiences; but these are minor faults, and do not prevent it from being excellent reading. The illustrations are of very good quality, and are well placed with respect to the references in the text.

THE MONEY OF THE UNITED STATES. By Henry M. Benedict. New York. 1893. Pamphlet; pages, 26.

The currency problem is undoubtedly the most important one now awaiting solution by the American people, but that the case is so desperate that it requires the radical and costly change proposed by Mr. Benedict we do not believe.

Mr. Benedict's plan as summarized by himself proposes: 1st. That all paper money be retired; 2d. That silver be coined to take its place, and, as silver coin is not liked by the people, that coin certificates be issued on deposits of coin; 3d. That an equivalent or "parity" fund be established to hold and maintain the difference, in gold, between the bullion and the face value of silver coin.

This fund, which, it may be said, is the distinguishing feature of Mr. Benedict's plan, is to be adjusted each year; the idea being that it shall always be equal to the difference between the average annual price of bullion for the preceding year and the coined value of silver at the ratio of 16 to 1. Mr. Benedict argues that to establish such a fund at the present time requires about \$140,000,000 in gold. To form it he advises the appropriation of the \$100,000,000 now maintained as a reserve fund for the redemption of United States legal tender notes; the seigniorage profit derived from coining silver bullion purchased under

the act of 1890, etc., and to maintain the fund it is proposed to cover into it annually a sufficient amount in gold from the revenues, or to sell United States bonds for the necessary amount. "This fund to be sacredly maintained for the purposes set forth," and it will then be, it is asserted, "a permanent evidence of the ability of the people of the United States to keep the value of their silver money equal to gold"; and "the people of the United States will then have in the intrinsic value and in the reserve fund gold value for all silver dollars issued."

While the plan here outlined does not lack certain elements of ingenuity, the objections to it are so numerous and weighty that its adoption as a practical measure of finance is impossible. Mr. Benedict cites as his text that article of the Constitution relating to coinage, and urges the fact that our silver money is a disturbing element and the time to regulate its value has come. He contends that our paper money is contrary to the letter and spirit of the supreme law, and that the people want the money which the Constitution dictates. To this it is sufficient to say that the Supreme Court has decided that Congress has the power to give a legal tender quality to government notes. No one has ever doubted the power of Congress to issue money receivable by the government in payment of taxes and of customs. When it is said that the people do not want paper money it is forgotten that after passing an act to retire it Congress passed a second act forbidding its retirement in answer to popular demands.

How the plan proposed by Mr. Benedict regulates the value of silver money we fail to see, unless he means that its legal tender quality is regulated. The value of the coin would not be changed by the establishment of a reserve fund. To retire the legal tenders it is proposed that \$20,000,000 in bonds be sold annually and the proceeds used to cancel the notes. This would convert a non-interest paying debt of \$346,000,000 into an interest-bearing debt of the same amount. Later on Mr. Benedict, in speaking of the national bank notes, says that the people of the United States paid \$300,000,000 in taxation and in interest to the national banks for the use of from \$165,000,000 to \$350,000,000 of their notes, and that consequently these notes have been very expensive to the people of the United States. It seems to us that this kind of argument is somewhat contradictory. The bonds were issued and the people had the benefit of the money received for them; that they had to pay interest on the money was inevitable, and it is not fair to say that the bank note circulation cost the people so much. If cheap circulation is desired, of what use is it to retire the legal tenders and issue \$346,000,000 in bonds instead?

Concerning the same national bank notes he also says: "It is now evident that the government instead of authorizing the issue of national bank notes could have issued United States notes as currency and bought the bonds such as the banks deposited as security for their notes." As an actual matter of fact Secretary Chase organized our national banking system first: For the purpose of procuring money by the sale of United States bonds, and, secondly, to get into circulation a larger amount of legal tender notes, the Treasury Department having found it had then issued all of such notes that the country would or could absorb. By withholding from the national bank notes the legal tender quality, and making them redeemable in legal tender notes, the Treasury was enabled to float some \$200,000,000 of its promises to pay.

The second part of Mr. Benedict's plan requires that silver be coined at the 16 to 1 ratio, the government buying the bullion for such coinage in the open market, it being held that "protection to silver bullion is not the chief factor in silver coinage."

On one point the plan is entirely silent; that is, the amount of silver bullion to be purchased. Whether the government is to continue to buy under the existing law, to buy the entire output of the mines of the United States, or to take all that may be offered is not stated. This is a most fatal defect to the plan. So long as our government buys but a limited amount of silver, the price of the metal is bound to continue to decline and bring all the disasters and difficulties to avoid which is "the silver problem" and a constantly increasing gold reserve fund would be required. If, however, all of the silver offered is to be bought then the government would quickly become insolvent.

Considered in any way the adoption of such a plan could not be other than costly in the extreme. This, however, does not trouble Mr. Benedict, for his universal panacea for all such ills is to sell bonds, for which he claims an unlimited market.

#### BOOKS RECEIVED.

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

*The Money of the United States.* By Henry M. Benedict. New York: Published for the Author. Pamphlet, 32 pages.

*Jahrbuch der Kaiserlich-Königlichen Geologischen Reichsanstalt.* Jahrgang 1892; XLII. Band. Wien, 1893. Pages 280; illustrated.

*United States Department of Agriculture: Experiment Station Record: Volume IV., No. 7.* Washington: Government Printing Office. Pages 75.

*Annual Reports of the Lighthouse Board to the Secretary of the Treasury; Fiscal Years Ending June 30th, 1888, 1889, 1890, 1891 and 1892.* Washington: Government Printing Office.

*Mineral Production of Canada, Years 1886 to 1891.* Elfric Drew Ingall, Head of Division of Mineral Statistics and Mines. Ottawa, Canada: Published by the Geological Survey of Canada.

*Report of the Director of the Mint Upon the Production of the Precious Metals in the United States During the Calendar Year 1892.* Edward O. Leech, Director. Washington: Government Printing Office. Pages, 260.

*A Brief History of Panics and Their Periodical Occurrence in the United States.* By Clement Juglar. Translated from the French and Edited, with an Introductory Essay, by DeCourcy W. Thomp. New York: G. F. Putnam's Sons. Pages 150; price, \$1.

#### CORRESPONDENCE.

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

#### The Bilharz Percussion Table.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In the "Engineering and Mining Journal" of March 11th, on page 221, in an article on the Albert Silver mine, South Africa, you say, "Mr. Eissler is now experimenting with Bilharz's steam vanner." As we have been intrusted by Oberberggrath Bilharz, of Freiberg, Saxony, the well known authority on mining matters and inventor of the table in question, with the sole right of manufacturing his automatic percussion table, we should like to correct your article, giving the proper names, and have much pleasure in sending you a description of the Bilharz device.

THE GRÜSONWERK, per Janicke.  
MAGDEBURG-BUCKAU, Germany, April 21, 1893.

#### Automatic Roasting Furnaces for Cop or Matte.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Permit me to ask your readers, through the medium of your valued paper, whether any of the automatic roasting furnaces such as the Bruckner, Spence, Brown-O'Hara, Stetefeldt or any other has ever been satisfactorily used to produce a fine calcination of silver bearing copper mattes? and whether any automatic furnace could be depended upon to oxidize the copper so thoroughly that no cuprous oxide would be present to precipitate the silver in metallic state from sulphate?

CAMDEN, N. J., May 16, 1893.

GEO. W. WHYTE.

(We do not believe that any of the mechanical furnaces now in use are capable of roasting with such a degree of delicacy that the roasted ore is fit for immediate treatment by the Ziervogel process, as our correspondent obviously intends. That process notoriously requires skilled workmen, and we doubt if this trained intelligence, through which alone this process has been made successful, can be supplanted by mechanical action.—Ed. "E. & M. J.")

#### "The Mineral Industry for 1892"

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: We are just in receipt of a copy of your volume, and have given it careful perusal. We unhesitatingly pronounce it a very useful and valuable publication. The information contained therein we regard as indispensable in our business.

PITTSBURG, Pa.,

WHITNEY & STEPHENSON,  
Members of New York Stock Exchange.

EDITOR OF ENGINEERING AND MINING JOURNAL:

Sir: I am in receipt of a copy of your very valuable and interesting publication of the "Mineral Industry, Its Statistics, Technology and Trade for 1892," for which please accept my sincere thanks. This work has evidently involved an immense amount of labor and research, and we feel assured it will be a great aid in the work of this office.

J. N. WHITNEY.

Acting Chief of Bureau of Statistics Treasury Department.  
WASHINGTON, D. C.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Your admirable volume, "The Mineral Industry for 1892," duly arrived. Permit me to cast my mite of warm appreciation of your enterprise and ability. It has long seemed to me that a "constructive policy" must be and will more be done by private associations and corporations (and good-by to so much political "chatter"), and also that in such constructive policy the tact and ability of a few women, like your business manager, will be felt and welcomed.

BOSTON, Mass., 11, 1893.

CHAS. R. FLEICHER, Chemical Engineer.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I have your volume, bound neatly, of the "Mineral Industry and Statistics, 1892." It is a very remarkable treasury of information of the minerals of the United States and foreign countries. It affords, in a clearly arranged and comprehensive system, the localities and properties of the industrial minerals, with full statistics of cost and amount of production for the year 1892. It also gives the products of the past years, thus affording full data for comparing the relative progress of each industry. It is a monument of the results of persistent and well directed hard work, deserving the sincere thanks, for its great helpfulness, to all engaged in these great industries.

JNO. FULTON.

General Mining Engineer, Cambria Iron Company.  
JOHNSTOWN, Pa., May 11, 1893.

A Geological Expedition.—Princeton College will send out a geological expedition this summer to the northwestern part of Nebraska and Southern Dakota. Professor Scott will have charge of the expedition, and about 15 students will accompany him. The party will leave New York on June 10, and the start will be made from Herronsa in South Dakota. The expedition will occupy nearly the whole summer. Princeton first sent out a geological expedition in 1877.

Prices of Coal in Great Britain.—The average price of two representative grades of coal in England on March 27th was \$2.06 per ton for best hard steam and \$2.44 for best house. These prices are f. o. b. at mine, the shilling being taken at 24 1/2 cents and the penny at 2 cents. The highest priced steam coal was Durham, \$3.40; the lowest Warwickshire, \$1.82. Welsh coal, generally considered good steam coal, was \$2.18, or only a little above the average. For house coal the prices varied from \$4 for Durham down to \$1.88 for Fifeeshire.



## THE WARWHOOB BAUXITE BANK, ALABAMA.

Written for the Engineering and Mining Journal by W. M. Brewer.

The accompanying illustration is from a photograph of the open-cut work in the Warwhoop Bauxite Bank in the Dike district in Cherokee County, Alabama. The work of mining was first commenced on this bank in the early spring of 1892, and a large quantity of bauxite ore was taken out and shipped during that year. The cut shown in the illustration has been run from the west in an easterly direction, the face being 70 ft. in width from north to south, and showing bauxite ore the entire distance across it, though not of uniform grade, because near the center of the surface a horse of kaolin clay was encountered overlaying the bauxite, extending toward the northern side of the cut for a distance of about 20 ft. and dipping toward the floor at an angle of about 40°. Near the floor it gives place to a better grade of bauxite, and the line of the clay horse makes a sharp turn forming a point and takes an upward course at a slightly increased angle to the surface, thus giving to the horse an irregular triangular shape, with the base at the surface and the bauxite ore overlaying the northern line and extending solidly to the northern extremity of the cut, at the left hand corner of the illustration. Another horse of the same character shows on the south side, though of less extent. While this kaolin clay is not of sufficiently high grade to be shipped as bauxite, yet it analyses an average of about 30% of alumina, while the ore exposed in the face generally averages 55% of alumina. The average thickness of the ore body along the face of the cut is 14 ft.; the extreme thickness is 18 ft. at one point, but the floor of the cut has been tested, and found to carry bauxite for a further depth of 12 ft., and the point of the drill still in ore, so that the extreme depth of this deposit has not yet been determined. While the face of the cut only shows 70 ft. in width, yet the surface soil has been stripped for a distance of nearly 120 ft., ex-

and for several months past the Republic Mining and Manufacturing Company has been the only shipper of this mineral, so that much of the interest which was manifested about a year since has abated. The frequent and unexpected changes in the grade of the ore in the same deposit and the limited demand will account for this.

(Since the discovery of bauxite in Alabama and Georgia in 1887 the ore from those deposits has been gradually replacing the imported mineral. In 1889, as the statistics given in "The Mineral Industry for 1892" show, the imports of bauxite into the United States were 28,945,674 lbs., and in 1890, when the Alabama beds first began to be worked to any extent, they were 27,503,730 lbs. In the following year the imports decreased to 17,936,504 lbs., and in 1892 there was a further decrease to 12,804,253 lbs., or about 44% of the amount imported in 1889. The production of bauxite in Georgia in 1892 was 2,000 tons, and in Alabama 7,200 tons; making 9,200 tons in all. The bauxite deposits of Arkansas, discovered in 1891, are not worked as yet.—Ed. "E. & M. J.")

## REPORTS OF THE MINE INSPECTORS OF PENNSYLVANIA FOR 1892.

(Concluded from page 442.)

## BITUMINOUS.

The bituminous coal region is divided into eight districts; the first comprises parts of Allegheny, Washington, Westmoreland and Fayette counties and the whole of Greene County. The mines in this district are inspected by Henry Louttit. Here 24 fatal accidents occurred, an increase of 4 over the number for 1891. The number of non-fatal accidents reported to the inspector was 67, but the operators' annual reports show 87. The total production of coal was 3,332,510 tons; 610,755 tons less than was produced in 1891. The reduction in the product was largely in consequence of a strike among the Monongahela miners



THE WARWHOOB BAUXITE BANK, CHEROKEE COUNTY, ALABAMA.

posing bauxite ore for that distance. No prospecting to the east, to determine the extent of the deposit in that direction has been done. Beyond the northern end of the cut as shown in the illustration, and 16 ft. below the level of the floor, another cut is being run with a southerly course, for the purpose of mining the ore in the floor to that depth, and thereby exposing a face of an average of 30 ft. in thickness. The last-named cut has been run 36 ft. from the mouth, exposing bauxite ore at a point about 25 ft. from the mouth, and about 20 ft. to the north from the present northern end of the open cut as shown. This bank is certainly a pocket deposit, and shows no stratification, but it is about one and a half miles directly northeast of the Washer bank on the Bass Furnace property, and in the same course a half mile further to the northeast other deposits known as the Terry and Carr banks occur; therefore it would appear probable that a ledge of bauxite runs for a distance of two miles at least in a northeasterly and southwesterly direction. Parallel to this ledge and about 600 ft. distant is another of about the same length, but the ore in these is not of as good grade as that found in the Washer and Warwhoop banks.

While work is being carried on slowly and irregularly at the Warwhoop, it is being pushed at the Washer, where a large force of men are regularly employed. The open cut here shows a face of ore nearly 40 ft. in thickness and about the same across or in width. This cut has been run from the west in an easterly direction; it is about 200 ft. in length, and the last 100 ft. through solid ore, which has been mined to a width of about 40 ft. and at some points more for that entire distance. In this bank a hanging wall of iron clay overlays the bauxite ore, which shows stratification and a regular dip of about 45° toward the southwest, but the extreme width of the orebody is yet undetermined, as also is the depth. This bank is, so far as prospecting has developed, at the extreme southwest of the Dike district. No other bauxite deposits in Alabama have yet been opened except to prospect,

against the reduction of  $\frac{1}{2}$  cent per bushel, but as the railroad mines increased their output somewhat the reduction is less than it would otherwise have been. The number of days worked was 10,560, and 9,393 persons were employed. The condition of the mines with respect to ventilation and drainage is steadily improving, and there is a general disposition on the part of the operators to obey the provision of the law regarding the safety and welfare of their employees.

The second district comprises parts of Allegheny and Westmoreland counties, and is inspected by William Jenkins. There are 85 mines in the district and all, excepting four, are in very fair condition; most of them, indeed, are in excellent condition. Of the 85 mines 74 were operated during the year, three were abandoned and five were opened. The number of persons employed in the mines was 9,090; number employed outside, 2,919. The total number of days worked by all the mines was 14,561½; and the average number of days that 64 mines were in operation was 221. The total production was 8,033,246 tons; number of tons shipped, 3,068,476; number of tons of coke manufactured, 2,296,788; number of tons of coal mined for each fatal accident, 320,760; for each non-fatal accident, 195,589; number of employees for each fatal accident, 480; for each non-fatal accident, 292. The increase in coal production over 1891 was 1,281,631 tons, and in coke production, 536,524 tons. The district has been free from strikes and other troubles during the year.

The third district comprises parts of Indiana, Westmoreland and Jefferson counties, and the whole of Armstrong, Butler, Clarion, Lawrence and Mercer counties. The mines in this district are inspected by Thomas K. Adams. The production was 3,207,814 tons; and a life was lost for every 1,608,907 tons produced. There were 26 non-fatal accidents during the year. The causes of these accidents may be thus classified; six by falls of roof, 10 by falls of coal, eight by mine wagons, and four by miscellaneous causes. Three new mines were opened dur-

TABLE SHOWING PRODUCTION OF COAL AND COKE, AND NUMBER OF EMPLOYÉS BY COUNTIES IN THE BITUMINOUS COAL REGION OF PENNSYLVANIA.

Counties.	Tons coal.					Tons coke.					Employés.				
	1888.	1889.	1890.	1891.	1892.	1888.	1889.	1890.	1891.	1892.	1888.	1889.	1890.	1891.	1892.
Allegheny.....	4,885,053	4,711,156	6,376,954	6,209,598	7,227,369	37,909	34,011	319,645	10,392	.....	10,348	9,708	11,916	12,275	13,445
Armstrong.....	224,781	239,586	385,920	299,945	307,109	4,320	14,012	.....	11,314	.....	531	458	779	573	494
Beaver.....	45,800	36,864	101,781	139,111	177,839	.....	.....	.....	56	.....	89	103	214	264	445
Bedford.....	237,861	270,652	319,917	413,537	565,761	34,201	25,159	78,201	41,757	25,876	569	665	527	869	1,412
Blair.....	255,211	398,137	395,716	218,955	278,495	121,268	43,240	68,402	79,252	101,117	575	1,050	631	614	638
Butler.....	191,146	185,919	152,488	160,213	132,040	3,740	6,153	4,720	.....	.....	399	396	285	292	356
Bradford.....	163,821	129,056	125,707	68,697	98,242	.....	.....	.....	.....	.....	380	321	295	169	.....
Clinton.....	.....	39,074	158,000	131,619	.....	.....	.....	.....	.....	.....	.....	134	195	210	173
Cambria.....	1,591,133	1,450,952	2,457,573	3,083,078	3,289,297	194,074	213,884	296,137	393,899	217,138	3,291	2,906	4,218	5,179	5,641
Centre.....	439,121	557,203	376,596	490,300	372,431	20,355	5,821	42,855	63,976	.....	693	60	538	858	729
Clarion.....	558,089	506,736	495,658	359,068	441,409	9,029	240	.....	.....	.....	1,198	1,061	985	1,346	1,224
Clearfield.....	5,625,306	5,235,172	6,759,422	6,762,630	6,663,056	108,632	86,744	203,308	197,793	10,568	8,077	8,620	9,356	10,254	10,781
Cameron.....	1,024	1,800	.....	.....	.....	.....	.....	.....	.....	.....	7	32	.....	.....	.....
Elk.....	547,818	611,318	766,917	739,058	726,852	2,505	32,864	4,864	2,500	17,181	1,111	1,287	1,303	1,365	1,243
Fayette.....	5,216,683	5,889,244	6,908,177	5,747,700	7,767,103	3,218,251	3,618,297	3,938,224	3,091,174	4,269,225	8,375	9,438	10,301	10,966	11,459
Green.....	5,304	3,216	.....	.....	.....	.....	.....	.....	.....	.....	19	9	.....	.....	.....
Huntingdon.....	275,700	246,234	306,782	278,938	350,205	76,292	48,805	52,825	.....	41,604	615	257	585	597	668
Indiana.....	159,223	185,381	315,968	539,818	619,351	21,600	83,700	42,995	105,623	29,109	218	362	691	822	988
Jefferson.....	2,275,616	2,783,814	3,047,332	3,799,752	3,684,777	.....	301,122	312,398	439,942	394,495	3,762	4,133	4,314	5,623	5,973
Lawrence.....	106,921	140,103	136,687	172,197	83,559	.....	.....	.....	.....	.....	257	279	283	368	267
Lycoming.....	.....	.....	.....	.....	17,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	60
McKean.....	10,443	.....	11,483	15,737	21,058	.....	.....	.....	.....	.....	16	.....	26	31	44
Mercer.....	480,993	508,236	491,835	579,770	370,947	.....	.....	.....	.....	.....	1,122	1,111	973	1,088	849
Somerset.....	351,177	528,175	275,554	441,079	480,179	2,000	26,360	20,270	26,657	11,745	584	736	433	576	625
Tioga.....	1,075,296	1,206,135	875,406	593,400	961,756	36,817	2,822	2,140	1,982	1,693	2,410	1,356	2,044	1,969	2,221
Washington.....	1,631,639	1,679,577	2,341,242	2,464,967	2,678,969	1,910	1,200	2,700	1,000	.....	4,178	4,531	4,193	4,730	5,409
Westmoreland.....	7,222,245	6,116,209	6,308,155	7,303,639	8,696,463	2,128,723	2,382,560	2,912,144	2,185,099	2,617,154	12,052	11,93	12,789	12,988	13,088
Totals.....	33,611,256	33,852,959	39,891,225	41,692,700	46,018,247	6,087,823	6,986,961	8,302,929	4,383,678	7,831,605	60,916	61,161	67,874	74,026	78,235

ing the year, making the number of mines now in the district 73. The number of miners employed was 4,491. There was a decrease in production of 153,736 tons.

The fourth district comprises McKean, Potter, Tioga, Bradford, Sullivan, Lycoming, Clinton, Cameron, and Elk counties, and also a portion of Jefferson County. The mines in this district are inspected by James N. Patterson. The general condition of the mines throughout the district is much improved, but fatal accidents increased in number over the previous year, while there has been a diminution in the number of non-fatal ones. Four of the fatal accidents were purely accidental, and the others were largely due to the carelessness of the miners. The number of mines in the district is 72; tons coal mined, 3,606,147; number of days worked, 6,809½; number of miners employed inside, 5,818, and number employed outside, 887.

The fifth district comprises parts of Fayette and Somerset counties. The mines in this district are inspected by William Duncan. The total production of coal was 7,360,108 tons, an increase of 1,896,307 tons over the production of 1891. There were 23 fatal accidents, 18 of which were caused by falls of roof and five by mine wagons. In all 60 non-fatal accidents occurred, of which 17 were caused by falls of roof, 33 by mine wagons, four by mules, two by dynamite, three by falls of coal and one by a fall from a scaffold. The inspector says that the non-fatal accidents show an increase of 18 over the number for the previous year, but the increase is accounted for by a more careful report made by the mine bosses of slight injuries which formerly were not noticed. The number of mines in the district is 89; number of miners, 6,457, and the number of persons employed outside, 3,958. The number of tons of coal produced per life lost was 320,004; number of persons employed per life lost, 280; number of persons employed per non-fatal injury, 107. The mines were in operation 18,369 days.

The sixth district comprises the whole of Blair and Cambria counties and parts of Clearfield, Indiana, Jefferson, Westmoreland, and Somerset counties, and J. T. Evans is inspector. The total production of coal was 7,360,158 tons, an increase of 360,158 tons over the production of 1891. The number of fatal accidents was 14, an increase of one over the previous year. There was an increase of one in the number of non-fatal accidents. The inspector says that in investigating the causes of accidents he finds that seven who were killed were not practical miners, and that a majority of them did not understand our language, and consequently could not be informed of the dangers existing or how to avoid them. More care should be exercised in employing men and in determining in what parts of the mines they should be put to work. Until this is done a decrease in the accidents can not be expected, as it is unreasonable to suppose that inexperienced men can avoid the many dangers of our mines when they do not know that they exist. The number of miners employed in this district was 12,211; the number per fatal accident, 872; number per non-fatal accident, 581; number of tons mined per fatal accident, 525,725; number of tons mined per non-fatal accident, 350,483.

The seventh district comprises parts of Allegheny, Washington and Westmoreland counties. The mines in this district are inspected by James Blick. Most of the mines in this district that ship their product by river transportation were operated but a few months during the year, partly on account of the drought during the summer months and partly on account of disputes concerning the price of mining. Operations at some of the railroad mines were greatly lessened for want of transportation facilities to move their product to market. The irregular operations during 1892 are attributed to the large number of mines opened during the past two years, together with the fact that many of the older operators have of late increased their producing capacity very materially. To remedy it the railroads must add to their equipment or some other mode of transportation must be obtained. He says that the sanitary condition of most of the mines is improving, and that many of the old ventilating appliances are being displaced by others which give effective results. The number of fatal and serious personal injuries have increased in this district during the year, which is largely due to the number of foreigners now employed in the mines. These men do not understand our language and know nothing whatever about underground work, or the dangers connected therewith, and are utterly incompetent to protect themselves; and in mines generating much gas a general willfulness and disregard of the impending dangers by a considerable number of the employees is a standing menace to the safety of all. The number of fatal accidents during the year was 25, an in-

crease of eight over the number for 1891. The number of non-fatal accidents was 56, an increase of seven over the number for the previous year, but, the inspector adds, in this connection we should take into consideration that there was a large increase in the production. The quantity of coal produced per life lost was 235,918 tons. Of the 14 men killed by falls of coal and slate seven were incompetent to detect and guard against the danger that caused their deaths, and of the other seven it is evident that three lost their lives through their own carelessness.

The eighth district comprises Bedford, Centre and Huntingdon counties, and also a part of Clearfield County. The mines in this district are inspected by D. H. Thomas. He reports that 335 visits were made during the year to 126 mines, and that some of the mines were visited several times while a few were visited but once. Four mines have been worked out and abandoned during the year, and several new ones have been opened. The number of accidents has diminished, 12 fatalities being reported by him and 55 non-fatal accidents. The total production was 6,843,781 tons, and of coke, 121,475 tons; number of days worked, 24,765; total number of persons employed, 11,883. The variety of nationalities in the mines is shown by the statement that among the 12 men killed six were Hungarian and Slavs, three English, one Irish, one Belgian, and one native born. The 55 injured included 16 Hungarians and Slavs, 13 native born, nine English, three Irish, three Belgian and French, six Scotch, three Swedes, and two Welsh.

The accompanying table shows the coal and coke production and the number of persons employed during the last five years.

## MINERAL PRODUCTION OF NEW SOUTH WALES.

The accompanying table shows the mineral product of New South Wales for the years 1890, 1891 and 1892, those for last year having been courteously furnished us in advance of their publication elsewhere by Mr. T. A. Coghlan, Government Statistician of the colony. The tons in the table are the long ton of 2,240 lbs.; in transferring the values to American currency, £1 is taken as equal to \$5.

Minerals.	1890.		1891.		1892.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold.....oz.	127,761	\$2,301,425	153,335	\$2,241,530	156,870	\$2,845,890
Silver.....do.	495,552	477,050	729,590	674,250	390,661	284,430
Coal.....tons.	3,060,876	6,395,445	4,087,929	8,713,980	2,780,968	7,311,945
Shale.....do.	56,019	520,515	40,349	390,800	74,197	680,395
Coke.....do.	31,097	205,735	30,310	172,365	7,899	44,260
Tin.....do.	.....	895,285	.....	669,815	.....	764,970
Copper.....do.	.....	420,535	.....	595,975	.....	572,795
Antimony & ox., tons.	1,026	101,200	914	110,285	728	73,400
Bismuth.....do.	2	1,530	4	2,500	11	5,400
Silver-lead & ores, tons.	131,040	13,335,720	147,779	17,423,695	133,355	12,104,760
Manganese.....do.	106	1,625	138	1,700	16	235
Oxide of iron.....do.	455	4,420	229	2,170	453	4,345
Zinc spelter.....do.	210	11,890	191	13,110	145	25,275
Lead (pig).....do.	126	7,935	159	10,125	71	8,630
Limestone (flux).....do.	41,437	209,945	74,057	326,785	103,368	465,155
Alumite.....do.	220	15,000	704	9,440	821	16,420
Opal.....pounds.	195	78,000	.....	.....	42	10,000
Cobalt.....tons.	.....	.....	1,115	2,350	76	5,550
Fireclay.....do.	.....	.....	17	275	35	400
Lime.....do.	.....	.....	410	4,790	403	4,110
Marble.....packages.	.....	.....	635	12,885	.....	.....
Stone (building).....pes.	.....	.....	4,735	26,025	2,478	14,190
(allast).....tons.	.....	.....	619	3,565	224	1,380
Grindstones.....pieces.	.....	.....	471	1,555	.....	.....
Slates.....do.	.....	.....	31,231	1,735	.....	.....
Sundry min'r's, tons.	973	36,260	789	16,080	92	5,790
Total.....	.....	\$25,019,515	.....	\$31,977,805	.....	\$25,244,715

The reduction shown last year in the output of silver, silver-lead and ores was due to the disastrous strike at the Broken Hill mines, which stopped work there for about three months of the year.

Argentine Trade.—The minerals exported from the Argentine Republic during 1892 reached the value of \$650,000 only, against \$1,350,000 in 1891, a decrease of \$700,000. The aggregate value of Argentine trade, imports and exports was \$204,100,000 in 1892, against \$166,200,000 in 1891, an increase of \$37,900,000.



## THE BROWN AND ALLEN IMPROVED O'HARRA ROASTING FURNACE.

This roasting furnace, which is in use throughout the West, is an improvement over the original O'Harra furnace, being so modified that the expense of repairs, which was an important factor in the cost of working in the old furnace, is now considerably reduced. The furnace is now made with stirrer carriages and a mechanism which moves the plows entirely outside of the roasting hearth. The chains are not, as in the former furnace, exposed to the flames, heat and the action of the chemical constituents of the ore. A slotted wall cuts off the moving mechanism from the hearth, and, at the same time, the friction is so reduced that the power formerly found inadequate for operating two stirrers is now sufficient for six.

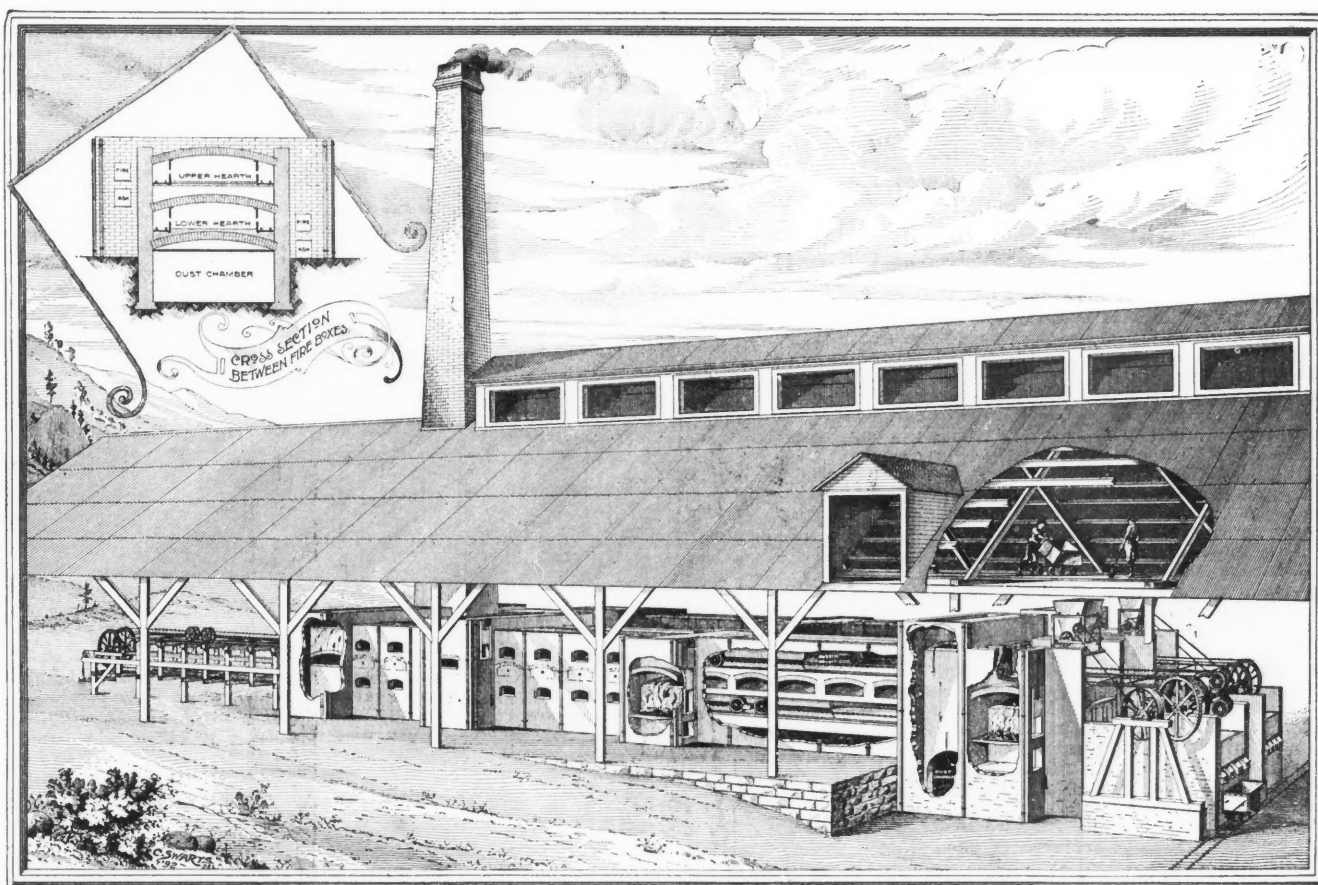
The operation of the furnace is easily understood from the accompanying illustration. The ore is fed into the hopper from a car or by any other convenient means, and is then charged to the hearth by an automatic feeder, so arranged that when loaded with the proper weight of pulp, it drops down, throwing all the mechanism out of gear, and remaining in that position until the passage of the next stirrer, which pushes it back into place ready for another charge. This operation can be repeated with the passage of each stirrer, and any desired amount can be fed, according to the weights with which the feeder is balanced. The ore is gradually worked through the upper hearth to the opposite end of the furnace,

## ABSTRACTS OF OFFICIAL REPORTS.

## PHILADELPHIA AND READING COAL AND IRON COMPANY.

The annual report of this company, as issued in pamphlet form, is brief, and gives only a general outline of its operations during the year ending November 30th, 1892. A comparison with the previous year is made difficult, on account of the partial including of the operations of the Lehigh Valley and the Lehigh & Wilkes-Barre coal companies during 1892.

The company sold during the year 12,062,804 tons of coal, the price realized averaging almost exactly \$3 per ton. The coal mined by the company itself was 7,163,173 tons; the average cost, including repairs and improvements, being \$1.53 per ton. Of the coal mined, 5,744,840 tons were from its own lands, and 1,418,333 tons from other lands; while, in addition to the amount named, 586,765 tons were mined by tenants on the company's lands. Besides the coal mined, the company purchased 5,806,116 tons, at an average cost of \$2.03 per ton. The coal purchased was made up as follows: From Lehigh & Wilkes-Barre Coal Company and its operators, 2,129,254; from Lehigh Valley Coal Company and Lehigh Valley operators, 3,486,862; from Schuylkill operators, 190,000; total, 5,806,116 tons. The average working time for the year was 200.4 days; the average output per day, 35,744 tons. For seven years the averages have been: Working days per year, 215.6; tons mined per day, 30,444. The coal mined by the company showed a de-



BROWN-ALLEN IMPROVED O'HARRA ROASTING FURNACE.

where it is dropped upon the lower hearth and then worked back until discharged. The furnace is fired from fireboxes constructed outside of the main walls, and the heat is conducted to the roasting hearth through cross arches, entering through the roof. These are so placed and so connected, that while a uniform heat is maintained along the greater length of the hearth, it increases in intensity as the ores near the discharge.

A furnace of average size has a roasting hearth 8 ft. wide in the clear and about 90 ft. long, or, including the lower stage, a continuous hearth of 8 ft. wide by 180 ft. long. To take care of a furnace, one man only on a shift is required, the whole action being automatic. The cost of roasting, while varying somewhat, according to the cost of material and labor, will average between 75 cents and \$1 per ton, including repairs. The capacity of such a furnace is about 35 tons per day, and the results are substantially as follows: When the ore is crushed reasonably fine, and 20 tons per day are treated, the calcined ore averages from 1 to 2.1% sulphur. If from 25 to 28 tons per day are treated, the calcines run from 3 to 3.5%. If 30 to 35 tons are roasted, the calcines run from 3.5 to 5%, and if the furnace is pushed to its maximum capacity, from 35 to 40 tons of roasted ore, they carry an average of about 6%.

The power required to drive this furnace is about 2½ H. P. for an average of 35 tons per day. The cost of construction varies somewhat with local conditions, but runs from \$8,000 to \$12,000 per furnace, including the necessary stacks. To date, 21 of these furnaces have been built and placed in operation, and two are now near completion. They are manufactured by Fraser & Chalmers, Chicago, Ill.

crease from 1891 of 411,493 tons, or 5.4%. The company received coal rents on 321,944 tons, an average of \$0.28 per ton, and paid an average royalty of \$0.41 per ton on 1,726,053 tons from leased collieries.

The receipts were: From coal sales, \$36,184,164; from coal, land and other rents, \$213,530; from interest and dividends, \$160,070; making a total of \$36,557,764. The expenses were made up as follows: Mining coal, repairs and improvements, \$10,915,539; coal purchased, \$11,734,562; coal royalties, \$707,198; permanent improvements, \$112,338; taxes, repairs and other expenses, \$1,801,581; transportation of coal by rail, \$13,417,753; boat and lake freights and shipping, \$1,824,894; total, \$40,513,865. From this is deducted \$5,229,249 as value of coal added to stock, leaving the net expenses \$35,284,616. Deducting this sum from the gross receipts leaves a balance of profit of \$1,273,148 for the year. Against this is charged \$1,248,809 interest and sinking fund, leaving a surplus of \$24,339, which contrasts with a deficit of \$332,861 for 1891. Several things are to be noted from this statement. The net surplus after paying interest was only 0.03% on the cost of the property as given in the report. Practically nothing appears to have been spent on permanent improvements, for the small sum charged to that account bears no appreciable relation to the cost of the property or the amount of coal mined; and finally, no charge or allowance appears for depreciation of property or on account of coal taken from the company's estate.

The balance sheet shows the fixed liabilities of the company to amount to \$85,196,408, made up of \$8,000,000 capital stock; \$12,579,106 bonds and real estate mortgages, and \$64,617,302 due to the Philadel-

phia & Reading Railroad Company, of which the sum of \$39,737,966 is covered by bonds and mortgages executed to that company. The floating liabilities include \$8,190,785 bills, accounts and current liabilities; \$59,980 sinking fund accounts; \$405,841 surplus account, and \$4,595,263 due to the Reading Railroad Company on current accounts; \$3,276,449 being for interest and \$1,318,814 for freight and tolls. The total amount of liabilities shown is thus \$98,448,277. The assets show the cost of coal and ore lands, real estate, furnaces, buildings, shops, colliery equipment and other property to have been \$79,287,547, and of stocks and bonds of controlled companies \$3,292,925, making the fixed investments \$82,580,472. Supplies, materials and miscellaneous accounts amount to \$945,680; cash, accounts and bills receivable to \$6,031,663; coal and iron ore on hand to \$7,585,992; making the total valuation of assets \$97,143,807. The balance of \$1,304,470 represents the debit charge to profit and loss, or the losses on the company's business to the date of the report.

The company has had in operation for some time a beneficial insurance fund for its employees. During the year covered by the report this fund received \$110,216 from 24,449 contributors, the average payment being \$4.51 each. Payments made were: \$67 dues refunded; \$28,079 to families of 152 contributors killed, and \$96,738 to 3,838 contributors injured. The average payment for death was thus \$184.75, and for injury \$17.39. The numbers given afford some indication of the number of casualties among the company's employees.

#### STANDARD CONSOLIDATED MINING COMPANY, BODIE, CAL.

The report of this company for the year ending January 31st., 1892, says that the company paid three dividends of 10 cents per share each, aggregating \$28,354, with another payable in March; had a cash balance on hand of \$43,335, and had besides invested \$22,584 in a water power and electric transmission plant. The necessity for this investment is made apparent by the statement that in 1891 the company expended \$21,360.75 for mill fuel, or an average of \$1,780 per month. In 1892 the expenditure for the same was \$22,758, or an average of \$1,897 per month. The object of this investment in water power and electric plant is to reduce the excessive cost of motive power at Bodie. More bullion was produced last year than in any year since 1887. It is considered that the mine looks as well if not better than it did at this time last year. While prospecting work in some places has been utterly fruitless, in others it has met with very fair success, notably so in the 400-ft. level, both northern and southern portions; and a larger amount of low to fair grade ore is in sight in the mine than has been the case for a number of years past. It is a necessity to keep prospecting and development work as far as possible in advance of the requirements of the mill, since in many places in the mine the working is on feeders to the main veins and remnants of ore in old stopes, that may give out when least expected to do so. President T. H. Leggett says: "It is impossible to make definite promises for the future, based on calculable quantities and values of ore in sight. It can be stated, however, that the property is in a very fair condition; and the ore reserves, though not quite up to the average in grade, are a good half year in excess of the needs of the mill, while the prospecting work continually carried on in the old south stopes bids fair to discover seams of high grade ore sufficient, with those already opened, to raise it to standard value. Moreover, important improvements in surface plant are under way, which, in reducing the cost of milling, will enable us to work lower grade ore at a profit, thus extending the life of the mine, and tending toward a continuance of the dividends."

The total amount of ore mined was 16,336 tons at an average cost of \$6.14 per ton. There were 8,658 tons of waste run out. The new work done was: Drifts driven, 2,231 ft.; cross-cuts driven, 1,222 ft.; upraises 1,378 ft.; winzes sunk, 230 ft.; old drifts reopened, 1,065 ft. The total cost of working, per ton, was: Mining, \$6.14; ore transportation, \$0.113; milling, \$3.525; superintendence and other expenses, \$0.804; total, \$10.582. For the previous year the expenses were \$11.62 per ton, showing a material reduction last year. The old Bulwer-Standard 30-stamp mill was torn down. From the clean-up, lumber, etc., this company's share was \$7,702.

The bullion product for the year was \$239,382. Other receipts were \$4,165, making a total of \$243,547. Expenses were \$208,048, and dividends \$30,537, leaving a surplus of \$4,967, which, added to the balance at the beginning of the year, left \$43,335 on hand at its close. The total bullion product for the 14 years, 1879-1893 has been \$4,486,265, and the total amount paid in dividends \$4,592,257.

During the year 16,336 tons of ore were crushed in the 20-stamp mill at an average cost, including all treatment, of \$3.525 per ton. The mill ran 357½ days, the average duty per stamp per day being 2.42 tons. The stamps weigh 750 lbs., have a drop of 6 to 7 in., and the usual speed is 104 drops per minute. The screens are of punched fin, 104 mesh. The average value of the ore was \$17.93 in gold and \$1.99 in silver, or \$19.92 per ton in all. The amount saved was 72.8%. Of the free gold \$55% was obtained from the apron plates and 14.5% from the battery sands. The total product was 11,121.4 oz. fine gold, and 12,291.3 oz. silver. There were 123½ tons of concentrates treated, having an average value of \$58.97 in gold, and \$30.86 in silver; a total of \$89.83 per ton. These concentrates from the free vanners were treated by pan ton. These concentrates from the free vanners were treated by pan ton. These concentrates from the free vanners were treated by pan ton. In the previous amalgamation, with an average extraction of 80.6%. In the previous report it was stated that a further yield would be obtained from the tailings of these concentrates after their exposure to oxidizing influences. Last summer these tailings were plowed over several times and then amalgamated, 134 tons being put through the pans before winter weather froze up the tailings bed. A very base bullion was purposely made, barely 100 fine in gold and silver, but the extraction was very good for such material, averaging 67% and raising the total extraction on the original concentrates to 93%, which is certainly as good as can reasonably be expected from any method of treatment. The tailings from the concentrators after passing through two pointed settling boxes to get rid of the excess of water, are amalgamated by the Boss continuous pan system; the yield being 67.2% of their assay value, or an average of \$12.47 per ton. Salt and bluestone have proved efficacious in aiding amalgamation in the pans, while the use of acid, advocated by Mr. M. P. Boss, was dis-

continued, as it was more expensive and gave no better results. While the work of this continuous pan system can hardly be considered good, the method is maintained in default of a better, and because it is cheap and shows a tolerable profit. As stated in the last report, the Gold and Silver Extraction Mining and Milling Company in Denver, to whom was sent a ton sample of these tailings, obtained an extraction of 46% after 12 hours' agitation of the pulp in a 0.5% solution of cyanide. The Noble Mining and Milling Company also tested a 200-lb. sample of vanner tailings, and have since reported an extraction of but 38%. Neither of these processes show a sufficiently higher extraction over that yielded by the present method to cover the royalty and the extra cost of either process.

The report is very full in its statements and is accompanied by maps showing the property very completely; these maps were made by Mr. Leo von Rosenberg and have been well executed.

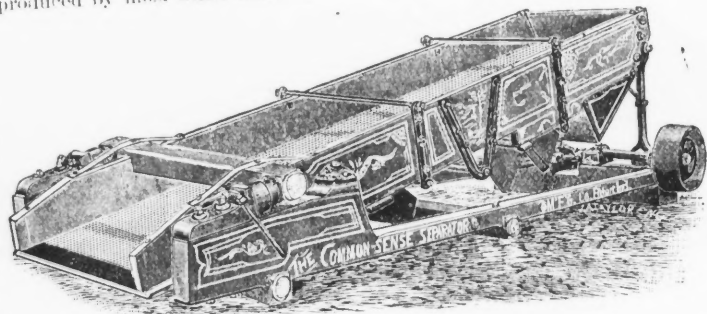
#### MINING AT THE COLUMBIAN EXPOSITION.

##### SOME SPECIAL EXHIBITS.

A very complete diamond exhibit is made by Cape Colony, South Africa. The exhibit includes 10,000 carats of uncut stones, a large quantity of very fine cut and polished ones, together with all that is necessary to show the process of mining and washing. For this it has been necessary to transport to Chicago 100 tons of pulverized blue earth, 50 tons of unpulverized earth and a complete washing machine, which will be operated by natives. The exhibit will also include a unique collection of crocidolite and special diamondiferous products.

The directors of the celebrated Ward Museum, of Rochester, N. Y., have spent \$25,000 in making their display in the Mining Building of specimens from all parts of the world. The exhibit has an estimated value of \$100,000.

A copper exhibit, the largest and most extensive ever attempted, will be made by the Calumet & Hecla mines. In speaking of it, the company's chemist says it will include "obelisks of pure copper, ranging in weight from 50 to 500 lbs., also quantities of wire and sheet copper that has been drawn and rolled from the native metal, just as it was taken from the mines; rods of copper bent into different shapes, and even tied into knots, as one would tie a cravat, without breaking or splintering, as would be the result of such an operation on the copper produced by most other mines."



THE COMMON SENSE SEPARATOR.

The H. C. Frick Coke Company has made its principal exhibit at the World's Fair a working model of the Standard shaft, of which Mr. Ramsey was the designer and builder. To complete the task will require more intricate workmanship than that taken to construct the original, which is called "the model of the region." The company has 50 ft. space at the Exposition, and 40 ft. of this will be taken up by the model, while in the remainder of the space will be shown samples of crushed coke, and a topographical chart of the Connellsville region, with the location of the different Frick plants and farms.

One of the leading items in the exhibit of mining machinery made by Fraser & Chalmers, of Chicago, is the Riedler pumping engine, an engraving of which is given herewith. This type of pump has found much favor abroad, especially for deep mines, and is also working successfully in this country. The pump valves have a liberal lift, to avoid any throttling, and are worked by a positive gear securing their regular action and preventing any danger of sticking. These valves, it is claimed, require smaller sized seats to be kept tight; also smaller size of valve chambers, secure great safety, especially in the construction of high-pressure pumps of large sizes. They are so arranged that they open freely and automatically at full lift at the commencement of the stroke, but at or near the end of the piston stroke they are controlled by a quick-acting positive motion, thus enabling the pump to be run at a very high speed, while in ordinary pumps the speed is limited because the valves do not operate quickly enough. The mechanism for operating them is exceedingly simple. Each valve is closed at the moment the stroke of the piston changes, and this closing is done by means of a spindle projecting into the valve chamber. The valve motion can be driven through the same eccentric which operates the steam valve, and consists simply of small rods connected with the valves. Provision is made for variable pressure, or for any solid substance which may get between valve and seat. The whole is simple in construction and easy to understand and adjust. The pump is simple in construction and easy to understand and adjust. The pump proper may be built in the form of two or three single-acting plungers or a piston pump. That shown, which was built for the mines of the Boston & Montana Consolidated Mining Company, at Butte, Mont., is driven by a twin compound condensing Corliss engine with 16-in. diameter initial cylinder, 25-in. diameter expansion cylinder, 24-in. stroke of piston. The cylinder heads and sides are steam jacketed. The pump has two differential plungers of the same stroke, 24 in., the large end being 8 in. diameter, and the small end 5½ in. diameter, made of bronze. The pump has ample capacity to pump 900 gals.



per minute from the 600-ft. level; it is so built that it may be later on removed to the 1,200-ft. level. All the change required in case of such removal would be that the plungers will have to be taken out and others of one-half the capacity substituted. Considering the small size of the plungers, such a change would be inexpensive. The pumps are built strong enough to withstand the pressure due to 1,200 ft. head of water.

The pumps are of the differential type, arranged so that on the forward stroke water is drawn in from the suction tank by the large plunger, while at the same time the small plunger forces out into the delivery pipe a volume of water equal to its displacement. On the backward stroke the large plunger forces the water drawn in at the previous stroke. Of this water one-half is discharged into the delivery pipe, while the other half fills the space vacated by the small plunger. In this manner the delivery of the pump is constant for each stroke. In Europe pumps of this type are raising water in one lift 1,800 and 2,200 ft. at high speed.

The smaller illustration shows a device which the inventor, P. F. Poorbaugh, of Elkhart, Ind., calls "The Common-Sense Separator," and which is intended to grade and separate crushed ores, concrete sand and similar materials. The machine has a positive shaking motion, and is arranged to carry heavy loads. The adjustable rubber jars shown in the cut will clear the mesh and assist in the screening power. The tightening rods keep the wirecloth on a tight tension, and the

#### RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

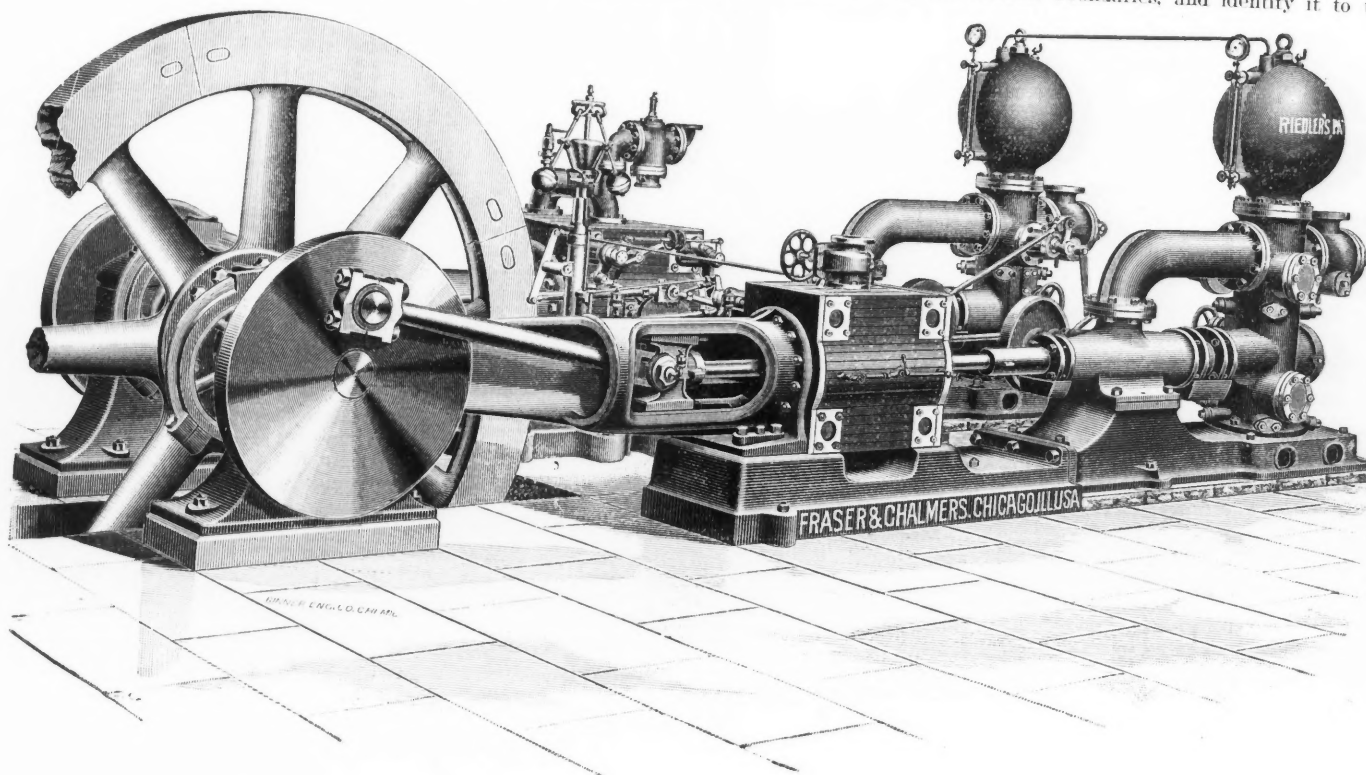
Supreme Court of Appeals of West Virginia.

Oil and Natural Gas Leases—Performance of Conditions—Forfeiture—Ejectment—Prerequisites of.

Action of ejectment by The Fleming Oil and Gas Company vs. The South Penn Oil Co. et al.

1. When a lease for oil and gas purposes contains a covenant that the lessee shall commence operations for a test well within one year from date thereof at some point within the district in which the leased premises are located, and complete the well in 18 months after its commencement, and before expiration of the time the well is located by surveying and leveling the timbers which are afterward used in constructing the derrick at said location are cut down and hewn; a contract is made with a party for drilling the well; and the machinery is ordered to be hauled to said location, but neither the timber nor machinery is hauled to said location in time, because of impassable roadways; said well is, however, completed in less than 18 months after date of lease—the lease is not liable to forfeiture on the ground that operations were not commenced within a year from date thereof under such circumstances.

2. Before plaintiff in ejectment can recover, he must claim the land in his declaration by its exterior boundaries, and identify it to that



THE RIEDLER PUMPING ENGINE FOR MINE WORK.

strength of the cloth is not depended on to stiffen the machine. The largest size weighs less than a ton. A number of them are now in use in the gold mines of South America.

A lump of coal measuring  $5 \times 5 \times 26$  ft., and weighing 50,000 lbs., or twenty-five tons, is exhibited at the Washington State Building. It is out of the Roslyn mine in Kittitas County, between Seattle and Tacoma, and is one of the largest blocks of coal ever mined. The Roslyn mine is owned by the Northern Pacific Railroad Company. The expense of getting this immense piece of coal to the surface reached nearly \$1,000. The coal is semi-bituminous. Among other large lumps of coal at the Exposition is one from the Wigan Junction Colliery, Lancashire, England, weighing nearly 12 tons. A lump stands at the west entrance to the Mines Building, taken from the George's Creek mines in Allegany County, Md. In size it is  $3 \times 4 \times 15$  ft., and weighs in the neighborhood of 10 tons.

**Early Locomotives.**—The old locomotive "John Bull," one of the first used in this country, recently went to Chicago under steam, pulling a train of two of its contemporary passenger cars. The "John Bull" was built by Stephenson in England in 1831 for the Camden & Amboy Railroad, and was the first locomotive on that road. It was in service for 20 years, and has since been carefully preserved. It was exhibited at the Centennial in Philadelphia in 1876. The engine has cylinders 9 in. in diameter and 20 in. stroke, and is carried on four 54-in. wheels, two of which are drivers. It was not, as has been stated in many places, the first locomotive run in America, that honor being claimed for the "Stourbridge Lion," which was run on the Delaware & Hudson Canal Company's road at Honesdale, Pa., in 1829. The "Stourbridge Lion," although the first to run, was not the first to reach this country; the "America," built by Stephenson for the Delaware & Hudson Company, having arrived in New York some months earlier. The road was not yet ready for it, however, and it was stored up and never used.

extent. If the defendant is entitled to exceptions or reservations he may show the fact as a matter of defense.

Judgment for plaintiff in court below reversed and new trial for defendant awarded.—English, J.—Opinion, March 22d, 1893.

United States Board of General Appraisers.  
Duty on Natural Gas.

The Buffalo Natural Gas Fuel Company imported from Canada, by pipes under the Niagara River, natural gas to be used for illuminating purposes, and the Collector of Customs levied a duty of 10% under the act of October 1st, 1890. The company claimed exemption from this duty on the ground that natural gas was "a crude mineral" and did not come within the meaning of the statute.

During the investigation of the case by the Board of Appraisers, several well known geologists and chemists were examined. The decision, which was rendered by Appraiser Wilkenson, states that the natural gas in question is similar to that produced in Pennsylvania, New York and Ohio, but as it was not imported prior to the passage of the act of October 1st, 1890, there were no precedents to guide the action of the board. Under these circumstances, the board took into consideration the definitions given by lexicographers and mineralogists of the word "mineral," as well as decisions recently given by the courts in Canada, and rendered the following decision in the case: "We find that natural gas is a crude mineral, and sustain the claim that it is exempt from duty under Paragraph 651 of the Tariff Act."

**Amber.**—In the "Mineral Industry" for 1892, it is stated that the amount of amber obtained by dredging along the coast of the Baltic has been declining for several years. We are now informed that Messrs. Stantien & Becker, who have had a monopoly of the business, have decided to give it up altogether as unprofitable, and have advertised for sale their plant, consisting of two steamers and 15 dredges.

## MINERAL AND METAL PRODUCTION OF THE UNITED STATES IN 1892.\*

The "Engineering and Mining Journal" collected and published January 2d, 1892, the statistics of production of a certain number of the metals in 1891, but in collecting the full statistics for 1892 the output of many additional substances in 1891 was also ascertained. This has rendered it possible to make many corrections in the figures given by the Geological Survey chart for that year and to substitute the more accurate amounts.

The statistics in the table for the year 1892 are, of course, exclusively those collected by the "Engineering and Mining Journal." They are in nearly all cases from direct returns by producers; but where it

From these tables the enormous development of the mineral industry of the United States can be appreciated. This country is already in the first place as a producer of many of the minerals and metals; in pig-iron, steel, copper, gold, silver, petroleum, and several other things it stands first. In coal output we are rapidly moving forward to the leading position, having long ago distanced every country except the United Kingdom, and it is probable that within the next seven years we shall have overtaken that nation with an annual production for each approaching 200,000,000 metric tons. The coal production of the United States is now 81.08% of that of the United Kingdom, and is about 28.75% of the whole world's output.

The production of gold and silver in 1892 was obtained by direct re-

## MINERAL AND METAL PRODUCTION OF THE UNITED STATES, 1890-1892.\*

No.	Products.	Customary Measures.	1890.		1891.		1892.		No.
			Quantity.	Value at Place of Production	Quantity.	Value at Place of Production	Quantity.	Value at Place of Production	
			Customary Measures	Metric Tons, §	Customary Measures	Metric Tons, §	Customary Measures	Metric Tons, §	
<b>Non-METALLIC.</b>									
1	Asbestos.....	Short tons†	71	64.3	66	59.8	100	90.7	1
2	Asphaltum.....	"	40,841	37,061	45,054	40,881	54,985	49,896	2
3	Barytes (crude).....	Long tons	21,911	22,180	31,069	31,576	26,500	26,932	3
4	Borax.....	Pounds	11,889,828	5,394	11,890,000	5,397	14,243,000	6,462	4
5	Bromine.....	"	387,847	176	368,786	167	379,180	172	5
6	Building stone.....	"	8,000,000	47,000,000	8,222,752	47,291,744	8,465,057	45,000,000	6
7	Cement.....	Bbls., 300-400 lbs.	41,502,357	42,180,257	66,395,772	45,219,492	45,988,504	76,019,147	7
8	Coal, anthracite.....	Long tons	97,849,081	99,417,339	108,708,000	106,129,033	107,862,538	118,861,516	8
9	Coal, bituminous c.....	"	6,788	3	7,300	3.3	8,600	4	9
10	Cobalt oxide.....	Pounds	1,970	1,789	89,395	2,265	90,330	2,200	10
11	Corundum.....	Short tons	3,599	3,657	53,985	1,372	1,396	3,000	11
12	Chrome ore.....	Long tons	8,000	8,130	45,200	10,163	50,000	16,000	12
13	Feldspar.....	"	13,000	13,212	57,400	15,245	60,000	16,262	13
14	Flint.....	"	8,250	7,486	55,328	6,320	5,735	38,000	14
15	Fluorspar.....	Short tons	182,965	166,057	574,523	208,126	188,862	225,000	15
16	Gypsum.....	Short tons	2,532	2,298	50,340	21,988	21,988	201,175	16
17	Infusorial earth.....	"	60,000,000	5,444,616	35,000,000	5,444,616	35,000,000	6,352,087	17
18	Lime.....	Bbls., 300 lbs.	5,521,622	5,611,730	2,704,811	5,000,000	5,081,650	4,560,000	18
19	Limestone for iron flux.....	Long tons	25,684	25,103	219,050	23,116	23,828	4,634,750	19
20	Manganese ore.....	Short tons	153,620	139,401	69,840	135,000	122,505	67,500	20
21	Marls.....	Pounds	60,000	27.1	75,000	75,000	34	75,000	21
22	Mica.....	"	23,720	16,587	23,720	16,587	50,000	50,817	22
23	Millstones.....	Long tons	45,732	46,478	661,922	47,562	48,430	50,000	23
24	Mineral paints.....	Gallons.	13,907,418	2,600,750	18,392,732	2,996,259	2,996,259	3,000,000	24
25	Mineral waters.....	"	18,742,725	15,500,084	15,500,084	15,500,084	15,500,084	13,000,000	25
26	Natural gas.....	Pounds	69,909	1,375,000	628	150,000	150,000	15,000	26
27	Novaculite.....	"	26,250	50,000	23	3,000	130,000	58.9	27
28	Ozokerite (refined).....	Bbls., 42 gals.	45,822,672	6,418,765	35,365,105	51,291,980	7,595,702	32,575,186	28
29	Petroleum.....	Long tons	510,499	518,835	3,212,795	587,988	597,589	54,341,500	29
30	Phosphate rock.....	Pounds	277,500	1,506,065	684	75,350	1,298,363	651,801	30
31	Plumbago.....	Long tons	350,000	355,715	750,000	400,000	406,532	900,000	31
32	Potters' clay.....	"	111,836	119,652	273,745	109,319	111,105	317,380	32
33	Pyrites.....	"	118,833	1,000	300	304	304	106,250	33
34	Precious stones.....	Pounds	400	*181.6	1,000	300	304	304	34
35	Rutile.....	Bbls., 280 lbs.	8,776,991	1,127,092	4,752,286	10,233,701	1,300,107	5,639,083	35
36	Salt.....	Long tons	2,400	2,032	20,000	2,032	20,000	11,585,754	36
37	Slate (for pigment).....	Short tons	13,670	12,404	252,309	16,514	14,985	1,471,875	37
38	Soapstone.....	"	a	a	1,200	1,089	39,600	19,000	38
39	Sulphur.....	"	41,354	57,526	389,196	53,054	48,113	17,241	39
40	Talc (fibrous).....	"						1,825	40
41	Talc (white).....	"						1,656	41
42	Total value of non-metallic mineral products.....			\$337,696,069		354,273,449		\$350,959,283	42
<b>METALLIC.</b>									
43	Aluminum, value at N. Y.....	Pounds	661,281	27.8	61,281	168,075	76	\$126,056	43
44	Antimony, value at S. Fran.....	Short tons	129	117	40,756	453	453	134	44
45	Copper, value at N. Y. h.....	Pounds	265,878,000	120,607	30,338,800	297,600,000	135,027	38,532,500	45
46	Gold, coined value.....	Troy ounces	1,588,880	*19,418	32,845,000	1,601,840	*19,915	33,175,000	46
47	Iron, value at N. Y.....	Long tons	9,302,702	9,352,983	151,300,410	8,279,870	8,415,079	140,757,700	47
48	Lead, value at N. Y.....	Short tons	161,754	146,780	14,266,703	202,000	183,303	17,574,000	48
49	Nickel, value at N. Y. i.....	Pounds	300,332	91	120,216	120,848	55	72,509	49
50	Platinum (crude).....	Troy ounces	600	2,500	450	3,150	350	96,152	50
51	Quicksilver, value at S. F.....	Flasks, 764 lbs.	22,926	797.8	1,203,615	22,926	777.13	27,995	51
52	Silver, coined value.....	Troy ounces	54,500,000	*1,695,102	70,485,714	58,330,000	*1,814,226	61,900,000	52
53	Tin.....	Pounds			125,198	56.8	25,085	143,400	53
54	Zinc, value at New York.....	Short tons	67,242	57,789	7,474,962	80,263	72,831	83,300	54
	Total value of metallic mineral products.....			308,641,957		311,813,941		\$318,638,596	
	Total value of non-metallic mineral products.....			337,696,069		354,273,449		350,959,283	
	Estim. value of mineral products, unspecified g.....			10,000,000		10,000,000		10,000,000	
	Grand total.....			656,338,026		679,087,390		\$679,597,879	

\* Kilograms.

† Short tons = 2000 lbs. ‡ Long tons = 2240 lbs. § Metric tons = 2204 lbs.

(a) Not reported.

(b) Including aluminum in alloys.

(c) Including brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.

(d) Value of crude product.

(e) Including fire-clay, common brick-clay, terra cotta, building sand, glass sand, limestone used as flux in lead-smelting, limestone used in glass-making, iron where used as flux in lead-smelting, tin ore, iridosmine, nitrate of soda, carbonate of soda, sulphate of soda, native alum, mineral soap, strontia, and pumice stone.

(f) Including copper from imported pyrites, except in 1881, for which no returns are available.

(g) Including nickel in copper-nickel alloy and in exported ore and matte.

(h) The production of petroleum stated in gallons is calculated in kiloliters, and converted to metric tons, by multiplying by 0.88. This, of course, gives a result only approximately correct, as the specific gravity of the various kinds of oil varies.

became necessary to estimate any portion of the output it was done by those actually engaged in the industry, whose familiarity with the local conditions and whose business relations enabled them to arrive, with substantial accuracy, at the output of unreported mines or works.

The statistics of the production of non-metallic substances in this table are for the yield of American mines only. The statistics for the metals, on the other hand, give the output of the metallurgical works, but in some cases include the total from both foreign and domestic ores, and in other cases represent only the product of American mines.

\* From "The Mineral Industry: Its Statistics, Technology and Trade for 1892," copyrighted by the Scientific Publishing Company. The full tables published in the book include, besides those given herewith, the production for the years 1880-1889, both inclusive, and under the appropriate heads, detailed statistics and information concerning each of the minerals and metals are given.

turns from each refiner in the United States to this work, and in the amount of silver produced differs very materially from the estimate of the Director of the Mint, which is intended to represent the amount of silver produced from ores actually mined in 1892. Our estimate, following the common previous practice in the reports of the Director of the Mint, gives the amount of silver actually refined and put in final marketable form during the year.

It will be seen from this table that while there was last year a considerable increase in the amount of production of many minerals, the total value of the mineral product was very nearly the same as in 1891. This has been due to a fall in prices of some of the more important metals and minerals, due chiefly to increasing facilities and diminished cost of production, and to greater competition.

If we look in this table at the quantities produced, it will be seen



that the production of the materials of construction, such as iron, copper, lead and zinc among the metals, lime and cement among the other minerals, showed a very considerable increase over the previous year. Pig iron nearly reached the high mark set in 1890. Anthracite coal, which is chiefly confined in its use to one section of the country, showed last year a small decrease, but bituminous coal, the more general fuel, had a large gain. It is in these minerals chiefly that we must look for indications of the general growth of the country, and we find in them an index to our great industrial development and to the increase in the wealth of our people.

In the precious metals we find last year a small decrease in the production of gold, but a considerable increase in silver, in spite of its lower price. From causes to which reference has frequently been made, it seems probable that the present year will see an increase in gold production, reversing the conditions of 1892; and probably a marked decrease in the output of silver.

The production of petroleum was almost the same in 1892 as in 1891. The exports show a considerable increase, so that a falling off in domestic consumption is indicated; a result which would hardly have been expected, but for which many reasons could be assigned.

Our space is not sufficient to follow out here all the indications of the table which is given. It may be said, however, that the comparative statement of the mineral production given here is an excellent index to the general conditions and business of the country, and that a study of the "Mineral Industry" is quite as useful to the financier and business man as to the miner or metallurgist.

#### A DUPLEX ELECTRIC SINKING PUMP.

The difficulties heretofore met with in obtaining an electric sinking pump, at once light in weight, compact in form, of good capacity and

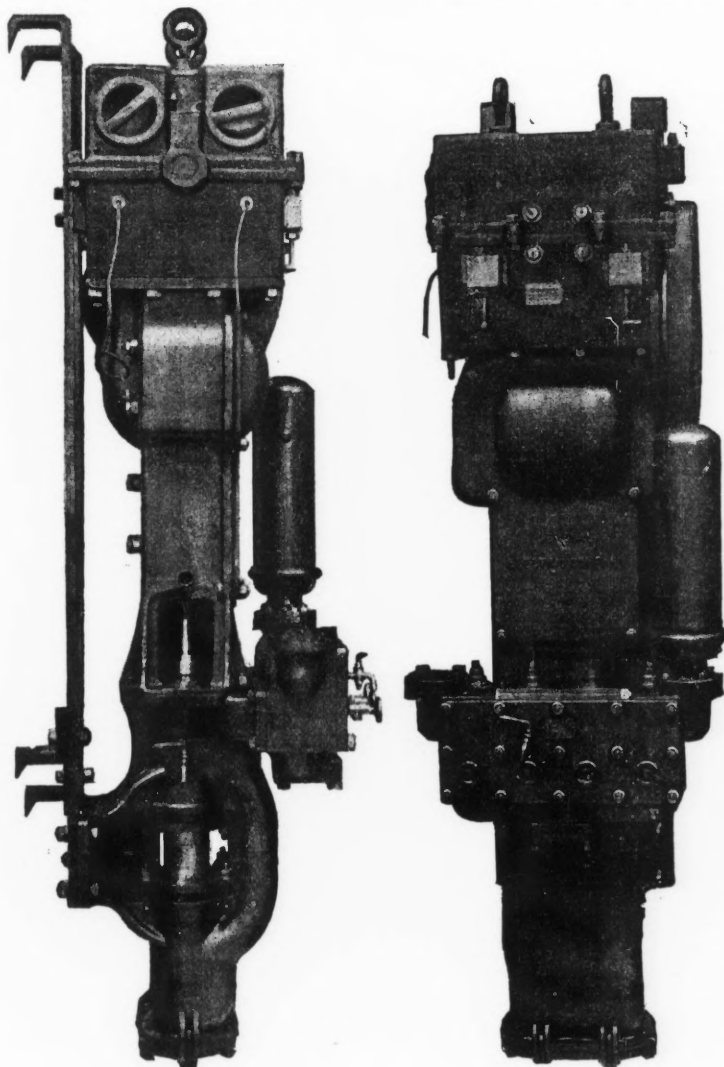


FIG. 1.

FIG. 2.

DUPLEX ELECTRIC SINKING PUMP.

efficiency, and not liable to damage from moisture or hard usage, have, it is claimed, been successfully overcome in the pump illustrated. The motor, with gearing and operating mechanism, is entirely contained in a cast steel casing, absolutely watertight. The pumps are of the duplex double-acting type, with outside packed plungers. The only moving parts visible are short sections of the plungers and rods. All wearing parts are readily accessible for examination, and can be quickly and easily replaced. This pump is not susceptible to damage from water, and its form is such that it will stand considerable hard usage, without injury. It will work as well under water as out of it, in fact, rather better, the cooling action of the water increasing the efficiency of the

electric motor. If, therefore, the precaution is taken to use thoroughly insulated cables for conveying the electric energy to the pump, it may be drowned by a sudden rush of water in the mine and still continue operating. Even should the case leak slightly, the motor in the upper part of the case, within a waterproof chamber of its own and separated from the gearing, would remain unaffected for a considerable time. There are no exposed working parts liable to damage, or to cause injury to those who may be working about the pump. This pump is economical in the use of power and has a capacity of 125 gals. per minute against a vertical head of 200 ft.; it occupies a space of only 24 x 26 x 86 in., and weighs complete 3,000 lbs. Pumps of this type are manufactured in various sizes and are put on the market by the General Electric Company, of Boston and New York.

**Steel Armor-Piercing Projectiles.**—The projectiles made for the United States Government by the Carpenter Steel Company, at Reading, Pa., are cast in moulds double the size of the finished shell. They are then hammered into shape in dies and machined, after which they are hardened by secret processes to proper temper and finally finished to exact dimensions, plugs being fitted in to fill the bored-out base of the chamber. If the shells are then truly concentric and balanced, two of each lot are fired at a hardened plate made of open-hearth steel, this plate, which is backed by 3 ft. of live oak backing, being one and a quarter times the thickness of the shell fired. If the shell penetrates the plate and backing without suffering injury the lot from which it is selected is accepted. The steel used by the company in making projectiles is a special grade of chrome steel, and is of high tensile strength, the test pieces frequently averaging 110 tons to the square inch, with about 7% elongation.

**The Largest Ore Carrier.**—The Cleveland "Marine Review" notes the launch from the Wheeler yard at West Bay City, Mich., of the new steamer "S. S. Curry," which is expected to carry 3,400 gross tons of iron ore on 14 ft. 6 in. draught, or 5,000 tons on 17 ft. The principal dimensions of the "S. S. Curry" are: Length over all, 378 ft. 6 in.; length of keel, 360 ft.; breadth, extreme, 45 ft. 2 3/4 in.; breadth, molded, 45 ft.; depth, molded, 26 ft. For water-ballast she has a cellular double bottom differing from the ordinary floor system employed in lake practice. The bottom extends fore and aft, and is 54 in. deep, with a capacity of 1,600 tons. Steam at 170 lbs. pressure will be furnished by three cylindrical boilers 12 ft. 6 in. diameter, and 12 ft. 8 in. long. Each boiler has three 40-in. diameter furnaces, the total grate surface being 100 sq. ft., and the heating surface 6,500 sq. ft. The motive power will consist of triple expansion engines, built in F. W. Wheeler & Co.'s shops, with cylinders 23, 37 1/2 and 63 in. by 44 in. stroke. A departure has been made from the usual practice on the lakes by placing the engines and boilers amidships, instead of near the after end. The ship is owned by the Hawgood & Avery Transit Company.

#### PATENTS PUBLISHED IN GREAT BRITAIN.

The following is a list of the patents published by the British Patent Office on subjects connected with mining and metallurgy:

WEEK ENDING MAY 13TH, 1893.

- 7,226 of 1892. Electric Welding, Forging, Etc. C. H. A. Hoho and E. A. C. Lagrange, Brussels.
- 7,238 of 1892. A New High Explosive. J. K. Von Falkenstein and A. M. Böhm, Vienna.
- 7,832 of 1892. Treatment of Silver and Gold Ores Containing Zinc. H. A. Penrose, Swansea.
- 8,393 of 1892. Electrically Tempering and Hardening Steel and Iron. W. Holland, Birmingham.
- 8,932 of 1892. Galvanizing and Tinning Bath. W. H. Luther, Glasgow.
- 12,733 of 1892. Electrolytic Reduction of Antimony. R. Koepf & Co., Oestrich-am-Rhein, Germany.
- 3,586 of 1893. Improvements in the Cementation Process. F. G. Bates, Philadelphia.

#### 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, MAY 16TH, 1893.

- 497,302. Tubular Well. John Burke, Niles, Mich.
- 497,330. Smoke Consumer. Thomas Lyman, Bloomington, Ill.
- 497,343. Bolting and Separating Machine. Hermann Raseh, Berlin, Germany.
- 497,379. Stone Channelling Machine. Zabby Lassar, Stinesville, Ind., Assignor of two-thirds to Charles C. Dunn and Abner Conner, same place.
- 497,392. Smoke Consuming Furnace. Charles A. Tinkham, Brockton, Mass.
- 497,427. Steam Vacuum Dredger. Levi Hussey, New York, and Edward D. Harsen, Brooklyn, N. Y., Assignors, by direct and mesne assignments, to the Mining and Dredging Power Company, of West Virginia.
- 497,432. Steam Boiler. Charles L. Seabury, Nyack, N. Y.
- 497,435. Fuel Gas Mixer. William G. Taylor, Hulton, Assignor to the Taylor Burner Company, Limited, Pittsburgh, Pa.
- 497,447. Device for Protecting Elevator Shafts. James D. Higgins, Boston, Mass.
- 497,459. Hydrocarbon Vapor Burner. Henry Ruppel, Cleveland, O., Assignor to the Dangler Stove and Manufacturing Company, same place.
- 497,469. Fuel Feeder for Furnaces. Max Fricke, New York, N. Y.
- 497,473. Process of Treating Complex or Sulphide Ores. Walter R. Ingalls and Francis Wyatt, New York, N. Y.
- 497,474. Ore Separator. William P. Miller, Redding, Cal.
- 497,490. Oil Burner. Almon H. Calkins, Evanston, Assignor to the Chicago Oil Burner and Stove Company, Chicago, Ill.
- 497,511. Billet Conveyor. Seward S. Babbitt, Pittsburgh, Pa.
- 497,513. Hydro-thermal Mining Process. Charles W. Beehler, St. Louis, Mo., Assignor to Albert Kuehne, same place.
- 497,545. Apparatus for Storing and Distributing Gas. Ebenezer Hill, South Norwalk, Conn.
- 497,597. Tamping Machine for Making Cement Pipes. Emanuel Oehle, Omaha, Neb., Assignor to Jeff W. Bedford, same place.
- 497,603. Amalgamator. Nathan L. Raber, Corvallis, Assignor to the Portland Amalgamator and Mining Company, Portland, Ore.
- 497,615. Washer, Drier and Separator. George H. Tench, Pottsville, Pa.
- 497,621. Process of Electro-Tin Plating. Louis Aronson, New York, N. Y., Assignor of one-half to James H. Hoffman, same place.
- 497,689. Amalgamator for Gold and Silver Ores. Alfred B. Kittson, Boston, Mass.
- 497,700. Process of Manufacturing Hydrogen Gas. Henry S. Blackmore, Mount Vernon, N. Y.
- 497,719. Elevator Controlling Mechanism. Thomas Hill, Quincy, Ill., Assignor to Smith-Hill Foundry and Machine Company, same place.
- 497,735. Dredging Machine. Isaac R. Taylor, Elmira, N. Y.

## PERSONALS.

Mr. A. V. Comstock will again manage the Bi-metallic Extension mine, Phillipsburg, Mont.

Mr. J. P. Tibbetts, Sutter County, Cal., has been appointed superintendent of the Amador gold mine.

Mr. J. Butler, manager of the White Ash Coal Mining Company, of Golden, Colo., has resigned his office.

Mr. Walter Allen has been appointed melter at the Denver Mint, in place of Mr. Sanford P. Hamer.

Mr. A. F. Brandt has been appointed superintendent of the Rosa Lee Mining and Milling Company, Gunnison, County, Colo.

Mr. Bradford H. Locke has been appointed general manager of the Pontiac, Champion and Empire companies, of Aspen, Colo.

Mr. James Hillhouse has been appointed State Mine Inspector of Alabama, in place of Mr. J. de B. Hooper, whose term has expired.

Mr. T. F. Van Wagenen has sold his interest in the Deming Ore Sampling Works, Deming, N. M., and will return to Colorado.

Mr. T. P. Cowardin, formerly of Florence, Ala., has been appointed chemist and engineer of the Lyman furnace, at Covington, Va.

Mr. James Breen, formerly superintendent of the Parrot works in Butte, Mont., has accepted the assistant superintendency of the Heinze smelter.

Mr. C. F. Jackson has resigned his position as superintendent of the Breckenridge Coal Company, Pineville, Ky., and has removed to Middlesboro, in the same State.

Mr. James D. Hague, mining engineer, accompanied by Mr. D. T. Hughes, arrived back from their examination of the Playa de Oro placer, Ecuador, on the 13th inst.

Mr. John Hays Hammond on May 13th returned to this country from England, where he has made a contract to go to Johannesburg, South Africa. He expects to sail in July next.

Mr. H. A. Judd has been appointed manager of the Sam Christian gold mine, in Montgomery County, N. C., in place of Mr. J. W. Young, who is going to Mexico, to take charge of a mine there.

J. H. Weddle, for four years past assistant treasurer to the Arkansas Valley Smelting Company, Leadville, Colo., has just been appointed assistant manager of the company, in addition to his other duties.

Gen. George S. Greene, past president and honorary member of the American Society of Civil Engineers, and the oldest living graduate of the West Point Military Academy, celebrated his 92d birthday on May 6th.

Mr. George F. Kunz, gem expert with Messrs. Tiffany & Co., of New York, and author of "Gems and Precious Stones of North America," is at present in Chicago, where he will remain during the summer in charge of the Tiffany exhibit at the World's Fair.

Mr. Leonard Sivyver, superintendent of the mineral exhibit of the State of Washington at Chicago, was given as Leonard Singer in our issue of May 6th, through a provoking mistake of the types. Mr. Sivyver has had charge of the State exhibit from the beginning.

Mr. John Daggett has been appointed superintendent of the Mint at San Francisco, in place of Gen. W. H. Dimond, resigned. Mr. Daggett was at one time Lieutenant-Governor of California, and has been actively engaged in mining, owning and working mines in Siskiyou County.

Mr. William E. Ardrey has been appointed United States assayer and melter, at Charlotte, N. C., in place of S. W. Cramer. Mr. Cramer tendered his resignation some time ago, and made arrangements to enter other business, but was urged to remain until a successor could be appointed. He is known to our readers as a contributor to our columns.

Prof. Wm. B. Phillips, who has for some months past been on the editorial staff of the "Engineering and Mining Journal," has accepted the position of chief chemist and metallurgical advisor to the Tennessee Coal and Iron Company, and will make his residence in Birmingham, Ala. Mr. Phillips will, however, continue to be a regular contributor to the "Engineering and Mining Journal," on his special department of metallurgy.

Mr. William Knox, who has been the financial manager of the Broken Hill Proprietary mine, New South Wales, for eight years past, arrived at San Francisco recently. The object of his visit to this country is to examine and report upon our machinery for the treatment of refractory ores. He proposes visiting the mining centers of this country, not forgetting, of course, the mining department at the Chicago Exposition. Mr. Knox recently resigned from the secretaryship of the Broken Hill, and accepted a seat upon the board of directors. He is also managing director of the Mt. Lyell mine, in Tasmania.

Mr. Edward Owen Leech has resigned his position as Director of the Mint, to take effect May 31st. He has accepted the position of cashier of the new National Union Bank, of New York. Mr. Leech was born in Washington, in December, 1859. He was educated at the Everett Institute and the Columbian University, from which he was graduated in 1869. In the same year he became a clerk in the Bureau of Statistics of the Treasury Department, and when the Bureau of the Mint was established in 1873 he was made an assistant to the Director. Mr. Leech found time to study law and secured a degree in 1886. In the government service he rose steadily, until he had special charge of the bullion and coin account. He was made Director of the Mint in 1889, being the youngest man who ever held that office.

## OBITUARY.

Holland Farish, son of Hon. T. E. Farish, lessee of the Vulture mine, Arizona, was accidentally killed at that property on May 5th.

Henry Lowell Leach, who died in Boston, May 14th, aged 72 years, was for a number of years superintendent of the Hinkley Locomotive Works. Since that company went out of business he had been representative in Boston of a number of manufacturing companies.

Albert W. Nickerson, a prominent merchant of Boston, died in that city May 17th, aged 53 years. He was a director and large stockholder of the Atchison, Topeka & Santa Fe, and the construction of the Mexican Central Railway by American capital was largely due to his efforts.

Constantine Hensch, a well-known mining engineer, of San Francisco, died in that city, recently. Mr. Hensch was born in Baden, Germany, received his mining education at Freiberg, and came to this country at an early age. He operated and examined mines throughout the Western States and had had a large experience in Mexico.

Frederick Ransome, an English engineer, and inventor of a process for the manufacture of an artificial stone, died on April 19th. He applied his process to the manufacture of emery wheels and grindstones. Later on Mr. Ransome turned his attention to the manufacture of cement from blast furnace slag and lime, and subsequently devised a novel type of revolving kiln, which greatly facilitated and cheapened the production of this useful material.

Augustus Woodbury Locke, who died at North Adams, Mass., May 14th, aged 47 years, was born in Rye, N. H., and graduated from the Massachusetts Institute of Technology. For over 10 years he was employed as an assistant engineer on the Hoozec Tunnel, and in 1878 was made chief engineer and manager of the tunnel and state road, holding that position until the state transferred the property to the Fitchburg Railroad, in 1887. Since then he has had a large practice as a consulting engineer.

John Gartrell West, who died in Reading, Pa., May 9th, aged 71 years, was born in England. He came to this country when a young man, and after a few years in Ohio, went into business in Norris-town, Pa., as an engineer and machinist. He designed and superintended the construction of the great pumping engine for the Lehigh Zinc and Iron Company, of Bethlehem, Pa., and was afterward engaged in the construction and erection of pumping and mining engines until 1878, when he became superintendent and manager of the Scott Foundry in Reading. Since 1890 he has been mechanical engineer of the Reading Iron Company.

## SOCIETIES.

American Society of Civil Engineers.—At the regular meeting in New York, May 17th, papers were read on the "Detroit Union Depot Viaduct," by J. W. Schaub, and on "Rainfall and River Flow," by Cyrus C. Babb.

Montana Society of Civil Engineers.—The regular monthly meeting was held in Helena, April 13th. Mr. O. C. Dallas read a paper on "Methods of Acquiring Title to Mineral Lands," which was discussed by members present.

Canadian Society of Civil Engineers.—At the regular meeting in Montreal, May 18th, the discussion of Mr. Baillairge's paper on the "Quebec Landslide" was continued. Mr. R. Adams Dave read a paper on the "Temiscanata Railway," which was briefly discussed.

Engineering Association of the South.—On the occasion of the regular monthly meeting at Nashville, Tenn., May 11th, the resident members extended their courtesies to the non-resident members in an excursion to some points of technical interest near Nashville. At the evening session, a discussion followed on "The Durability of Yellow Pine." A number of interesting facts were elicited by the discussion.

General Mining Association of Quebec.—A meeting of the Executive Committee was held at Sherbrooke, P. Q., May 12th, to consider a statement of the various classes and kinds of mining machinery manufactured in Canada, to be filed for ref-

erence in the Department of Customs at Ottawa. After the discussion of the operation of the act it was resolved to recommend that the Association memorialize the government to extend the present law so as to read, "that all mining, quarrying, concentrating, smelting and refining machinery and appliances of a class or kind not manufactured in Canada be admitted free of duty." The present law is restricted to the admission of such machinery as is used for the extraction of the minerals only. A statement of the various classes and kinds of mining machinery manufactured in Canada was carefully considered, and after some discussion was adopted. The statement will be forwarded to the various Canadian mining associations for approval and adoption before being forwarded for reference to the department.

## INDUSTRIAL NOTES

Dean Brothers, Indianapolis, Ind., have completed plans for their new works. The shop will be of brick 900 x 60 ft. in size.

The Southern Iron Company has started up one of its charcoal furnaces at Forty-eight, Tenn., and is preparing to blow in the second stack.

The Birmingham Foundry and Machine Works, Birmingham, Ala., are at work on a dredging plant to be used by the government in Mobile Bay.

The Schenectady Locomotive Works, Schenectady, N. Y., have contracted to build eight consolidated engines for the St. Paul, Minneapolis & Sault Ste. Marie Railroad.

The Cumberland Iron and Steel Shafting Company has begun work on its new plant at Cumberland, Md. The building will be in the form of two wings, one 180 x 78 ft., the other 283 x 80 ft.

The National Plate Glass Company, which was recently formed at Pittsburg, Pa., with a capital stock of \$8,000,000, has purchased the plant of the Charleroi Plate Glass Company. The price paid was \$1,750,000.

Heyl & Patterson, of Pittsburg, have secured a contract from the Cambria Iron Company, Johnstown, Pa., for the construction of a plant for storing, breaking and distributing coal used in mechanical stokers. The plant will have a capacity of 600 tons per day.

The Brown & Sharpe Manufacturing Company, Providence, R. I., has let contracts for the addition to its works, which will consist of a four-story brick building 163 x 51 ft., with two wings, each 57 x 84 ft. The new building will have about 50,000 sq. ft. of floor space.

The Hazard Manufacturing Company, Wilkes-Barre, Pa., through N. P. Hyndman, Pittsburg representative, have just furnished a wire rope to the Pittsburg & Castle Shannon Railroad Company, which measures 1 7/8 in. in diameter, and weighs about 8,000 lbs.

The Circuit Court at Belleville, Ill., has appointed Charles Becker and Bernard Yoch receivers of the Belleville Steel Company, of Belleville, Ill. It is stated that the assets largely exceed the liabilities, and that the difficulties of the company can be arranged and the works kept running.

Mr. Robert A. Kearsbey, manufacturer of the magnesia sectional coverings for boilers, steam pipes, etc., has been obliged by increase of business, to remove from his old office to more convenient quarters at No. 54 Warren street, New York, with much larger store-rooms and better facilities for customers.

The Stirling Water Tube Safety Boiler Company, New York, reports recent sales of boilers aggregating 3,820 H. P. The company is also installing a large plant for the Union Passenger Railway Company, of New York city, and for the Lindell Avenue Railroad, St. Louis, Mo., the latter plant being for 2,600 H. P.

The property of the West Superior Iron and Steel Company, of West Superior, Wis., was attached on May 8th, by the Land and River Improvement Company, in order to protect its interests in the steel company and rescue the enterprise from complications arising from the recent failure of Francis H. Weeks, who has fled to Canada.

The Barker Mine Car and Foundry Company, Springfield, Ill., has been formed, with capital stock of \$25,000, for the manufacture of mine cars, car wheels, axles, machinery and appliances used in mining, and also to do a general foundry business. John W. Black, J. L. Cook and Irving Barker are the stockholders of the company.

A plan for the reorganization of the Pennsylvania Steel Company is now under the consideration of the special committee appointed for the purpose. The committee comprises E. B. Morris, George B. Roberts, Howard W. Middleton, Alfred Earnshaw and William D. Winsor. The plan, it is stated, provides for an issue of at least \$5,000,000 in 6% bonds, sufficient in amount to pay off the floating debt, and provide a sufficient working capital.

The Lake Drummond Canal and Water Company is a new organization which proposes to build a canal 10 ft. in depth from the Elizabeth River, at Deep Creek, Va., to the Pasquotank, at South



Mills, N. C., a distance of 22 miles. The company has bought the old Dismal Swamp Canal, the oldest canal in the country, and will use the works of that canal. The officers are: W. B. Brooks, of Baltimore, president; W. M. Bosley, of Baltimore, vice-president; C. G. Ramsay, of Norfolk, treasurer; I. F. Sinton, of Baltimore, secretary, and Capt. Henry Roberts, of Norfolk, general manager.

At the annual meeting of the Westinghouse Electric and Manufacturing Company, held at Pittsburgh, May 17th, the following directors and officers were elected for the ensuing year: Charles Francis Adams, Lemuel Bannister, August Belmont, N. W. Burnstead, A. M. Byers, Marcellus Hartley, George W. Hebard, Henry B. Hyde, Brayton Ives and George Westinghouse, Jr.; chairman, Brayton Ives; president, George Westinghouse, Jr.; first vice-president and general manager, Lemuel Bannister; second vice-president, George W. Hebard; assistant general manager, W. F. Zimmerman; secretary and attorney, Charles A. Terry; treasurer, P. F. Kolbe; general agent and assistant treasurer, W. C. Clark, and auditor, F. H. Ketchum.

The Bucyrus Steam Shovel and Dredge Company, long at Bucyrus, O., has removed to South Milwaukee, Wis., and hereafter all communications should be addressed to that place. The new plant was built in 1892, and is admirably planned. The ground comprises 15 acres, 13 of which are occupied by the main works. The remaining land, on the lake shore, will be used as a shipyard, and connected with the main works by a belt line railroad. The buildings are of steel, brick and glass, and are heated by the hot-blast ventilating system and lighted entirely by electricity. The power is distributed from a central power-house by electricity to the various buildings, and two multipolar generators, each 150 H. P., driven by a cross-compound Corliss engine, are employed. The machine shop and foundry are equipped with electric traveling cranes, auxiliary cranes for the machine tools are served by compressed air, and all the latest methods are used in order to insure the systematic and economic production of machinery, high-class in design as well as in materials and workmanship.

#### MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the Engineering and Mining Journal of what he needs, he will be put in communication with the best manufacturers of the same.

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.

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.

#### GENERAL MINING NEWS.

##### ALABAMA.

###### Calhoun County.

Aluminum-Bauxite Paint Company.—This company has established a mill at Choccolaco, near Anniston, for the manufacture of paint from bauxite taken from the beds of this county. The officers of the company are: President, O. Cost; vice-president, G. C. Bain; secretary and treasurer, M. Haupt.

###### Jefferson County.

Bessemer.—The Bessemer "Weekly" says that an important series of experiments has been lately carried on here in the roasting or calcining of the best ores—the carbonates. There are immense seams of these ores, yielding under analysis about 55% of iron. They carry nearly enough limestone to flux them in the stack. These have been taken and roasted in a coke oven with a very gratifying result. The carbonic acid gas seems to remove the phosphorus and the sulphur is liberated, and the analysis then following shows about 62% of metal and .04% of phosphorus. It is claimed that this roasting process can be economically done, and from the iron produced from the treated ore steel by the basic process is readily made.

Watts Coal and Iron Company.—The repairs on the coke ovens have been completed, and they have been started up, making about 40 tons of coke a day. The output of the mines is now 100 tons of coal a day.

##### ARIZONA.

###### Cochise County.

Tombstone Milling and Mining Company.—Prospecting with a diamond drill on the 800-ft. level in the Lucky Cuss mine is still progressing. The ledge has streaks of high grade ore. A drift on one of the seams will be started 90 ft. above the bottom of the winze from the lower level.

###### Pima County.

Columbia Gold Mining and Milling Company.—A new incorporation has been formed under this name to work mining properties in the newly formed Highland District. The veins are said to be from 3 to 10 ft. wide and run from \$25 to \$30 gold per ton. The company will probably build a 20-stamp mill at once. The mines are 80 miles below Quijota, about 5 miles north of the Sonora line. The nearest railroad station is Gila Bend.

Hermosa.—In the last run of the Finley mill on ore from this mine, 1,763 tons, assaying \$20 per ton, were put through. The total production was \$35,000, in five months of operation.

The Phoenix Company.—This property has secured a water-right some seven miles from the mine, and will bring the water to the mill in pipes, securing 180 in. at the driest season, and 600 ft. head, quite sufficient to drive the mill. Fraser & Chalmers are ready to ship some of the mill machinery and expect to have the mill built and mining with steam power this summer.

###### Yavapai County.

Seven Stars Gold Mining Company.—At the offices of this company it was said that the failure of Mr. H. H. Warner, who personally guaranteed 15% annually, and redemption at the option of the holders of the stock at the expiration of two years from date of flotation, would not affect his guarantee—that money and securities had been deposited by him in sufficient amount to provide for this. It is now said that the "securities" put up to "guarantee" the payment of dividend were stock of the company itself. If this be true then the guarantee would become worthless if the mine should give out. Operations are progressing favorably. On the completion of the dry crushing and roasting mill, the output will be considerably increased.

##### CALIFORNIA.

(From our Special Correspondent.)

The following companies have incorporated this week: The Mayflower Gold Quartz Mining Company. Directors: J. Bacon, W. M. Macmillan, J. McCan, W. S. Kerr and C. A. Poage. Capital \$200,000, with \$164,000 subscribed.

The Ideal Placer Mining, Water and Power Company.—Directors: A. M. Griffith, M. A. Brown, F. M. Wright, E. L. Mayer and W. A. Morralls. Capital \$1,000,000, with \$500,000 subscribed.

###### Amador County.

Bunker Hill Mining Company.—It is reported that work on this property will again be resumed. A number of Eastern capitalists have secured a bond and their manager is now on the spot.

Glover Mining Company.—The shaft has been sunk to the 1,200-ft. level, and the sump and drifts from the station are now being commenced. At the bottom of the shaft a small but rich vein was encountered.

Plymouth Consolidated Mining Company.—The report that this company will soon resume operations is not believed.

###### El Dorado County.

French Mining Company.—The 10-stamp mill is nearly completed. If the results of its operations are satisfactory, more stamps will be added. The ledge is said to be from 15 to 50 ft. wide.

###### San Diego County.

(From our Special Correspondent.)

The Ella Mine.—A clean-up of 62 tons, mined from a depth of 150 ft. in developing the property, averaged \$120 per ton, or over \$7,000.

###### Shasta County.

A crude form of dredger is worked in the Sacramento River, some distance above Reading, extracting gravel from the river bed, which is washed for the gold it contains. Two men are said to earn from \$10 to \$20 per day.

Uncle Sam.—This mine is said to be yielding \$1,000 per day. The chlorination works are running.

###### Sierra County.

(From our Special Correspondent.)

Twenty stamps of the Gold Bluff Quartz mill at Downieville have commenced crushing ore. There is enough ore in sight of rich quality to keep the mill running for several years.

###### Siskiyou County.

Empire.—This mine which has a complete mill upon it, is said to be looking very well now.

###### Trinity County.

Integral Silver Mining Company.—This company, which is operating the quicksilver mines at Cinabar, will build two more large furnaces, it is said.

##### COLORADO.

###### Boulder County.

Boulder City Mining and Smelting Company.—This mine, which has been closed down for some time, will resume operations on the completion of a proposed cyanide mill.

Colorado Consolidated Mining and Milling Company.—The tunnel of this company is now in 260 ft., 100 ft. having been driven in one week. The object of the tunnel is to cut the Orphan Boy and other lodes.

December.—This property is closed down, the long tunnel having failed to strike pay ore.

###### Custer County.

Bull Domingo.—A large body of galena has been cut on this property at the 800-ft. level, and the lessees are making large profits. Twenty men have recently been added to the force.

###### Dolores County.

Atlantic Cable Consolidated Mining Company.—It is said that this company is making preparations to explore the ground under the town site of Rico with a diamond drill. The Rico Town Site Com-

pany, which is controlled by Dave Moffat, is now prospecting in that manner. The ore is said to be found in blanket deposits, and carries silver, lead and copper.

###### Eagle County.

Grand River Placers.—It is stated that placer mining will be inaugurated on the banks of the Grand River, near Burns' Hole.

Ground Hog.—This property is being worked by lessees. Some pockets of very rich gold ore have been struck.

Stephanite.—A strike of a small quantity of rich ore was made in this mine at 20 ft. from the surface. The vein is 1 ft. thick and the mine 1½ miles from Red Cliff.

###### El Paso County.

Deerhorn.—It is reported that this property has been sold to the owners of the Rosebud mill for \$45,000.

Manitou Contact.—A five-stamp chlorination plant is about to be built on this property.

###### Lake County.

(From our Special Correspondent.)

The Marian lease on the R. A. M. property is being placed in excellent condition. The shaft is down 550 ft., while a steam pumping plant is being placed in position to handle the water. When completed the Marian shaft will be one of the deepest in the camp.

The White Cap is being marked by several leases, and considerable ore is being taken out, the principal portion of which is a lead sand running 40% lead.

Vigorous work is being carried on in the Lime-Smuggler property; the lessees believe they have a good thing, having caught an ore chute in which the gold value is quite high, and the excess in iron pays.

It is expected that some important work will soon be carried on in the Edison group, which comprises the Buffalo, Comstock, President Edison and Fraction. Application has been made for a patent, and as soon as this is received work will be commenced.

The Lecompton property, developed by a tunnel, is in a fine body of ore 3 ft. wide. The mineral is a hard lead carbonate intermixed with yellow ochre. The first assays 100 oz. silver and 50 to 60% lead, and the latter 25% lead and 100 oz. silver.

In the Midnight there is lots of mineral in sight, and considerable prospecting and development are being carried on. Shipments are light on account of the bad roads.

The new lessees on the Etna have sunk an entirely new shaft, and are down 150 ft., where they are now carrying on exploration work.

Iron ore shipments from the Dunkin have fallen off somewhat, being less than 50 tons daily; this decrease, however, is more than made up by carbonate ore shipments, the lessees having disclosed a good body of carbonate ore among 30 oz. silver and 15% lead, from which regular shipments are now being made.

The work of developing the recent strike in the Maid and Henrietta has started. The character of the ore met with in these workings is entirely different from any ever before met with in the camp. It consists of native copper, iron, silver and a little gold with the iron and sulphur making a real sulphide iron. Not over 5% of silica is shown by the assays.

Gazelle Mining Company.—The reorganization occurred May 12th. This corporation is in the hands of D. H. Moffat, Eben Smith and John Champion. The capital stock is \$100,000. The property to be worked by the Gazelle Mining Company consists of the Dillon, O-Z, and the west half of the Niles-Augusta, all of which were owned by the former Gazelle company, while a lease has also been secured on all of the property of the Morning and Evening Stars west of the Carbonate fault. The entire consolidation embraces 32 acres of ground. A great deal of mining has been done up to the west line of the Pendery fault in the second contact, but further than this no exploration of the second contact has been made. In examining this ground west of the Pendery fault, a very important discovery has just been made. An entirely unknown fault has been found about 400 ft. west of the Pendery, this fault being cut by the Grey Eagle shaft above the upper limestone. The displacement of the Pendery fault is about 300 ft., and of the new fault 150 ft. The discovery of this new fault is of great value to mining men, as it enables them to get their underground bearings with greater accuracy. There is plenty of capital at the back of the new company.

###### Pitkin County.

Zenobia.—During April, ore valued at \$10,134.75, was taken from this property. The expenses during the same time were \$3,438. During May, three cars of ore running over \$3,000 per car have been shipped.

###### San Miguel County.

The shipments of ore from the Telluride mines for the week, up to May 6th, were: From the Smuggler Union, 19 cars; Hector, 1 car; Humboldt, 4 cars; total, 24 cars. Total number of cars shipped since January, 598.

Aspen Mining Company.—The suit between this company and the Little Annie has been amicably settled.

**Gold Queen.**—Two-thirds of this property has been sold to Telluride parties and the mine will be developed.

**San Miguel Gold Mining and Milling Company.**—This company, which owns the Suffolk, Crown, Cosola and Globe mines, has a 20-stamp mill on this property, which it will increase, it is said, to 40 stamps. Work will be commenced shortly.

**Silver Bell Mining Company.**—This company, it is said, will ship 500 tons of ore to the San Bernardo mill at Dry Lick. If it is reduced successfully, it is the intention of the company to erect a concentrating plant of its own.

Summit County.

**Lucky.**—The mill started up on the 10th inst. The mine is said to be showing a large body of good ore.

#### FLORIDA.

Citrus County.

**Hartshorne Phosphate Company.**—This company has received an equipment of portable rails and dump cars for its phosphate mine near Inverness.

**Standard Phosphate Company.**—This company is actively working its mines in this and Marion County.

Polk County.

**Foot Chemical and Phosphate Company.**—This company has recently erected a Mayfield washer, built by the South Florida Foundry and Machine Company, at Orlando. It is a new machine of the cylinder type, weighing about 14 tons in all and requiring about 40 H. P. to run it. The company has also completed a new drier in connection with this machine.

#### GEORGIA.

Lumpkin County.

**Chestatee.**—The Dahlonega "Nugget" says that this company now has 65 men employed. The water power is to be utilized to its full extent in running the new machinery, of which five carloads have already been received.

**Preacher.**—This mine is turning out a fair quantity of ore which is being worked at the Lawrence mill. The ore is said to be yielding about \$25 per ton.

**Singleton.**—Active work is in progress on this and the other mines recently bought by F. W. Hall. There are 30 stamps running on ore from the Singleton and Lockhart mines.

Troup County.

**George H. Clark, of Cedartown,** is at work sinking two prospecting shafts on the tract near West Point, where asbestos was discovered some time ago by Dr. W. P. Beasley. The deposit has never been worked since the first discovery, and very little is known of its extent or the quality of the mineral.

#### IDAHO.

Shoshone County.

The mine owners of this region have made a proposition to the Miners' Union to adopt a sliding scale of payment, the rate of wages to be based on the market price of lead and silver, the pay for miners ranging from \$3 to \$4 per day. This, however, was refused by the miners and the mine owners have agreed to leave the question of wages to arbitration.

**Argentine Mining Company.**—Four hundred tons of ore in this company's bins will be sold and the proceeds applied in part payment of the miners' wages. Mr. Essler has sold his interest in this property to Mr. Geo. E. Bent. The mine is being unwatered, and the shaft will be sunk 100 ft. deeper.

**Coeur d'Alene.**—The Union and Northern Pacific railroads have declined to reduce freights, as had been requested by the mine owners of the Coeur d'Alene District.

**Coeur d'Alene Silver and Lead Mining Company.**—This company has declared a dividend for May, of 3c. per share, aggregating \$15,000.

**Morning.**—It is rumored that work on this property will be resumed in a few days.

#### ILLINOIS.

**Citizens' Coal Mine.**—An explosion of gas occurred in this mine at Lincoln, on the night of May 15th, at a point about 1,400 ft. from the opening. The end of the workings where the explosion took place was completely closed by the fall of the roof, and some time would be required to reach it. A foreman and five miners were at work at the time, and it is believed that all were killed.

#### MAINE.

York County.

**Biddeford.**—The Rockland "Courier-Gazette" states that the Biddeford granite strike has been settled by a compromise. The original demand of the Union was that the quarrymen work nine hours a day and eight hours Saturdays, receiving pay fortnightly. The agreement signed is for nine hours' work every day. Payments will be made fortnightly. If a workman is discharged he shall be paid within 24 hours; if he leaves he shall give three days' notice.

**Fox Island Co-operative Granite Company.**—This company has the contract to furnish the granite for the Harlem River Ship Canal Bridge, at New

York. The contract includes all of the hammered work in piers and approaches. The company is making preparations to extend its business. Dericks are to be erected, sheds built, etc.

#### MASSACHUSETTS.

Berkshire County.

**Olcott Iron Company.**—This company has finally decided to abandon mining on the Theodore Cone property at Richmond, and has sold the buildings and machinery. This property adjoins the Cone Mine, owned by the Richmond Iron Works.

#### MICHIGAN.

Copper.

**Calumet & Hecla Mining Company.**—On the 14th inst. a cage fell from the surface to the bottom of the shaft, 3,000 ft. below, and all the nine occupants were killed. The indicator did not work properly, the cage dashed up against the gallow's frame, and the couplings broke, causing the terrible fall.

**Oscoda Mining Company.**—The Oscoda mine produced 250 tons of mineral for April, against 230 tons for March, and 335 tons for April, 1892. For four months the product was 1,134 tons, against 1,312 tons last year, a decrease of 178 tons.

**Tamarack Mining Company.**—The product of the Tamarack mine for April was 760 tons, against 810 tons for March and 930 tons for April, 1892. This makes 3,402 tons produced since January 1st, against 3,590 tons last year, a decrease of 288 tons.

**Tamarack, Jr., Mining Company.**—This company's product for April was 75½ tons of mineral. The workings in the sixth level are reported to be looking well.

Iron—Marquette Range.

**Platt.**—This mine, located near Marquette, was recently sold to Messrs. John F. Eddy, Newell A. Eddy, Charles F. Eddy and Selwyn Eddy, of Bay City. The Platt, according to the Marquette "Mining Journal," is a promising mine, and the ore is said to be of good quality. The working force at the property is about 30 men at present.

Iron—Menominee Range.

**Badger.**—A few men have been laid off at this property, but the work of hoisting ore is still being energetically pushed. About 1,000 tons is the daily output, and the ore is shipped to Escanaba as rapidly as it is hoisted. One boatload of Badger ore has already left Escanaba for Cleveland.

**Florence.**—This mine has commenced shipping ore to Escanaba, and daily shipments will be made from now on.

#### MINNESOTA.

Iron—Mesaba Range.

**Globe Iron Company.**—This company has been organized with a capital stock of \$100,000. The company owns 1,200 acres of land in fee and leases, and the officers are: David Ogilvie, president; Clark W. Kelly, of Devil's Lake, vice-president; B. M. Stoddard, secretary; Charles J. Johnson, treasurer. These with E. L. Fisher, D. B. Smith and George Brown constitute the board of directors.

**Mascotte Iron Company.**—This company has been incorporated under the laws of Illinois at \$1,000,000, with the following officers: Frank Barrett, president; J. E. Campbell, vice-president; K. W. Brown, secretary; H. G. Becker, treasurer. The company will operate on lands on the western Mesaba range, located in towns 57-20 and 57-22, just east of the Diamond property.

#### MISSOURI.

Jasper County.

(From our Special Correspondent.)

Joplin, May 15.

Continual rain and the low price of zinc ore has had a telling effect on the mines of the lead and zinc belt during the past week. Four of the largest producing mines at Cartersville have been closed for the past 10 days, and will not open up until the weather clears up. The zinc ore market is very unsettled, ore buyers only offering \$21 per ton for best grades of ore. The sales of ore last week were in excess of the output, so that surplus stocks of ore are about cleaned up. The large mine operators do not feel inclined to make a large output at the present price of ore. Lead ore declined during the week, and closed at \$21 per thousand. Following are the sales from the different camps: Joplin mines, 1,424,380 lbs. zinc ore and 218,710 lead, value \$18,836; Cartersville mines, 2,132,880 lbs. zinc ore and 60,560 lead, value \$22,579; Webb City mines, 209,280 lbs. zinc ore and 24,250 lead, value \$2,582; Zincite mines, 74,900 lbs. zinc ore and 14,180 lead, value \$1,046; Oronogo mines, 124,350 lbs. of lead, \$2,449; Carthage mines, 31,190 lbs. zinc ore and 38,150 lead, value \$1,134; Cave Springs mines, 104,960 lbs. zinc ore and 5,630 lead, value \$1,050; Galena, Kans., mines, 1,120,000 lbs. zinc ore and 366,000 lead, value \$19,720; district's total value, \$69,396; Aurora Lawrence Company mines, 1,318,120 lbs. zinc ore and 164,130 lead, value \$13,598; lead and zinc belt's total value, \$82,904.

Messrs. Lear and Lichter are busy prospecting a 200-acre tract of land about midway between Joplin and Webb City; they have put down a number of drill holes, some of which are reported to

have cut large deposits of lead and zinc ore; they are now having a portion of the land surveyed off into mining lots, and some development shafts have been started. Should the shafts prove up good deposits of ore this will fill in a connecting link between Joplin, Webb City and Cartersville. Mr. Lichter is one of the old and successful mine operators of this district, and he gives it as his opinion that this land will prove very productive.

#### MONTANA.

Lewis and Clarke County.

**Montana Mining Company, Limited.**—The output for April was \$37,639, including \$4,800 from the treatment of 2,050 tons of tailings. Only 2,035 tons of ore were crushed, owing to 30 stamps being hung up in the mill. The working expenses were \$27,500; development work, \$6,600, and extraneous and legal expenses, \$4,850.

Madison County.

**Maggie.**—A force of men has been developing this copper property in the Camp Creek district, for some time past. The Lucky Boy has also been developed recently, but the property purchased some time ago by the Anaconda Mining Company has remained idle.

#### NEVADA.

Esmeralda County.

**Silver Peak.**—This mine, in the southern portion of this country, has been bonded by San Francisco parties. It is said to be a large mine of a low grade of ore.

(From our Special Correspondent.)

**Mt. Diablo Mining Company, Candelaria.**—A shipment of 6,249 fine oz. of silver has been received at the San Francisco office.

Eureka County.

**Cortez Mines, Limited.**—An important strike has been made on this property.

Lincoln County.

**Bristol.**—The copper smelter at Bristol has started operations. Before the run ceases a considerable amount of custom ore will be reduced.

Nye County.

**Magnolia.**—The last shipment of 20 tons of ore assayed as follows: First-class, 18 oz. gold, 150 oz. silver, per ton; second-class, 5.7 oz. of gold, 83 oz. silver, per ton. The 20 tons brought in the neighborhood of \$5,000.

Storey County.

**Ophir Mining Company.**—The cross-cuts have as yet failed to find ore.

Storey County—Comstock Lode.

(From our Special Correspondent.)

The following is the weekly tabulated statement of ore hoisted from Comstock mines and milled, with the car and battery assays, bullion shipments, etc.:

Mines.	Tons Hoist'd	Car Sample Assay, Mt'd.	Tons Mt'd.	Av. Bat'ry Assay.	Bullion for Week.	Bullion Shipped.
Fletcher...	29					
C. C. & Va.	560	\$27.11	665	\$23.96		\$22,993.67
Justice...			15	19.16		\$6,183.55
Kentuck...	21	31.00				
Potosi...	511	22.72	549	22.80		\$915 lb.
Savage...	463	35.00				

\* Last shipment on April account, making total \$56,791.81. \* Product of 400 tons of ore. \* To Carson mill. \* Cars.

**Consolidated California & Virginia Mining Company.**—The yield of bullion during the several months of the year has been as follows:

	Gold.	Silver.	Total.
January.....	\$4,000		\$4,000
February.....	\$6,129		\$6,129
March.....	27,731	31,361	59,092
April.....	27,932	29,761	57,693
Total.....	\$80,892	\$81,799	\$162,691
In 1892.....	185,332	\$133,636	\$318,968

Shareholders ought to congratulate themselves on the showing being made, for whatever may be the ulterior purpose of the management, the return being made by the mill is much more satisfactory than last year. Of the 2,414 tons of ore worked the average car sample was \$33.51; battery sample \$28.73 2-10; pulp assay, \$23.52 6-10.

The bullion yield, to be exact, was: Gold, \$27,032; silver, \$29,759; total, \$56,791. Discount on silver, \$10,415, and transportation and milling, \$12,070. Balance, \$34,306.

The bullion yield was thus 70-16% of the car sample, and 82-25% of the pulp assay. The company on April 1st, had cash on hand amounting to \$59,702, and on May 1st the sum of \$66,561, all the monthly expenses being paid. It seems therefore as if a profit of \$6,858 had been made during April.

**Kentuck Mining Company.**—Arrangements have been made, by virtue of which the Santiago mill will crush the ore from this mine. A joint west crosscut, near the Jacket south line, has been started, the face being now in fair grade ore. The reported ore strike upon which the public have been more or less depending for a month past is mostly in Jacket ground.

**Ophir Mining Company.**—When the winze on the 1,565 level was sunk and passed through ore, it did not need a very expert superintendent to know from the indications that the ore body lay to the



east of the winze. Now, however, 52 ft. below the 1,565 level crosscutting has been commenced west of the winze.

**Potosi Silver Mining Company.**—There were crushed at the Nevada mill 1,800 tons of ore, which yielded in bullion \$32,965, an average of \$18.3 per ton. The average car sample was \$24.83, and the average pulp assay \$22.77; the cost of reduction, at \$6 per ton, was \$10,800, thus making the net return in bullion \$22,165. The mill thus returned 73.75% of the car sample assay and 80.40% of the pulp assay. It will be noted, however, that albeit the management have been making a better and more honest showing than heretofore—not so good this as last month, however—they preferred to make a fairly honest return by dishonest methods. For instance, not infrequently since Judge Hubbard gave his famous decision the car load assays have shown a less value than the battery assays. It is easy to make such a showing, but not honestly. Good ore is showing in several of the openings of this mine, and also in Chollar, but none of this ore is being extracted. The long-looked-for connection between these mines by means of the new south laterals was made on Wednesday. The showing being made in Chollar is better than in Potosi, but as Alvinza Hayward controls both, stockholders will probably not benefit much.

**Yellow Jacket Mining Company.**—The report which was spread abroad regarding an ore strike in Kentucky, has proved to be inaccurate. The ore body is almost entirely in Jacket ground, but the superintendent has forgotten in his weekly reports to mention anything about it.

#### NEW MEXICO.

##### Dona Anna County.

**Organ Mountain.**—A strike has been made on property 40 miles southeast of Las Cruces, in the Organ Mountain District. A tunnel has been driven in 70 ft. on low grade iron ore carrying gold. It is thought the ore is too low grade, however, to be worked at a profit at this remote spot. At a mine in the southern portion of the Organ Mountains, there is 3 ft. of free milling ore running from \$35 to \$70 per ton. A good strike has also been made in the Grey Eagle Mine. It is thought that the Bennett and Stevenson mines will resume operations. There is said to be a considerable quantity of ore on the dump.

##### Sierra County.

**Manhattan Gold Mining and Milling Company.**—Work is now going on in the tunnel. It is expected that the vein will be struck in five or six weeks.

**Pacific Gold Mining Company.**—Operations on this property have been resumed. Owing to the insufficiency of water it has been proposed to move the mill to the mine, but the manager does not think there is a sufficiency of water there, and in all probability the mill will be removed to some other spot.

#### NEW YORK.

##### Clinton County.

**Chateaugay Ore and Iron Company.**—At the annual meeting at Lyon Mountain, last week, the following officers were chosen: Trustees, Smith M. Weed, James M. Burden, James P. Dickson, Francis J. Domulick and Robert M. Oliphant. Inspectors of election, M. F. Parkhurst and George S. Weed.

##### Essex County.

**Crown Point Iron Company.**—It is stated that the company has settled the suit brought against it for failing to comply with the "weekly payment law" by paying \$200 penalty into the State Treasury and stipulating to make weekly payments to its employees after June 1st.

#### OHIO.

##### Lawrence County.

**Sheridan Coal Company.**—A press dispatch says that a New York syndicate has secured control of the abandoned property of the Sheridan Coal Company, at Sheridan, O., and will re-open the mines at once. Frank Brown, of New York, vice-president and general manager of the new company, is making the preliminary arrangements. The land embraces about 400 acres, in which are several veins of coal that are said to average about 5 ft. in thickness. Two mines will be opened and 10 coke ovens built to begin with, while shipping will be done by both river and rail.

#### OREGON.

##### Jackson County.

**Ashland Mining Company.**—This mine is  $1\frac{1}{2}$  miles from Ashland. It is now worked at a depth of 385 ft. On the surface the vein was 20 in. wide, and the free milling ore averaged \$16 per ton. At present, the vein is 7 ft. wide and averages close to \$25. The production since November, with a five-stamp mill, has been \$33,000. The clean-up for April amounted to \$6,665.

#### PENNSYLVANIA.

##### Anthracite Coal.

**Delaware & Hudson Canal Company.**—At the annual meeting in New York, May 16th, the following managers were elected: Legrand B. Cannon, James Roosevelt, R. M. Oliphant, Benjamin H. Bristow, R. Snyder Grant, William H. Tillinghast, Alfred Van Santvoord, James A. Roosevelt, Alex-

ander E. Orr, Oliver P. C. Billings, Samuel Spencer, Cornelius Vanderbilt and Chauncey M. Depew.

**Union Coal Company.**—This company has opened two new collieries in the vicinity of Mt. Carmel, one of which, the Richards, is being pushed rapidly to completion. It is expected that it will begin operations in a short period. The breaker is large, according to the Ashland "Telegram," and the slopes and workings are being well finished. The colliery will be a large producer, and will give employment to 700 men and boys. At the Strong colliery the work is progressing rather slowly at present, due to the fact that the Richards has had the preference, but it is expected after this colliery has begun shipments the work at the Strong colliery will be pushed vigorously. These mines are under the superintendency of John L. Williams, formerly of Shenandoah.

#### SOUTH DAKOTA.

##### Custer County.

**Keystone.**—The mill on this property is in successful operation.

**New Reduction Works.**—Mining in the Black Hills seems to be more than promising. The Welcome Mining Company will build a 100-ton chlorination plant, the Deadwood & Delaware a 60-stamp mill, the J. S. Childs a 50-ton cyanide plant, and Thomas H. White a 100-ton cyanide plant.

##### Lawrence County.

**Big Missouri Mining Company.**—The Uncle Sam 60-stamp mill will be started up on this property. The company is now stoping ore on the 300-ft. level.

**Minerva.**—A mill run of 11 days on ore from this property is said to have yielded \$2,300.

**Welcome Mining Company.**—Operations on this property have been suspended. It is said by some that the vein is pinched out, but by other interested parties this is contradicted. It is stated also that the chlorination plant cannot work the ore properly, but again this statement is denied.

#### TENNESSEE.

##### Polk County.

**Ducktown Sulphur, Copper and Iron Company.**—This company has begun work on new buildings to replace those recently destroyed by fire.

**Pittsburg & Tennessee Copper Company.**—This company has put in a large pump, driven by water power, for the purpose of draining its mine, and is making extensive preparations to resume mining.

#### UTAH.

**California Bar.**—A hydraulic plant has been put up on the placers at California Bar, on the Colorado River.

##### Juab County.

**Centennial-Eureka Mining Company.**—This company has declared dividend No. 30 of 50c. per share, amounting to \$15,000.

##### Salt Lake County.

**Dickert & Meyers Sulphur Company.**—This company held its annual meeting, May 4th, at Salt Lake City. The following directors were elected: R. L. Scannell, C. Tenason, C. F. G. Meyers, Samuel Meyers, W. A. Nelden.

**Germania Smelter.**—This smelter is making an experiment in the use of burnt lime instead of limestone in its blast furnaces. The comparative merits of the two have been discussed in the columns of the "Engineering and Mining Journal."

##### Summit County.

**Crescent Mining Company.**—Arrangements between this company and the Alliance Mining Company, have been effected, by which the two suits at present pending will be withdrawn and permission given the latter company to extend its tunnel into the Crescent ground. It is said that favorable developments have been made on the 400 level of the Crescent, and the Alliance tunnel will cut the ore body below this depth.

**Daly-West Mining Company.**—There is now 700 tons of milling ore and 300 tons of smelting ore on the dump, the result of a few months' work. The bottom is said to be looking well.

**Northland-Mayflower.**—The long and expensive litigation between these two companies has come to an end, matters having been settled out of court, by the payment of \$45,000 on the part of the Mayflower and the withdrawal of their suit, in consideration of this, the Northland people deeded the Northland, Nevada, North Pole, Jenny Lind and the Central Hill claims. This will permit work on these properties to be pushed actively, and at the same time release a certain amount of money—the profit from ore sales—which for some time has been tied up.

**Ontario Mining Company.**—The work of rebuilding the No. 1 Stetefeldt furnace is now in progress. When completed, the mill will be entirely fired by producer gas. The tunnel is in soft ground again and is making slow progress. A large volume of water is coming in the face.

##### Tooele County.

**Mercur Mining Company.**—This company is increasing the capacity of its cyanide plant from 35 to 75 tons per day. The cyanide plant for the Merrian company is to be completed and will have a capacity of about 50 tons per day.

#### WASHINGTON.

##### Okanogan County.

**Washington Reduction Company.**—According to Mr. Luther Wagoner, superintendent of this company, a tunnel 4,500 ft. long will be run to tap the Fourth of July and First Thought ledges. Mr. Wagoner considers the prospects extremely good for successful mining. His company has 70 tons of concentrates ready for shipment, said to run from \$100 to \$700 per ton.

#### FOREIGN MINING NEWS.

##### BRAZIL.

**St. John del Rey Mining Company.**—The secretary of this company has issued a circular letter stating that the directors have ordered the whole of the machinery and plant required, not only to make the mine self-supporting, but to enable the mining and milling operations to be carried out on a large scale. The London "Financial News" states that the directors have assured the shareholders that by adopting this policy of completing the whole plant in one operation monthly profits will be earned as soon as the work is completed. On account of the additional expenditure it has been decided to issue a pro rata allotment on the holding of each shareholder, one share of new stock for every ten shares held.

##### BRITISH COLUMBIA.

##### Slocan.

**Highlander.**—Considerable prospecting has been done on this property near Ainsworth, and several veins have been cut. The first vein carried galena which showed an average of about 40 oz. to the ton in silver. On the second vein 2 ft. of ore was struck, yielding 107½ oz. in silver and 6 in. of higher grade matter. Prospecting at depth will be done. The property has been bonded for \$15,000.

**Kootenai Hydraulic Placer Mining Company.**—This company has 15 or 20 miles of claims, extending some distance back from the banks of the Pend Oreille River. The ditch has been completed, and the water will be turned on the gravel very shortly. The flume is 18 miles long, and is said to have cost \$75,000.

**Rip Van Winkle.**—This placer mine, near Lytton, will begin operations shortly. It is believed that a successful run will be made.

**War Eagle Mining Company.**—A contract has been let by this company to sink 250 ft. and then to drift 350 ft. on the vein. The contract must be completed by Aug. 1. It is reported that the Le Roy Company will also do a considerable amount of developing work.

##### GREENLAND.

**Ivigtut.**—The output of cryolite for 1892 was given in an item under this head in our last issue as 655 tons by a misprint. It should have been 8,155 tons. As shown in the "Mineral Industry" for 1892, the contract of the Danish company which controls these mines calls for 10,000 tons yearly, but this amount is seldom reached.

##### MEXICO.

(Special correspondence of Richard E. Chism.)

In my letter of two weeks ago, referring to the exportations from this country according to the official figures of the Treasury Department, I did not give any estimate of the amount of lead exported from this country. In the Treasury reports the item of base bullion appears with a statement of value only, the weight of the product not being given. The value is said to be \$3,184,082. From some independent sources I am able to calculate very closely that the above represents about 10,000 short tons of lead with an assay of about 160 ozs. of silver per ton, valuing the lead at 5c. Mexican, or say 3½c. gold, per pound. Adding to this the amount of lead exported as such without reference to silver value, which is some 247½ tons, we find the total export of Mexican lead to have been approximately 10,247½ tons in six months, or 20,500 tons a year. This agrees fairly well with an approximate calculation made from the known workings of the smelters from which I estimated 27,000 tons as the product for 1892.

**San Luis Potosi.**—Quite a little stir has been occasioned in the capital of this State by the closing up of the mint, which has been steadily at work there for some 60 years, and the removal of the coining machinery to Mexico City. It is stated that in place of the mint an assay office for the receipt of bullion will be established in San Luis Potosi, and indeed the assay office is supposed to have been at work since May 1st.

A circular from the Treasury Department states that the closing of the San Luis Mint forms a part of the programme of the government and which consists in the concentration as far as possible of the minting process, to thereby diminish its cost and increase the perfection of the coinage. It has been feared by many merchants that the policy of the government has been to unduly favor the circulation of paper money, but this is authoritatively denied, and it is stated that all possible measures have been taken to distribute coin wherever it is needed for commercial purposes.

There are, or have been until recently, some thirteen mints in this country under control of various private parties, who have them rented from the government under conditions more or less onerous to the national treasury.

To support these mints a tax amounting to nearly 5% was exacted on all gold and silver coined in the republic and upon all gold and silver not coined and intended for exportation. The government now collects this tax for its own benefit instead of for that of the mint contractors.

Another duty that has just been imposed, to take effect after July 1st, 1893, is a stamp tax of three cents for every five dollars' worth of gold and silver coined or exported. Putting the gold and silver production of Mexico in round numbers at 50,000,000 per year, the above tax ought to produce about \$300,000 yearly, which will be a welcome addition to the diminished revenue of Mexico.

**Guanajuato.**—The usual annual tin discoveries are reported this spring from the State of Guanajuato a few miles south of the capital of that State. The find was made by an American prospector, named Frank Gordon, who was investigating the mineral resources of the State on behalf of a Philadelphia syndicate. The new tin properties "bear evidence of having been worked by the Aztecs or some other race centuries ago." It is stated that the work of developing the deposits will begin as soon as the machinery can be obtained.

It may perhaps avoid a useless expense and a disagreeable experience to some of the members of the "Philadelphia syndicate" to learn that the existence of tin ores is well known in the State of Guanajuato and that every promising deposit has been carefully and eagerly worked with no profitable result whatever. The "ancient workings" above alluded to as being at the site of the new find are undoubtedly relics of some of these abortive attempts.

#### NEW CALEDONIA.

Australian papers report that in the terrible hurricane which recently passed over New Caledonia 10,000 tons of nickel ore stored ready for shipment were "swept away." Just how the hurricane swept the nickel away we are not informed, but the loss is a serious one.

#### NEW SOUTH WALES.

**Bendigo.**—The gold returns for February show a total of 16,176 oz., as compared with 12,844 oz. in February, 1892, an increase over last year of 3,332 oz. The January and February returns for six years show as follows: 1888, 25,492 oz.; 1889, 21,494 oz.; 1890, 28,990 oz.; 1891, 21,292 oz.; 1892, 25,014 oz., and 1893, 34,190 oz.

#### NOVA SCOTIA.

The receipts of the Department of Mines during 1891 and 1892 were as follows: In 1891, for prospecting licenses, \$10,133; in 1892, \$7,371, a decrease of \$2,761. In 1891, rents and gold lease applications, \$1,622; in 1892 it was \$1,926, an increase of \$304. The amount received for gold rentals in 1891 was \$1,400, and in 1892 \$1,653, showing an increase of \$244. Gold royalty in 1891, \$8,360, and in 1892, \$8,199, being a decrease of \$161. From licenses to search for minerals other than gold and silver the Department received in the year 1891, \$1,340, and in the year 1892, \$5,019, being an increase of \$700. For licenses to work and lease minerals other than gold and silver the Department received in 1891, \$1,643, and in 1892, \$1,925, being an increase of \$325. For rentals of minerals other than gold and silver the amount received in 1891 was \$2,400, and in 1892, \$3,030, showing an increase of \$630. The royalty on iron for 1892 was \$180. By far the largest and most important item was royalty on coal. The amount received in 1891 from this source was \$143,572, and in 1892, \$135,962, being a decrease of \$7,609. The net decrease in revenue for the year was \$7,955.

#### ONTARIO.

A deputation of the Canadian Manufacturers' Association has petitioned the Provincial Parliament to supplement the Dominion bounty of \$2 per ton on pig iron, by a like duty from the Provincial Treasury for a period of 10 years.

#### QUEENSLAND.

The Mills United Mine has paid £7,500 monthly in dividends since January.

**Mount Morgan Mining Company, Limited.**—This company's report for February shows 1,410 men employed and 208 ft. of driving done; 4,278 tons of ore raised during the month. The quantity of ore treated was 5,790 tons, and the yield of gold 9,566 oz.

#### QUEBEC.

**North American Mining Company.**—The annual meeting was held in Montreal, May 15th, and resulted in the election of G. N. Ducharme, F. Bayard, A. Montreuil, A. Renaud, A. Yale, A. Bayard and O. Henault as directors. At a subsequent meeting of the directors G. M. Ducharme was elected president and A. Bayard vice-president.

#### RUSSIA.

A Russian journal reports the finding of naphtha at Romany, in the Caucasus. The well is said to have produced 10,400 metric tons in 21 hours.

**Petroleum.**—There has been in recent years a large business in petroleum from the Baku refineries which is sent to Persia. This business has been restricted by the difficulties of transportation. The Baku refiners now propose to build a pipe line from that place to some point on the Persian Gulf, to be selected after surveys have been made. The shortest possible line will be about 400 miles. A shipping port on the Persian Gulf would also be very convenient for oil shipments to India, China and Japan, saving the Black Sea voyage and the passage through the Suez Canal.

**Silver.**—It is stated the government has ordered the Imperial silver mines at Lutjev, Paulov and Barnaoul, in Siberia, to be closed for the present, as their operation is not profitable.

#### SAN DOMINGO.

Work will be begun shortly on the property of the West Indian Exploration Company to treat the alluvial gold deposits, which are supposed to be rich. Several washing machines will be placed on the rivers.

#### SOUTH AFRICA.

The "South African Journal" believes that with the extension of railroad facilities in the Transvaal, custom smelting will not only become possible, but profitable.

**Diamonds.**—A 253 $\frac{1}{2}$  carat diamond was recently discovered in the Jaegersfontein mine by a native. He was given £80, a horse, saddle and bridle. This company has declared a dividend of 5% for the quarter ending March 31st.

#### Natal.

During the year 1891-92 this colony produced, according to a recently issued Bluebook, not less than 120,000 tons of coal. The report states that the coal compared favorably in quality with the best English or Welsh coals imported and that the market is increasing fast. Iron ore has been found in close proximity to the coal.

#### Transvaal.

The total gold output of the Transvaal during 1892 reached 1,325,391 oz., of which 1,210,868 oz. were the product of the Witwatersrand. The other districts produced as follows: DeKaap, 63,125 oz.; Lydenburg, 21,092 oz.; Klein Letaba, 11,693 oz.; Klerksdorp, 8,567 oz.; Malmazi, 2,060 oz.; Marabastad, 1,113 oz.; and Houtbushberg, Vryheid and Silati, 471 oz.

**Deep Level Mines.**—The Exploration Company (Limited), as managers of the Deep Level Development Company, have issued a circular in which they state that "a successful issue of 90,000 shares of the Goldenhuis Deep (Limited) has been made, the proceeds of which are now available for the thorough development of the mine of that company. The Consolidated Deep Levels (Limited) has concluded preliminary negotiations for the sale of its block of 43 claims under the New Primrose and Moss Rose mines to a company to be called 'Rose Deep (Limited)'. This company will be formed on the same lines as the Goldenhuis Deep, and a public issue of some of its shares for working capital is expected to be made in London in the next few months. The directors of the Consolidated Deep Levels (Limited), being now satisfied as to all the titles will forward from Johannesburg about 102,410 shares of that company, which is the number receivable by the Deep Level Development Company; these shares are entitled to about 10,000 shares of the Goldenhuis Deep (Limited). The object for which the Deep Level Development Company was formed having been attained, the managers advise that the company be liquidated, and that its assets in shares and cash be distributed as soon as practicable." The company, it will be remembered, is the one at the head of which are the Rothschilds and which has Hamilton Smith, Jr., as Consulting Engineer.

The mill (25 stamps) ran 27 days 21 hours; quartz milled, 2,007 tons; gold won from mill, 1,031 ozs. 2 dwts.; gold won from tailings, 698 ozs. 19 dwts.; concentrates won, 20 tons; assay value of concentrates, 54 ozs. to the ton; average assay value of ore milled, 106 dwts.; recovered from mill, 103 dwts. per ton; recovered from concentrates, 12 dwts. per ton; total recovery, 115 dwts. per ton. During the month, 2,745 tons of tailings from the Klemfontein mill were treated at the cyanide works, yielding 698 ozs. 19 dwts.

**Durban-Roodepoort Mining Company, Limited.**—The report for 1892 shows that dividends to the amount of over 40% were paid, including the distribution of 10% on January 21st, derived from earnings in 1891. The company has added an extensive cyanide plant which should increase its earnings during this year. The report shows that at the end of 1892 the total expenses were reduced to a little under £1 per ton.

**New Chimes Gold Mining Company.**—As showing the costs of working, the following report of this company for the month of January has considerable interest:

Working expenditures on 2,007 tons milled: Mining and hauling, £2,341 7s. 3d.; transport and milling, £838 5s. 10d.; maintenance, £1,092 6s. 10d.; general expenses, £371 15s. 3d.; expended on development, £330 9s. 4d.; total, £5,774 5s. 6d.

Revenue: Native gold, 1,031 ozs. valued at £3,670; concentrates, cash value of 20 tons, £355 18s. 4d.; tailings, 2,745 tons at 3s. 3d., £446 1s. 3d.; balance, deficit for month, £1,301 5s. 11d.; total, £5,774 5s. 6d.

Analysis of working expenses and revenue: Mining and hauling, £1 3s. 39d. per ton; transport and milling, 8s. 42d. per ton; maintenance, 10s. 10 62d. per ton; general expenses, 6s. 83d. per ton; expended on development, 8s. 83d. per ton; total working expenditure, £2 17s. 6 59d. per ton; value of gold, £1 16s. 68d. per ton; value concentrates, 3s. 66d. per ton; value, tailings, 4s. 53d. per ton; total revenue, £2 4s. 68d. per ton; net loss, 12s. 11 62d. per ton.

**Durban-Roodepoort Gold Mining Company.**—The total cost of the new cyanide works of this company is reported to be between \$40,000 and \$45,000. Mr.

Charles Batters prepared the plans for the works. The leaching vats are 45 ft. in diameter and 8 ft. deep, with bottom discharge. There are three solution vats, 24 ft. in diameter and 7 ft. deep, and three precipitation boxes, 17 ft. long and 3 3/8 ft. wide and deep.

**Witwatersrand.**—The output for March was 111,474 oz., against 93,252 oz. in February and 93,241 oz. in March, 1892.

#### TASMANIA.

**Blue Tier Tin Mine.**—The government geologist recently examined this mine and made a very favorable report. If the ore continues to hold out as the workings increase in depth the mine may be considered a rich one. It is to be developed on a large scale.

**Mount Lyell Mining Co.**—The preliminary report of Dr. E. D. Peters, Jr., on this property has been published. Dr. Peters estimates that 2,500,000 tons of ore are available above water level. The ore body is 600 to 800 ft. in length and 200 ft. wide. After stating that these pyritic bodies are among the most permanent of mineral deposits, Dr. Peters believes that with a suitable plant a profit can be earned. The process he recommends is heap or stall roasting, smelting in large blast furnaces to a copper-silver matte, refining the copper matte to metallic copper, and finally separating the silver and gold from the copper.

#### WALES.

**Dinas Colliery.**—This colliery, which has for the previous 18 months been working on the day-to-day contract, was stopped on March 18th. The pit is the oldest in the valley, and it is stated that about 700 workmen have been thrown out of employment. There are now eight collieries idle in the valley.

#### COLORADO ORE MARKET.

##### Denver.

May 8.

(From our Special Correspondent.)

For two weeks ending May 6th the receipts of ore in this market offered for competitive bid by the three different public sampling works only amounted to 390 tons. A large proportion of this ore was silicious, which came principally from Cripple Creek. These ores running very low in silver and high in gold brought unusually good prices, the smelting margins running below the minimum. The heavy lead products brought a premium, due to the general shortage of lead in the market. Of straight silicious ores there was offered 215 tons, which sold at from \$6 to \$12 off for smelting, in many cases \$9.50 being paid for the gold. Of silicious lead ores there was offered 51 tons, which sold at unusually good prices, 15% lead bringing 40 cents per unit, standing about \$8 smelting charge. Of heavy lead ores, carrying from 25% up to 55%, there was offered 55 tons, which sold at unusually good prices, the lead over 45% 55 to 60 cents per unit being allowed and no smelting charge.

Of copper ores carrying from 3% to 7% there were offered 39 tons, the copper bringing from 80 cents to \$1 per unit, the smelting charge running from \$9 to \$12.

#### MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, S. Dak.; St. Louis, Helena, Mont.; London and Paris, see page 480.]

NEW YORK, Friday Evening, May 19.

The mining stock market has not recovered from the recent flurry so quickly as the general stock market. As a result of the panicky feeling which prevailed in the exchanges a fortnight ago, when mining stocks were relegated to the rear, many brokers and members of the investing and speculating public have been forced to part with the mining shares which they held. It is due largely to this fact that mining stocks have been dull and depressed and lower in price. But just as the general stock market has rallied and "bulls" no longer tremble for their lives, so it is expected that mining securities will shortly have a hearing before the long-deaf public and a better business is anticipated.

The actual behavior of the Comstock shares unfortunately does not offer very promising prospects for the near future. Prices have declined, with but few exceptions, and all hopes are now centered on the reports of good crops in California. Prosperity in agricultural circles means general prosperity, and brokers in San Francisco are looking forward to better times to come before the fall is over. Within the past month or two there have been sundry rumors approaching "booms" on the Comstock lode, but of none of these venerable tales have been verified by actual events, and dealers in mining shares are once more "hoping and hoping and hoping."

During the past week the total number of shares sold was 2,135. This is probably the smallest weekly total transaction at the Consolidated Stock & Petroleum Exchange in several years. Of this number 1,300 were of Comstock Tunnel stock, which was sold at \$6.9c. The only other Comstock dealt in was Consolidated California & Virginia, of which 235 shares were sold at \$2.25@2.15.

Of the California stocks the only one which shows a transaction is Bulwer, of which 100 shares were sold at 21c. Late advices from the Brunswick Consolidated Gold Mining Company's property are to the effect that 50 tons of non-assorted ore from the



600 ft. level were run through the mill and sold for \$220. This ledge is 6 ft. wide. A lot of 50 tons of as sorted ore will now be run through the mill.

Of Monte Cristo 400 shares were sold at \$3.15. Phoenix of Arizona shows a single transaction of 100 shares at 2c.

Arrangements have been made for placing the stock of the Victor Gold Mining Company of Cripple Creek, Colo., on the New York market. The company is capitalized at \$1,000,000, divided into 200,000 non-assessable shares of a par value of \$5 each. The company is paying at present regular monthly dividends of \$10,000, or 5c. per share. Mr. H. R. Lounsbury has been appointed the New York agent of the company. In our next issue we shall have more to say of this company.

**Boston.**

May 18.

(From our Special Correspondent.)

The decline in the Montana stocks was the principal feature in copper circles the past week. There was not much stock pressed for sale, but stop orders were reached in Boston & Montana, which caused a decline in this specialty to \$19½, being the lowest recorded price for this stock. Later it rallied to \$21½ to \$22, which was the closing price to-day. Butte & Boston touched \$6½, after selling at \$7½, and recovered to \$7.

The dividend stocks were fairly firm. Calumet & Hecla declined from \$290 to \$285, but quickly recovered to \$290, and closed strong.

Tamarack sold at \$148, but dropped to \$145, at which price it is in good request.

Oscoda was quite strong at \$28½ early in the week, but yielded to the pressure to sell and declined to \$27. Quincy declined to \$110, recovering to \$112 for a small lot to-day.

Franklin has ruled strong throughout the week with a few sales at \$11½, but most of the transactions were at \$11½ to \$11¾, and a small lot sold at \$12.

Atlantic declined to \$7½ for a lot of 25 shares.

Centennial and Kearsarge, both purely speculative stocks, were not very active. The former sold at \$61½ to \$61¾, and the latter at \$7½ to \$8½.

Wolverine declined from \$2½ to \$2, on sales of 500 shares.

Allouez sold at 50¢ to 51c., Arnold at 40c., Santa Fé at 5c. and National at 7c.

3 P. M.—There was no change in the market after the noon hour, and the market closed dull, but steady.

**San Francisco.**

May 12.

(From our Special Correspondent.)

The week opened with a sharp decline in the mining stock market. The entire line of Comstocks suffered, and, although a reaction took place later in the week, prices have not fully recovered on the week's volume of trade. The weekly reports from Consolidated California & Virginia have shown a decline in the assay value of the ore being taken out, and the expectations regarding the development in the cresscent on the L565 level have not been realized. As has been shown elsewhere in these columns, the Ophir management are not sinking for ore in Ophir, and a decline of price will suit them, even if it does not the Street, perfectly.

The visit of J. H. Mackay to Virginia City has been looked forward to with eager expectancy; this visit will again be delayed. Superintendent Lyman arrived from the lode early in the week, and has been in conference with the magnates in the Nevada Block previous to Mr. Mackay's departure for the East yesterday. What the outcome of their deliberations may be remains to be seen. If a market is to be made, much has to be done by the inside clique. A small line of stocks is not held by them very closely, and before a market can be made these will have to be gathered in. Meantime Consolidated California & Virginia is selling for \$2.20; Ophir for \$2.30; Mexican for \$1.00; Sierra Nevada, \$1.25, and Union Consolidated for \$1.15.

In the middle group of Comstocks Potosi sold as high as \$3 on Wednesday, an advance of 40c. on the previous day's ruling, but declined again, and opened to-day at \$2.80, closing at 5c. off. Best & Belcher sold to-day for \$1.35; Chollar for \$1.20; Gould & Curry for 95c.; Hall & Norcross for 85c., and Savage for \$1.05.

The Gold Hill and South End Comstocks have ruled at less prices than last week, and have not been in such demand. Belcher has been more called for than any other stock, and sold to-day for \$1.15; Bullion for 15c.; Consolidated New York for 10c.; Confidence for \$1.10; Crown Point for 75c.; Kentuck for 20c.; Occidental for 15c.; Overman for 20c., and Yellow Jacket for 90c.

The outside stocks have been quoted only. Bodie Consolidated at 25c. bid, and Bulwer Consolidated and Mono at 20c. asked.

Of the Tuscaroras, Belle Isle, North Belle Isle, North Commonwealth and Nevada Queen have been held for 15c., and Commonwealth for 5c.; Navajo was quoted to-day at 10c. bid.

In the Quijotoa group the following were the quotations at to-day's close; Crocker, 5c. asked; Peerless, 10c., and Pew, 20c. asked.

SAN FRANCISCO, May 19th (By telegraph).—The opening quotations to-day are as follows: Best & Belcher, \$1.10; Bodie, 25c.; Belle Isle, 10c.; Bulwer, 15c.; Chollar, 95c.; Consolidated California & Virginia, \$1.95; Enreka Consolidated, \$1; Gould & Curry, 75c.; Hale & Norcross, 70c.; Mexican, \$1.20; Mono, 10c.; North Belle Isle, 15c.; Navajo, 10c.; Savage, 75c.; Sierra Nevada, 90c.; Union Consolidated, 85c.; Yellow Jacket, 75c.

**London.**

May 9.

(From our Special Correspondent.)

The feature of the week on the mining exchange has been the continued increase in the value of Poormans, which stand strong at 8s. 9d. @ 8s. 3d. Good reports from the mine have brought this about and are likely to send the price much higher still. South Poormans have also fractionally improved. Holcomb Valley shares have again been to the fore and there are plenty of buyers about at 1s. 1½d. Seven Stars have fallen 1s. 3d., and so have De Lamars. There have been plenty of dealings in Jay Hawks, and the price has fluctuated a good deal, but finally improved and hardened on the receipt of better news from the mines.

The report of the working of the Golden Leaf Company, Montana, during 1892 has been published. From this it appears that the three mines belonging to the company, viz., the Golden Leaf, Empire and Bell Boy, have all been conducted at a profit during 1892, even after reckoning the sums spent on developments as part of the expenditure amount. The ore occurs in such irregular pockets that, with the present price of silver, the engineer, Mr. Longmaid, does not consider the prospect hopeful, and the directors recommended that the balance of £12,000 on the year's workings should not be paid out as dividend, but should be devoted to purchasing some other property. At the meeting of the shareholders held on May 8th, the proposition was received with disfavor, and the resolutions were not carried. The chairman of the Board of Directors resigned, and the meeting was adjourned for a month for the further consideration of the state of the company.

The West Virginia Freehold Land Development, Mining and Railway Company, Limited, is the title of a new company, whose shares are being placed on the market. It has been formed to purchase the mineral and timber rights over three properties, aggregating 114,333 acres of freehold agricultural, timber and coal land in the counties of Wyoming, McDowell, Logan and Webster, in West Virginia, to develop the natural resources of this land and erect towns, etc. The authorized capital is £250,000, and 100,000 shares at £2 each are now being offered to the public. Mr. T. Currie Gregory is the consulting engineer.

The New House Tunnel Company, Limited, has been registered in London. The object of the company is to acquire the stock, shares or securities of the Argo Mining, Drainage, Transportation and Tunnel Company of the State of Colorado.

**MEETINGS.**

Boston & Montana Mining Company, at the office of the company, in Boston, Mass., June 21st, at 12 o'clock noon.

Clandia J. Mining Company, at the office of the company, Mining Exchange, Denver, Colo., June 1st, at 10 a. m.

Copper Harbor Copper Company, at the office of the company, No. 65 Devonshire street, Boston, Mass., May 26th, at 11 a. m.

Minnesota Iron Company, at the office of the company, in Duluth, Minn., June 12th, at 11 a. m.

Puzzler Gold Mining and Milling Company, at the office of the company, room 317 Mining Exchange, Denver, Colo., June 13th, at 10 a. m.

**DIVIDENDS.**

Copper Queen Consolidated Mining Company paid a dividend of 50c. per share, \$100,000, May 12th, at the office of the company, No. 330 John street, New York City.

Champion Mining Company paid dividend No. 31 of 10c. per share, May 15th, at the office of the company, No. 320 Sansome street, San Francisco, Cal.

Homestake Mining Company, dividend No. 178, of 10c. per share, \$12,500, payable May 25th, at the office of Messrs. Lounsbury & Co., Mills Building, No. 15 Broad street, New York City. Transfer books close May 26th and reopen May 26th.

Mayflower Gravel Mining Company paid dividend No. 6 of 10c. per share, May 18th, at the office of the company, No. 330 Pine street, San Francisco, Cal.

Pharmacist Mining Company paid dividend No. 6 of one cent per share, \$12,000, May 15th, at the office of the company, in Colorado Springs, Col.

**METAL MARKET.**

New York, Friday Evening, May 19, 1893.

Prices of Silver per Ounce Troy.

	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in St.	May	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in St.
13	189	38¼	82½	617	17	189¼	37½	82¼	638
15	189	38¾	83¼	615	18	189¼	37¾	82¾	641
16	189¼	37¾	82¼	636	19	189	37½	82½	641

Silver had been quiet to steady until the pinched condition of affairs in London disturbed the Eastern exchanges, and made buyers less inclined to engage silver at rates which had previously prevailed. At same time the fluctuations in silver compared with other commodities have been slight.

The United States Assay office at New York reports the total receipts of silver for the week to be 159,000 ounces.

**Gold and Silver Exports and Imports at New York, Week Ending May 13th, 1893, and for Years from January 1st, 1893, 1892.**

Week....	Gold.		Silver.		Excess of Exports.
	Exports.	Imports.	Exports.	Imports.	
1893.....	\$573,000	\$7,123	\$326,455	\$32,315	\$859,687
1892.....	\$2,216,606	\$630,493	\$1,325,632	\$73,273	\$6,908,452
1891.....	\$2,532,893	\$617,839	\$1,106,081	\$21,384	\$26,090,751

During the five days ending May 19th the exports and imports of gold and silver have been as follows: Exports, gold, \$2,531,000; silver, \$158,362. Imports, gold, \$48,339; silver, \$106,370. Besides the above it is probable that some \$2,500,000 in gold will be exported to-morrow. A noticeable feature of the gold movement is the change in the rate of exchange, in consequence of which the gold exported is now sent to London instead of to the Continent.

**NOTES OF THE WEEK.**

The advance report of Sir Charles Fremantle states that during 1892 the gold coinage of the English Mint amounted to £7,080,100 in sovereigns and £6,617,400 in half-sovereigns, a total of £13,697,500, against £6,179,500 in sovereigns and £543,900 in half-sovereigns, a total of £6,723,400, in 1891. The increase in the coinage of 1892 is accounted for by the re-coinage of old pieces then undertaken. In 1890 the pre-Victorian coins were called in, but it was not until 1892 that active measures were taken to deal with the entire volume of the gold currency under the act of 1891. The amount withdrawn from circulation, according to the provisions of the Coinage Act of 1891, was: Sovereigns, £9,415,000; half-sovereigns, £6,785,000; a total of £16,200,000. To this should be added light-weight coin withdrawn as bullion under the provisions of the former law, equal to £1,168,125, making a total withdrawal of £17,368,125.

In other words, the withdrawal of light coin exceeded the new coinage by £3,670,875. During the same year the in-and-out movement from the Bank of England was as follows: Imports, £6,379,000; exports, £6,711,000; net exports, £332,000.

According to Sir Charles Fremantle's report for 1890, the gold coin then in circulation amounted to £102,500,000, of which £52,000,000 was light-weight coin. If this estimate was correct, one-third of the light weight coins has been replaced by coins of standard weight.

The silver coined during the year was less than for some years past, having amounted to £741,300 in 1892, against £1,000,500 in 1891 and £884,500 in 1890. The bronze coinage amounted to £54,600 in 1892, against £9,600 in 1891 and £53,400 in 1890. From the above amount of silver coinage should be deducted the sum of £217,500 of old silver withdrawn from circulation, which would make the net addition to the silver currency equal to £523,800. During the year the Mint purchased 2,647,500 oz. of standard silver, the average price of which was 39½d. per ounce. As the coining rate is at 66d. per ounce, the seigniorage amounted to 65½%. This is the largest in the history of the English Mint.

For the three months ending March 31, 1893, the imports into and exports from Great Britain of the precious metals compared with the movement for the same period of 1892 were as follows: Imports, gold, £3,106,273 in 1893, against £1,283,267 in 1892; silver, £2,711,514 in 1893, against £2,395,650 in 1892. Exports, gold, £3,009,823 in 1893, against £1,777,548 in 1892; silver, £3,125,602 in 1893, against £3,176,720 in 1892. A study of the detailed figures as given by the London "Economist" shows some interesting facts. For example, the imports of gold from Portugal, the Azores, and Madeira in 1893 amounted to £253,176, against £949,586 in 1892, while the exports to those localities increased from £3,821 in 1892 to £140,340 in 1893. The exports to Germany for the three months of 1892 were £2,305,351, but dropped to £506,070 in 1893. The exports to Holland increased from £265 in 1892 to £467,000 in 1893.

On the other hand, exports of gold to Mexico, South America and the West Indies decreased from £912,538 in 1892 to £217,975 in 1893; at the same time the imports from those countries increased from £281,228 in 1892 to £252,818 in 1893. The imports of gold from the United States decreased from £480,671 in 1892 to £111,247 in 1893, while none was exported to this country in 1893, against £120,005 in 1892. The imports of silver from the United States showed a large increase, being £1,619,422 in 1893, against £1,075,448 in 1892. We may add that a gratifying feature of this increase is to be found in the fact that an unusually large part of the silver exported from this country to Great Britain during the present year was American bullion.

The financial depression continues to extend geographically like the ever-increasing circles caused by a stone thrown into the water, though it would appear that at New York, the financial center, affairs have settled back into their accustomed state. While time money, especially on commercial paper, continues high, call money on good stock collateral is obtainable on easy terms; the banks have strengthened their condition and added a much-needed confidence at the same time by decreasing their outstanding loans and increasing their surplus, which is now considerably above the legal requirement. In consequence of this railroad stocks and other capitalized properties have experienced a marked advance. In the early part of the week the market was largely over-sold,

but the weak operators have been shaken out and stocks are now held in strong hands. In striking contrast to this is the situation outside of New York. Throughout the West and South national banks and commercial houses have failed by the dozen, and at present there is a sense of uneasiness and distrust which, unless checked, will work serious harm. The wisest and most conservative observers declare the present situation to be the direct result of our present unsatisfactory laws, but candor compels us to say that the situation is complicated by unwise speculation, over-trading and the prevailing fear that the Columbian Fair will prove a failure financially. It was expected that the Fair would bring a large amount of gold to this country—a moderate estimate being \$75,000,000—but inquiry at the steamship offices shows that travel from Europe to this country has failed to develop to the extent expected, and the gate receipts at Chicago have so far been less than half the anticipated amount. It may be said, however, that although outward travel from this port has been fully equal to the average for some years past, the return tickets purchased are for a less period than is usual, which proves that a number of those who annually depart for Europe intend to visit the Fair at Chicago before its close.

As we have predicted, the purchase of stocks by the London and Continent during the late flurry in Wall street were insufficient in amount to prevent gold exports for any continued length of time. During the present week \$2,500,000 has been sent to Europe, which sum is likely to be doubled by shipments to-morrow, and in our opinion this movement will continue to the end of the present fiscal year, June 30. As it is, the United States has lost by net exports not less than \$120,000,000 in gold since January 1st, 1892; that our money has been increased to nearly the same extent by purchases of silver bullion and various paper issues is but poor consolation. In our editorial columns the question of our stock of gold is discussed at some length and from it we gather that no allowance has hitherto been made for various losses that have certainly occurred to our gold stock. For some years it was thought that the amount of gold brought into this country by immigrants would more than offset the amount of gold carried out by travelers. It is more than probable that this was true some 25 or 30 years ago; for instance, in 1856 the Commissioners of Immigration examined a number of immigrants as to the amount of their means and it was found that the average cash brought by each of 142,000 immigrants examined was \$68. In the year 1854 the Commissioner of Immigration said in his report that German immigrants alone had brought into the country \$11,000,000 during the previous three years—their total number being 900,000. But during the last decade not only has the character of immigration changed, but there has been a change in the nature and quantity of cash brought. The average immigrant has, as a rule, brought less money than in former years and what little he has brought has been in the shape of silver or in small drafts, the latter forming by far the larger proportion. These drafts are, of course, for gold values, but it must not be forgotten that they add nothing to the gold stock of the country, unless by preventing the export of an equal amount of money. That the gold brought into the country by immigrants is not equal to that taken out by travelers has for some time been recognized by the Mint, but no allowance has been made for this loss, because, as Mr. Kimball in one of his reports said: "The efforts of this bureau to ascertain the stock of metallic money in the country has been solely directed to the total called for by official statistics. The estimate by this bureau of the stock of coined money in the United States corresponds to such official data not without consideration of, but without estimate for, indefinite values corresponding to coin withdrawn from the country on the persons of the travelers and not registered at the Custom Houses."

#### Domestic and Foreign Coin.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars.....	\$65½	\$66¼
Peruvian soles and Chilean pesos....	53½	54
Victoria sovereigns.....	4.85	4.88
Twenty francs.....	3.86	3.89
Twenty marks.....	4.71	4.78
Spanish 25 pesetas.....	4.80	4.85

A feeling of flatness is prevalent throughout all the markets, which are more or less affected by the financial crisis. Of course, prices have suffered, as well as the volume of business.

**Copper.**—Consumers having rather largely covered their wants in Lake at 11c. have been somewhat reticent; electrolytic copper, of good brands, has been offered at 10½c., but buyers for moderate quantities only have been found; casting copper is obtainable at 10½c. according to brand and quantity. Consumption appears to be fairly good, but consumers complain of the low prices realized for their manufactures.

In England the prices for G. M. B's declined rather heavily, in the beginning of the week, the climax being reached on the 16th, on which day further heavy failures in Australia created great uneasiness, and prices dropped to £42 15s. for spot and £43 5s. for three months prompt. Since then a somewhat better feeling has prevailed, the market recovering and prices closing to-day at £43 15s. for spot and £44 7s. 6d. for three months. Refined and manufactured sorts we quote, as follows:

English tough, £46 15s. @ £47; best selected, £48 @ £48 10s.; strong sheets, £55 @ £56; India sheets £51 10s. @ £52; yellow metal, 4½d.

Quite a good demand for fine copper has existed, but owing to the reluctance of sellers to accept prices on a parity with the lower values of G. M. B's the amount of business actually done has not been large. A statistical decrease of 1,600 tons is reported for the first half of the current month.

The following figures give the production, in tons of 2,240 lbs., of copper in the United States and also by the chief foreign mines, and the exports of fine copper from the United States for the month of April and for the four months since the beginning of the year:

	April.	From Jan. 1, 1893.
Reporting mines in United States.....	11,775	38,240
Pyrites and outside sources, U. S.....	1,042	1,334
Reporting foreign mines.....	6,918	26,312

Total, long tons..... 19,735 68,946  
Exports from U. S. (fine copper)..... 3,450 10,770

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

		Lbs.	
To Liverpool—Copper Matte.....	5,017 bags	165,122	\$25,000
S. S. Cufie.....	3,565 bags	412,400	18,000
" Servia.....	960 bags	123,113	5,500
" Germanie.....	3,338 bags	348,275	27,000
" St. Enoch.....	2,157 bags	224,879	10,000
" Herschel.....			
To Bristol—Copper.....			
S. S. Manhansett.....	370 pigs	228,253	\$21,500
" Exeter City.....	841 pigs	248,935	25,000
To Hamburg—Copper.....			
S. S. Gillert.....	71 cakes	11,780	\$1,277
" ".....	54 cakes	67,500	8,000
" Russia.....	265 pigs	56,432	6,200
" Suevia.....	45 casks	56,250	6,700
" ".....	157 pigs	56,152	5,600
" ".....	25 casks	22,400	2,625
" ".....	1 box	356	
" ".....	992 plates	134,423	15,000
" ".....	10 bars	646	1,800
To Stettin—Copper.....			
S. S. Italia.....	1,514 plates	246,484	\$28,286
To Bordeaux—Copper.....			
S. S. Panama.....	1,535 casks	98,428	\$11,000
To Rotterdam—Copper.....			
S. S. Spandam.....	72 casks	92,160	\$10,13
To Genoa—Copper.....			
S. S. Kaiser Wilhelm II.....	378 bars	116,106	\$11,200
" Fulda.....	10 plates	1,277	117
To Havre—Copper.....			
S. S. La Gascogne.....	176 plates	12,365	\$1,347

**Tin.**—The prices for this article have been subjected to wide fluctuations. Much spot metal being pressed for sale here and the London market growing weaker, at one and the same time, large quantities changed hands here at prices quickly declining to \$19.70 @ 19.60. Then came a reaction to 20c., but afterward 19½ was again accepted. Closing prices are higher, and sellers absent, at \$19.85 for spot, \$19.90 for June and \$20 for July.

Current prices being exceedingly low and the quantities that can be brought in prior to the levying of duty on and after July 1st rather small, holders of tin who are not affected by the scarcity of money are not eager to sell, looking forward to higher values.

In London prices declined to £89 10s. for spot, £85 10s. for July and £85 7s. 6d. for three months tin, these figures being reduced early in the week, but there was a quick recovery, and at the close the quotations are £90 15s. for spot, £88 for July and £86 for three months prompt.

Shipments from the East in the first half of May are reported as having been rather light.

**Lead.**—The market is dull and depressed and we have still to quote 3 82½ @ 3 85.

The London market is unchanged at £9 11s. 3d. @ £9 12s. 6d. for Spanish and £9 13s. 9d. @ £9 15s. for English brands.

**St. Louis Lead Market.**—The John Wahl Commission Company telegraph us as follows: "Lead rather steadier, and 3 60c. during the week has proved lowest water mark. Transactions, however, continue light, and consumers still look for another landslide soon."

**Spelter.**—This metal is pressed for sale by all producers and throughout the entire country much lower offers have been sent broadcast. This has frightened buyers and not nearly as much business as might have been expected in view of the heavy decline has been done. We have to lower New York prices to 4¼ @ 30.

In England good ordinaries are quoted at £17 10s. and specials at £17 12s. 6d., which prices are rather above the parity of those now ruling here.

**Antimony.**—The market is very dull with Cookson's at 10½, L. X. at 10¼, and Hallett's at 10c.

**Nickel.**—Prices are unaltered and nominal at 45 @ 52c.

#### IRON MARKET REVIEW.

New York, Friday Evening, May 19, 1893.  
Pig Iron Production.

	Week ending	From Jan. '92	From Jan. '93.
Fuel used.	May 19, 1892, May 19, 1893.		
Anthracite.....	81 35,474 68 33,453	736,933	657,733
Coke.....	147 132,313 147 142,231	2,634,133	2,540,981
Charcoal.....	40 10,100 37 8,581	183,969	165,111
Totals.....	268 177,886 252 184,265	3,560,975	3,343,845

The pig iron market here continues in the condition reported in our last issue. The demand remains stationary and we do not hear of any change in prices. Some of the Lehigh furnaces report an improvement in their trade, but this does not apply to the market in general. The Southern producers are in no better condition than they have been for some time past. Now and then we hear of some Southern iron pressing for sale and offering at shaded figures, but when all comes to be said, the lots which have thus been offered turn out in most cases to be not all of the grades represented by the sellers. Complaints of this have been rather numerous of late. There is considerable depression in certain iron-consuming industries, and the uncertainty provoked by the financial troubles which certain sections are undergoing makes buyers more than ever conservative in the matter of securing stocks for future requirements. Prices are without change from last week. We quote: Northern brands: No. 1, \$14.50 @ \$15.25; No. 2, \$13.75 @ \$14.50; Gray Forge, \$12.50 @ \$13.00. Southern: No. 1, \$14 @ \$15; No. 2 F, \$13 @ \$13.50; No. 1 soft F, \$13.25 @ \$14; Gray Forge, \$12 @ \$12.50 tidewater. Scotch irons: Coltness, \$21.50 @ \$22; Eglinton, \$19.50 @ \$20; Summerlee, \$20.50.

For the past eleven years the Cleveland "Iron Trade Review" has published accurate, and, therefore, valuable statistics of iron ore. The iron trade has appreciated our contemporary's enterprise, and we wish to add also our cordial commendation. In its last issue, the "Iron Trade Review" publishes statistics of iron ore stocks on hand at Lake Erie ports. The figures show that an amount of ore only about 500,000 tons less than the entire Lake Superior shipment of last year was consumed in the twelve months ending May 1st, 1893. There were on dock May 1st, 1893, in all 2,035,797 gross tons of ore. One year previous the amount was 1,537,188 gross tons. The shipments from Lake Superior mines in 1892 were 9,074,243 gross tons. All that did not come to Lake Erie ports went direct to furnaces in Illinois, Michigan, Wisconsin and Minnesota, and may therefore be regarded as consumed. The excess of this year's amount on dock over that of May 1st, 1892, is 558,609 gross tons. Deducting this from 9,074,243 shows that in the 12 months ending May 1st, 1893, there were sent to furnace yards 8,515,634 tons of Lake Superior ores, the largest year's record in the history of the region. The stocks on dock at the close of navigation, December 1st, 1892, were 4,149,451 tons, as against 3,508,489 tons on December 1st, 1891, and 3,893,487 tons on December 1st, 1890. At the opening of navigation, May 1st, the stocks were as follows: 2,095,797 tons in 1893; 1,537,188 tons in 1892, and 2,062,223 tons in 1891. It will thus appear that there were shipped by rail to furnaces during the winter of 1892-1893 a total of 2,053,654 tons. Adding to this amount the shipments to furnaces during the season of navigation in 1892, which were 4,048,471 gross tons, the "Iron Trade Review" finds that the total shipments to furnaces from lower lake ports in the year ending May 1st, 1893, were 6,102,125 gross tons.

**Billets and Rods.**—The market for billets and rods continues dull and featureless. We quote: Steel billets, tidewater, \$25.25 @ \$25.50; foreign, \$29 @ \$29.50; wire rods, \$33.50 @ \$34; foreign, \$40 @ \$40.50; Swedish, \$52 @ \$53.

**Manufactured Iron and Steel.**—There is nothing essentially new to report of this market. As we said last week, there are several good sized contracts still unplaced, and there is considerable competition for them. In consequence of this prices continue low. We quote: Angles, 1 75 @ 2c.; axles, scrap, 1 90 @ 2 10c.; delivered; steel, 1 85 @ 2c.; bars, common, 1 50 @ 1 60c.; refined, 1 65 @ 1 9c. on dock; beams, up to 15 in., 1 90 @ 2 15c.; 20 in., 2 10 @ 2 35c.; car truck channels, 2 @ 2 10c.; channels, 1 90 @ 2 10c. on dock; hoops, steel, 1 8 @ 1 9c.; delivered; links and pins, 1 85 @ 2 10c.; plates, bridge, 2 @ 2 10c.; firebox, 2 5 @ 2 8c.; flange, 2 25 @ 2 50c.; marine, 2 50 @ 2 75c.; sheared, 1 85 @ 2 10c.; shell, 2 10 @ 2 25c.; tank, 1 8 @ 2c.; universal mill, 1 80 @ 1 90c.; tees, 2 @ 2 50c., all on dock.

**Merchant Steel.**—There is nothing new to report of this market. Quotations are: Tool steel, \$6.50 @ \$6.75 and upward; tire steel, \$2 @ \$2 10; toe calk, \$2.30 @ \$2.40. Bessemer machinery, \$2.10 @ \$2.20. Bessemer bars, \$1.70 @ \$1.75; open hearth machinery, \$2.30 @ \$2.40; open hearth carriage spring, \$2.10 @ \$2.20; crucible spring, \$3.75 @ \$4.

**Old Material.**—We here of absolutely nothing doing in this market. Quotation are as follows: Rails, iron, \$16.50 @ \$17; steel, \$13 @ \$13.50; No. 1 scrap, \$15.75 @ \$16; car wheels, \$12.50 @ \$13 f. o. b. Jersey City.

**Rail Fastenings.**—The market for rail fastenings continues lifeless. Quotations remain: Fish and angle plates, 1 55 @ 1 60c. at mill; spikes, 1 9 @ 1 95c.; bolts and square nuts, 2 45 @ 2 50c.; hexagonal nuts, 2 55 @ 2 60c., delivered.

**Spiegeleisen and Ferromanganese.**—There is but little demand for either spiegel or ferro, and the market continues as quiet and dull as ever. Quotations are nominally as follows: 10 to 12% Spiegel, \$22 @ \$22.50, 20% \$25 @ \$25.50. Ferro, 80% \$57 @ \$57.50.

**Steel Rails.**—The rail market is quiet. A few sales of not much magnitude are reported, but, on the whole, the week's business has been far from good. We hear of greater activity among some of the Western mills, who have succeeded in booking some desirable orders. Quotations are unchanged at \$29 mill or tidewater. Girder rails, \$31 @ \$33. Steel rails fit to relay can be had for \$20.



## NOTES OF THE WEEK.

A press dispatch from Ishpeming, Mich., reports the sale of about 700,000 tons of Lake Superior ore in Cleveland last week by big mines at compromise figures under \$4.

**Buffalo.**

May 18.

(Special Report of Rogers, Brown &amp; Co.)

The great financial depression continues to have a marked effect on the market. Buying is confined to small amounts. Further than this, makers are exhibiting great caution in making large contracts. Already the usual summer reduction in consumption is beginning to be felt. Iron is moving forward more slowly on contracts.

We quote for cash f. o. b. cars Buffalo: No. 1 X foundry strong coke iron, Lake Superior ore, \$14.50; No. 2 X foundry strong coke iron, Lake Superior ore, \$13.75; Ohio strong softener No. 1, \$14.50; No. 2, \$14; Jackson County silvery No. 1, \$17@17.30; No. 2, \$16.30@16.80; Lake Superior charcoal, \$16.75; Tennessee charcoal, \$18; Southern soft No. 1, \$14; Alabama car wheel, \$19; Hanging Rock charcoal, \$20.50.

**Chicago.**

May 18.

(From our Special Correspondent.)

The passing into liquidation of one important and large steel industry in the southern part of the State, and several minor ones in this city, together with the unsatisfactory condition of the financial affairs, have had a still further depressing effect on the iron market here. On the other hand the ore market begins to show some activity, and several Western furnaces have made their purchases for the season at about 75c. less than last year. This drop in ore will of course cause a corresponding fall in the price of pig iron. One of the causes of the failure of the steel mill referred to is stated to be the excessively low prices at which it had taken contracts for merchant and implement steels during the past two years. The Cornice Makers' Union is making a very vigorous kick in regard to the new building ordinance which excludes the use of sheet metal in bay windows and light shafts; the matter is now in court so as to test its validity. General business in iron and steel circles continues quiet, and the best post-d say that at present they see no silver lining to the cloud.

**Pig Iron.**—The volume of business this week has not been large and the quietude now so general is due entirely to the unfavorable financial conditions. The molders' strike has not affected general trade, but orders are light, running mostly to earloads, and from those upward to 200 or 300 tons, the latter now being considered a good order. Shipments from furnace are heavy, and only in rare instances are there requests to withhold shipments of local iron. Southern coke iron is also in light inquiry, and actual sales of small amounts only have been made. There is further weakness shown, and some agents are known to have accepted contracts at cuts of 50c. below the inside quotation. Lake Superior charcoal iron is in moderate demand in small lots, and efforts of consumers to force prices to lower rates have so far proved unavailing.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, \$16.50@16.75; Lake Superior coke No. 1, \$13.75@14.00; No. 2, \$13.25@13.50; No. 3, \$12.75@13; Lake Superior Bessemer, \$14.75; Lake Superior Scotch, \$14.50@15; American Scotch, \$16.00@16.50; Southern coke, foundry, No. 1, \$14.25; No. 2, \$13.00; No. 3, \$12.50; Southern coke soft, No. 1, \$13.00; No. 2, \$12.75; Ohio silveries, No. 1, \$16.50; No. 2, \$16.00; Ohio strong softeners, No. 1, \$16.75; No. 2, \$16.25; Tennessee charcoal, No. 1, \$17; No. 2, \$16.50; Southern standard car wheel, \$19.50@20.

**Steel Billets and Rods.**—Quotations are merely nominal, as the steel company here is out of the market on both; billets \$24.50, rods \$25.50.

**Structural Iron and Steel.**—The granting of an additional franchise for the Lake Street Elevated Railroad will greatly increase the tonnage already ordered. Beams and other shapes are in better demand from the outside than locally. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, \$1.85@1.90; tees, \$2.15@2.25; universal plates, \$1.90@1.95; sheared plates, \$1.90@1.95; beams and channels, \$1.95@2.15.

**Plates.**—Business generally is slow in mill quantities and from warehouse, with nothing new in sight. Prices from stock are holding very well, considering. Steel sheets, 10 to 14, \$2.25@2.35; iron sheets, 10 to 14, \$2.20@2.30; tank steel, \$1.90@2; shell iron or steel, \$2.50@2.75; firebox steel, \$1.25@1.55; flange steel, \$2.75@3; boiler rivets, \$4@4.15; boiler tubes, all sizes, 65%.

**Merchant Steel.**—Implement buyers are still very chary about placing their orders, and though several large contracts were booked this week, they are the exception. Prices remain steady. Quotations are: Tool steel, \$6.50@6.75 and upward; tire steel, \$2@2.10; toe calk, \$2.30@2.40. Bessemer machinery, \$2.10@2.20. Bessemer bars, \$1.70@1.75; open-hearth machinery, \$2.30@2.40; open hearth carriage spring, \$2.10@2.20; crucible spring, \$3.75@4.

**Galvanized Sheet Iron.**—Manufacturers' agents state that the late building ordinance excluding sheet iron from bay windows and light shafts has greatly decreased demand locally, but side trade is only fair. Discounts are unchanged at 70 and 10% off on charcoal, and jobbing quantities at 70 and 7½% off on the former and 70 and 10% off on the latter.

**Black Sheet Iron.**—Some consumers and dealers are requesting manufacturers to hold up on shipments. Demand is very quiet, and most mills are well booked up. Price is easy at 280c. for No. 27 common. Jobbers quote 3c. for iron and 3½@3½c. for steel, which is rapidly displacing iron.

**Bar Iron.**—Mills generally in Ohio and Pennsylvania will close down June 30 for repairs, adjustment of wages, etc.; and as the date of resumption is very uncertain, inquiry is becoming rather more active from consumers as well as jobbers. Many mills are positively declining to quote on business requiring delivery after July 1. Sharp competition prevails, but mills with established reputation are holding to 1½@1½c. base Chicago; some agents quote 50c. a ton less. Jobbing prices are 1½@1½c. on steel or iron bars.

**Nails.**—Wire nails are quiet and weak at \$1.55, Chicago, in mill lots and \$1.65 from jobbers' stock. Steel cut nails are dull, and orders and prices very unsatisfactory to mills at \$1.30. Jobbers quote \$1.40 from stock.

**Steel Rails.**—Several large orders are under negotiation which may be probably placed before end of week. The outlook is now regarded as more favorable by the steel mills, as some long contemplated extensions to Western roads are to be pushed. Quotations are unchanged at \$30@31.

**Scrap of all descriptions** is in very light demand and prices easy. Railroad, \$14.50; No. 1 forge, \$14; No. 1 mill, \$9.50; fish plates, \$15.50; axles, \$19.50; horseshoes, \$14.50; pipes and flues, \$7; cast borings, \$5.50; wrought turnings, \$8; axle turnings, \$9.50; machinery castings, \$10; stove plates, \$6.50; mixed steel, \$10; coil steel, \$15; leaf steel, \$15.50; tires, \$14.50.

**Old Material.**—Offers of \$17.50 have been refused by holders of iron rails; a nominal quotation would be \$18. No transactions are reported. Steel rails are dull at \$11.25@14.50, as to condition, etc. Car wheels are \$14.25 and quiet.

**Louisville.**

May 18.

(Special Report by Hall, Bros. &amp; Co.)

A few more inquiries have been out this week, but for small quantities, well distributed between coke and charcoal and for scattered deliveries ranging from two to six months. Prices were at about current figures. There are no encouraging signs for any early improvement in prices, though things are about holding their own.

**Hot Blast Foundry Irons.**—Southern coke No. 1, \$13@13.25; Southern coke No. 2, \$12@12.25; Southern coke No. 3, \$11.25@11.50; Southern charcoal No. 1, \$15.50@16; Southern charcoal No. 2, \$15@15.50.

**Forge Irons.**—Neutral coke, \$10.75@11; mottled, \$10.50@10.75.

**Car Wheel and Malleable Irons.**—Southern (standard brands), \$17.50@18.50; Southern (other brands), \$16.50@17; Lake Superior, \$18@18.50.

**Philadelphia.**

May 18.

(From our Special Correspondent.)

**Pig Iron.**—Scarcely any change has taken place in the pig iron market. Nothing has occurred to stimulate buying. Production is ample to cover all demands. It is not known that concessions are made on large sales. Brokers think that for future deliveries there will be no difficulty in getting good prices, but the actual business done does not show any improvement whatever. Small lots of No. 1 are going at \$15; No. 2, \$14.50. Millowners are slow buyers, but prefer the better grades as a rule, those selling at \$13@13.25. A few lots of standard Bessemer sold at \$15.

**Muck Bars.**—Much complaint exists over prices, and even at \$22.50 only a moderate business is done.

**Steel Billets.**—Buyers as a rule buy to cover work in hand and are able to do so at \$23.50 for Western. Manufacturers think much more buying will be done in a few weeks and that under this movement prices may reach \$24.

**Merchant Iron.**—Business is disappointing at mills, but the distribution at stores is fair at 170@180 for steel and 160@170 for iron.

**Nails.**—The distribution from city and country stores is good, but no improvement in price.

**Skelp.**—No perceptible improvement, but more inquiry. Quotations, 150@155.

**Pipe.**—Only a few small orders this week, but manufacturers have been encouraged by inquiries for large summer requirements, which, it is thought, will soon be presented, now that less cutting is to be expected.

**Sheet Iron.**—Good business is still reported at mills for all kinds of sheets and for early deliveries. Prices are said to be firmer. Large summer delivery orders are coming in with, of course, the usual cutting.

**Plate and Tank.**—The big Park avenue contract is off, at least so far as the three bidders are concerned, though different accounts are given as to the real cause of the break in negotiations. Brokers and manufacturers say there is a large amount of new work in sight, and that no further concession in prices is likely to be made.

**Structural Material.**—Quite a number of small orders have been placed this week, and more are promised. Prices keep very low.

**Steel Rails.**—Light sections are in good demand. The Pennsylvania mills are all pretty well fixed and are running full time.

**Old Rails.**—Old rails are in good supply and prices have weakened 50 cents. Lots have been taken at \$17.50.

**Scrap.**—There is a good deal of scrap in this market at \$15@16 for No. 1 railroad.

**Pittsburg.**

May 19.

(From our Special Correspondent.)

**Raw Iron and Steel.**—The weakening tendency in the iron and steel trade seems to have been checked, at least, to a certain extent. Prices for all kinds are now at figures never before reached. May 17th, 1892, Bessemer pig iron brought \$14.25@14.30; to-day Bessemer can be purchased at \$13.35@13.50. Steel billets one year ago, \$22.35@22.50; to-day's prices, \$21.50@21.80 cash. Muck bar, May, 1892, \$25@25.25; to-day, \$23.90@24. These figures show the condition of the market better than words can express. The third week of May finds the general iron trade situation but little changed and so far as the indications point no important change is likely to take place either way for the present. The most notable feature of the market is the close relation which continues to exist between the supply and demand for pig iron, and the steady absorption of the existing stocks, notwithstanding that the output is still large. The leading producers continue firm in their prices, and even a scarcity is reported of the favorite brands.

There is weakness in other grades, the pressure to realize on the part of some of the Southern producers rendering concessions easy to secure. From the weakness which has developed for the past few weeks it seems evident that, although prices cannot go much lower, there is but little prospect of an immediate improvement, and it is quite probable that the market may rest upon its present low basis for some time. Considering the extremely unsettled condition of affairs financially it would be unreasonable to expect very favorable reports from the manufacturing interests, but on the whole iron and steel have done fairly well. There has been no falling off in consumption, and with slight exceptions no particular shrinkage in prices. The general feeling is naturally nervous and unsettled, but with few exceptions prices have been pretty well maintained. Transactions are kept within the narrowest limits possible. There is sharp competition for business in manufactured iron, but no new prices have been established. While the volume of trade continues large there is not much complaint about the scarcity of orders, but there is a general dissatisfaction at the low prices prevailing.

However, within the past 24 hours the market has undergone a material change for the better for steel billets and Bessemer, with sales at an advance from 20 to 30c. per ton, with reports of makers on the market as purchasers. The following shows the week's business:

Coke Smelted Lake and Native Ore.		Charcoal.	
Tons.	Cash.	200 C. L.	\$18.00
5,000 Bessemer at Valley Furnace, July to Jan.	\$12.85	50 No. 2 F.	18.50
3,000 B. May, June.	13.40	50 C. B.	25.00
3,000 B. July to Jan.	13.50	50 W. B.	25.50
2,500 B. May, June.	13.35	50 C. B.	26.50
2,500 B. May, June.	13.40	<b>Skelp Iron.</b>	
2,400 B. June, July.	13.45	700 W. G.	4 m.
2,000 B. June.	13.50	450 S.	1.67½ 4 m.
2,000 B. July, August.	13.60	300 N. G.	1.45 4 m.
2,000 B. June.	13.60	<b>Skelp Steel.</b>	
1,250 G. F.	12.20	800 W. G.	1.45 4 m.
1,000 G. F.	12.15	<b>Blooms, Billets and Bar Ends.</b>	
1,000 G. F.	12.25	500 B. and B. E.	\$15.00
1,000 G. F. all on.	12.50	300 B. E.	15.10
500 App. B.	13.00	<b>Steel Wire Rods.</b>	
500 G. F.	13.00	820 5-gauge American at mill	\$29.60
450 No. 1 F.	14.00	<b>Spelter.</b>	
400 No. 2 F.	13.00	100 Spelter.	4.35
200 W. 1.	11.50	50 Spelter.	4.32
150 No. 1 S.	16.00	<b>Sheet Bars.</b>	
100 No. 2 S.	13.00	3,000 June, July, August, at mill.	28.10
100 Open Mill	12.30	<b>Iron Ore.</b>	
<b>Steel Billets and Slabs.</b>		400,000 Bessemer ore at Lake Erie docks,	\$3.75
6,000 B. July to Dec.	\$21.50	<b>Scrap Material.</b>	
3,000 B. July to Dec.	21.50	100 No. 1 R. R. W. S. net	15.50
2,000 B. last 6 months, at mill.	21.50	100 C. S. gross.	11.00
2,000 B. June, July, Aug., at mill.	21.75	75 Leaf Springs, gross	20.50
1,500 B. and S. June, at mill.	21.75	75 Coil Springs, gross	19.00
1,000 S. S. May, June, at mill.	21.65	<b>Old Iron and Steel Rails.</b>	
<b>Muck Bar.</b>		500 O. I. R. Val. Del.	19.25
Tons.	Cash.	250 O. I. Young'ton, 19.00	
1,000 N.	\$24.00	250 Old steel rails.	14.50
1,000 N.	23.90	100 " " short.	14.00
500 N.	24.10		

## COAL TRADE REVIEW.

NEW YORK, Friday Evening, May 19.

Statement of shipments of anthracite coal (approximated) for week ending May 13th, 1893, compared with the corresponding period last year:

	May 13, 1893.	May 14, 1892.	Difference.
Wyoming region.	448,225	472,569	Inc. 24,344
Lehigh region.	132,365	113,054	Inc. 19,311
Schuylkill region.	177,255	230,579	Dec. 53,324

Total..... 757,845 816,142 Dec. 58,297  
Total for year to date. 14,690,158 13,585,399 Inc. 1,104,849

Statement of shipments of anthracite coal for month of April, 1893, compared with corresponding period last

year, compiled from the returns furnished by the mine operators:

Regions.	April, 1893.	April, 1892.	Difference.
Wyoming region.....	1,688,284	1,691,163	Dec. 2,819
Lehigh region.....	696,199	453,031	Inc. 173,168
Schuylkill region.....	930,176	815,023	Inc. 175,156
Total.....	3,284,659	2,939,157	Inc. 345,501
For year.			
Wyoming region.....	7,415,364	6,154,836	Inc. 960,527
Lehigh region.....	2,061,497	1,751,627	Inc. 309,870
Schuylkill region.....	3,743,277	3,826,728	Dec. 103,451

Total..... 13,200,139 12,033,292 Inc. 1,166,846  
The stock of coal on hand at tidewater shipping points April 30th, 1893, was 970,988 tons; on March 31st, 1893, 781,187 tons; increase, 256,116 tons.

PRODUCTION OF BITUMINOUS COAL for week ending May 13th and year from January 1st:

Shipped East and North:	Week.	Year.	1893.	1892.
Phila. & Erie R. R.	1,131	43,769	35,610	
Cumberland, Md.	80,336	1,423,210	1,288,609	
Bardonia, Pa.	796	25,234	75,435	
Broad Top, Pa.	10,253	284,559	218,862	
Clearfield, Pa.	82,760	1,590,013	1,469,748	
Allegheny, Pa.	23,600	497,150	444,972	
Beach Creek, Pa.	21,683	664,110	977,250	
Pocahontas Flat Top.	67,826	1,072,383	994,816	
Kanawha, W. Va.	77,061	1,175,657	904,379	
Total.....	365,619	6,778,106	6,277,681	
Shipped West:	Week.	Year.	1893.	1892.
Pittsburg, Pa.	25,616	484,467	486,652	
Westmoreland, Pa.	49,328	782,073	574,264	
Monongahela, Pa.	15,425	242,668	196,549	
Totals.....	90,379	1,509,208	1,257,465	
Grand totals.....	456,028	8,287,314	7,535,147	

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending May 13th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 101,426 tons; year, 2,067,547 tons; to corresponding date in 1892, 2,105,124 tons.

#### Anthracite.

The hard coal trade shows signs of improvement. A series of circumstances has helped to restrict the production, whether operators were willing or not to adhere to the official allotment. There is some paucity of transportation facilities brought about by the active demand for vessels from Southern points. The floods in the Schuylkill region helped the situation by restricting the output for the first half of the month, and the market finds itself in better condition now than for some time past. The discussion as to the probable advance in prices next month continues. The belief is spreading that an advance will be made, and, as we stated last week in this column, consumers will have to accept it, if it does come, as indicative of the existence of a definite understanding between the companies. This in itself will tend to strengthen the market by allaying the uncertainty as to the future which has prevailed for some time. Prominent operators are of the opinion that the market can stand an advance of from 10 to 25 cents. The sales agents will hold their meeting next week and before our next issue goes to press this much-mooted question will have been settled.

During the past week the demand has increased, and it is now reported as being very fair. Some of the shrewdest buyers, who have canvassed the trade thoroughly, are placing their orders liberally, and there are many indications that their example will be followed by others. If there is any accumulation of coal it is probably due to the scarcity of vessels. Prices are firm, and we do not hear of any cutting in the first-class coals.

Prices are about 15c. below the official schedule, which is as follows:

Philadelphia.	Broken.	Egg.	Stove.	Chestnut.
Hard white ash.....	\$3.75	\$3.75	\$3.90	\$3.90
Free white ash.....	3.65	3.65	3.90	3.90
Shamokin.....	3.90	4.10	3.90	
Schuylkill R. R. A.....	4.00	4.25	4.00	
Lakewood Valley.....	4.50	5.25	5.50	4.75

New York prices 25c. per ton above Philadelphia. Pea, \$2.75; No. 1 Buckwheat, \$2.10; No. 2 Buckwheat, \$1.25@1.50.

F. o. b. prices are quoted as under:	Schuylkill.	Shamokin.	Red Ash.	Lykens Valley.
Lump and steamboat.....	\$2.20	\$....	\$....	\$....
Broken.....	2.25	....	2.95	2.95
Egg.....	2.45	2.45	3.05	3.30
Stove.....	2.60	2.85	3.15	3.55
Chestnut.....	2.50	2.55	2.55	2.90
Pea.....	1.25	1.25	1.25	1.60
Buckwheat.....	0.75	0.75	0.75	1.30

The Reading Railroad system reports that its coal shipment (estimated) for last week, ending May 13th, was 370,000 tons, of which 9,000 tons were sent to Port Richmond and 45,000 tons were sent to New York waters. Vessels are in moderate supply at Port Richmond, and freights are nominally quoted at 95c.@ \$1 and discharge to Boston, and 90c.@ \$1 to Providence.

#### Bituminous.

The bituminous market is very quiet, and not altogether in good condition. Coal is accumulating at the lower ports, due, as stated last week, to the expiration of old contracts and to the now placing of new orders. To these causes must be added also the scarcity of vessels. Some of the companies who have continued to produce coal to their full capacity have stocked up cars to a serious extent, and the railroads have been forced to refuse any more cars to some of the operators in order to prevent a worse state of affairs than already exists. This blocking has impeded shipments by those who had vessels. Reports of cutting prices are still met with in the trade, though perhaps not so frequently as a fort-

night ago. We hear of a number of companies which have filled up on contracts and of others, mining poorer grades, which are beginning to do so. Consumers who have been holding off for lower prices, will have a chance to see how low they may purchase these grades.

Ocean freight rates remain about the same as last week. We quote from Baltimore, Norfolk and Newport News, to Boston, Salem and Portland, \$1.05; Sound ports 90c.@95c. From Philadelphia to Boston, Salem and Portland, 95c.@ \$1; Sound ports, 85c.; Lynn, \$1.10@ \$1.25; Newburghport, \$1.10@ \$1.15; Portsmouth, \$1; Gardiner and Bangor, \$1@ \$1.05. Rates are firm and vessels are very scarce.

It is difficult, in the face of the numerous rumors of cutting, to quote prices. True, George's Creek coal is quoted as follows: f. o. b. Baltimore, \$2.50; Philadelphia, \$2.55; South Amboy, \$3.10. Alongside, New York, \$3.30; other and poorer grades range down from this.

The Chesapeake & Ohio Canal has had a break which has delayed vessels for some time. Shipments to Georgetown have been greatly curtailed by the lack of coasting vessels at that point. There is some talk of finishing the road from Mechanicsville, Md., to Drum Point harbor, and the extension of the road down to Point Lookout is under earnest consideration. The Cumberland coal trade is being canvassed to determine whether it can be induced to ship coal that way. This Drum Point talk has come up every spring for the last 20 years.

The regions sending coal to Atlantic shipping ports are free from labor disturbances, and the probabilities are that there will be no interruption from this source.

The Ontario Coal Company, of Toronto, Ont., assigned on May 15th. The Molson Bank is the principal creditor, the amount of paper held by it being between \$250,000 and \$400,000. The Ontario Bank is interested to the extent of over \$100,000.

#### Boston.

May 18

(From our Special Correspondent.)

Dealers here are commencing to fear that prices are going higher the first of next month, and as a consequence are anxious to get coal. The belief is that the companies will advance prices on June 1st. So light are dealers' stocks it is very doubtful if they can get the amount they would like to have in the next two weeks. It is understood that the private operators are not cutting prices near as much as they were, as they too are receiving the benefit of a very active market. In consequence of the present heavy demand for anthracite coal, rates from New York are up 5c.

The wholesale prices of coal quoted here are f. o. b. prices at New York: Stove and chestnut, \$4.15; egg and free broken, \$3.90.

In bituminous coal, trade is of but limited proportions, there being very little, if any, change during the week. George's Creek, on cars here, is quoted \$3.82@ \$3.92, and Clearfield, \$3.65@ \$3.70.

As noted above, freight rates are higher from New York, but from all other points, especially soft coal ports, they are lower. The reason for the last is most likely the quietness in the market and light demand for tonnage. Rates are: From New York, 80c.; from Philadelphia, 95c.; from Baltimore, \$1@ \$1.05; from Baltimore to Sound ports, 90c.@95c.; to Bath, \$1.10; from Newport News and Norfolk, 90c.; to Sound points, 80c.

The retail demand for coal is light, but prices are unchanged. Stove, \$6.25; nut, \$6.25; egg, \$6; furnace, \$5.75; Franklin, \$7.50; Lehigh egg, \$6.25; Lehigh furnace, \$6.05; soft coal, \$4.25.

#### Buffalo.

May 18.

(From our Special Correspondent.)

The anthracite coal trade is very quiet; no changes in quotations. Incidents have been few and really of no special interest. The bituminous dealers report a good demand, with nominally unchanged figures, both from manufacturers, vessel men and tug owners. Coke with average trade. The movement of coal by lake is anything but active at the low rates prevailing. The vessel interests are in a complaining mood, and no wonder. One cent to carry a bushel of grain from Chicago to Buffalo and 40c. per net ton from Buffalo to Chicago are figures at which no profit is realized. The supply of anthracite coal received by railroads is larger now.

The coal shipments by lake from this port westward during the week ending May 13th were 84,880 net tons distributed as follows: 32,230 tons to Chicago, 25,030 to Milwaukee, 7,000 to Duluth, 9,830 to Superior, 700 to Toledo, 1,250 to Ashland, 650 to Kenosha, 440 to Kincardine, 500 to Saginaw, 2,250 to Racine, 1,500 to Washburn, 1,000 to Green Bay, 350 to Bay City and 2,000 to Gladstone. The rates of freight were 50c@ 40c. to Chicago and Milwaukee; 40c.@30c. to Duluth; 50c. to Green Bay, Kincardine, Racine, Washburn and Gladstone; 30c. to Detroit, Ashland, Portage, Superior and Toledo; 40c. to Saginaw; 50c. to Kenosha, and 30c. to Bay City.

The first vessel departure from and arrivals at Duluth this season were on May 9th. The first arrival from Duluth at this port was on Sunday, May 14th, at 3:00 o'clock P. M.

The barge "B. L. Pennington" laden with about 2,000 net tons of coal from Oswego to Duluth passed through the Welland Canal yesterday. This is the largest cargo of coal ever taken through.

Coal charters from Oswego by lakes on May 16th were as follows: To Chicago, 85c.; to Toledo, 55c., and to Duluth, 75c. per net ton free on and off.

The Niagara Falls Company has contracted to supply the Cataract Electric Company, of Rochester, N. Y., with 10,000 H. P. ;

#### Chicago.

May 18.

(From our Special Correspondent.)

Some of the shippers of anthracite report trade as being fairly active, and quite a large quantity of coal has been placed for immediate shipment at May circular. Several of the agents of producing companies have, it is said, been cautioned by their Eastern superiors not to accept any more orders at current prices or for May shipment. A reported scarcity of cars at the mines, and the rumored refusal of the Michigan Central Railroad Company to transport any anthracite over their line this season, are probably largely responsible for these restrictive measures.

It is thought that the exceedingly low lake freight rates on coal should enable the shippers to reload from docks here, and forward to the country to good advantage, but some companies' agents claim that the extra handling and consequent increase of dust and small coal increase the cost not less than 75c. to 80c. per ton, including all charges, which is probably not an extravagant estimate. The receipts of coal to date are about 120,000 tons, and are considerably less than for the corresponding period last year. There is, however, ample time to make good any deficiency which may exist. Retail trade, considering the season and the really inclement weather, is very good.

Bituminous coal is in fair demand. All the large office buildings, hotels and public institutions are using little less coal than during the winter. Country orders are fair and city trade good, with prices generally well maintained. General resumption of mining in Indiana and Illinois has not as yet affected the market injuriously. So far all coal offered on the market has been taken at fair figures and no stocks have been accumulated. This will probably continue until we have a spell of decidedly warm weather. As yet there have been no arrivals of Ohio coal since the resumption of work in that field late last week. Shipments of Hocking are daily expected and there is ample room for it.

There is still some trouble in the Wilmington, Ill., district, and a number of mines are closed down on account of the pushers and drivers having gone out at the instigation of agitators from Braidwood. Several of the larger mines have closed down, and others are running from quarter to half time with outside help, who have displaced the strikers. There is every indication that a complete and satisfactory settlement will be arrived at shortly.

Coke continues in moderate demand only, and prices on all but Connellsville are irregular, but the cuts are not very deep.

Quotations are: \$4.65 furnace; \$5.05 foundry crushed; \$5.40 Connellsville; West Virginia: \$3.90 furnace, \$4.10 foundry; New River Foundry, \$4.65; Walston: \$1.65 furnace, \$5 foundry.

Circular prices are at the following rates: Lehigh lump, \$6.00; large egg, \$5.35; small egg, range and chestnut, \$5.60. Retail prices per ton are: Large egg, \$6.75; small egg, range and chestnut, \$6.75.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, \$3.35; Hocking Valley, \$3.10; Youghiogheny, \$3.25; Illinois block, \$2.50; Brazil block, \$2.50.

#### Pittsburg.

May 18.

(From our Special Correspondent.)

Coal.—The situation in the pools shows no change, the miners are all at work. There is plenty of coal to mine and plenty of boats to load. The outlook for work for some time to come is very favorable. On account of low water shipments are confined to light barges. During the past 24 hours both rivers have been rising with a good prospect for water for some time. There is considerable coal loaded that will be sent down the Ohio within a few days. The following is the stock of coal afloat at various stations between Natchez and New Orleans: Natchez, 75,000 bu.; Bayou Lave, 375,000 bu.; Plaquemine, 150,000 bu.; Nine-Mile Point, 300,000 bu.; Donaldville, 325,000 bu.; Willow Grove Landing, 150,000 bu.; New Orleans, 250,000 bu.; on hand last month, 250,000 bu. The continued good stage of water has kept up stocks at lower ports and kept down prices to the lowest point. In the railroad district nothing new has transpired and the mines generally are in full operation.

Connellsville Coke.—The coke trade shows a very unsteady gait for the week. Demand for coke increased just a little, but the operators were afraid of overstocking the market, and blew out about 600 ovens, thus cutting down the running order of the region several notches. There is, however, a feeling among the coke dealers that the coke trade will pick up in the near future. The operations show 11,802 ovens in blast and 5,525 idle, with a total estimated production of 115,657 tons, an increase of 3,332 tons compared with the preceding week. Shipments for the week aggregated 6,424 cars distributed as follows: To Pittsburg, 1,500 cars; points east of Pittsburg, 1,689 cars; points west of Pittsburg, 3,175 cars; total, 6,424 cars. Western shipments decreased 25 cars; Eastern shipments, 11 cars; Pittsburg, 40 cars; total decrease, 76 cars.

#### CHEMICALS AND MINERALS.

New York, Friday Evening, May 19.

Heavy Chemicals.—The dullness which has prevailed in the heavy chemical market for sometime past continues unabated. The past week has been devoid of features of interest. All the chemicals



have been quiet. The trading in spot goods has been of a hand-to-mouth nature, consumers professing anxiety concerning the uncertainty in the financial world and buying as little as possible. Caustic soda remains quiet. For carbonated soda ash and alkali the demand has been light. The same may be said of bleaching powder. There is little change in prices. We quote: Caustic soda, 60%, 2.95¢ 3.10¢; 70%, 2.70¢ 2.80¢; 74%, 2.72¢ 2.82¢; 76%, 2.80¢ 2.90¢. Carbonated soda ash, 48%, 1.40¢ 1.45¢; 5%, 1.35¢ 1.40¢. Alkali, 48%, 1.35¢ 1.40¢; 58%, 1.30¢ 1.40¢, according to package. Sal soda, English, on the spot, 1c.; American, 90¢ 95¢; bleaching powder, 2.25¢ 2.50¢.

**Acids.**—The acid market exhibits no new features. Dealers are busy on old contracts, but no new business of any consequence is reported. There is no scarcity of supplies, but on the other hand there has not been any great amount of cutting in prices, all reports to the contrary notwithstanding. Our quotations are as follows: Acid, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, \$1.87 1/2¢ 2¢, according to quality; muriatic, 18°, 90¢ @ \$1.10; 20°, \$1.15 25¢; 22°, \$1.25 50¢; nitric, 40°, \$1.42. \$4.50 @ \$4.75; sulphuric, 80¢ @ \$1.10; mixed acids, according to mixture. Oxalic, \$6.30 @ \$6.50. Blue vitriol is quoted all the way from \$3.35 to \$3.75; glycerine for nitroglycerine, 11 1/2¢ @ 12 1/2¢, according to quality and quantity.

**Brimstone.**—There is no improvement in the demand for Sicilian brimstone; it continues small. Prices which underwent a slight decline during the early part of the week rallied later, and the market closes firmer. Quotations are as follows: Best un-mixed seconds, on the spot, \$19.50 @ \$19.75; shipments (May-June-July), \$18.75 @ \$19.25. Thirds are 75c. less.

**Fertilizing Chemicals.**—There is absolutely nothing new to say of this market; it continues exactly in the condition reported in our last issue—very dull. Prices have undergone little or no change, and the demand is slight. A shipment of about 2,000 tons of various potash salts is expected daily, and will relieve the market. Our quotations this week are as follows: Dried blood, \$2.65 @ \$2.70 per unit for high grade, and \$2.55 @ \$2.60 for low grade; azotine, \$2.65; sulphate of ammonia on the spot, \$3.20 for gas liquor. No bone liquor is offering. Acidulated fish scrap, no stocks on hand; dried scrap is quoted at \$29 f. o. b. fish factory. Tankage, high grade, \$27 @ \$29; low grade, \$26 @ \$28. Bone tankage, \$24 @ \$25; bone meal, \$24 @ \$25.50.

The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, \$1.12; Philadelphia, \$1.14; Charleston and Savannah, \$1.17 cwt., basis 48% 50%, in 50 ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis, 90%; New York and Boston, \$2.07; Philadelphia, \$2.09 1/2; Charleston and Savannah, \$2.12 1/2, sulphate of potash, 96-99%, basis 90%, is 4% higher.

**Phosphates.**—Quotations for high grade land rock f. o. b. Charleston, are \$1.50 @ \$1.75. Freight is \$2.25.

**Muriate of Potash.**—There is a very little demand for muriate just now. Arrivals at New York during the past week amounted to 50 tons, but more are due. In consequence of this the high prices which for the past fortnight have been asked for goods on the spot have been declined. The prices fixed by the syndicate for 1893 are as follows: New York or Boston, \$1.75; Philadelphia, \$1.80 1/2; Southern ports, \$1.83.

**Kainit.**—This market is very quiet. Quotations for shipments previous to September are as follows: New York, Philadelphia and Boston, \$8.75 for foreign invoice weight and test, and \$9 for actual weight; Charleston, Savannah and Wilmington, \$9.50 for invoice weight and test, and \$9.75 for actual weight. Shipments after September 1st, 25c. higher.

**Nitrate of Soda.**—The demand is small and the supply is not. Owing to this and to considerable competition during the past week prices have declined. Several consumers have thrown their lots upon the market. Quotations are \$2 @ \$2.05 for nitrate on the spot.

#### NOTES OF THE WEEK.

According to Accounts Relating to Trade in the United Kingdom, the imports and exports of chemicals, etc., during the first three months of the present year as compared with the corresponding period of 1892 have been as follows: Imports: Alkali, 11,596 cwt., worth £10,640, in 1893, against 10,105 cwt. worth £7,554 in 1892. Brimstone, 132,267 cwt. worth £31,482 in 1893, against 121,347 cwt. worth £37,047 in 1892. Chemical manufactures and products, £320,693 in 1893, against £351,129 in 1892; salt-petre, 58,655 cwt. worth £51,710 in 1893 against 76,654 cwt. worth £60,760 in 1892. Manures, bones, 15,617 tons worth £97,764 in 1893, against 22,824 tons worth £107,468 in 1892. Guano, 2,850 tons worth £14,620 in 1893, against 9,463 tons worth £74,505 in 1892. Nitrate of soda, 27,091 tons worth £260,318 in 1893, against 21,619 tons worth £198,355 in 1892. Rock phosphate, 83,630 tons worth £161,281 in 1893, against 71,129 tons worth £173,410 in 1892. Exports: Alkali, 1,733,949 cwt. worth £572,183 in

1893, against 1,341,117 cwt. worth £500,999 in 1892. Bleach, 335,855 cwt. worth £151,790 in 1893, against 316,209 cwt. worth £125,320 in 1892. Prepared manures, 93,293 tons worth £37,092 in 1893, against 89,505 tons worth £39,891 in 1892.

**Re-Exports:** Chemical manufactures, £43,732 in 1893 against £12,998 in 1892. Guano, 314 tons worth £2,191 in 1893 against 315 tons worth £3,098 in 1892. Saltpetre, 8,125 cwt. worth £7,324, against 5,708 cwt. worth £5,239 in 1892.

#### Liverpool.

May 10.

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

The dullness which has characterized the market for heavy chemicals for some weeks past still continues and shows no signs of lifting, and all round business is very slack.

Soda ash is dull, and prices are nominal, the following being about nearest spot quotations:

Caustic ash, 48%, £1 17s. 6d. @ £5 5s. per ton; 57-58%, £5 15s. per ton; carb. ash, 4%, £5 @ £5 5s. per ton; 58%, £5 7s. 6d. @ £5 15s. per ton, all net cash; ammonia ash, 58%, £4 15s. @ £5 per ton, less 2 1/2%.

Soda crystals are quiet, but prices are unchanged at £2 17s. 6d. @ £3 per ton, less 5%.

Caustic soda is flat, but at the same time quotations are unchanged, varying considerably according to the export market. Nominal spot values are as follows: 61%, £3 5s. @ £3 per ton; 70%, £9 5s. @ £10 per ton; 74%, £10 5s. @ £11; 76%, £11 10s. @ £12 per ton, all net cash. For parcels under 10 tons, 5s. per ton extra is charged.

Bleaching powder is firm at £3 10s. @ £3 15s. per ton, net cash for hardwood packages.

Chlorate of potash is very quiet, and nearest values are as follows: May delivery, 8 1/2 d.; June, 8 1/2 @ 8 3/4 d.; July, 8 1/2 d.; July-December, 7 1/2 d. per pound for second-hand lots. The syndicate quotations are 9d. for May or June and 8d. for July-December.

Bicarb. of soda is very scarce, makers being well sold for this month and price is firm at £5 15s. per ton, less 2 1/2% for one cwt. kegs with usual allowance for larger packages.

Sulphate of ammonia shows little change since our last report, the nearest spot values being about £12 7s. 6d. to £12 10s. per ton, for good grey 24% in double bags, less 2 1/2%, f. o. b. here.

There is not much going on, and lower prices would be accepted for delivery later on in this month.

Nitrate of soda has had a further decline, but it is rather steadier to-day at about £9 15s. per ton, less 2 1/2% f. o. b. here for double bags.

Carb. Ammonia.—Lump, 3d. per lb.; powdered, 3 1/2 d. per lb., net cash.

#### CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

**Acid**—Acetic, chem. pure, 17¢ 19¢ Commercial, in bbls. and cys., 61¢ 62¢ Carbonic, liquefied, 18¢ 20¢ Chromic, chem. pure, 1.00

for batteries, 40¢ Hydrobromic, dilute, U. S. P., 2¢ 30¢ Hydrocyanic, U. S. P., 4¢ 30¢ Hydrochloric, 30% gall., 2¢ 30¢

**Alcohol**—80%, 40% gall., 2¢ 30¢ Absolute, 40% gall., 2¢ 30¢ Ammoniated, 40% gall., 2¢ 30¢

**Alum**—Lump, 6 cwt., 1.75¢ 1.85¢ Ground, 6 cwt., 1.80¢ 1.90¢ Powdered, 6 cwt., 1.80¢ 1.90¢

**Aluminum Chloride**—Pure, 6 cwt., 1.25¢ Amalgamating solution, 6 cwt., 1.60¢ Sulphate, 6 cwt., 1.90¢ 2.50¢

**Ammonia**—sal., in bbl. lots, 0.75¢ 0.80¢ Carbamate, 6 cwt., English and German, 0.75¢ 0.80¢

Muriate, white, in bbls., 0.75¢ 0.80¢ **Aqua Ammonia**—(in cys.) 18° 0.60¢ 0.61¢ 20° 0.60¢ 0.61¢ 28° 0.60¢ 0.61¢

**Antimony**—Oxymur., 10¢ 11¢ Regulus, 10¢ 11¢ **Argols**—Red, powdered, 10¢ 11¢

**Arsenic**—White, powdered, 0.03¢ 0.03 1/2 Red, 0.03¢ 0.03 1/2 Yellow, 0.03¢ 0.03 1/2

White at Plymouth, 12¢ 2¢ **Asbestos**—Canadian, 10¢ 11¢ Italian, 10¢ 11¢

**Ashes**—Pot., 1st sorts, 1.75¢ 1.80¢ Pearl, 0.50¢ 0.60¢

**Asphaltum**—Prime Cuban, 0.04¢ 0.05 Hard Cuban, 0.03¢ 0.04 Trinidad, refined, 0.03¢ 0.04 Egyptian and Syrian, 0.03¢ 0.04

California, at mine, 0.03¢ 0.04 at San Francisco, 0.03¢ 0.04 **Barium**—Carbonate, pure, 0.45¢ Carbamate, commercial, 0.40¢ Chlorate, crystal, 0.75¢ Chloride, commercial, 0.05¢ 0.16

pure, 0.16¢ Iodide, 0.40¢ Nitrate, 0.06¢ 0.07 Sulph., Am. prime white, 0.07¢ 0.08 Sulph., foreign, floated, 0.07¢ 0.08

Sulph., off color, 0.07¢ 0.08 Carb., lump, f. o. b. L'pool, 0.26¢ No. 1, Casks, Runcorn, 24¢ 10¢ No. 2, bags, Runcorn, 23¢ 15¢

**Bauxite**—0.10¢ **Bichromate of Potash**—Scotch, 1.1¢ 1.12 American, 1.1¢ 1.12 **Bichromate of Soda**—0.09¢ 0.10

**Borax**—Refined, 0.07¢ 0.08 San Francisco, 0.08¢ 0.09 Concentrated, in car lots, 0.07¢ 0.08 Redwood, Liverpool top, 0.03

**Bromine**—0.25¢ 0.35 **Cadmium**—Minion—1 lb., 2.00¢ Cadmium Iodide—1 lb., 5.50¢

**Chalk**—ton, 1.50¢ 2.25¢ Precipitated, 1 lb., 0.4¢ 0.6¢ **China Clay**—English, 1 ton, 1.30¢ 1.80¢ Domestic, 1 ton, 1.00¢ 1.10¢

**Chlorine Water**—1 lb., 10¢ **Chrome Yellow**—1 lb., 10¢ 25¢ **Chrome Iron Ore**—ton, San Francisco, 10.00¢

**Chromalum**—Pure, 1 lb., 35¢ Commercial, 1 lb., 0.25¢ **Cobalt**—Oxide, 1 lb., 1.60¢ 1.75¢

**Copper**—Sulph. English Wks., 0.20¢ 0.21¢ Vitriol (blue), ordinary, 1 lb., 0.03¢ 0.03 1/2 extra, 0.04¢

**Nitrate**, 1 lb., 40¢ **Copperas**—Comm'n., 100 lbs., 85¢ 45¢ Best, 100 lbs., 1.35¢ 1.50¢

**Liverpool**, 1 ton, in casks, 2.20¢ 2.10¢ **Corundum**—Powdered, 1 lb., 0.04¢ 0.09¢ Flour, 1 lb., 0.07¢ 0.18¢

**Cryolite**—Pow., 1 lb., bbl. lots, 0.07¢ 0.18¢ **Emery**—Grain, 1 lb., (kg.), 0.01¢ 0.04¢ Flour, 1 lb., 0.02¢ 0.14¢

**Epsom Salt**—1 lb., 0.01¢ 0.10¢ **Feldspar**—Ground, 1 ton, 0.00¢ 0.10¢ Crude, 1 ton, 0.00¢ 0.10¢

**Fluorspar**—Powder, No. 1, 1 ton, 0.20¢ 0.30¢ Lump, at mine, 0.06¢ 0.08¢

**French Chalk**—Fuller's Earth—Lump, 1 ton, 0.16¢ 0.20¢ **Glauber's Salt**—in bbls., 0.01¢ 0.14¢

**Glass**—Ground, 1 lb., 0.01¢ 0.10¢ **Gold**—Chloride, pure, crystals, 0.03¢ 0.04¢ pure, 15 gr., c.v., 5¢ 50¢

liquid, 15 gr., 5¢ 50¢ a. v., 5¢ 50¢ Chloride and sodium, 0.03¢ 0.06¢

Oxide, 0.03¢ 0.06¢ **Gypsum**—Calcined, 0.03¢ 0.12¢ Land Plaster, 0.03¢ 0.12¢

**Iodine**—Resublimed, 0.30¢ 0.33¢ **Iridium**—Oxide, 1 lb., 0.90¢ **Iron**—Nitrate, 10°, 0.01¢ 0.14¢ 47°, 0.02¢ 0.02 1/2

**Kaolin**—See China Clay. **Kieserite**—1 ton, 0.09¢ 0.10¢ **Lead**—Red, American, 1 lb., 0.06¢ 0.07¢

White, American, in oil, 0.06¢ 0.07¢ White, English, 1 lb., in oil, 0.06¢ 0.07¢ Acetate, or sugar of, white, 0.06¢ 0.06 1/2

Granulated, 0.06¢ 0.06 1/2 Nitrate, 0.09¢ 0.12 **Lime Acetate**—Am. Brown, 0.09¢ 0.35

Gray, 1.75¢ 1.87¢ **Litharge**—Powdered, 1 lb., 0.03¢ 0.07 1/2 English flake, 1 lb., 0.03¢ 0.09 1/2

**Marble Dust**—1 bbl., 1.75¢ 1.50¢ **Metallic Paint**—Brown, 1 lb., 1.20¢ 2.00¢ Red, 1 lb., 2.00¢ 2.25¢

**Mineral Wool**—Ordinary slag, 0.10¢ Ordinary rock, 0.02 1/2¢ Ground, 1 ton, 0.02 1/2¢

**Mica**—In sheets according to size. 1st quality, 1 lb., 25¢ 30¢ **Naphtha**—Black, 1 lb., 10¢

**Nitre Cake**—1 ton, 10.00¢ **Ochre**—Rochelle, 1 lb., 0.14¢ 0.15¢ Washed Nat Oxid. Lump, 1 lb., 0.06¢ 0.06 1/2

Washed Nat Oxid. Powder, 1 lb., 0.07¢ 0.07 1/2 Golden, 1 lb., 0.03¢ 0.03 1/2 Domestic, 1 ton, 12¢ 20¢

**Oils, Mineral**—Cylinder, light filtered, gal., 1.14¢ 1.16¢ Dark filtered, gal., 1.00¢ 1.13¢

Extra cold test, gal., 2¢ 2.24¢ Dark steam refined, gal., 1.75¢ 1.12¢

**Phosphorus**—1 lb., 5¢ 5 1/2¢ Precip., red, 1 lb., 10¢ 85¢ white, 1 lb., 85¢ 90¢

**Platonic Chloride**—Dry, 1 oz., 8¢ **Plumbago**—Ceylon, 1 lb., 0.04¢ 0.06¢ American, 1 lb., 0.05¢ 0.07¢

**Potassium**—Cyanide, 1 lb., C. P., 71¢ fused, 38¢ 41¢ Bromide, domestic, 1 lb., 18¢ 82¢

Chloride, English, 1 lb., 18¢ 18 1/2¢ Chlorate, powdered, English, 1 lb., 18¢ 19¢

Carbonate, 1 lb., by casks, 82¢ 0.41¢ 0.05¢ Caustic, 1 lb., pure slick, 0.55¢ 0.06¢

Iodide, 1 lb., 2.38¢ 2.80¢ Nitrate, refined, 1 lb., 0.06¢ 0.06 1/2 Bichromate, 1 lb., 1.00¢ 1.14¢

Yellow Prussiate, 1 lb., 21¢ 22 1/2¢ Red Prussiate, 1 lb., 9¢ 9 1/2¢

**Pumice Stone**—Select lumps, 103 1/2¢ 1.1¢ Original cks., 1 lb., 0.01¢ 0.02¢ Powdered, pure, 1 lb., 0.01¢ 0.01 1/2¢

**Pyrites**—Non-cupreous, p. units, 12¢ 1.1¢ **Quartz**—Ground, 1 ton, 0.06¢ 0.10¢

**Rotten Stone**—Powdered, 1 lb., 0.03¢ 0.03 1/2¢ Lump, 1 lb., 0.06¢ 0.07¢ Original cks., 1 lb., 0.04¢ 0.05¢

Rubbing stone, 1 lb., 0.03¢ 0.04¢ **Sal Ammoniac**—Lump, in bbls., 1 lb., 80¢ Salt—Liverpool, ground, 1 sack, 70¢

Domestic, fine, 1 ton, 7¢ 7 1/2¢ Common, fine, 1 ton, 4.50¢ 4.50¢

**Talc**—Ground French, 1 lb., 0.01¢ 0.01 1/2¢ American No. 1, 1 lb., 0.01¢ 0.01 1/2¢ American No. 2, 1 lb., 0.00¢

**Terra Alba**—French, 1 lb., 0.65¢ 0.80¢ English, 1 lb., 0.60¢ 0.80¢ Amer. can. No. 1, 1 lb., 0.60¢ 0.80¢

American, No. 2, 1 lb., 0.40¢ 0.40¢ **Tin**—Crystals, in kegs or bbls., 14¢ 15¢ feathered or flossed, 9¢

Muriate, single, 0.07¢ 0.12¢ Double or strong, 54° B., 10¢ 10 1/2¢

Oxymur., or nitro., 19¢ **Vermilion**—Imp. English, 1 lb., 0.37¢ 0.39¢ Am. quicksilver, bulk, 0.58¢ 0.61¢

Am. quicksilver, bags, 0.58¢ 0.61¢ Chinese, 0.85¢ 0.90¢ Trieste, 0.90¢ 0.95¢

American, 1 lb., 1.14¢ 1.12¢ **Zinc White**—Am. Dry, 1 lb., 0.04¢ 0.05¢ Antwerp, Red Seal, 1 lb., 0.14¢ 0.07¢

Paris, Red Seal, 1 lb., 0.07¢ 0.08¢ Muriate solution, 0.06¢ Sulphate crystals, in bbls., 1 lb., 63¢ 0.03¢

#### THE RASER METALS.

**Aluminum**—1 lb., 80¢ 85¢ **Arsenic**—(Metallic), per lb., 0.03¢

**Barium**—(Metallic), per gram, 0.40¢ **Bismuth**—(Metallic), per lb., 0.00¢

**Cadmium**—(Metallic), per lb., 0.01¢ 0.01 1/2¢ **Calcium**—(Metallic), per gram, 0.10¢

**Cerium**—(Metallic), per gram, 0.75¢ **Chromium**—(Metallic), per gram, 1.00¢

**Cobalt**—(Metallic), per lb., 0.60¢ **Dysprosium**—(Metallic), per gram, 0.90¢

**Erbium**—(Metallic), per gram, 0.75¢ **Gallium**—(Metallic), per gram, 0.140¢

**Glucinum**—(Metallic), per gram, 0.120¢ **Indium**—(Metallic), per gram, 0.90¢

**Iridium**—(Fused), per oz., 12.00¢ **Lanthanum**—(Metallic), per gr., 10.00¢

**Lithium**—(Metallic), per gram, 0.100¢ **Magnesium**—(Powdered), per lb., 0.40¢

**Manganese**—(Metallic), per lb., 0.10¢ Chem. pure, per oz., 10.00¢

**Molybdenum**—(Metallic), per gm., 0.60¢ **Niobium**—(Metallic), per gram, 0.50¢

**Osmium**—(Metallic), per oz., 0.85¢ **Palladium**—(Metallic), per oz., 0.20¢

**Platinum**—(Plate), per oz., 0.975¢ **Potassium**—(Metallic), per in., 0.45¢

**Rhodium**—(Metallic), per gram, 0.50¢ **Ruthenium**—(Metallic), per gm., 0.50¢

**Selenium**—(Metallic), per gram, 0.20¢ **Silicium**—(Metallic), per lb., 0.120¢

**Sodium**—(Metallic), per lb., 0.60¢ 0.75¢ **Strontium**—(Metallic), per gm., 0.60¢

**Tantalum**—(Metallic), per gram, 0.90¢ **Tellurium**—(Metallic), per lb., 0.050¢

**Thallium**—(Metallic), per gram, 0.20¢ **Thorium**—(Metallic), per gram, 0.170¢

**Tungsten**—(Metallic), per lb., 0.80¢ **Uranium**—(Oxide), per lb., 0.350¢

**Vanadium**—(Metallic), per gm., 0.90¢ **Yttrium**—(Metallic), per gram, 0.90¢

**Zirconium**—(Metallic), per gm., 0.90¢

#### NON-DIVIDEND-PAYING MINES.

[illegible]

\*Ex-dividend. †Dealt at in New York Stock Ex. Unlisted securities ‡Assessment paid. §Assessment unpaid. ¶Dividend shares sold, 53. ††Dividend shares sold, 1,300.

NAME OF COMPANY.	May 12.	May 13.	May 15.	May 16.	May 17.	May 18.	SALES.	NAME OF COMPANY.	May 12.	May 13.	May 15.	May 16.	May 17.	May 18.	SALES.
Atlantic, Mich.		7.50	7.50				125	Allouez, Mich.			.50	.51	.50		2,100
Bodie, Cal.								Arnold, Mich.	40						300
Bonanza Development.								Aztec, Mich.						40	
Bost. & Mont., Mont.	22.50	21.88	22.00	21.50	21.38	19.50	2200	19.75	22.60	22.00	21.75				
Breece, Colo.								Brunswick, Cal.							
Calmar & Hecla, Mich.		260	257.50	255	255		290	Butte & Boston, Mont.	7.25	7.25	7.00	7.25	6.50	7.00	6.50
Catalpa, Colo.								Centennial, Mich.		6.50	6.75	6.00	6.50	7.00	1.90
Central, Mich.								Colchis, N. Mex.						6.25	1.30
Cœur d'Alene, Id.								Copper Falls, Mich.							
Crescent, Colo.								Crescent, Colo.							
Con. Cal. & Va., Nev.								Dana, Mich.							
Cookin, Cal.								Don E.rique, Mex.							
Eureka, Nev.								Geyser, Colo.							
Franklin, Mich.	11.75	11.75	11.50		11.88	11.75	11.75	12.00	11.75	990					
Honorine, Utah.								Hanover, Mich.							
Horn Silver, Utah.								Humboldt, Mich.							
Idaone, Mich.	5.00	6.63	6.50		25.00		6.75	Hungarian, Mich.							
Lake Superior, Iron.								Huron, Mich.							
Little Pittsburg, Colo.								McCard, Mich.							
Minnesota Iron, Minn.								National, Mich.				.75			100
Napa, Cal.								Native, Mich.							
Ontario, Utah.	28.50	28.00	28.50	28.00	28.50	27.75	28.00	27.00	27.00	748					
Oscoda, Mich.								Orinental & M., Nev.							
Quincy, Mich.					113	110	110	Phoenix, Ariz.							
Ridge, Mich.								Pontiac, Mich.							
Sierra Nevada, Nev.								Rappahannock, Va.							
Silver King, Ariz.								Santa Fe, N. Mex.			.05				30
Stormont, Utah.								Shoshone, Idaho.							
Tamarack, Mich.	148		145	148		148	145	145	South Side, Mich.						
Tecumseh, Mich.								Tamarack, Jr., Mich.							
								Washington, Mich.							
								Wolverine, Mich.			2.50	2.50	2.00		

Dividend shares sold, 5,632

Non-dividend shares sold, 6,100.

Total shares sold 11,732

### NON-DIVIDEND-PAYING MINES.

DIVIDEND-PAYING MINES.																
Name and Location of Company.		Capital Stock.	Shares.		Assessments.		Dividends.		Name and Location of Company.		Capital Stock.	Shares.		Assessments.		
No.	Par	Total levied.	Date and amount of last	Total paid.	Date and amount of last.	No.	Par	Total levied.	Date and amount of last.	No.	Par	Total levied.	Date and amount of last.	No.	Par	
1	Adams, S. L. & Co.	Colo.	\$1,000,000	100,000	\$10				\$67,500	Jan. 1892	05	1	Allaunce, S. G.	Utah.	\$100,000	100,000
2	Alaska-Treadwell, g.	Alaska	5,000,000	200,000	25			1,500,000	April 1892	23	2	Allouez, C.	Mich.	2,000,000	80,000	
3	Alma, S. L. & Co.	Mont.	10,000,000	400,000	40			975,000	Nov. 1891	06	3	Alpha Con. g. s.	Nev.	3,000,000	30,000	
4	Alma & Elwood, g.	Cal.	3,000,000	30,000	10			60,000	Jan. 1889	50	4	Alta, S.	Nev.	10,080,000	100,800	
5	Amador, g.	Cal.	1,250,000	250,000	5			31,250	Jan. 1892	12	5	American, g.	Idaho	5,000,000	50,000	
6	American, g.	Colo.	3,000,000	30,000	10			225,000	Mar. 1892	05	6	American Eng.	Colo.	1,250,000	12,500	
7	American Belle, g. & C.	Colo.	2,000,000	400,000	5			50,000	April 1891	12	7	Amity, S.	Colo.	250,000	250,000	
8	American & Nettie, g. & C.	Colo.	300,000	3,000	25			175,000	Mar. 1892	05	8	Anchor, S. L. & G.	Utah.	3,000,000	120,000	
9	Atlantic, C.	Mich.	1,000,000	10,000	100			700,000	Feb. 1891	1,00	9	Antiochia-Monta, L.	Mont.	800,000	120,000	
10	Atlatl, C.	Colo.	10,000,000	100,000	100			40,000	Feb. 1890	20	10	Appalachian, g.	N. C.	1,750,000	1,300,000	
11	Argyle, g.	Colo.	1,000,000	1,000,000	1			20,000	Mar. 1892	40	11	Arizona, C.	Calif.	3,575,000	100,000	
12	Aspen Mfg. & S. S. L.	Colo.	2,000,000	200,000	10			70,000	Sept. 1892	10	12	Astoria, g.	Cal.	100,000	100,000	
13	Aurora, I.	Mich.	2,500,000	100,000	25			630,000	Feb. 1893	2,00	13	Atlanta, g. s.	Idaho	3,250,000	650,000	
14	Badger, S.	Ont.	250,000	50,000	5			37,500	Mar. 1890	25	14	Barcelona, g.	Nev.	5,000,000	20,000	
15	Bald Eagle, S. & Co.	Colo.	250,000	2,500	1			72,500	Mar. 1892	03	15	Barclay, C.	Idaho	100,000	20,000	
16	Bates Hunter, S. & Co.	Colo.	1,000,000	1,000,000	1			1,000,000	Dec. 1891	00	16	Belmont, g.	Cal.	500,000	500,000	
17	Belle Isle, S.	Nev.	10,000,000	100,000	100			300,000	Dec. 1892	23	17	Belmont, g.	Cal.	500,000	100,000	
18	Belcher, S. g.	Nev.	10,000,000	100,000	100			15,397,000	April 1876	1,00	18	Belcher & Belcher, S. g.	Nev.	10,080,000	100,800	
19	Bellevue, Idaho, S. L.	Idaho	1,250,000	125,000	10			200,000	Jan. 1890	10	19	Black Oak, g.	Cal.	3,000,000	300,000	
20	Best Friend, S. & Co.	Colo.	1,000,000	1,000,000	1			200,000	Feb. 1892	01	20	Boston Con. g.	Cal.	10,000,000	100,000	
21	Bi-Metallic, S. g.	Cal.	5,000,000	200,000	25			2,300,000	Dec. 1892	30	21	Brown, g.	Colo.	250,000	250,000	
22	Bodie Con. g. I.	Cal.	10,000,000	100,000	100			1,602,572	April 1885	50	22	Brunswick, g.	Cal.	2,000,000	20,000	
23	Boston & Mont. g.	Mont.	2,500,000	250,000	25			500,000	June 1886	15	23	Buckeye, S. L.	Mont.	1,000,000	500,000	
24	Boston & Mont. C. S.	Mont.	3,125,000	125,000	25			2,075,000	Nov. 1891	1,00	24	Bullion, S. g.	Nev.	10,000,000	100,000	
25	Brookfield Lead, L. S.	Mich.	500,000	5,000	1			127,000	July 1887	05	25	Burlington, g. s.	Mont.	10,000,000	100,000	
26	Brotherton, I.	Cal.	2,000,000	20,000	25			150,000	Oct. 1892	05	26	Butte & Boston, C. S.	Mont.	5,000,000	20,000	
27	Bulwer, g.	Cal.	10,000,000	100,000	10			190,000	Oct. 1892	05	27	Butte, g.	Cal.	1,000,000	10,000	
28	Bunker Hill & S. S. L.	Idaho	3,000,000	30,000	10			150,000	Oct. 1888	06	28	Caiaveras, g.	Cal.	500,000	5,000	
29	Caledonia, g.	Dak.	10,000,000	100,000	100			192,000	Oct. 1890	08	29	Calaveras Con. g.	Cal.	800,000	160,000	
30	Califlope, S. & Co.	Cal.	1,000,000	1,000,000	1			140,000	Jan. 1891	00	30	California, g.	Cal.	1,000,000	100,000	
31	Calumet & Hecla, M. M.	Mich.	1,500,000	15,000	50			39,000	Mar. 1883	00	31	California Con. I. q.	Cal.	2,250,000	450,000	
32	Centen'l-Eureka, S. L.	Utah.	1,500,000	30,000	50			645,000	April 1892	05	32	Camille, g.	Cal.	1,000,000	10,000	
33	Central, C.	Mich.	500,000	20,000	25			1,971,500	Feb. 1891	1,00	33	Carissa, g.	Wyo.	500,000	100,000	
34	Champion, g.	Cal.	340,000	34,000	10			132,900	May. 1895	10	34	Caripano, g. S. L. C.	Cal.	200,000	100,000	
35	Chrysolite, S. L.	Colo.	10,000,000	200,000	50			1,650,000	Dec. 1884	25	35	Cashier, g. s.	Nev.	500,000	250,000	
36	Clay, g.	Cal.	200,000	2,000	5			56,000	Nov. 1891	02	36	Challenge Con. g. s.	Nev.	5,000,000	50,000	
37	Clinton Con. g.	Cal.	5,000,000	100,000	50			27,000	Nov. 1891	02	37	Challenger, g.	Cal.	1,500,000	150,000	
38	Cneur D'Ale, S. L.	Idaho	5,000,000	500,000	10			310,000	Nov. 1891	02	38	Chollar, g.	Cal.	112,000	11,200	
39	Colorado Central, S. L.	Colo.	2,750,000	275,000	10			530,000	April 1893	05	39	Cleveland, T.	Dak.	1,000,000	100,000	
40	Commonwealth, S.	Nev.	10,000,000	100,000	100			20,000	Nov. 1890	20	40	Colchis, S. g.	N. M.	500,000	150,000	
41	Con. Cal. & Va. S. g.	Nev.	2,495,000	24,950	100			199,650	April 1889	1,00	41	Colorado, S.	Cal.	1,625,000	325,000	
42	Cons. Cal. & Va. S. g.	Nev.	216,000	2,160	100			3,692	Aug. 1891	50	42	Constock, S.	Utah.	1,250,000	250,000	
43	Constitution, S.	Ariz.	12,500,000	250,000	50			2,637,500	Aug. 1892	20	43	Constock, S.	Utah.	10,000,000	100,000	
44	Cook's Peak, S.	N. M.	2,000,000	20,000	10			114,532	Nov. 1892	05	44	Con. Imperial, S. g.	Nev.	5,000,000	50,000	
45	Cop. Queen Con. g.	Ariz.	2,000,000	20,000	10			1,461,000	May. 1893	50	45	Con. New York, S. g.	Nev.	5,000,000	100,000	
46	Copper, S.	Cal.	1,500,000	15,000	50			67,000	July 1892	12	46	Con. Pacific, g.	Cal.	6,000,000	60,000	
47	Cortez, S.	Cal.	1,500,000	30,000	50			180,000	Mar. 1890	50	47	Con. Silver, S.	Mo.	2,500,000	250,000	
48	Crescent, S. L. g.	Utah.	15,000,000	600,000	25			238,000	Oct. 1888	05	48	Corcoran Union, g.	Cal.	1,900,000	19,000	
49	Crown Point, g. S.	Nev.	10,000,000	100,000	100			11,889,000	Jan. 1875	2,00	49	Crescent, S. Union, g.	Colo.	3,000,000	200,000	
50	Cu & Bertrand, L. S.	Mont.	5,000,000	500,000	10			15,000	Nov. 1889	03	50	Crocker, S.	Ariz.	10,000,000	100,000	
51	Daly, S. L.	Cal.	1,000,000	10,000	20			2,762,500	April 1893	25	51	Crowell, g.	N. C.	500,000	50,000	
52	Deer Creek, S. g.	Idaho	200,000	2,000	5			1,700,000	June 1889	05	52	Dalhousie, g.	Cal.	250,000	25,000	
53	Deadwood-Terra, g.	Pat.	5,000,000	200,000	25			1,700,000	June 1892	05	53	Dandy, S.	Cal.	5,000,000	50,000	
54	DeTamar, S. g.	Idaho	2,000,000	400,000	5			303,000	April 1893	37	54	DeTamar, S.	Colo.	5,000,000	50,000	



## DIVIDEND-PAYING MINES.

## NON DIVIDEND-PAYING MINES.

Name and Location of Company.		Capital Stock.	Shares.	Assessments.		Dividends.		Name and Location of Company.		Capital Stock.	Shares.	Assessments.				
			No.	Par	Total levied	Date and amount of last.	Total paid.	Date and amount of last.				No.	Par	Total levied	Date and amount of last.	
55	Derbe B. Gray, g. s.	10,000	100	100	100,000	Sept. 1892	10	60,000	Aug. 1891	55	Denver City, s. Colo.	5,000,000	500,000	11	*	
56	Dexter, g. s. Nev.	1,000,000	100,000	100	100,000	Sept. 1892	10	60,000	Aug. 1891	56	Denver Gold, s. Colo.	200,000	20,000	5	20,000	Aug. 1891
57	Dunkin, s. L. Colo.	5,000,000	500,000	25	250,000	Sept. 1892	25	200,000	Oct. 1892	57	Dickens-Custer, s. Idaho	2,000,000	200,000	5	200,000	Oct. 1892
58	Elkhorn, s. L. Mont.	1,000,000	100,000	5	50,000	Sept. 1892	5	50,000	May 1893	58	Dunsmuir, s. B. C.	5,000,000	500,000	1	500,000	Oct. 1892
59	Enterprise, s. Colo.	2,500,000	250,000	100	550,000	June 1889	50	5,017,500	Jan. 1892	59	Eastern Dev. Co., Li S. S.	1,500,000	150,000	4	990,000	Mar. 1881
60	Eureka Con., s. L. G. Nev.	1,000,000	100,000	100	500,000	June 1889	50	1,450,000	Dec. 1889	60	El Dorado, g. s. Cal.	1,000,000	100,000	2	25,000	Jan. 1892
61	Evening Star, s. L. Colo.	500,000	50,000	100	500,000	June 1889	50	1,450,000	Dec. 1889	61	El Talento, g. U.S.C.	1,000,000	100,000	3	500,000	Jan. 1892
62	Father de Smet, g. Dak.	10,000,000	1,000,000	100	200,000	Nov. 1878	1.00	1,125,000	Dec. 1885	62	Emma, s. Utah	625,000	62,500	12	300,000	Jan. 1892
63	Franklin, g. Mich.	1,000,000	100,000	25	200,000	June 1871	2.00	1,100,000	July 1892	63	Empire, s. Utah	2,000,000	200,000	1	200,000	Jan. 1892
64	Freeland, s. g. Colo.	5,000,000	500,000	25	500,000	Sept. 1892	25	1,000,000	July 1892	64	Eureka Tunnel, s. Nev.	10,000,000	1,000,000	100	940,000	Jan. 1892
65	Garfield L., g. s. Nev.	1,250,000	125,000	100	500,000	Sept. 1892	25	1,000,000	June 1891	65	Excelsior, s. g. Nev.	10,000,000	1,000,000	100	130,500	Jan. 1892
66	Glenn, s. Mont.	1,000,000	100,000	100	500,000	Sept. 1892	25	1,000,000	June 1891	66	Foundry, g. s. Nev.	10,000,000	1,000,000	100	130,500	Jan. 1892
67	Gold Rock, s. Colo.	500,000	50,000	100	500,000	Sept. 1892	25	1,000,000	Dec. 1891	67	Grand Bank, g. s. Colo.	250,000	25,000	1	50,000	Jan. 1892
68	Golden Reward, s. Dak.	1,250,000	125,000	100	4,591,200	June 1892	25	3,826,800	Oct. 1870	68	Grand Cup, s. Colo.	500,000	50,000	1	50,000	Jan. 1892
69	Gould & Curry, s. g. Nev.	10,000,000	1,000,000	100	785,000	Jan. 1890	30	485,000	Mar. 1884	69	Golden Era, s. Mont.	2,000,000	200,000	10	5,000	Mar. 1892
70	Grand Prize, s. Nev.	10,000,000	1,000,000	100	785,000	Jan. 1890	30	485,000	Mar. 1884	70	Gold Flat, g. s. Cal.	1,000,000	100,000	10	5,000	Mar. 1892
71	Granite, s. L. Idaho	500,000	50,000	1	500,000	Sept. 1892	25	1,100,000	Nov. 1892	71	Golden Gate, s. Cal.	1,000,000	100,000	10	5,000	Mar. 1892
72	Granite Mountain, s. Cal.	10,000,000	1,000,000	25	500,000	Sept. 1892	25	1,100,000	Nov. 1892	72	Golden King, s. Colo.	1,650,000	165,000	5	45,000	Mar. 1892
73	Great Western, L. Q. Cal.	500,000	50,000	100	500,000	Sept. 1892	25	1,100,000	Nov. 1892	73	Golden Rock, g. s. Cal.	1,000,000	100,000	10	5,000	Mar. 1892
74	Green Mountain, g. Cal.	1,250,000	125,000	100	500,000	Sept. 1892	25	1,100,000	Nov. 1892	74	Golden Feather, s. Cal.	500,000	50,000	5	5,000	Mar. 1892
75	Hale & Norcross, g. s. Nev.	11,250,000	1,125,000	100	5,534,500	Aug. 1892	50	1,822,000	Aug. 1888	75	Goodshaw, g. s. Cal.	10,000,000	1,000,000	100	13,000	Feb. 1892
76	Hecla Con., s. o. L. C. Mont.	1,500,000	150,000	50	500,000	Sept. 1892	25	1,980,000	Aug. 1893	76	Grandeur, g. s. L. Mont.	1,000,000	100,000	10	13,000	Feb. 1892
77	Helena & Fred, s. L. Idaho	3,315,000	331,500	5	663,000	Sept. 1892	25	1,980,000	Aug. 1893	77	Grand Canyon, s. Ariz.	375,000	37,500	5	5,000	Mar. 1892
78	Helena & Victor, s. Mont.	1,000,000	100,000	100	500,000	Sept. 1892	25	1,980,000	Aug. 1893	78	Grand Duke, s. Colo.	800,000	80,000	10	5,000	Mar. 1892
79	Holmes, s. Nev.	10,000,000	1,000,000	100	370,000	May 1890	2	75,000	May 1890	79	Gregory Con., g. Mont.	3,000,000	300,000	10	5,000	Mar. 1892
80	Homestake, g. Dak.	12,500,000	1,250,000	100	370,000	May 1890	2	75,000	May 1890	80	Harriet M. & M. Co., g. Ariz.	1,000,000	100,000	5	22,000	Oct. 1891
81	Honolulu, s. L. Utah	1,000,000	100,000	100	370,000	May 1890	2	75,000	May 1890	81	Hartshorn, g. s. L. S. Dak.	1,250,000	125,000	5	8,750	Sept. 1891
82	Hope, s. L. Mont.	1,000,000	100,000	100	370,000	May 1890	2	75,000	May 1890	82	Head Cent. & Tr., s. g. Cal.	10,000,000	1,000,000	100	45,000	Jan. 1892
83	Horn Silver, s. L. Utah	10,000,000	1,000,000	100	370,000	May 1890	2	75,000	May 1890	83	Hendland, g. s. Mich.	1,500,000	150,000	5	45,000	Jan. 1892
84	Hubert, g. Colo.	1,000,000	100,000	100	370,000	May 1890	2	75,000	May 1890	84	Himalaya, g. s. L. Utah	1,000,000	100,000	10	12,800	Oct. 1892
85	Illinois, s. S. M. Mont.	310,000	31,000	100	370,000	May 1890	2	75,000	May 1890	85	Holywood, s. Cal.	2,000,000	200,000	2	280,000	May 1887
86	Iron Hill, s. s. Colo.	2,500,000	250,000	10	134,000	July 1889	05	125,000	Nov. 1887	86	Hortense, s. Colo.	2,000,000	200,000	10	280,000	May 1887
87	Iron Mountain, s. Mont.	5,000,000	500,000	10	134,000	July 1889	05	125,000	Nov. 1887	87	Huron, s. Colo.	1,000,000	100,000	25	250,000	May 1887
88	Iron Silver, s. L. Colo.	10,000,000	1,000,000	100	134,000	July 1889	05	125,000	Nov. 1887	88	Idaho, g. s. Idaho	1,250,000	125,000	5	1,000,000	May 1887
89	Jack Rabbit, g. Cal.	10,000,000	1,000,000	100	134,000	July 1889	05	125,000	Nov. 1887	89	Ingalls, g. Colo.	1,000,000	100,000	5	20,000	May 1887
90	Jackson, o. s. Nev.	5,000,000	500,000	10	134,000	July 1889	05	125,000	Nov. 1887	90	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
91	Keams, g. Colo.	1,000,000	100,000	100	134,000	July 1889	05	125,000	Nov. 1887	91	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
92	Kearney, g. Mich.	1,000,000	100,000	100	134,000	July 1889	05	125,000	Nov. 1887	92	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
93	Kentucky, s. g. Nev.	3,000,000	300,000	100	454,180	Oct. 1891	15	1,350,000	Dec. 1886	93	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
94	La Plata, s. L. Colo.	2,000,000	200,000	10	454,180	Oct. 1891	15	1,350,000	Dec. 1886	94	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
95	Leadville Con., s. L. Colo.	4,000,000	400,000	10	454,180	Oct. 1891	15	1,350,000	Dec. 1886	95	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
96	Lexington, g. s. Mont.	4,000,000	400,000	10	454,180	Oct. 1891	15	1,350,000	Dec. 1886	96	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
97	Little Chief, s. L. Colo.	10,000,000	1,000,000	50	454,180	Oct. 1891	15	1,350,000	Dec. 1886	97	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
98	Little Chief, s. L. Colo.	10,000,000	1,000,000	50	454,180	Oct. 1891	15	1,350,000	Dec. 1886	98	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
99	Little Chief, s. L. Colo.	10,000,000	1,000,000	50	454,180	Oct. 1891	15	1,350,000	Dec. 1886	99	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887
100	Little Chief, s. L. Colo.	10,000,000	1,000,000	50	454,180	Oct. 1891	15	1,350,000	Dec. 1886	100	Iron, s. L. Wis.	1,000,000	100,000	25	40,000	May 1887

