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We hear very little just now about the practical uses of liquid air. A year or so ago several companies were organized to exploit the business, and lectures were delivered without number on the wonderful revolution in industry which was to follow. In the press despatches this week we find a notice of the failure of two small banks in Illinois, and the reason given therefor is that the president and manager of these banks had "invested in liquid air." Perhaps further comment is unnecessary; but we must remind our readers that we warned them at the time that great caution should be exercised with regard to these schemes.

Nova Scotia showed last year a considerable increase in coal production, the total being 3,013,638 tons, which is an increase of 375,701 tons, or 14 per cent., over the preceding year. About two-thirds of this gain was from the mines of the Dominion Coal Company, which last year furnished a little over 60 per cent. of the total. The demand for coal for the new Dominion Steel Works and elsewhere in Canada has been so large that comparatively little has been sent to the large coke and gas plant near Boston; that plant having used Pennsylvania coal largely. It looks very much as though the steel works and other factories would continue to absorb the Nova Scotia output.

The gold mining excitement of two years ago in the Dutch East Indies, which resulted in some failures, still produced some solid results. Several of the companies then incorporated have gone carefully and honestly to work in the exploitation of their properties, and are already joining the list of producers. Several gold mines in Sumatra, for instance, are being worked on a considerable scale, and with good promise for the future. One at least, the Redjang-Lebong Company, has erected a plant with the latest improvements. An opening for American mining machinery exists in the Dutch colonies, as the success of the mines already working will certainly be followed by the opening of others. Although the gold mines are chiefly in Sumatra and Celebes, the headquarters of most of the companies are in Batavia, on the Island of Java, the commercial center of the Dutch colonies.

The final figures of Lake Superior traffic, as made up from the reports of the engineer in charge of the Sault Ste. Marie Canal, show that while rates were higher than for several years past, the transportation on the great lakes is still about the cheapest known. The total freight passing to and from Lake Superior in 1900 was 25,643,073 short tons, and the average distance carried was 825.9 miles; so that this freight represented 21,179,229,014 ton-miles. The average rate per ton-mile in 1900, when rates were generally high, was 0.118 cent per ton-mile. That is, a ton was carried 8.5 miles for one cent. The rate for 1900, low as it seems, compares with the lower figure of 0.105 cent in 1899, and with 0.079 cent in 1898, which was the lowest point ever reached on the Lakes.

The estimated value of the freight carried last year was \$267,041,959; and the amount paid for its transportation was \$24,953,315, or 9.3 per cent. of its value. More than half of this freight was mineral, chiefly iron ore and coal.

A British contemporary, the London "Iron and Coal Trades Review," seems unduly elated by a paragraph from a correspondent which appeared in our columns, referring to the exhaustion of some mines in the Connellsville coke region. From this slight basis it draws a gloomy picture of the future, and argues that American iron-workers are soon to lose all the advantages which cheap coke and ore have given them. Low prices, it says, are a thing of the past, and British manufacturers need no longer fear American competition.

We are sorry to spoil our contemporary's forecast, but we fear that regard for facts will compel us to do so. It is true that some mines in the Connellsville Region have been exhausted and others are being worked out every day. It is the case in every coal district which is actively exploited. The Connellsville people, however, are not by any means ready to admit that the region is worked out, and there is, in fact, coal enough there to last for a long time yet. Even if the Connellsville District should be entirely exhausted, there are adjoining districts in Western Pennsylvania, in which coal mining has but recently begun; while West Virginia has resources which have been hardly touched, and which are within moderate distances of the iron-making centers. Upon the whole, we are quite satisfied with the situation; and we advise British readers not to put too much confidence in the "Review's" forecast.

The directors of the Bingham Gold and Copper Company of Boston appear unduly jubilant over the successful inauguration of their new smelting plant in Utah. They are indeed to be congratulated upon the good management and engineering foresight which have enabled it to be put in operation so promptly and without any serious hitch, but that they are leading the way to a new metallurgical development is

a mistaken idea, and we think it is, to say the least, doubtful if the method they have adopted is the best for the treatment of their ore. There is no question whatever as to the metallurgical practicability of the pyritic smelting of such ore, if the definition of "pyritic smelting" be the direct reduction of sulphide ore without preliminary roasting; the question is as to its economy. The possibilities of smelting the ore raw at a fast rate of driving and with reasonably clean slags may be conceded, but everywhere, so far as we know, at Mount Lyell, Tilt Cove, and in Australia, notwithstanding the high percentage of oxidation of the sulphur which is attained in the furnace, it is insufficient to produce a high-grade matte from ore which is of low grade in copper. On the other hand, the blast-furnace oxidation yields a comparatively high-grade matte from ore which has previously been desulphurized to 7-9 per cent. S by a preliminary roasting, as in the ordinary process of copper-matte smelting. In producing a high-grade matte a quantity of iron is set free which would otherwise be held by the sulphur and frequently can be employed profitably in carrying silicious ore on the charge that will yield a good profit. This fluxing value of the iron when liberated from sulphur should not be lost sight of. Moreover, a heavy sulphide ore will lose something like 25 per cent. in weight by roasting and there are fewer tons to be put through the blast furnace than when the ore is charged raw. On the other hand, there is the cost of roasting to be considered. We are of the opinion, however, that it will be only under exceptional conditions that the balance will indicate in favor of the pyritic process.

Mining Dividends in February.

In February 58 mining and metallurgical companies in the United States reported to the "Engineering and Mining Journal" dividends aggregating \$7,219,043, which is a most satisfactory showing, considering that heavy quarterly payments were made in January. It is also encouraging to note that several companies in February have increased their annual dividend rate, while some new payers were added to the list. From reports received it is understood that there will be many more new dividend payers before the close of the year, as the developments at the mines are promising and the market values of the metals well maintained.

The distribution of dividends in February included \$2,995,918 by 39 gold, silver, lead, zinc and copper mines; \$3,127,081 by 5 leading iron and steel companies producing much of their own raw material; \$480,753 by 6 petroleum and natural gas companies; \$396,782 by 4 coal mining companies, and \$218,504 by four other companies.

In the metal mines list the copper companies continue to hold first place with \$1,880,000. Of this amount the Boston & Montana Company paid \$1,500,000, which is at the rate of 40 per cent. for the quarter or 160 per cent. per annum on its capital stock of \$3,750,000, making it the second largest dividend paying mining company in the country. There were 33 gold, silver and lead companies that paid \$693,441, of which the Homestake of South Dakota contributed \$105,000. This company has distributed among its stockholders since its incorporation a total of \$9,613,750, which places it among the most profitable gold mines in the United States. The Silver King Gold Mining Company of Utah upon payment of \$100,000 in February, has increased its annual dividend rate from 30 to 40 per cent. On a capitalization of \$3,000,000 the Silver King Company paid in dividends \$3,625,000 so far, which has been equaled by comparatively few producing mines. The Empire State-Idaho Mining Company of Idaho upon increasing its capital stock from \$1,000,000 to \$6,000,000 has been put upon a 12 per cent. dividend basis, while last year it paid 36 per cent. on the old-share capital. The zinc mines paid \$422,477 in February, of which the New Jersey Zinc Company furnished \$400,000. The Missouri-Kansas zinc mines are not paying as frequently as the promoters promised when they capitalized their companies on the abnormally high price of zinc ore which ruled about two years ago.

The leading dividend payer in the iron and steel group is the Federal Steel Company, which distributed \$2,324,215 on its common stock in February. This puts the company's common stock on a 5 per cent. basis, while last year it received only 2½ per cent.

In the petroleum list new California oil wells have begun dividend payments, and it is learned that more will be heard from soon. Of the \$396,782 paid by the coal mining companies, the Consolidation Coal Company of Maryland, contributed \$205,000, which is at the rate of 2 per cent. per annum on its capital stock.

Of the four miscellaneous dividend payers, the National Salt Company leads with \$192,500. This company is paying 6 per cent. annually on its common stock and 7 per cent. on its preferred, and up to date it has disbursed to holders of both shares a total of \$962,500, which is equal to fully 8 per cent. on its total authorized capital stock of \$12,000,000.

THE UNITED STATES STEEL CORPORATION.

On another page we give the particulars, so far as settled or made public up to date, of the organization of this company, in which are included the leading steel producers of the United States. The settlement of a transaction of this magnitude naturally requires some time, and there may yet be some changes in the details of the arrangements reported. There is, of course, talk of protests from some of the interests included in the consolidation, but these are evidently in the nature of "bluffs" to secure large allotments of stock, and may be regarded as of slight importance. The larger interests appear to be generally satisfied.

Briefly expressed, the new company will have a capital of \$400,000,000 in common stock, \$400,000,000 in 7 per cent. preferred stock and \$300,000,000 in 5 per cent. bonds; the total of \$1,100,000,000 being a far larger capitalization than that of any other company organized. Without going into the details—which are given on another page—the bonds go to the owners of the Carnegie Company, while about \$550,000,000 of the stock will be exchanged for the stocks of the other companies, leaving a reserve which is apparently held for the purchase of the properties of other companies which may be added to the consolidation hereafter. These terms serve to show the controlling position in the steel trade which the Carnegie Company had secured. The stockholders of that company receive for their property the fixed obligations which carry with them compulsory interest payments, while the stock, dividends upon which are contingent on the profits earned, goes to the other companies in the consolidation. This, indeed, seems to be a just recognition of the value and earning power of the Carnegie properties, and the completeness with which they cover the whole cycle of production from ore and fuel to the finished product.

The terms offered are such as to provide for an inflation of about \$74,000,000. The stock of the new company to be issued will exceed by that nominal amount the stocks for which it will be exchanged.

While the new corporation will undoubtedly be in practical control of the steel trade, it does not include the whole productive capacity of the country, as some have assumed. There are several companies of importance not included in the consolidation; and it does not touch the Southern iron producers, whose output is growing in importance, especially since the successful establishment of steel works in Alabama. Competition from the South must be reckoned with, though there is probably little to be expected from the independent companies left elsewhere. As to competition from new concerns which may enter the field hereafter, that may be disregarded for the present, though it will become a factor later.

It has been assumed that the consolidated company will enter largely into the export trade, and from this point of view it has attracted much attention in Great Britain and Germany. Whether this view is correct is doubtful yet. There is a surplus capacity which can be utilized for export trade; but it must be remembered that extensive sales abroad while prices are maintained at a higher level at home will excite a feeling which would very probably find expression in the withdrawal of the duties on iron and steel, thus seriously decreasing the possible differential between home and foreign prices. Such a measure has already been proposed, and has met with a good deal of popular approval.

Of the effect of the consolidation on the markets it is too soon to speak at length. However powerful the combination may be, varying demand must still make its influence felt; though probably a steadier range of prices and fewer fluctuations will be the immediate result.

We shall discuss the subject of such combinations in an early issue and shall be pleased to receive the views of our readers on this extremely important question.

NEW PUBLICATIONS.

"The Cement Industry." Reprinted from the "Engineering Record." New York; the "Engineering Record." Pages, 236; illustrated. Price, \$3.

The first beginning of this book was a series of articles on the Portland cement industry in Europe, prepared for the "Engineering Record" by Mr. Frederick H. Lewis. Later these were supplemented by a number of articles on American plants, both for Portland and natural cements, prepared by Mr. Lewis and by Messrs. Newbury, Meyer, Lathbury, Spackman, Haight and Vredenburg. The bulk of the book, however, is by Mr. Lewis. It contains descriptions of all the prominent cement plants in the United States, their methods and practice, as well as general descriptions of cement practice in England, Germany, France and Belgium. It gives a very complete view of the cement industry as carried on in America and Europe, noting the character of the ingredients used, the methods and machinery employed and the results attained. The European plants described all make Portland cement, while the American accounts include also natural and slag cements. The three classes are thus defined in the introduction to the book:

"1. Portland cement, a compound consisting essentially of lime, silica and alumina, produced by mixing intimately some form of carbonate of lime with the correct proportion of clay, calcining the mixture at a high heat, and grinding the resulting clinker to fine powder.

"2. Natural cement, produced by calcining at comparatively low heat a natural limestone containing usually a considerable proportion of magnesia and an excess of clay over that required for Portland cement.
 "3. Puzzolana, or Slag Cement, produced by mixing natural volcanic scoria or granulated blast furnace slag, of suitable composition, with slaked lime."

The book cannot fail to be a most useful and acceptable one to engineers who have constant occasion to use cement in construction work, to whom a knowledge of its composition and properties and of the best methods of manufacture is essential.

"Evolution of the Thermometer, 1592-1743." By Henry Carrington Bolton. Easton, Pa.; the Chemical Publishing Company. Pages, 98; illustrated.

In this book the author has sketched the gradual evolution of the thermometer from the first crude forms used in Italy down to three standards now in use in all civilized countries. In conclusion he notes two points. "First that no nation now makes popular use of the thermometer designed by its own citizen. The instrument constructed by the German Fahrenheit in the Netherlands is used almost exclusively in English-speaking lands; that invented by the Frenchman Reaumur finds no credit in France, but is popular in Germany; and that of Celsius, the Swede, modified by Christin, of Lyons, is used chiefly in France, Belgium and Switzerland.

"Secondly, no one of the thermometers now in use has exactly the scale originally devised by the person whose name is attached to it, later and more nearly perfect methods of manufacture having modified the primary form."

An appendix to the book gives in tabular form 35 different thermometer scales which have been used at different times. This is followed by a condensed chronological statement. In conclusion a list of books bearing upon the thermometer is given, which includes no less than 69 titles.

BOOKS RECEIVED.

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

"Annual Report of the City Engineer of Minneapolis." G. W. Sublette, City Engineer. Minneapolis, Minn.; published by the City. Pages, 110; with maps.

"The Standard Guide to the City of Mexico. 1901." City of Mexico; Modern Mexico Publishing Company. Pages, 152; illustrated. Price, 50 cents.

"A Review of Technical Paints for the Protection of Metal Surfaces." By W. H. Loomis. Williamsport, Pa.; the National Paint Works. Pamphlet, pages 32.

"South Africa Hand-books, No. 3. Cape Colony and Orange River Colony." London; Published by "South Africa." Pages, 36; with maps. Price (in New York), 20 cents.

"A Compendium of Gold Metallurgy." Second Edition, Revised. By E. M. and M. L. Wade. Los Angeles, Cal.; published for the authors. Pages, 140; illustrated. Price, \$1.

"Ausgewählte Methoden der Analytischen Chemie." Volume I. By Dr. A. Classen. Braunschweig, Germany, 1901; Friedrich Vieweg & Sohn. Pages, 940; illustrated. Price (in New York), \$7.

"American Engineering Competition." Being a Series of Articles Resulting from an Investigation made by the "Times." London. New York and London; Harper & Brothers. Pages, 140. 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 will only be published when so requested.

Letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

The Nome Receivership Cases.

Sir: A newspaper clipping is enclosed from the Seattle "Times," which may give some information which you have not already received, perhaps, concerning the corrupt and high-handed methods of administration imposed upon the Nome miners last year. Congress should take immediate steps to appoint an investigation committee, if it has not done so already, for the purpose of giving the district court of Alaska at Cape Nome a thorough examination with the same care and interest as have been received by some other matters of less importance. The testimony that has been sworn in the McKenzie case at San Francisco—corroborating the facts as told by hundreds of miners—indicates beyond a doubt that the removal of Judge Noyes from the district court of Alaska is a foregone conclusion.

As stated in your editorial of February 9th, there is a strong effort being made to keep the testimony in the McKenzie case from the public. Why? Because a Government officer of wide influence has serious charges proven against him. It is to be hoped that our representatives at Washington will not neglect their duty in this matter and compel the miners to take the case into their own hands for settlement.

Seattle, Wash., Feb. 21, 1901.

W. M. Brook.

A Convenient Candlestick for Mining Engineers.

Sir:—Having just seen the letter and sketch sent by Mr. J. R. Stephens and published in the issue of the "Journal" for February 2d, I wish to describe a similar, and I think, better device, designed by me and used for a number of years with uniform satisfaction. This is a folding candlestick made from heavy sheet copper—No. 16, B. W. G., is a good size, and nearly always found about mills. The candle-

stick can be made in less than an hour, and requires no more mechanical skill than is possessed by any engineer or mine foreman. The pattern is first marked out on the sheet, and the strip roughly cut out by means of a cold-chisel or hack-saw, and then finished up with a file. After making the hook and bending the parts into shape, the hole is punched or drilled, and the two pieces riveted together with a copper rivet made either from wire or hammered from a piece of the same sheet copper. It is better to have the base of the hook slightly thicker than the rest, so that it will open and close without binding on the sides. The hook should be riveted rather tight, so that the action is stiff enough to insure the necessary rigidity when open.

This little implement will be found most convenient for all kinds of work with a transit or compass, and for general use as a mine candlestick. When closed it is very compact and easy to carry in the pocket.

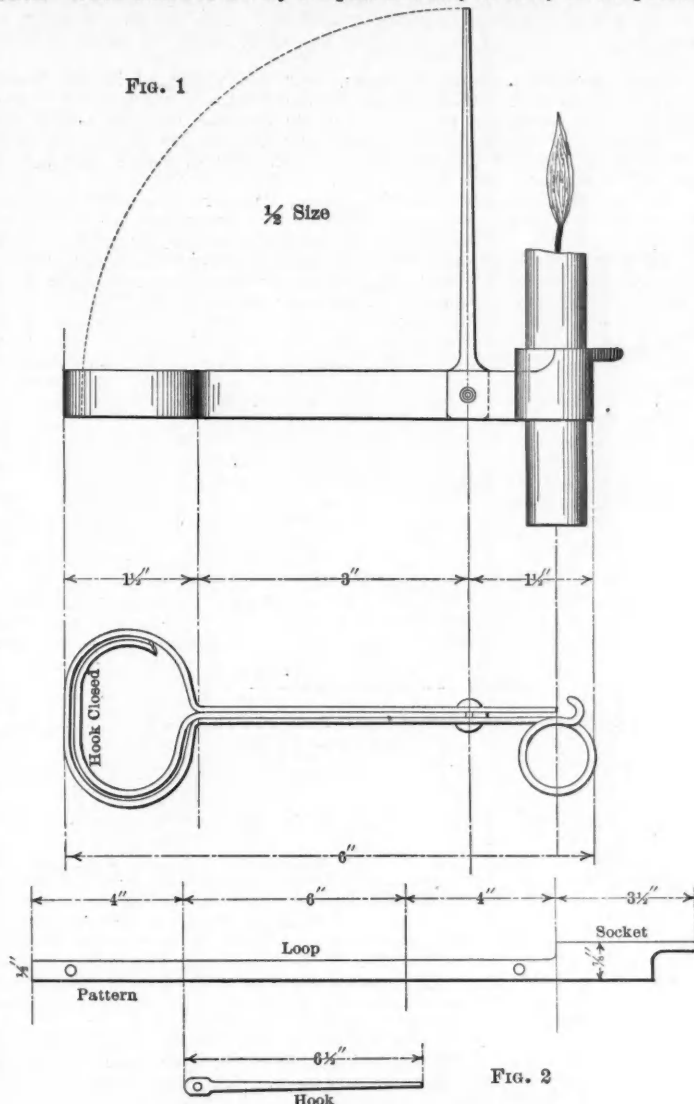


FIG. 2 CANDLE-HOLDER FOR MINING ENGINEERS.

There are no soldered parts to become loose when the metal gets overheated, as often happens, and it is strong enough to stand pretty rough handling. In the accompanying sketch I give a scale drawing of the candlestick, one-half size; also a pattern for cutting out on a smaller scale. This is the size which I prefer for my own use, but there is a chance for considerable latitude in size as well as for variation in shape and pattern.

Henry Huntington Miller.

New York City, Feb. 6, 1901.

MOVING LAKE BUILT STEAMERS TO THE SEABOARD.—The American Ship Building Company is now building two steamers for ocean work which are of such dimensions that they will have to be taken to the seaboard in halves. These steamers, says the Cleveland "Marine Review," are for Eastern capitalists, represented by Charles E. & W. F. Peck, of New York. Their dimensions are to be 430 ft. keel, 450 ft. over all, 43 ft. beam and 35 ft. deep. A 5-ft. water bottom will be provided and the ships will be of the three-deck type. Messrs. A. B. Wolvin and James C. Wallace, of the American Ship Building Company, were recently in Montreal on the business of determining where these ships could be most conveniently joined, and the American company will probably establish a yard down the St. Lawrence for that purpose and for the purpose also of building a ship or two there each year so as to keep a working force steadily employed. The vessels are to be completed by October next so that they may be taken to New York before the close of navigation. They are big enough to go to any part of the world. They are up to the limit of breadth of ships which may pass through the canal—43 ft. Were it not for this limitation of breadth in the canal there would be no practical limit to the size of the ships which might be constructed on the section of the lakes for ocean service.

THE SMELTER CONSOLIDATION.

There are no new developments in this case, unless we include a persistent "bear" attack on the American Smelting and Refining Company's stock on the exchanges. This has been accompanied by the circulation of all sorts of rumors affecting the company's credit. This on Wednesday led Mr. Nash, president of the company, to make the following statement regarding the reports: "The company's annual business amounts to \$75,000,000. It is borrowing only \$5,000,000. None of this matures until April, and then only \$350,000, and it has on hand, subject to check, \$1,000,000 in cash. The remainder matures at later dates upon time paper. The company could liquidate its entire debt in 30 days without inconvenience, using only its gold or silver, or using only its copper and lead on hand, since, while its debt is \$5,000,000, its quick assets amount to over \$14,000,000. The company's paper is eagerly and generally sought after on terms most favorable to borrowers.

"The company's net quick assets, over and above all indebtedness, represented by gold and silver, copper and lead, are approximately \$9,000,000. The company has increased its original working capital to this amount by accumulation of earnings; besides paying off \$1,250,000 of mortgage bonds, subject to which it took over its plants, and having put \$2,000,000 into new construction.

"Its net earnings for the year ending October 31st, 1900, exceeded \$4,500,000. For the months of November and December, 1900, they exceeded \$1,200,000. The January earnings are not yet in. The plants and property of the company was never in better condition; its earning capacity was never so great; its prospects of a profitable business were never so good and its financial condition was never stronger.

"The stories of dissensions among the present directors are false. There are no such dissensions; on the contrary there is an entire unanimity of opinion as to the policy to be pursued by the company not only with regard to the consolidation with M. Guggenheim's Sons but with regard to all important questions. The credit of the company having been viciously and unwarrantably attacked I feel bound, in the interests of the stockholders, to state the facts, and to warn our stockholders not to be driven or frightened into parting with their stock by these unfounded statements in the press."

A statement given out to the press last week and published in the Engineering and Mining Journal, page 249, contained a material underestimate of the quantity of silver produced by the combination. The statement referred to put the silver marketed by the American Smelting and Refining Company at 36,000,000 oz., and added that this would be brought up to 50,000,000 oz. by the output of the Guggenheim plants. The actual production of the works of the two concerns last year was about 75,000,000 oz., of which the Guggenheim plants produced over one-third.

RECENT COAL DEALS IN THE PITTSBURG FIELD.

Written for the Engineering and Mining Journal by Wm. Gilbert Irwin.

There have been a number of deals in Western Pennsylvania coal lands recently. The Greene County field is just now the center of interest in consequence of the reported sale of lands in that field to representatives of a New York syndicate. The details of this sale are still lacking. The land involved in the rumored deal includes about 75,000 acres. J. P. Morgan and his allies in the iron and steel business already own extensive coal and coke lands in the Greene County field as well as in West Virginia. J. V. Thompson and other Uniontown, Pa., and Pittsburg capitalists have also secured large coal tracts in Greene County. They have purchased outright something like 20,000 acres and have options on additional lands.

Another big deal in the Greene County field has just been concluded whereby a company of Pittsburg capitalists has come into possession of 24,033 acres of coal lands in that field. The figure paid is something over \$500,000. The Greene County coal seam runs from 8 to 12 ft. in thickness, and while that portion near the Monongahela is an excellent gas coal, other sections of the field yield a fair coking coal. This field is continuous of the main Pittsburg coal seam, and on the south merges into the Fairmount field of West Virginia, where many new mines have been opened during the past few months and coking plants have been put into operation. For that portion of the Greene County field which yields suitable coal the near future is certain to see a wonderful activity in coke making. The new Uniontown, Waynesburg & Wheeling Road, now in course of construction, intersects the Greene County field and will afford ample communications with every section. In addition there are already the Baltimore & Ohio and the Pennsylvania roads, and the Monongahela affords river facilities.

The Monongahela River Consolidated Coal and Coke Company is one of the most extensive owners and operators of coal mines in the Greene County field. Adjoining the property of this big river concern on the south is the Montana Coal and Coke Company, which controls large tracts of coal lands about Fairmount in West Virginia. The Pittsburg Coal Company is also in the field for new coal properties, and lately purchased 2,100 acres in the Washington County field for \$315,000. The Washington County field lies nearer to Pittsburg than the Greene County field, and the coal there is suitable for both gas and steam purposes. While there are many thousand acres of coal lands in the Pittsburg district still to be obtained, it may be said that nearly all the desirable properties are now in the hands of the two big companies, the Monongahela River Consolidated Coal and Coke Company and the Pittsburg Coal Company.

The present prosperous days for coal in Western Pennsylvania have had a wonderful effect in increasing the prices of coal lands. The owners have the impression that they can obtain almost any figure for their properties. They are also placing much confidence in the prospects for the early working of the lower coal seams. However,

any one familiar with the conditions of coal mining in Western Pennsylvania as they exist to-day would give little attention to the lower veins when the main Pittsburg vein is so far from being exhausted.

STEAMSHIP SPEED.—Froude's law, in brief, states that 1 per cent. increase of speed requires 2 per cent. increase in length, 6 per cent. increase in tonnage and bunker coal, and 7 per cent. increase in horsepower, boiler capacity and engine-room crew. This law applies to the transatlantic passage, and has to be modified for voyages of different lengths.

FIG IRON IMPORTS IN GREAT BRITAIN.—In the month of January there were 20,715 tons of pig iron imported into Great Britain, of which 12,907 tons were from the United States, 5,268 tons from Sweden, and 2,440 tons from other countries. In January, 1900, the imports were 9,443 tons, of which 5,743 tons were from the United States.

COAL EXPORTS OF GREAT BRITAIN.—Exports of coal, coke and briquettes from Great Britain in January were 3,206,235 long tons, against 3,087,532 tons in 1900; showing an increase of 118,703 tons, or 3.8 per cent. In addition there were 1,030,165 tons of coal sent abroad for the use of steamers engaged in the foreign trade, against 913,154 tons in 1900; an increase of 117,011 tons, or 12.8 per cent., this year.

A LARGE GRANITE BLOCK.—A solid mass of finest gray granite, measuring 68 ft. long, 20 ft. wide, and 14 ft. deep, has been successfully blasted at the De Lank quarries, Bodmin, Cornwall, says the London "Engineer." The weight of the block is about 1,400 tons. It is now being cut up into blocks averaging 5 tons each, which will be used in the erection of the new lighthouse off Beachy Head.

CABLE STEAMERS.—There are over 40 steamers afloat whose sole work is the laying and maintenance of the world's vast system of telegraph cables; 7 of these belong to Government administrations, and the remainder to manufacturing and cable-operating companies. Ten of the cable-laying ships are owned by the three largest English cable manufacturers; one of the largest of these cable ships is of about 5,000 tons displacement, with a carrying capacity of 8,000 tons, and has carried 2,500 nautical miles of deep-sea cable in one trip.

IRON ORE IMPORTS IN GREAT BRITAIN.—Imports of iron ore into Great Britain in January are reported as below, in long tons:

From:	1900.	1901.	Decrease.	Per ct.
Spain	509,002	419,235	89,767	17.6
Other countries	86,023	80,671	5,352	6.2
Totals	595,025	499,906	95,119	16.0

Other countries include Sweden, Greece, Elba and Algeria; the larger quantity coming from Sweden.

COAL PRODUCTION IN GERMANY.—A preliminary statement gives the output of coal in Prussia for last year as below, in metric tons:

	1899.	1900.	Increase.	Per ct.
Coal	94,780,000	101,980,000	7,200,000	7.6
Brown coal (lignite).....	28,460,000	33,750,000	5,290,000	18.6
Totals	123,240,000	135,730,000	12,490,000	10.1

The large increase in lignite was mainly due to more active working to meet the demand caused by the lighter imports of brown coal from Bohemia, resulting from the long strike of the miners there.

MINERAL IMPORTS AND EXPORTS OF SPAIN.—The imports of fuel into Spain in the year 1900 included 1,769,921 metric tons of coal and 197,407 tons coke. Imports of metals included 4,692 tons pig iron, 7,226 tons wrought iron, 53,321 tons steel and 2,331 tons tin plates. Exports of minerals are reported by the "Revista Minera" as below, in metric tons:

	1899.	1900.	Changes.	Per ct.
Iron ore	8,613,137	7,824,837	D. 788,300	9.2
Copper ore	948,853	1,029,240	I. 80,387	8.5
Zinc ore	96,533	60,970	D. 35,563	36.9
Lead ore	9,798	4,632	D. 5,166	52.7
Salt	326,356	205,561	D. 120,795	37.1

Exports of metals were 20,169 tons pig iron (40,918 tons, 1899); 29,083 tons copper (28,443 tons, 1899); 154,541 tons lead against 162,853 tons in 1899.

LIGNUM VITAE TRANSFORMED INTO COAL.—London "Engineering" abstracts from an article by G. Arth an account of an interesting case of a rapid transformation of pockwood, or lignum vitae, into coal. The wood had been inserted in the bronze footstep of a 12-H. P. Jonval turbine, which was making 112 revolutions per minute. The revolving mass weighed about 900 lbs. The wood, on which the steel pivot of the shaft rested, was not under water, but it would always be wet. When the turbine had been running for six months, some repairs became necessary, and it was observed that the wood had turned black in its upper portion: the wood was brittle, and the fracture strongly resembled that of coal; many fissures were noticed. The lower portion of the wood was not altered; dimensions are not stated. The black wood contained 2.74 per cent. of moisture. Dried in vacuo, it yielded on analysis, 3.9 per cent. of ashes, 4.86 of hydrogen, 69.76 per cent. of carbon, and the heating value of the dry material was found to be 7,106 calories. The substance would thus occupy an intermediate position between lignite and coal. This transformation had been effected within the short period of six months, and the temperature could not have risen to any high degree. The change would, therefore, appear to be due essentially to continued friction of the wet wood. The author concludes, hence, that we need hardly believe in the long periods which geologists demand for the formation of our coal-fields. That might be so, but the circumstances were certainly peculiarly favorable, and not of a kind as are likely to occur in nature.

A CURIOUS MINERAL FORMATION IN IDAHO.

Written for the Engineering and Mining Journal by John Ross.

The photograph herewith shows a curious mineralized formation on the Pocahontas Claim, in the Seven Devils Mining District, Idaho. It is about 2 miles southeast of the Peacock Mine. There is a succession of oval rings around a central core. These rings are composed of layers of garnet and limestone (marble) with 2 or 3 per cent. of sulphide of copper (chalcopyrite and bornite), with crystals of molybdenite (powellite).

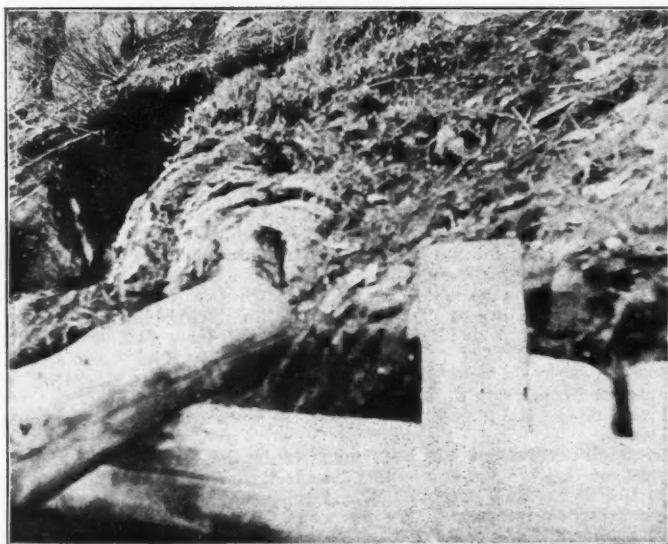
The trend of the oval is about south 65° west. It apparently dips to the north 5° or 6° off the perpendicular. Its area is about 600 ft. in length by about 300 ft. in width. Around the central core for 9 or 10 ft. the rings are small and well defined; further out they are thicker and not so well marked, but all are mineralized to a small extent.

A shaft is sunk to a depth of 20 ft. about 10 ft. northeast of the core. There is about 2½ ft. of 10 per cent. ore in the bottom; the balance of the shaft, which is 7 by 5 ft., being 4 or 5 per cent. ore. Occasional crystals of bornite 1 in. square occur in the garnet, always accompanied by crystals of molybdenite.

The first photograph shows the formation in place, while the second is a view of part of the core, taken separately.

THE CANADIAN MINING INSTITUTE.

Secretary B. T. A. Bell gives notice that the annual general meeting of the Canadian Mining Institute will be held in the Club Room of the Windsor Hotel, Montreal, on March 6th, 7th and 8th. Arrangements have been made for round-trip tickets at a single fare on all the railroads leading to Montreal; also for special rates at the Windsor Hotel. The annual dinner will be held on Friday evening, March 8th.



1. FORMATION IN PLACE.



2. PART OF CORE.

MINERALIZED FORMATION, POCAHONTAS MINE, IDAHO.

The programme for the meeting includes on Wednesday, March 6th, business meeting at 10:30 a.m.; sessions for reading of papers and discussion at 3 p.m. and 8 p.m. Thursday, March 7th, sessions at 3 p.m. and 8 p.m. Friday, March 8th, business meeting at 10:30 a.m.; session for papers and discussion, 3 p.m.; annual dinner in the evening.

The following papers are scheduled for presentation at this meeting:

1. Coarse Concentration in the Slocan District, B. C. By Mr. S. S. Fowler, Nelson, B. C.
2. The New Mining Plant at the Le Roi Mines. By Mr. Bernard Macdonald, Rossland, B. C.
3. A Simple and Convenient Instrument for Mine Surveys. By Mr. Frank Robbins, Kimberley, B. C.
4. The Duty of Stamp Mills in Crushing and Amalgamation. By Prof. Courtenay DeKalb, Kingston, Ont.
5. Notes on Gold Dredging in Canada and New Zealand. By Mr. F. Satchell Clarke, Vancouver, B. C.
6. Notes on Coal Shaft Sinking. By Mr. John Johnstone, Port Hood, C. B.
7. On the Performance of Coal Cutting Machines. By Mr. T. J. Brown, Glace Bay, C. B.
8. On Coal Shipping Piers. By Mr. Hiram Donkin, Glace Bay, C. B.
- 9 and 10. On the Treatment of Auriferous Mispickel Ores. (1) By Mr. P. Kirkegaard, Deloro, Ont. (2) By Mr. Sydney B. Wright, Deloro, Ont.
11. On Natural Gas in Ontario. By Mr. Eugene Coste, Toronto, Ont.
12. On Company Law. By Mr. J. M. Clark, Toronto, Ont.
13. Notes on Milling Practice at the Athabasca Mine. By Mr. E. Nelson Fell, Nelson, B. C.
14. On the Iron Ore Deposits of Bilbao, Northern Spain. (Illustrated by Lantern Slides.) By Mr. Frank D. Adams, Montreal, Que.
15. Pioneer Work in the Crow's Nest Coal Areas. (Illustrated by Lantern Slides.) By Mr. Wm. Blakemore, Montreal, Que.
16. On the Iron Ore Fields of Ontario. By Prof. W. G. Millar, Kingston, Ont.

17. Notes on Nova Scotia Mining Legislation. By Alexander McNeill, Halifax, N. S.
18. On Coal, Coke and Gas as Domestic Fuels. By F. H. Mason, Halifax, N. S.
19. Rope Driven versus Direct Driven Collery Ventilating Fans. By Mr. Francis T. Peacock, Montreal, Que.
20. Comparative Methods of Assaying Nickeliferous Pyrrhotites. By Mr. J. Walter Wells, Belleville, Ont.
21. On Certain Fault Conditions in the Copper Mines of Butte, Montana. By Mr. Wm. Braden, Bruce Mines, Ont.
22. The Chemistry of the Limestones of Eastern Ontario. By Dr. W. L. Goodwin, Kingston, Ont.
23. On the Magnetic Iron Sands on the North Shore of the St. Lawrence. By Mr. J. Obalski, Inspector of Mines, Quebec.
24. On the Composition of Some Canadian Limestones: (a) for Calcium Carbide, (b) for Chemical Pulp, (c) for Portland Cement. By Dr. J. T. Donald, Montreal, Que.
25. Up the Pitch versus Across the Pitch (Continued). By Mr. O. E. S. Whiteside, Anthracite, N. W. T.
26. On Leaching Copper Ores by Sulphurous Acid. By Mr. E. P. Jennings, Salt Lake City, Utah.
27. Subject not announced. By Mr. Charles Fergie, Westville, N. S.
28. Subject not announced. By Mr. Charles Brent, Rat Portage, Ont.
29. Subject not announced. By Mr. W. F. Ferrier, Rossland, B. C.

30. Notes on Laboratory Work at McGill. By Dr. J. Bonsall Porter, Montreal, Que.
 31. The New Coking Plant at Sydney, C. B., with some Notes on the Coking Properties of Cape Breton Coals. By Mr. A. J. Moxham, Sydney, C. B.
 32. Subject not announced. By Dr. A. R. Ledoux, New York, N. Y.
 33. Subject not announced. By Mr. D. W. Robb, Amherst, N. S.
 34. Notes on the Coal Haulage Plant at Port Morien, C. B. By Mr. J. G. S. Hudson, Port Morien, C. B.
 35. Subject not announced. By Mr. R. G. McConnell, Ottawa.
 36. On the Sedimentary Formations of the Province of Ontario and Boring Operations carried on in them. By Dr. H. M. Ami, of the Geological Survey of Canada.
- The following papers are entered for the students' competition; others may be entered up to the opening of the meeting: 37. The Coal Mines at Fernie, B. C. By Mr. C. V. Corliss, McGill.
38. The Concentration of Silver Lead Ores at Gem, Idaho. By Mr. W. M. Edwards, McGill.
 39. Notes on Crushing and Screening under varying conditions in the Ore-Dressing Laboratories at McGill University. By Mr. W. G. Flint, McGill.

IRON AND STEEL EXPORTS OF GREAT BRITAIN.—The values of iron and steel exported in all forms from Great Britain in January are given by the Board of Trade returns as below:

	1900.	1901.	Changes.	Per ct.
Iron and steel.....	£2,729,478	£2,185,776	D. £543,702	19.9
Machinery	1,541,401	1,458,458	D. 82,943	5.4
New ships	323,446	449,667	I. 126,221	39.7
Totals	£4,594,325	£4,093,901	D. £500,424	10.9

The value of mining machinery exported this year is given at £51,450, against £46,059 last year, showing a considerable increase.

THE UNITED STATES STEEL CORPORATION.

Articles of incorporation of the consolidation, which is to include practically all the large steel plants in the United States, were filed in New Jersey on February 25th. The incorporators named are Charles C. Cluff, William J. Curtis and Charles McVeagh—who are of course dummies—and the office in New Jersey, where one must be kept to meet the requirements of law, is with the Hudson Trust Company in Jersey City. The capital stock named in the articles is the modest sum of \$3,000, with power to increase the same. Some important sections of the articles of incorporation are given below:

"The objects for which the corporation is formed are to manufacture iron, steel, manganese, coke, copper, lumber and other materials, and all or any articles consisting or partly consisting of iron, steel, copper, wood or other materials, and all or any products thereof.

"To acquire, own, lease, use or develop any lands containing coal or iron, manganese, stone or other ores, or oil and any woodlands or other lands for any purpose of the company.

"To mine or otherwise to extract or remove coal, ores, stone and other minerals and timber from any lands owned, acquired, leased or occupied by the company, or from any other lands.

"To buy and sell, or otherwise to deal or to traffic in iron, steel, manganese, copper, stone, ores, coal, coke, wood, lumber and other materials, and any of the products thereof, and any article consisting or partly consisting thereof.

"To construct bridges, buildings, machinery, ships, boats, engines, cars and other equipment, railroads, docks, slips, elevators, water works, gas works, and electric works, viaducts, aqueducts, canals and other waterways and other means of transportation, and to sell the same or otherwise to dispose thereof, or to maintain and operate the same: except that the company shall not maintain or operate any railroad or canal in the State of New Jersey.

"To apply for, obtain, register, purchase, lease or otherwise to acquire and to hold, use, own, operate and introduce and to sell, assign or otherwise to dispose of any trademarks, trade names, patents, inventions, improvements and processes used in construction with or secured under letters patent of the United States or elsewhere or otherwise; and to use, exercise, develop, grant license in respect of, or otherwise to turn to account any such trademarks, patents, licenses, processes, and the like, or any such property or rights.

"To engage in any other manufacturing, mining, construction or transportation business of any kind or character whatsoever, and to that end to acquire, hold, own and dispose of any and all property, assets, stocks, bonds and rights of any and every kind; but not to engage in any business hereunder which shall require the exercise of the right of eminent domain within the State of New Jersey.

"To acquire by purchase, subscription or otherwise, and to hold or dispose of stocks, bonds, or any other obligation of any corporation formed for, or then or theretofore engaged in or pursuing any one or more of the kinds of business, purposes, objects or operations above indicated or owning or holding any property of any kind herein mentioned; or of any corporation owning or holding the stocks or the obligations of any such corporation.

"To hold for investment, or otherwise to use, sell or dispose of any stock, bonds or other obligations of any such other corporation; to aid in any manner any corporation whose stocks, bonds or other obligations are held or are in any manner guaranteed by the company, and to do any other acts or things for the preservation, protection, improvement or enhancement of the value of any such stock, bonds, or other obligation, or to do any acts or things designed for any such purpose; and while owner of any such stock, bonds or other obligations, to exercise all the rights, powers and privileges of ownership thereof, and to exercise any and all voting power thereof.

"The business or purpose of the company is, from time to time, to do any one or more of the acts and things herein set forth, and it may conduct its business in other States, and in the territories and in foreign countries, and may have one office or more than one office and keep the books of the company outside of the State of New Jersey, except as otherwise may be provided by law; and may hold, purchase, mortgage and convey real and personal property either in or out of the State of New Jersey.

"Without in any particular limiting any of the objects and powers of the corporation it is hereby expressly declared and provided that the corporation shall have power to issue bonds and other obligations in payment for property purchased or acquired by it, or for any other object in or about its business; to mortgage or pledge any stock, bonds, or other obligations or any property which may be acquired by it; to secure any bonds or other obligations by it issued or incurred; to guarantee any dividends or bonds or contracts or other obligations; to make and perform contracts of any kind and description and in carrying on its business for the purpose of attaining or furthering any of its objects; to do any and all other acts and things and to exercise any and all of the powers which a copartnership or natural person could do and exercise, and which now or hereafter may be authorized by law.

"The holders of the preferred stock shall be entitled to receive when and as declared from the surplus or net profits of the corporation yearly dividends at the rate of 7 per cent. per annum and no more, payable quarterly on dates to be fixed by the by-laws. The dividends on the preferred stock shall be cumulative and shall be payable before any dividend on the common stock shall be paid or set apart; so that if in any year dividends amounting to 7 per cent. shall not have been paid thereon the deficiency shall be payable before any dividend shall be paid upon or set apart for the common stock.

"Whenever all cumulative dividends on the preferred stock for all previous years shall have been declared and shall have become payable, and the accrued quarterly installments for the current year shall have been declared and the company shall have paid such cumulative dividends of the previous years and such accrued quarterly installments, or shall have set aside from its surplus or net profits a sum sufficient for the payment thereof the board of directors may declare dividends on

the common stock, payable then or thereafter out of any remaining surplus or net profits.

"In the event of any litigation or dissolution or winding up (whether voluntary or involuntary) of the corporation the holders of the preferred stock shall be entitled to be paid in full both the par amount of their shares and the unpaid dividends accrued thereon before any amount shall be paid to holders of the common stock; after the payment to the holders of the preferred stock of its par value and the unpaid accrued dividends thereon the remaining assets and funds shall be divided and paid to the holders of the common stock according to their respective shares.

"The number of directors of the company shall be fixed from time to time by the by-laws, but the number if fixed at more than three shall be some multiple of three. The directors shall be classified with respect to the time for which they shall severally hold office by dividing them into three classes, each consisting of one-third of the whole number of the board of directors. The directors of the first class shall be elected for a term of one year. The directors of the second class for two years and the directors of the third class for a term of three years, and at each annual election the successors to the class of directors whose terms shall expire in that year shall be elected to hold office for the term of three years, so that the term of office of one class of directors shall expire in each year.

"Unless authorized by votes given in person or by proxy by stockholders holding at least two-thirds of the capital stock of the corporation, which is represented and voted upon in person or by proxy at a meeting specially called for that purpose or at any meeting, the board of directors shall not mortgage or pledge any of its real property or any shares of the capital stock of any other corporation; but this prohibition shall not be construed to apply to the execution of any purchase money mortgage or any other purchase money lien.

"The board of directors shall have power from time to time to fix and to determine and to vary the amount of the working capital of the company and to direct and determine the use and disposition of any surplus or net profits over and above the capital stock paid in, and in its discretion the board of directors may use and apply any such surplus or accumulated profits in purchasing or acquiring its bonds or other obligations or shares of its own capital stock to such extent and in such manner and upon such terms as the board of directors shall deem expedient, but shares of such capital stock so purchased or acquired may be resold unless such shares shall have been retired for the purpose of decreasing the company's capital stock as provided by law.

"The board of directors from time to time shall determine whether and to what extent and what time and places, and under what conditions and regulations the accounts and books of the corporation or any of them shall be open for the inspection of the stockholders and no stockholders shall have any right to inspect any account or book or document of the corporation except as conferred by statute or authorized by the board of directors or by resolution of the stockholders."

It is generally reported that the company will issue \$400,000,000 common stock, \$400,000,000 preferred stock and \$300,000,000 bonds. The properties of the Carnegie Company will be paid for in bonds; the other companies brought into the consolidation will receive preferred and common stocks, in agreed proportions, in exchange for their present stocks.

An official statement has been made as to the basis upon which securities of the various companies be received for conversion into the securities of the new corporation. These terms are as follows:

Federal Steel preferred, 110 per cent. of new preferred. Federal Steel common, 4 per cent. of new preferred and 107½ per cent. of new common.

American Steel & Wire preferred, 117½ per cent. in new preferred. American Steel & Wire common, 102½ per cent. of new common.

National Tube preferred, 125 per cent. of new preferred. National Tube common, 8.8 per cent. of new preferred and 125 per cent. of new common.

National Steel preferred, 125 per cent. of new preferred. National Steel common, 125 per cent. of new common.

American Tin Plate preferred, 125 per cent. of new preferred. American Tin Plate common, 20 per cent. of new preferred and 125 per cent. of new common.

American Steel Hoop preferred, 100 per cent. of new preferred; American Steel Hoop common, 100 per cent. of new common.

American Sheet Steel preferred, 100 per cent. of new preferred. American Sheet Steel common, 100 per cent. of new common.

On the basis of the reported stocks of the several companies outstanding, the amount of stocks of the new company required for exchange would be as follows:

	Stock Outstanding.	New Stock Required. Preferred.	Common.
Federal Steel preferred.....	\$53,260,900	\$58,586,990	
do common	46,484,300	1,859,372	\$49,970,623
American Steel & Wire preferred.....	40,000,000	47,000,000	
do common	50,000,000		51,250,000
National Tube preferred	40,000,000	50,000,000	
do common	40,000,000	3,250,000	50,000,000
National Steel preferred	27,000,000	33,750,000	
do common	32,000,000		40,000,000
American Tin Plate preferred.....	15,325,000	22,906,250	
do common	28,000,000	5,600,000	35,000,000
American Steel Hoop preferred.....	14,000,000	14,000,000	
do common	19,000,000		19,000,000
American Sheet Steel preferred.....	24,500,000	24,500,000	
do common	24,500,000		24,500,000
Proposed issue by new company, totals		\$261,452,612	\$269,720,623

As the total outstanding stock of the seven companies named is \$217,085,900 preferred and \$239,984,300 common, the increase in capitalization would amount to \$44,366,712 preferred stock and \$29,736,323 common stock; a total of \$74,103,035. The terms made with the Carnegie stockholders are not stated, but it is understood that they will receive some stock and practically all the bonds. It is reported that some Carnegie stock has been bought for cash.

THE RICHMOND MEETING OF THE AMERICAN INSTITUTE OF
MINING ENGINEERS.

According to the programme given in our last issue, the opening session of the meeting of the American Institute of Mining Engineers was held at the Jefferson Hotel in Richmond, Va., on the evening of Tuesday, February 19th. It was expected that Governor Tyler, of Virginia, would deliver an address of welcome, but he was prevented by illness. The meeting was therefore opened by a short address from Dr. R. W. Raymond.

Dr. Raymond, as secretary, then read a paper by Mr. A. F. Lucas, of Beaumont, Tex., giving an account of the great oil well near Beaumont, which has attracted so much attention. This paper went into the details of the formation of the land, the soil, and the other natural characteristics of that portion of Texas surrounding Beaumont. It graphically described the sinking of Mr. Lucas's great well, and the sudden appearance of the oil. Pictures of the machinery used in boring, and of the well itself shooting the oil 200 ft. into the air, as well as samples of the crude oil, were passed among the audience.

Following Dr. Raymond's address, Dr. James Douglas, president of the Institute, gave a lecture, illustrated with stereopticon views, on the Paris Exposition, especially regarding the architectural designs of the buildings and the exhibits from the various countries of mining and metallurgical products.

Upon adjournment the entire company assembled in the cafe of the hotel, where a reception was given the visitors by the general committee of the Richmond Chamber of Commerce. The reception was a brilliant one, and was most heartily enjoyed by everyone present. It was under special charge of the Reception Committee, of which Mr. W. R. Trigg was chairman.

All the local arrangements were under charge of a committee of the Richmond Chamber of Commerce. Of this committee Mr. Wyndham R. Meredith was chairman and R. A. Dunlop secretary.

A large number of papers were prepared for this meeting. These may be divided into three classes, as below:

I. Papers to be read in full or in abstract:

1. The Paris Exposition, by Jas. Douglas, New York City.
2. The Great Oil Well at Beaumont, Tex., by A. F. Lucas, Beaumont, Tex.
3. The Shipbuilding Establishment of the William R. Trigg Company, Richmond, Va., by E. T. D. Myers, Jr., Richmond, Va.
4. History and Present Condition of Coal Mining in the Richmond Basin, by J. B. Woodworth, Cambridge, Mass.
5. Virginia Mining and Miners, by S. Dabney, Crenshaw, Richmond, Va.
6. Mineral Resources of Virginia, by C. W. Hayes, Washington, D. C.
7. The Deposits of Copper Ores at Ducktown, Tenn., by J. F. Kemp, New York City.
8. Gold Fields of Cape Nome, Alaska, by Alfred H. Brooks, Washington, D. C.
9. Biographical Notice of James W. Tyson, by William Glenn, Baltimore, Md.
10. Specifications for Steel Rails, by Albert Ladd Colby, Bethlehem, Pa.
11. Finishing Temperatures for Steel Rails, by Robert W. Hunt, Chicago, Ill.
12. A New Type of Air Compressor, by Henry G. Morris, Philadelphia, Pa.
13. Character and Genesis of Certain Contact Deposits, by Waldemar Lindgren, Washington, D. C.

II. Papers and contributions to be presented in print:

14. Problems in the Geology of Ore Deposits, by J. H. L. Vogt, Kristiania, Norway.
15. The Origin of Ore Deposits, by Richard Beck, Freiberg, Saxony.
16. Discussion of Papers of Messrs. Emmons and Weed, by L. De-launay, Paris, France.
17. The Origin of Ore Deposits (Discussion of Van Hise), by H. Foster Bain, Washington, D. C., and C. R. Keyes, Des Moines, Ia.
18. Specifications for Steel Rails, by William R. Webster, Philadelphia, Pa.
19. Concentrating Tests and Calculations, by Otto F. Pfordte, Ruthersford, N. J.
20. The Forecast of Chemical Reactions from the Algebraic Signs of the Quantities of Heat Liberated, by H. Le Chatelier, Paris, France.
21. Note on Cheap Gold Milling in Mexico, by Henry F. Collins, Mina de Santa Fe, Mexico.
22. The Genesis of Ore Deposits (Discussion of Messrs. Emmons and Weed), by Arthur L. Collins, Telluride, Colo.

III. Papers to be read by title only, for subsequent publication and distribution to members:

23. Mining in the Transvaal, South Africa, by John Hays Hammond, Denver, Colo.
24. The Coal Fields West of Peking, by N. F. Drake, Tientsin, China.
25. Investigations on Magnetic Fields with Reference to Magnetic Ore Concentration, by Walter R. Crane, Lawrence, Kan.
26. Survey of the System of Management at the Neudorf Mines, Anhalt, Germany, by Frank H. Probert, London, England.
27. Notes Upon the Report of the U. S. Geological Survey on the Telluride Quadrangle, by H. C. Lay, Telluride, Colo.
28. The Granby Consolidated Smelting Works, Grand Forks, B. C., Canada, by A. B. W. Hodges, Grand Forks, B. C., Canada.
29. The Missouri and Arkansas Zinc Mines at the Close of 1899, by Eric Hedburg, Joplin, Mo.
30. Problems of Haulage and Hoisting, by Alexander Bowie, Gallup, New Mexico.
31. A Study of the Effect of Heat Treatment on One Per Cent. Carbon Crucible Steel, by George William Sargent, Reading, Pa.
32. Note on the Geology of Southeastern Arizona, by E. T. Dumble, Guaymas, Sonora, Mexico.

33. The Use of the Triaxial Diagram in the Calculations of Slags, by Ernest A. Hersam, Berkeley, Cal.

34. Some Recently Exploited Wolframite Deposits in the Black Hills of South Dakota, by John D. Irving, Washington, D. C.

35. Notes on a Bottom for Copper Furnaces, by William Glenn, Baltimore, Md.

36. The Caliche of Southern Arizona: An Example of Vadose Circulation, by W. P. Blake, Tucson, Ariz.

Two subjects were submitted to be specially discussed, namely:

1. The Origin of Ore Deposits, chiefly with regard to the papers of Messrs. Van Hise, Emmons, Weed, and Lindgren, read at the Washington meeting. (To this discussion belong Nos. 13, 14, 15, 16, 17 and 22.)

2. Specifications for Steel Rails. (To this discussion, initiated by No. 18, belong Nos. 10 and 11.)

The following were present at the opening meeting: Dr. R. W. Raymond, James Douglas, New York; Alfred Raymond, New York; E. Gybbon Spilsbury, New York; Henry W. Bulkley, New York; Benjamin R. Lawrence, Denver, Colo.; Henry G. Morris, Philadelphia, Pa.; Adolf Thies, Haile Gold Mine, S. C.; John Wilkes, Charlotte, N. C.; R. H. Richards, Boston, Mass.; William R. Webster, Philadelphia, Pa.; W. B. Cogswell, Syracuse, N. Y.; J. William Smith, Syracuse, N. Y.; E. W. Parker, Washington, D. C.; W. H. Van Arsdale, Aurora, Ill.; Edward H. Sanborn, Philadelphia, Pa.; James Archbald, Scranton, Pa.; George Gordon Crawford, Braddock, Pa.; Frederick W. C. Whyte, Belt, Mont.; Robert W. Hunt, Chicago, Ill.; Ware B. Gay, Horr, Mont.; Burdett Loomis, New York; T. C. Jones, Iron Gate, Va.; Prof. S. B. Woodworth, Cambridge, Mass.; W. Lindgren, Washington, D. C.; Claude L. Gaujot, Williamson, W. Va.; John Birkinbine, Philadelphia, Pa.; Stuart Lindsley, Orange, N. J.; Edward C. Pechin, Buchanan, Va.; the Messrs. Ormrod, Allentown, Pa.; John M. Garvin, Rock Run, Ala.; Thomas Wiley, New York; T. M. Chatard, Washington, D. C.; Arthur W. Sheaffer, Pottsville, Pa.; Dr. Henry Froehling, Richmond, Va.; Joseph E. Johnson, Longdale, Va.; Edward K. Landis, Philadelphia, Pa.; William S. Hungerford, Jersey City, N. J.; J. H. Lee, Baltimore, Md.; E. E. Olcott, New York; C. Willard Hayes, Washington, D. C.; S. F. Emmons, Washington, D. C.; Erwin S. Sperry, Bridgeport, Conn.; George S. Morison, New York; Stephen M. Pitman, Providence, R. I.; William Glenn, Baltimore, Md.

A number of members were added to the list on Wednesday morning, including J. M. Sherrerd, Easton, Pa.; Thomas M. Eynon, W. S. Kimball, Philadelphia; E. S. Cook, Pottstown, Pa.; James F. Kemp, A. R. Ledoux, C. P. Perrin, R. P. Rothwell, New York; David T. Day, Washington; J. O. Middleton, Baltimore; J. F. Lewis, Canada.

At the morning session on Wednesday, February 20th, the secretary announced the result of the balloting for officers of the Institute for the ensuing year, as follows:

President—E. E. Olcott, New York City.
Vice-Presidents—C. F. de Landero, Pachuca, Mexico; J. E. Hardmann, Montreal, Canada; J. H. Hammond, Denver, Colo.
Managers—G. A. Crocker, New York; H. V. Winchell, Butte, Mont.; Clemens C. Jones, Richmond, Va.

Treasurer—Theodore D. Rand, Philadelphia, Pa.
Secretary—Rossiter W. Raymond, New York City.

The annual report of the Council shows receipts from all sources during the year, \$34,369; disbursements, \$32,891, and a cash balance on hand December 31, 1900, of \$1,478, in addition to which the Institute possesses invested funds with par value of \$15,900 and a present market value of more than \$20,000, yielding about \$1,000 interest annually.

The total present membership is 2,799, or, including new members proposed and not yet elected, about 2,900.

Thirty-nine members died during the year 1900, among whom the most distinguished were Prof. Thos. Eggleston, founder of the Columbia College School of Mines, New York; Prof. Samson Jordan, of the Ecole Centrale, Paris; George Labram, engineer of the Kimberley mines, South Africa; H. B. C. Nitze; Addison C. and Jasper R. Rand, for many years known to all miners through the operations of the Rand Drill Company and the Rand Powder Company; Hamilton Smith, James W. Tyson and H. Walter Webb.

After the announcement of the names of the new officers, the first paper that was read was on "A New Type of Air Compressor," by Mr. Henry G. Morris, of Philadelphia.

"The Mineral Resources of Virginia" was the title of the second paper, which was read by Dr. C. Willard Hayes, of Washington. This paper gave a statement of all the mineral products of the State of Virginia. The minerals treated of were barytes, cement, coal, iron, gold, granite, ocher, slate, zinc, salt pyrites and more than a dozen minor minerals. The total value of the mineral products of the State for last year was about \$11,699,759.

A third paper, read by Professor J. B. Woodworth, of Harvard University, was entitled the "History and Present Condition of Coal-Mining in the Richmond Basin." This paper created considerable discussion, those who joined in being Mr. W. B. Gay and others.

"Specifications for Steel Rails" was the title of a paper read by Mr. William R. Webster, of Philadelphia. This paper was followed by another on the "Finishing Temperature of Steel Rails," by Mr. Robert W. Hunt, of Chicago.

The morning session adjourned about 1 o'clock, and at 2 p. m. a large number of the engineers paid visits to the new plant of the Virginia Electrical Railway and Development Company and the factories of the T. C. Williams Tobacco Company. The visitors to the electric plant were presented with handsomely illustrated pamphlets describing the company's extensive installation. The tobacco factory visited is one of the largest of those works for which Richmond is noted.

At the evening session Prof. James F. Kemp, of Columbia University, read a paper on "The Deposits of Copper Ores at Ducktown, Tenn." This lecture was illustrated by stereopticon pictures, and was heartily enjoyed by the audience.

Mr. E. T. D. Myers, Jr., read a paper on the "Ship-Building Establishment of the William R. Trigg Company." The lecture was supplemented by stereopticon views of the plant in its various phases of development. Some of these views were exceedingly fine.

The last article of the evening was read by Mr. Alfred H. Brooks, of Washington, D. C. This paper was a description of the "Gold-Fields of Cape Nome, Alaska." This lecture was also illustrated with lantern views.

On Thursday morning, February 21st, a meeting was held, at which the secretary read by title a number of papers. There were also brief discussions on some of these papers. Some of the papers read by title and discussed were: "Virginia Mining and Miners," by S. Dabney Crenshaw; "The Deposits of Copper Ores at Ducktown, Tenn.," by J. F. Kemp, of New York; "Finishing Temperatures for Steel Rails," by Robert W. Hunt, of Chicago, and "Character and Genesis of Certain Contact Deposits," by Waldemar Lindgren, of Washington.

At this session all of the papers actually read were devoted to the subject of the genesis or origin of ore deposits.

The first paper presented was on the "Problems in the Geology of Ore Deposits," by J. H. L. Vogt, of Christiana, Norway. Another paper was "The Origin of Ore Deposits," by Richard Beck, Freiburg, Saxony.

Other papers presented were: "The Origin of Ore Deposits" (discussion of Van Hise), by H. Foster Bain, Washington, D. C., and C. R. Keyes, Des Moines, Ia.

"The Genesis of Ore Deposits" (discussion of Messrs. Emmons and Weed), by Arthur L. Collins, Telluride, Col.

"The Caliche of Southern Arizona—An Example of Vadose Circulation," by W. P. Blake, Tucson, Ariz.

These papers brought forth considerable discussion. Among those who took part were Professor J. F. Kemp, School of Mines, Columbia University; Messrs. S. F. Emmons and W. Lindgren, of the United States Geological Survey; Adolph Theis, of the Haile Gold-Mining Company; Benjamin B. Lawrence, Denver, Colo.; President Douglas, and Dr. Ledoux, New York, and several others.

In the afternoon the members divided into three parties, which visited respectively the W. R. Trigg Shipyards, the Richmond Locomotive Works and the Richmond factory of the Virginia-Carolina Chemical Company. The shipyards are fully described in Mr. Myer's paper, an abstract of which is given elsewhere.

The Richmond Locomotive Works now possesses one of the largest plants in the country, employing over 1,600 men and using over 1,000 H. P. During the past few years a large amount of new machinery has been bought and installed, electricity as a motive power more largely used, new buildings, notably the new boiler shop, have been erected, and the cost of production reduced to a minimum. Sufficient orders are already booked to keep the works running day and night up to October of the present year, and among the deliveries to be made are some locomotives to Finland, Canada, and New Zealand. The present capacity of the works is 250 of the largest sized locomotives per year, or an average of 5 per week. By the end of the present year the increased capacity will be one locomotive per day.

The new boiler shop, now nearing completion, will have a capacity of 600 boilers per year, and is equipped with the latest and best machinery. Electricity is being largely introduced in the works.

The Richmond plant of the Virginia-Carolina Company is fully equipped with modern machinery for grinding phosphate rock, manipulating fertilizers and shipping same to the extent of 500 tons daily when in full operation. The sulphuric acid making department of this plant has a capacity of 400 tons per week of sulphuric acid, and consists of furnaces of two types, one the Spence furnace and the other known as the Hand shelf furnace. These furnaces burn sulphur ore (pyrites) obtained from the company's mines in Louisa County, Va. The plant is further fully equipped with Glover and Gay-Lussac towers, lead chambers, tanks, and other up-to-date apparatus for the economical manufacture of sulphuric acid from Virginia ore. The plant is lighted with electricity, and fully equipped with boilers, engines, pumps, etc., necessary for its efficient working both night and day. In the busy shipping season it employs the labor of some 300 men, and will take in and ship out 20 to 30 car-loads of material daily.

In the evening the annual subscription banquet was given at the Jefferson Hotel. This was one of the most brilliant occasions in the history of the Institute. The banquet committee is composed of Messrs. Virginius Newton (chairman), Thomas Bolling, Jr., A. H. Christian, Jr., Clemens Catesby Jones, P. H. Mayo, and S. T. Morgan.

At the banquet 125 covers were laid. There were present at this banquet many of the leading citizens of Richmond, and a large number of the party of visitors. The tables were decorated with white and pink carnations, and large tea and bridesmaid roses.

Mr. Wyndham R. Meredith presided as toastmaster. Two toasts were responded to—"Virginia," by Governor J. Hoge Tyler, and the "American Institute of Mining Engineers," by Dr. James Douglas, the retiring president. The others who occupied seats at the speakers' table and who made speeches were Mr. E. E. Olcott, president-elect; Judge J. H. Ingram; Mr. R. W. Hunt, of Chicago; Professor W. M. Thornton, of the University of Virginia, and Dr. R. W. Raymond, of New York.

After the courses had been served, and before the speaking commenced a party of Richmond ladies visited the banquet hall, and remained until the speaking was over.

Friday, February 22d, was devoted to an excursion to the University of Virginia at Charlottesville. A special train tendered by the Chesapeake & Ohio Railroad Company left Richmond at 9 a. m., returning in the afternoon. Part of the members left the train at Mineral City and took another special to the pyrites mines of Louisa County, which were thoroughly inspected.

A number of the members left Richmond on Friday evening and Saturday morning. A number decided to stop over Sunday at Old Point Comfort, leaving there for home on Monday.

We give below abstracts of some of the papers read at the meeting:
Coal Outcrops.

By C. Scholz, Mammoth, W. Va.

In this discussion of Mr. Catlett's paper—read at the Canadian meeting—the author, after referring to the necessity of studying all possible

indications on the surface, says that for the owner of land who wishes to show it off to the best advantage the most desirable location for an opening is usually near the head of a drain or valley, where the strata appear to be in position; the crop-dip will not affect the thickness of the seam as much there as it would on the point of a mountain, for the reasons given above.

This crop-dip affects to some extent the thickness of the coal on the outcrop line; and it is necessary to study the conditions of every seam, before definite conclusions can be formed as to how the seam will open up. For instance, where a rock-roof is found, or there is but little slate or fire-clay between the coal and the sandstone above, but a considerable thickness of slaty strata below the coal, we may expect to find the coal increase as it is driven upon, since the more plastic slates have been swelled by the action of the atmosphere, causing, together with the pressure from beneath, a compression of the coal on the outcrop; but where the floor and roof are of about the same material and thickness, it is not likely that the coal has been thus affected. By keeping this condition in mind, pretty close estimates can be made by "facing-up the coal," without driving under rock-roof for any great distance. There are no certain and general rules, but practical experience is in this matter the best instructor.

Where lands of higher valuation are concerned, it is well to test with the diamond-drill the persistency of coal-seams established by crop-openings. This method leaves no room for doubt. Moreover, the drill-cores, besides giving information as to the character of the deposits above the coal, may be useful in establishing the most suitable system of mining, and in furnishing material for analysis, which is of special importance in the case of coking coals.

In drilling for a seam, which was found about 150 ft. below the water-level, the drill penetrated, at only about 10 ft. below the surface, the Cedar Grove seam, well known in the Kanawha Valley, which usually has a thickness of 36 to 39 in., but showed in this case 4 ft. 8 in. Additional drilling proved that a considerable territory was underlain by 5 ft. of coal, where only 3 ft. was expected—the last opening above water-level, only half a mile away, having shown a section of 36 in.

The Forecast of Chemical Reactions from the Algebraic Signs of the Quantities of Heat Liberated.

By Prof. H. Le Chatelier, Paris, France.

An evident connection exists between chemical and calorific phenomena: the most important of our sources of heat, the combustion of coal, is nothing else than a chemical reaction.

Not satisfied with this indefinite statement, investigators have attempted to establish a more precise correlation between these two orders of phenomena, and have questioned whether there be not a necessary connection between the possibility of a chemical reaction and the algebraic sign of the quantity of heat which it would call into play (i.e., liberate or absorb).

This question possesses the highest interest for metallurgical chemists. But the study of it by experimental methods only could not completely elucidate it. To arrive at a definite solution, it was necessary to appeal to a science much more general than chemistry—namely, that of energetics, which embraces all the physical sciences. We can place absolute confidence in its conclusions, because they rest upon a proposition which can scarcely be denied, namely, the impossibility of creating energy for nothing; and because, in directions most widely different, these conclusions have always been found ultimately to conform with the results of experiment. Even one who refuses on principle to trust to theory, reserving his confidence for the verdict of experiment only, must at least feel bound to examine with critical severity experiments which, at first view, seem to contradict a theory so solidly founded as this. And deductions, more or less remote, though based on experiment, cannot be urged as more trustworthy than the theory, because such deductions are themselves but theories, and this theory is itself a deduction.

After carefully discussing the questions raised, the author reaches the conclusions that the agreement between the direction of a chemical reaction and the positive sign of the heat of reaction is the more frequent:

1. The lower the temperature;
2. The more similar the substances replacing one another; and
3. The greater the heat of reaction.

So far as the metallurgy of iron is concerned, the concordance here indicated as to the forecast of chemical reactions must be accepted with a certain proportion of skepticism.

Finishing Temperatures of Steel Rails.

By Robert W. Hunt, Chicago.

After tracing the history of steel rail manufacture and noting the fact that recent heavy rails have not given as satisfactory results as some earlier and lighter rails, Mr. Hunt goes on to say:

The Pennsylvania Railroad Company made it a part of their rail contracts for this year that the rails must be finished at a low heat. This naturally brought up the question of what constituted such a heat, and how it should be determined. Representing the Pennsylvania lines west of Pittsburg in their rail inspection, I recommend the use of lunette pyrometers. This led to a series of heat observations with such an instrument, the results of which I shall give. It may be that the Ducretet & Lejeune pyrometer does not give the exact heat degrees, but from my observations I feel certain it does yield consistent results. If it does that, it will be all that is required. Thomas Morrison, general superintendent of the Carnegie Steel Company's Edgar Thomson Works, and who planned and executed their mill alterations, thinks that the distance between the hot saws, which is found to yield a rail of the desired length, will be a sufficiently accurate and practical controlling factor as to the heat at which the rail is finished, and I concur with him, but also think that the lunette pyrometer will assist and always give quick results.

As observed by such an instrument, the heat at which rails of 80 lbs. to the yard were furnished under old conditions in most rail mills

averaged 1795° F. In the Edgar Thomson mill under existing conditions the following observations were made, and have been followed by others on 80-lb. and also on the lighter sections with similar results:

The temperature of partially formed rails when first placed on the cooling table was recorded as follows: 1742° F., 1772° F., 1772° F., 1742° F., 1772° F., and 1772° F., the average being 1762° F.

The temperature of finished rails on leaving the rolls recorded 1600° F., 1600° F., 1574° F., 1574° F., 1574° F., 1574° F., 1574° F., and 1600° F., the average being 1580° F.

The rails remained on the cooling table about 1 minute 15 seconds, the longest time observed being 1 minute 20 seconds, and the shortest 1 minute 6 seconds. It was found that the saws, to yield an 80-lb. rail 30 ft. long when cold, had to be set 1 in. nearer together than under the old practice.

In the Joliet McKenna Renewing Mill I found that the average temperature at which the rails were drawn from the reheating furnaces was 1750° F. As the rails left the finishing rolls their average temperature was 1480° F. It will be noticed that this was less than the Edgar Thomson average, and I believe that as the difficulties which surround all new manufacturing steps are overcome the latter works will finish a little cooler. But this can be overcome. If the steel is too cold it will spring the rolls, receive no work on the interior structure, and thus be unsatisfactory. While this can be easily theoretically understood, Mr. Morrison has demonstrated it by actual work.

Thomas Morrison and Julian Kennedy have united in a patent covering the handling of the rails while on the intermediate or cooling bed, the gist of which covers the placing of the head of one rail against the flange of another, and so on. The head of the outside rail to be first entered in the finishing pass is exposed, but the bottom of its flange is against the head of the next rail. The theory is that the flange being thinner, its heat will pass off quicker, and it will thus draw heat from the head of the rail lying against it, and so remain longer at a temperature sufficiently hot to roll, and by so doing give more time for the heat to pass off from the head of the rail, which, as stated, lies exposed. When that rail is entered in the finishing rolls, of course, the head of the next one, and which had been against its flange, becomes exposed, and so on.

The new method of rolling at the Edgar Thompson mill does not interfere with its large products. In other words, the production is now quite as large as before its introduction, but the wear of the finishing rolls is greater, and it must be harder on the hot saws. The rails are finished free from scale, and show more elasticity under the cold straightening process.

The W. R. Trigg Shipyards at Richmond.

By E. D. T. Myers, Jr., Richmond.

A small part of the old James River & Kanawha Canal still remains, and the Richmond dock, in which the canal boat formerly laid side by side with the ocean-going vessel, is still fed by it. The water in this dock is 17 ft. above mean low tide in the river hard by and is reached by means of a stone ship lock. It is this dock that has made possible the placing of the William R. Trigg Company's plant within the business portion of the city and has given peculiar advantages. In August, 1898, proposals were opened at the Navy Department for 25 torpedo boats and torpedo-boat destroyers, and one of these was submitted by Mr. William R. Trigg, a native Richmonder, prominently connected with the Richmond Locomotive and Machine Works, and to whose exertions the great growth of that enterprise has been mainly due. In the early stages of the development of that establishment they had undertaken and successfully carried out the contract for the engines, boilers and machinery for the United States battleship "Texas," and it was no doubt this experience that led Mr. Trigg to submit a proposal for the construction of torpedo boats. The proposal was made by this gentleman on his own account, but when he found himself the lowest bidder for 10 of these boats he organized a corporation, known as the William R. Trigg Company, rented the disused Shockoe Machine Works, together with a strip of ground on the south side of the Richmond dock, and in November of the same year was awarded the contract for three torpedo boats and two torpedo-boat destroyers.

By the time the contract was formally awarded the Trigg Company was ready to proceed with its work, and of the several establishments receiving orders at the same time, this corporation was the first to launch a boat and the first to have one accepted. The torpedo boat "Shubrick" was launched on October 31st, 1899. Her sister ship, the "Stockton," followed soon, and was completed before the "Shubrick," having been accepted on January 18th, 1901. These torpedo boats are designed for a speed of 26 knots, or about 30 miles per hour and for 3,000 indicated horse-power. They are 175 ft. long and 17½ ft. beam and have a displacement of 165 tons.

The destroyers are designed for 28 knots, or about 33 miles, per hour and 8,000 indicated horse-power. They have a length between perpendiculars of 245 ft., a beam of 23½ ft. and a displacement of 420 tons. Both the torpedo boats and the destroyers have twin screw propellers and are equipped with water tube boilers, built by the Trigg Company under the Thornycroft patents.

Much encouraged by the progress made in its venture, the company took steps before the completion of its first contract to enlarge its yard and secure additional orders. It has now in progress of construction the boats referred to, the United States cruiser "Galveston," of 3,200 tons displacement, two revenue cutters and one fast passenger steamer for the Chesapeake & Ohio Railway Company, to ply between Newport News and Norfolk.

The company has enlarged its capital and procured the use of a tract of 45 acres, lying adjacent to the original yard, providing room for a launching and laying-up basin of 25 acres, and for shops and the erection of ships, 20 acres. Part of this area is that occupied by the old dock, which is to be greatly enlarged. All of the machinery is electrically driven from the power-house of the Virginia Electrical Railway and Development Company, about one-third of a mile to the west, which establishment is operated by hydraulic power from the

James River and is equipped with auxiliary steam power for use in case of an emergency. The nearly completed installation at this power house provides 5,600 H. P., but with arrangement for 15,000 ultimately.

The present ship-lock, affording access to the dock, being too small for modern vessels, a larger one will be added. The new lock will be controlled by caissons, such as are used at dry docks. The lock is to be 550 ft. long and capable of taking a vessel of 79 ft. beam. The lock basin is so arranged that vessels can be launched into it. The caissons will be of steel and the pumps electrically driven.

The company contemplates adding to its plant a dry dock of 25 ft. draft over sill, and capable of taking a ship 550 ft. long. It is proposed to make the dock of concrete, the bottom resting on solid rock, which is to be found at a depth of 15 ft. below mean low water or 32 ft. below the level of the launching basin. It is expected that a great saving in cost of construction will be effected because of the existence of this solid rock bottom at this level, as it renders rock excavation, bottom lining and sheet piling unnecessary. The operation of this dock will be unusually economical, inasmuch as it will be drained for a depth of 17 ft. by gravity, it being necessary to pump less than one-half of the contained water. At the present time, actual construction has not been started on either the ship-lock or dry-dock.

There are very few shipyards on the Atlantic seaboard which have the advantage of fresh water for the storage of vessels, and inasmuch as the ships lie in the water for months between the date of launching and completion, the avoidance of the destructive action of salt water upon the hulls is of great value.

NOTES ON NOME, AND THE OUTLOOK FOR VEIN MINING IN THAT DISTRICT.

Written for the Engineering and Mining Journal by Forbes Rickard.

The occurrence of auriferous beach sands is not, as has been generally supposed, unique to the Cape Nome District. There are reports of the working, more than 20 years ago, of gold-bearing beach sands at various points along the Pacific Coast from Lower California northward and more particularly between longitude 138° and 140°, the region north of Sitka in Alaska. The first notable discoveries* of gold-bearing beach sands in Alaska were made in Yakutat Bay in 1887, and the mining and sluicing of beach sands in Lituya Bay developed into a production of \$40,000 for the season of 1896.

The Cape Nome District has become famous through its beach mining, though the importance of the mining of these ocean sands has been in 1900 shadowed by the richer developments in the gulches of the foothills which back the coastal shelf and tundra of this district. In 1899 the gold production of Nome was put down in round numbers at \$2,000,000, one-half of which was derived from the washing of beach sands. In 1900 the production, according to San Francisco and Seattle mint returns, is recorded as \$5,119,272; out of this about \$1,125,000 has been accredited to beach diggings. Much of the beach within a few miles of the town of Nome has been worked over twice, and some of it was being turned over for the third time in the months of July and August, 1900. The beach sands of Top-Kok (Bonanza District) to the east of Nome turned out quite richly and produced something like \$500,000.

There is a great deal of theorizing in Nome concerning the origin of the gold of the beaches, tundra and gulches, and every inhabitant of Nome has a theory, with personal variations. The prevailing belief is that chemical agency in sea-precipitation is responsible for the golden deposits, but quite a popular way of accounting for the thing is by regarding the sea bottom as a great vault which yields its golden sands to each successive storm in such a way as to replenish the wasted diggings that the miner leaves behind him. Many a time have I heard the claim made that in this district a storm brings about a fresh deposit of gold-laden sands and the speaker cites the instances in which abandoned pits have, by the storm action, been enriched beyond any original values that the diggings yielded from their former working. This would suppose a process of regeneration, which would be very interesting, and as fiction it ranks higher than some mining prospectuses that come to the public. A similar regeneration process would be useful in vein-mining under some circumstances.

The beach of Nome, with its horizon or layers of "black" and "ruby" sand, has been described in many articles. In a few words, it is a re-assortment—through a natural selection by specific gravity—of the disintegrated materials of the nearest rock masses. These rock masses are the slates and schists of the hills immediately behind the coastal shelf or tundra and they are backed by granite ranges. The term "dry seepage" has been very aptly applied in reference to these horizontal phenomena. Much rich sand has no doubt swept oceanward and has been impoverished in mingling with the barren sands of the ocean floor. The many dredges shipped to Nome and designed to work the sands beneath tide water have proved failures.

The schists and slates of Cape Nome are very much altered, more or less gold-bearing sediments; the term "sapolite" has been used in making classification of similar rocks in Alaska. They are profusely seamed with calcite, contain much pyrite, and abound in an infinite number of quartz veins, most of them of the thinnest description. These rocks are largely graphitic, attesting the inclusion of organic matter in their sedimentation, since transformed. They are much broken and sheared. The disintegration of such a rock must have been very rapid under normal conditions, and particularly destructive in a country where a long frost is suddenly broken by the warm Arctic summer. It must be measured by thousands of feet added to the present surface and contour. The gold of the beach sands is flat and very fine, while that of the gulch placers is very unusually coarse. I have some very fine octahedra with quartz inclusions that I picked out of some Anvil Creek washings. The beach gold is very much water-worn. Already

*The existence of gold in Alaska was not known prior to 1848. There was then not a native word for gold in the language of the tribes that inhabited that part of the world, nor is there in northeastern Siberia to-day a word for gold among those natives. It is only vaguely designated as "money."

†"Engineering and Mining Journal," February 2d, 1901.

in a fine state of division when it is moved seaward through flowing waters, the sea again grinds it down finer. Besides the garnet and magnetite of the ruby and black sand, these beach sands contain hornblende, pyroxene, zircon, calcite, mica and quartz; also small fragments of slate and schist.

The gold losses in working these deposits, beach and gulch, are no doubt heavy. In my observation of the sluicing of the gulches, and notably the upper claims of Anvil Creek, the gravels abounded in a ferruginous clay which it was almost impossible to separate. The gold was very much coated with iron oxide and this, with the clay, robbed many sluices of their golden burden. In connection with gulch mining I observed that on Anvil Creek the magnetite particles, or black sand, diminish perceptibly as one goes upstream, until at about No. 8 above there is practically no magnetite noticeable in the pannings. The gold is redder and more angular. The first condition argues a more active oxidation of the iron minerals of the rock with decomposition of magnetite into the sulphide and subsequently into the oxide of iron. The angular property of the gold of the upper reaches of the gulch would indicate the lesser travel of the gold particles of these deposits. The so-called benches of Upper Anvil Creek have, in the work done on them, as yet disclosed no regular channel that would correspond to an old river bed, and I am inclined to think that the deposit is akin to a placer "in situ."

The gold of the workings in the tundra intervening between the beach and gulch diggings is in a degree of coarseness intermediate between the coarse gold of the gulch and the finer gold of the beach. In point of fineness or proportion of gold to silver or other impurity there is apparent no variation in the gold of the tundra beach and gulch within the same district, but there is a variation in the fineness of the gold mined in the several districts of the Nome gold field. The tundra of Nome is nothing more than a raised beach brought about through the gradual upheaval of land. It is a platform of erosion and deposit. The placer material of the gulches has been deposited only to be moved

I have seen nodules of magnetite washed out of the slates of the Cape York District, Alaska, and not infrequently these nodules showed coarse gold. The following separation of black sand after washing out the metallic gold of the crude sand may be interesting; it is a test made for the North American Trading & Transportation Company on 50 oz. of crude sand from the beach, which yielded, after washing: 2 per cent. of black sand of assay value, \$526.05 per ton; 6 per cent. of ruby sand of assay value, \$5.13 per ton. The value of black sand per ton of crude sand was \$10.52; of ruby sand per ton of crude sand, \$2.35; total assay value of ruby and black sand per ton of crude sand, \$12.87. While this does not represent in any way an average, it illustrates the peculiar gold association. This close association of gold with magnetite in these deposits speaks very plainly of some existing relation between the precious metal and the iron mineral.

Magnetic sand in itself is not necessarily gold-bearing, and in the Tihukotsk Peninsula of Siberia—whither about East Cape I traced the Nome formation, and found strips of beach that showed the same ruby and black sand horizons—there were flat areas of land and lagoons on the Arctic Ocean side that yielded magnetic sand to every panning. This magnetite was probably traceable to a basaltic area lying behind and inland.

Quartz inclusions are not uncommon in the nuggets of the gulches of the Nome District, but quartz is not as much the visible accompaniment of gold as is the magnetite, or allied pyrite. The larger quartz lenses of these metamorphic rocks are for the most part barren. They are generally intercalated in the slates and schists, and conform with the cleavage of the slate. The smaller quartz seams show a tendency to cut across the plane of the rock's lamination. The origin of the quartz veins of similar metamorphic rocks in other parts of Alaska has been by some authors ascribed to the residual fluid left by the crystallization of these rocks out of the original magma.

The quartz veins of these schists are very different from the general conception of a quartz vein gotten through experience in vein mining



THE BEACH AT NOME, ALASKA.

along by the running waters of thaws and rains, re-deposited and swept along by a new current, alternately finding lodgment and impelled seaward until from the valley of the gulch and over the plain of the tundra it at last comes to comparative rest in the ocean, but still subject to the movements of the ebb and flow of the tide (which makes a good start toward the concentration of the garnet and magnetite sand) until by gradual upheaval of the land it merges into the tundra.

Several shafts from 40 to 60 ft. deep have penetrated the tundra to bed-rock. The results, as shown in the work of panning the material excavated in sinking of their shafts and pits, are always very carefully guarded, but from the information I was able to get I took the impression that they were only indifferently good. The tundra will doubtless turn out much gold, but to make a profitable enterprise it will have to be worked on a bigger scale than anything attempted in the working of the beach or gulches. It is frozen practically all the year round within a few feet of the surface and it will require a good head of water to make an impression on the thickness of strata which are made up of successive layers of clay, gravel and sand and the interstratified horizons of magnetite and garnet sands with which the gold is more particularly associated. Both on the Siberian peninsula* and on the Nome side of the Behring Sea I noticed the absence of any distinct evidence of glacial action or markings, but often saw something of the effects of shore ice and ice packs.

Regarding the derivation of the gold of these placers, whether in their Nome development, classified as bench, bar, gulch or beach placers, I believe that the gold of these placers is derived from magnetite and its related pyrite—pyrite being easily derived from magnetite by decomposition connects this mineral in the same process—and that the close association of magnetite and gold is therein explained. And I submit also that both pyrite and gold being derived by the decomposition of auriferous magnetite, they have here a common origin.

*The writer was a member of the "Samoa" Expedition of 1900 to North Siberia.

in California, Colorado and other States. They are so limited that generally both ends of a vein will be included in a hole 10 ft. long, and a few feet will sound the end of the vein in depth. This is, I believe, true of the same geological series in the Yukon and other parts of Alaska. The quartz veins are not persistent. Their non-persistence is probably original, but in some instances is due to faulting and shredding. The field for vein mining in this district of Alaska is necessarily, with no single exception that I know of, restricted to the mining of these quartz stringers.

I saw on the Siberian side of the Behring Straits some veins that at first sight resembled quartz veins, but on close inspection they showed much feldspar occurring with the quartz; a crystalline-granular admixture of quartz and feldspar. These veins were apparently transitional into pegmatite and aplite. This may apply also to the so-called quartz veins of the granite area behind Nome, which has been much staked out but has not yet contributed to the gold production of the district. It is hardly possible to break a piece of rock in the trough of the gulch placers that is not seamed with pyrite and usually has more or less pyrite sporadically disseminated through it. Indeed the proportion of pyrite in the schists of Anvil Creek, Nome, is, in a limited way, indicative of the richness of the placer ground contiguous. And these deposits are no exception to the universal observation, that of all the metallic minerals with which gold is associated in quartz veins, iron pyrites is the most abundant.

To sum up, it is generally agreed that the gold of Nome is indigenous to the schists of its foothills, and I take it that the pyrite so abundantly contained within its laminations is a secondary mineral principally derived from the decomposition of magnetite (in itself sometimes a decomposition product, but in this instance probably an original constituent of the rock). The formation of pyrite from an auriferous magnetite has been suggested, by no less an authority than the geologist Hutton, to have the effect of liberating the contained gold, and I believe that this suggestion is very useful in explanation of the occurrence of gold and associated phenomena in this district of Nome.

THE JEFFREY AIR POWER LONGWALL MINING MACHINES.

The accompanying illustrations show the latest design of air longwall mining machines manufactured by the Jeffrey Manufacturing Company, of Columbus, O. Fig. 1 shows a partial front view and Fig. 2 a partial rear view of the machine. It will be seen that it is of the disk, or wheel, type and self-propelling. Some of the main features of this machine are:

1. That it runs on a single rail, the side thrust being taken by special ties and light screw jacks. The use of one rail reduces to a minimum the liability of jumping the track so common to the two-rail machine; a single rail is also much more easily laid.
2. It cuts its own floor; in other words, cuts on the floor level. It can be built, however, to cut at any height from the floor that local conditions require.
3. The disk or cutter wheel can be tilted up or down by means of a hand wheel at the front end of the machine—see Fig. 1—so that sulphur balls or other obstacles can be passed over or loosened if met with in undercutting; or on an uneven floor the irregularities can be easily followed.
4. The machine is designed to be operated from the front end, which enables the operator to lay his rail ahead of machine, see that the roof

be removed and the other left intact with the machine. This enables it to be moved from one part of the mine to the other without removing the wheel entirely. The quadrant plate is of boiler steel and carries a heavy self-oiling bearing for the cutter wheel. It is claimed that under favorable conditions this machine will cut from 600 to 800 lineal ft. face per day.

ABSTRACTS OF OFFICIAL REPORTS.

Mount Morgan Gold Mining Company, Queensland.

The latest report of this company covers the half year ending November 30th, 1900. The receipts were: Gold, £430,997; interest and rents, £747; balance from preceding account, £27,297; transferred from reserve account, £13,000; total, £472,041. Charges for mine expenses were £181,151; royalty and taxes, £14,261; dividends—20 per cent.—£175,000; total, £370,412; leaving a balance of £101,629 forward. Expenditures for permanent improvements were £18,351, chiefly for additions to the treatment works. Reduced to United States currency the receipts were \$17.03 and the costs \$7.72 per ton of ore treated. The mine report shows that from the open workings 131,172 tons of rock were taken, of which 55,493 tons were waste and 75,679 tons ore.

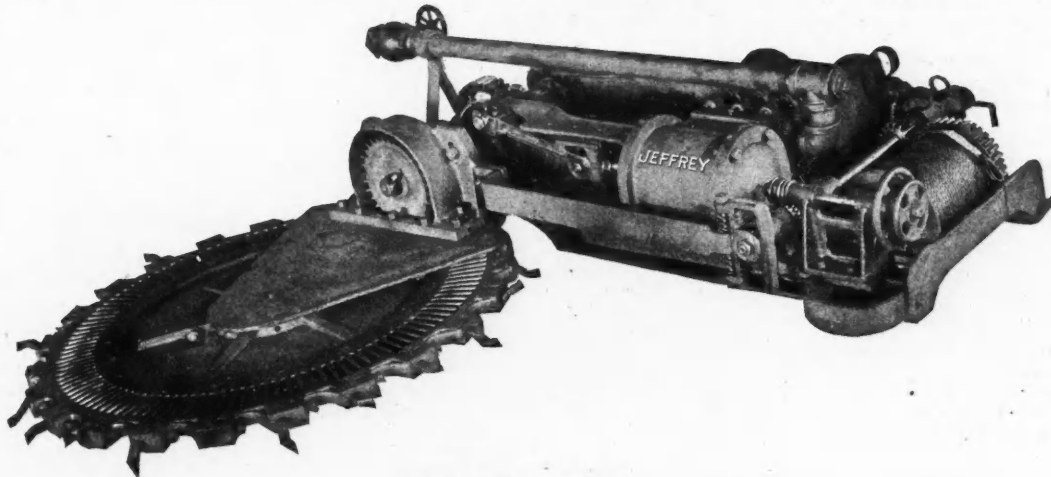


FIG. 1.—FRONT VIEW.



FIG. 2.—REAR VIEW.

THE JEFFREY LONGWALL MINING MACHINE.

and face are safe before the machine approaches, and leaves more room in the rear for handling rails and spragging the coal.

5. The feed mechanism—see Fig. 2—is driven by an eccentric on the outer end of the main drive shaft at the rear through a ratchet and pawl to a winding drum located on the front end; the important feature here is the ability of the operator to start, stop or change the rate of feed at will without stopping the engine; this is recognized as a very desirable point, as it enables the operator to let the machine clear itself in case of a fall of coal on the disc. The rates of feed that are possible are 8 to 15 in. and 21 in. per minute, thus enabling the same machine to cut a hard or soft grade of coal or clay without any changes in its construction.

6. The machine is constructed of steel throughout with the exception of the engines, which are of cast iron; all gears are machine cut except the pinion driving the cutting wheel, which is a rough, heavy casting. The whole machine is very compact, being only 6 ft. 11½ in. long, 35¼ in. wide without the wheel, 20½ in. high. It weighs about 3,000 lbs. for a 48-in. undercut, and can be built for the following undercuts: 36 to 48 in., 54 in. or 60 in., and from 4 in. to 6 in. kerf, without any change in the machine, except the quadrant plate and wheels.

The bed frame is cast in one piece and has cast with it the main bearing for the rocker arm that carries the quadrant plate and center wheel. The engines are 9 by 8-in. cylinders, designed to develop 25 H. P. with 40 lbs. of air at the machine, and are provided with cast steel crossheads, connecting rods and crank disks. The eccentrics are arranged so the engines can be reversed in a very few minutes without resorting to the link motion. The cutter wheel is of a high-grade malleable iron, made in halves bolted together, so that one half can

From the underground workings 45,686 tons of ore were taken, of which 12,147 tons were oxidized and 33,639 tons sulphide ore. The total development was 2,267 ft. The treatment report shows results as below:

	Ore treated.	Gold, oz.	Oz. per ton.
Oxidized ore	21,060	33,237	1.58
Low grade oxidized ore.....	66,766	34,542	0.52
Sulphide ore	33,639	38,434	1.14
Total, tons	121,465	106,213	0.87

The quantity of ore treated was limited by the water supply, which was unusually short. There was an increase in oxidized and sulphide ore, but a decrease in low-grade oxidized ore treated. The company has nearly completed a large addition to the Mundic (sulphide) Works, and is also enlarging its reservoirs for water.

Bald Butte Mining Company, Montana.

The report of this company covers the year ending December 31st, 1900. During this period the development work done included 1,937 ft. of shafts, tunnels, levels and cross-cuts and 588 ft. winzes, upraises, etc.; a total of 2,525 ft., at an average cost of \$7.17 per foot. The ore extracted was 26,439 tons. The ore milled was 26,710 tons, from which there was obtained \$288,290 in bullion and 298 tons of dry concentrates, having a gross value of \$27,138, and a net cash value of \$20,466. The mill of 40 stamps ran 324½ days during the year, crushing an average of 82½ tons a day, or 2.0625 tons per stamp per day. The ore in sight at the close of the year included 1,000 tons mined and in the bins, 3,000 tons broken in the stopes and 55,890 tons blocked out in the re-

serves. The statement of earnings and expenses is as follows, the averages being calculated on 26,710 tons milled:

	Amount.	Per ton.
Bullion recovered	\$288,290	\$10.793
Concentrates, net value.....	20,466	0.766
Total	\$308,756	\$11.559
Mining ore	\$48,580	\$1.819
Milling ore	21,833	0.810
Development work	19,504	0.730
Hauling ore, supplies, etc.....	10,789	0.404
General expenses	9,951	0.372
Renewals, repairs and depreciation.....	3,250	0.122
Total costs	\$113,707	\$4.257
Net profit	\$195,049	\$7.302

The value of the concentrates—298 tons—was \$68.68 per ton. The average assay of the tailings was \$2.0542 per ton, showing an average recovery of 84.8 per cent. From the net earnings dividends amounting to \$152,500—being 61 per cent. on the capital stock of \$250,000—were paid. Additions to plant during the year included a diamond core drill for prospecting, a sampling crusher and grinder and some extension of the electric railroad.

The development work during the year was chiefly in the lower workings and opened up an entirely new vein, which has been explored for 350 ft., much of it in ore of high grade. This has added largely to the ore reserves.

The report is a very satisfactory one, and further deserves commendation for the full information given to stockholders as to the operations and prospects of the mine.

Quincy Mining Company, Michigan.

The report of this company covers the year ending December 31st, 1900. The total production of the mine in refined copper was 14,161,551 lbs., which was sold for an average of 16.67c. per pound. The results of the year's operations are shown in the following table:

	Amount.	Per lb. copper, cents.
Copper produced and sold.....	\$2,353,417	16.67
Interest and real estate.....	21,122	0.15
Total receipts	\$2,374,539	16.82
Running expenses at mine.....	\$1,112,146	7.88
Smelting, transportation, etc.....	157,381	1.12
Taxes in Michigan	50,266	0.35
Total running expenses	\$1,319,793	9.35
Add construction cost	604,871	4.28
Total	\$1,924,664	13.63
Net balance	\$449,875	3.19

The balance brought forward from previous year was \$1,207,942, making, with the net balance above, \$1,657,817. From this two dividends, amounting in all to \$900,000—36 per cent. on the stock—were paid, leaving a balance of \$757,817 forward to current year. The statement of assets shows: Cash and copper, \$443,146; supplies, etc., at mine, \$290,326; accounts receivable, \$222,081; total, \$955,553. Accounts payable were \$197,736, leaving a balance of \$757,817, as above.

The summary of results for the year shows: Average force employed, 1,366 men; number of miners, 433; wages of miners on contract, per month, \$62. The yield of mineral per fathom of ground broken was 512 lbs.; refined copper per fathom of ground broken, 391 lbs. The total rock mined was 650,545 tons; rock hoisted, 590,166 tons; stamp rock treated, 558,723 tons. The product, mineral from stamp mill, was 13,818,830 lbs.; mineral from rock houses, 4,672,919 lbs.; total mineral, 18,491,749 lbs. The yield of refined copper was 14,116,551 lbs. This shows an average of 1.26 per cent. copper in the stamp rock treated.

Superintendent Harris' report says that No. 2 shaft was sunk from 47 ft. below the 54th level to 40 ft. below the 56th; No. 5 shaft from the 53d level to 30 ft. below the 55th; No. 7 shaft from 70 ft. below the 49th level to 70 ft. below the 51st; No. 8 shaft was sunk to the 5th level, making it 744 ft. from the surface. The results of exploration were generally good. No diamond drill work was done during the year. The new construction work, commenced about two years ago, is practically all completed. No. 7 plant went into regular service about the middle of October. The first head of new stamp mill was started up December 5th, the second December 26th and the third January 9th. At the mine a new stone blacksmith shop, 50 by 124 ft., with wing 50 by 90 ft., was completed and equipped with new tools and machinery. A line of 7-in. air pipes was laid (nearly 1 mile) from No. 6 compressor to No. 8, Mesnard Shaft. There were 6 good dwelling houses built at the Mesnard Division, 12 at North Quincy, 10 at the Hill-side Addition, Hancock, and 6 at the Stamp Mill. Another furnace was added to the smelting works. The railroad equipment was increased by a new locomotive and 24 rock cars.

The president's report says: "The betterments authorized, and begun some years ago, which have occasioned an outlay of over \$1,500,000, are now completed and paid for, and with the commencement of the year we have in successful operation two large, modern, well-equipped stamp mills, one with 5 heads and another with 3 heads of stamps, each capable of stamping and treating as much rock per head as any mill now running on Lake Superior. The new mill, and improvements made necessary to supply increased quantity of rock now required from the mine have proved costly, but all the work is substantial and well done."

LONG SERVICE OF A WATER WHEEL.—A 15-H. P. Pelton water wheel in the Kinkead Mill, Virginia City, Nev., has been running five years, using water under a pressure of 200 lbs. The shaft of the wheel has been renewed once, but the original buckets are still in use, and as the rim-speed of the wheel is about 4,500 ft. per minute, it is estimated that they have traveled over 2,000,000 miles.

BRIQUETTING MINERAL FINES.

Briquetting is the process of treating fine ores (which means concentrates, flue dust and all granulated mineral fines) and putting them into small bricks or blocks so that they can be smelted in the furnace the same as lump ore. Of late blast-furnace and smelter owners have learned that the briquetting of the fines and pulverized mattes increases the furnace output from 10 to 20 per cent.; also saving much time and labor in preventing the freezing up and barring down of the furnace, and reducing or eliminating the making of flue dust, with its well-known losses. Besides these advantages, it is found to be possible and advantageous to briquette slimes from the concentrators, thereby saving what metallic values have heretofore been flowing down the tailings run. At the present time smelter managers are erecting briquetting plants to treat these tailings; digging up material that has been running down canyons, or into settling basins, for years, and bringing it back to be treated. Old dumps made up of fine ores, flue dust, etc., carrying 3 to 6 per cent. of copper and other values, which formerly were considered of no use, are now being dug up and briquetted with profit to the owners.

One mining superintendent says: "I don't know how it is; we are mining no more than formerly, but the furnaces are turning out more copper than ever." The answer to this is contained in his next statement: "We have put in a dust chamber and are now briquetting all our fines, and what small amount of flue dust we get. We screen all the ore as it comes from the mines and take the fines to the briquetting plant, where, in connection with the concentrates, they are briquetted, but little loss from what goes up our stack."

The history of the experiments that have been made during recent years by smelters and mechanical engineers to determine the best method to briquette fines, would fill a volume. The Chisholm, Boyd & White Company, of Chicago, years ago introduced the bricking of ores with a vertical plunger press, known as the Boyd ore press. They found this method was not practical for bricking ore, although it was a good press in every way; and their presses are now used by hundreds of clay-workers all over the world for making pressed brick. They also made many experiments with horizontal plunger presses, using direct pressure. They found that no pressure, however great, would make good blocks or briquettes from ore, and after long, tedious and costly experiments their engineers found, first, that the bond must be thoroughly incorporated and pugged with the fines before being formed into briquettes. Cream of lime (thick whitewash) was found to be the only feasible bond to use, as all others were too expensive, or had a detrimental effect in the furnace. To thoroughly incorporate this bond with the fines for briquetting it was found that some method must be used to convert the ore and lime into a plastic condition. This was done by preparing the lime, crudely at first, but now with machinery, which separates the lime from the uncalcined stone, then pumps it into a mixer into which the material to be treated is fed automatically; here the measured proportions are mixed and carried to a chasing mill, where large rollers incorporate the lime thoroughly with the dust. Then it is in proper condition for delivery to the press for briquetting.

After several years of experience they determined to combine the chasing mill and press into one machine, and they brought out what is known as the White mineral press, designed and perfected by the joint efforts of their engineers, who were devoting their whole time to the proposition. To no one of them does the credit belong, but to the Chisholm, Boyd & White Company, who had brought together, at large expense, this corps of engineers to work out and design a self-contained and combined machine for this purpose. How well they succeeded can be judged best when it is stated that in the United States, Mexico, South America, and across the water in Australia, England and Germany briquetting plants are running, using 1 to 4 improved White mineral presses.

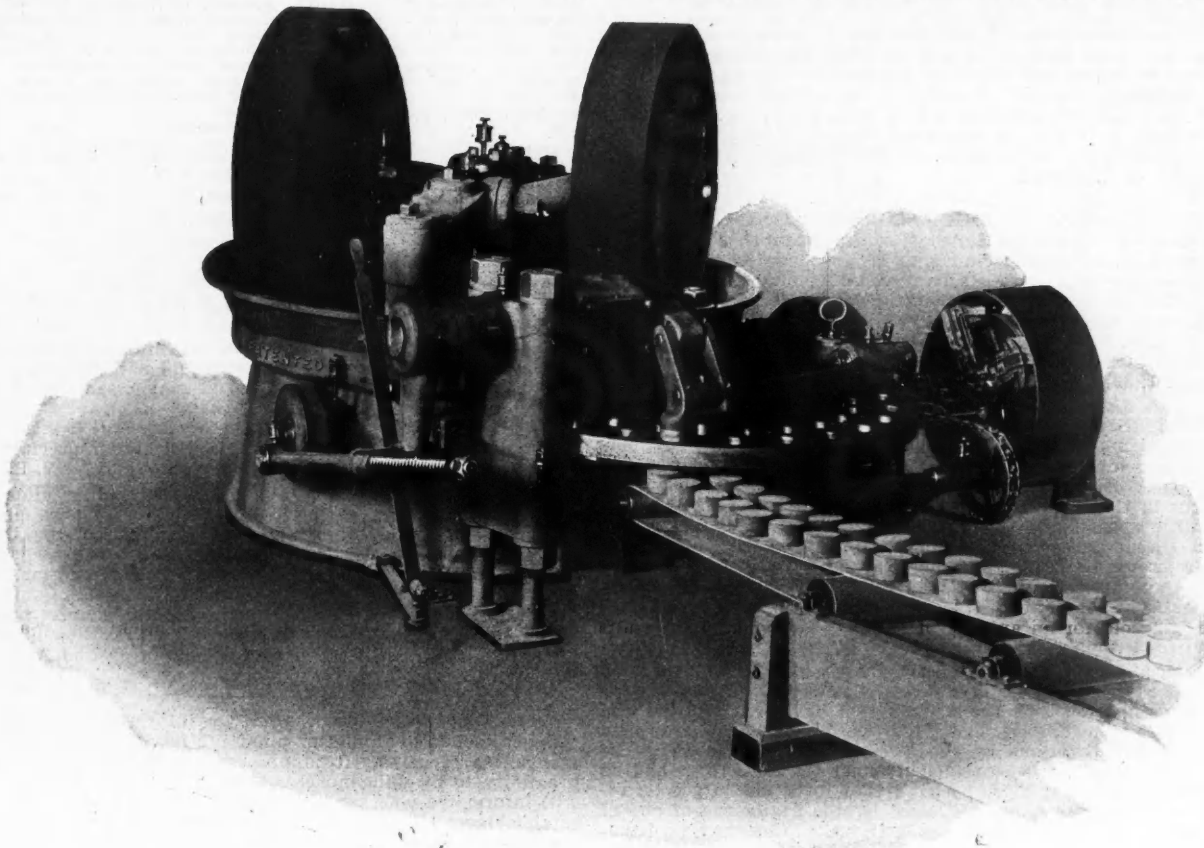
The Chisholm, Boyd & White Company's departure from the plunger type of press to the roller and plate-mold method was for the reasons previously stated. They found that ore was entirely different to brick than any clay or shale they had ever treated. A plunger, fitted close into a mold, would not stand to briquette more than 200 or 300 tons, owing to the sharp and gritty nature of the material, and where the latter had, from necessity, been made plastic, the worn out or loose-fitting plunger and mold would allow the material to ooze past the plunger head. This loss of material in the molds prevented the making of solid briquettes. This was one of the first troubles they had to contend with, and one not easily overcome, and it caused them to give up briquetting with machines of the plunger type. The success of the combined chasing mill and press finally developed into the improved White mineral press. This was an evolution brought about by experience and hard work, both in the field and in their shops.

There are now over 50 briquetting plants running which have been equipped by the Chisholm, Boyd & White Company. Some of these have been running for years. Some of their customers have adopted their car system for handling the briquettes from the carrier belt to the furnaces, which are loaded automatically by the adjustable carrier belt, and where this is in use the cost of briquetting, including repairs on plant, power, labor and bonding agent, has been put down to 62½c. per ton for an 18 months' run. This statement is taken from the books of customers, and as authentic.

The accompanying cuts show the improved White mineral press and the auxiliary machines. The machines, A, B and C, are erected in a suitable location on a floor above the press so that the mixed material may be discharged into the pan of the press by gravity. This is an economical arrangement for floor space. The machine consists of a large and efficient chasing mill, in which two ponderous rollers follow each other in a circular track. Each roller is connected to a cross-beam by a 5-in. crank-shaped steel shaft, which permits free vertical action of the rollers and allows them to run over any thickness of material in the pan bottom. One side of the pan bottom is cut out to

admit a circular disk, having holes or molds, whose center is outside the rim or curb of the pan, and whose top surface is level with the pan track. A segment of the disk thus forms a part of the track over which

molds the wear is reduced to a minimum. The material having been forced or pounded into the molds by the heavy rollers, is so solid that the travel of the re-press plungers on the briquettes is never more than



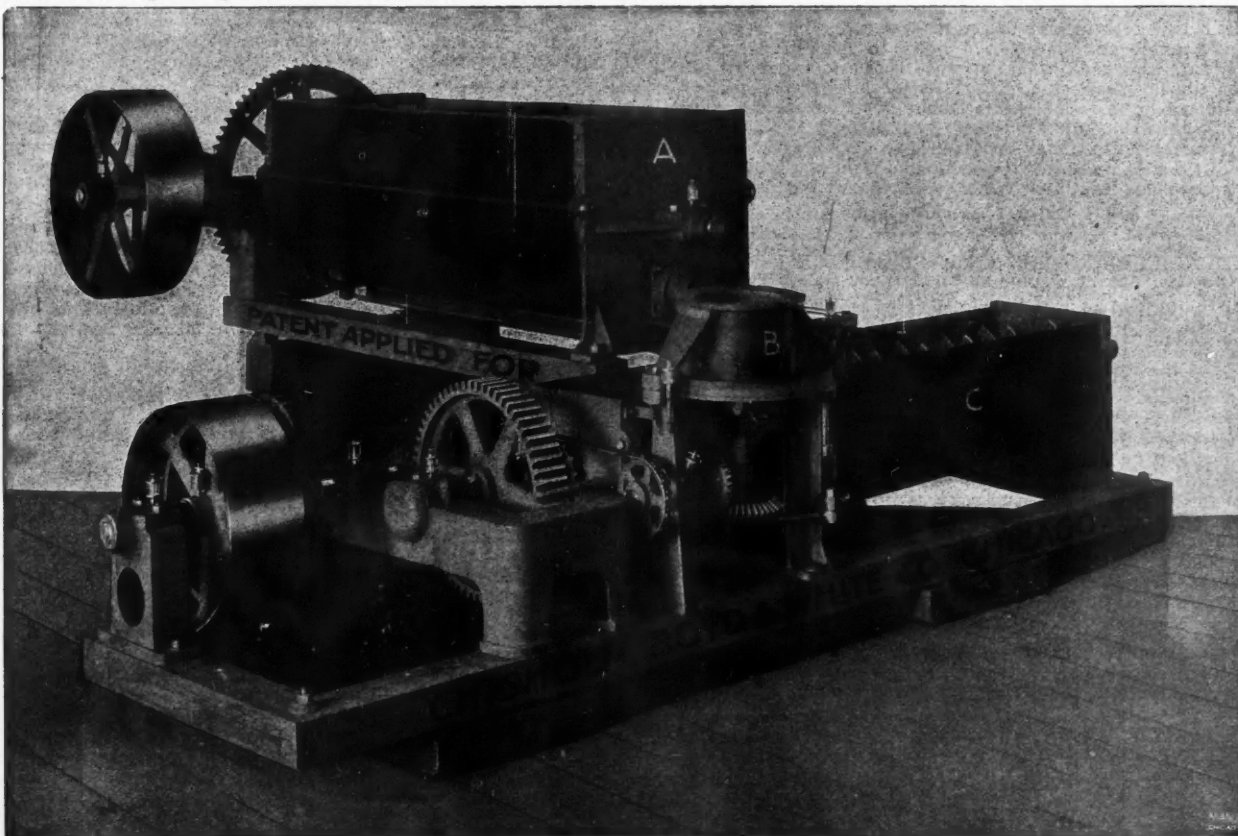
IMPROVED WHITE MINERAL PRESS.

the rollers travel. Thus the material, thoroughly mixed and kneaded, is forced by the rollers into the molds.

The movement of the disk is made only when neither roller is on it, by a simple pawl and crank, and there is no weight on the disk when it is in motion. The re-pressing of the briquettes is effected after they

are brought outside the pan curb, when the disk is at rest. The plungers are forced into the molds by a powerful toggle and lever movement, and at the same time the briquettes are ejected upon the carrier belt. The mold disk has 48 molds, 4 in., and by this large number of

the rollers travel. Thus the material, thoroughly mixed and kneaded, is forced by the rollers into the molds. The capacity of the machine is 80 briquettes per minute, the size being 4 in. by 2 1/4 in. To operate the press and auxiliary machines, A,



WHITE BRIQUETTE PRESS AND AUXILIARY MACHINERY.

are brought outside the pan curb, when the disk is at rest. The plungers are forced into the molds by a powerful toggle and lever movement, and at the same time the briquettes are ejected upon the carrier belt. The mold disk has 48 molds, 4 in., and by this large number of

B and C, about 35 H. P. are required. All of the bearings of the machine are extra large and are lined with the best quality of babbitt anti-friction metals and bronze, and its general construction and workmanship are of the best class.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

WHO MADE THE SALE OF THE MINE.—Mine owners executed a written contract to sell their mine to D on certain conditions, and orally agreed that if he did not buy the mine himself, but effected a sale, they would pay \$1,500 commission. D assigned the written contract to another party, and that one assigned it to a third party, who bought the mine. The court, in a suit to determine conflicting claims, held that D had effected the sale.—*O'Toole vs. Dolan* (62 Pacific Reporter, 30); Supreme Court of California.

WHAT IS NECESSARY TO THE RECORD OF MINING CLAIMS.—Under the laws of the United States (Revised Statutes, section 2324) requiring locations of mining claims to be distinctly marked on the ground, so that the boundaries can be traced, and that records of mining claims shall contain the name of the locator, the date of location, and such description of the claim with reference to some natural monument as will identify it, it is not necessary that the record shall show that the claim is marked on the ground.—*McCann vs. McMillan* (62 Pacific Reporter, 32); Supreme Court of California.

GOOD NOTICES OF LOCATIONS.—Notices of location which state that the undersigned had located the ground for borate mining purposes, and describing the claims as 1,500 by 600 ft., are good notices of location of placer claims; there being no difference between placer and lode locations in this regard. Notices of location which describe it as bounded on the east side by H mine, and as being a quarter of a mile south of the B road and about 3 miles east of C sufficiently describe the claim with reference to natural monuments, since notices of location are to be liberally construed.—*McCann vs. McMillan* (62 Pacific Reporter, 31); Supreme Court of California.

NOT LIABLE FOR ACT OF FELLOW-SERVANT.—A timberman in a coal mine requested a dirt scratcher to assist him in fixing a prop to support the roof, and in rendering such assistance the latter was injured. The foreman of both these employees had requested the dirt scratcher to assist the timberman on previous occasions. It was held that such previous directions by the foreman did not constitute the timberman the superior, or vice-principal; since the timberman had no power to compel the other to do such work or to be discharged on refusal, but that they were fellow-servants, for the negligence of one of whom the other could not recover.—*Kelleyville Coal Company vs. Humble* (87 Illinois Appellate Court Reports, 437); Illinois Appellate Court.

WHAT IS SUFFICIENT TO GIVE NOTICE TO SUBSEQUENT LOCATORS.—Where the notice of location claimed 1,500 lineal feet on a certain lode, ledge or rock in place, bearing precious metals, commencing at this monument and running 300 ft. northeasterly and 1,200 ft. southwesterly, situated between certain gulches, under a prominent reef of rocks about 250 ft. or 300 ft. southwesterly from the southwesterly end of Bonham lode survey, together with 100 ft. on each side of the lode, it is sufficient to give notice to subsequent locators.

Where the notice of re-location referred to the old claim by name, giving the date and book where it was recorded, and described it as situated on the southeast side of Carr Fork, about 100 ft. above Levant Lode, between Log and Car Forks, about 300 ft. from the creek in a certain mining district, running 500 ft. northeasterly and 1,000 ft. southwesterly from the notice monument and discovery shaft with 100 ft. on each side of the vein and along the course of it, it was sufficient to give notice to subsequent locators.—*Wells vs. Davis* (62 Pacific Reporter, 3); Supreme Court of Utah.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid. We cannot undertake to return them. If analyses are wanted we will turn specimens over to a competent assayer, should our correspondent instruct us to do so and send the necessary money.—Editor E. & M. J.)

294.—The Field Columbian Museum of Chicago is continually adding to its fine mineral collection as Professor Farrington and his assistants gradually weed out species that are represented too abundantly and replace them by new specimens. The museum received a lot of minerals from the World's Fair, and many of these of no particular merit have become a positive nuisance. These are gradually giving place to more interesting specimens. The exhibit has recently been newly labeled and now shows much improvement over the old system.

295.—Chrysocolla.—Beautiful specimens of chrysocolla are being taken from the Torpedo Mine near Organ, Dona Ana County, New Mexico. Specimens now and then show pretty crystallizations of wulfenite on chrysocolla.

296.—Mica.—H. C. M.—The samples are biotite mica. They are too dark and too full of flaws to have any value except as scrap. Scrap mica is used in making lubricants, in decorating wall paper, in fire-proof paint and in insulating materials. The market is supplied by mines producing it as a by-product and a mine worked exclusively for scrap probably would not pay unless transportation facilities were unusually good. You are mistaken as regards price. Scrap mica does not sell for \$30 per ton at Western mines. Scrap mica of best quality is worth but \$25 per ton at the North Carolina mines. Ground mica is worth 3 to 5c. per pound at New York City.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Ball Mills.—Is the Grusonwerk (Krupp) ball mill adapted for wet as well as dry crushing?—S. P.

Answer.—The ball mill is used both for wet and dry crushing. The catalogue of the makers will give you a list of the mills at which this mill is in use.

Portland Cement Material.—I know of a large body of hydraulic lime and about half a mile therefrom is a large body of black slate stone. Is the latter of value in making Portland cement?—E. A. C.

Answer.—Your description is too indefinite to enable us to answer your question. "Black slate stone" would not ordinarily be useful for the purpose you mention. You should submit samples of the rock to a cement expert for examination.

Aluminum Clay.—We have large beds of aluminum clay; is there any proper method of extracting aluminum from clay?—W. B. H.

Answer.—All clay contains aluminum, the oxide of aluminum, or alumina, being the basis of clay. Only certain very pure clays, composed of alumina with few impurities, are available for making aluminum. The methods of separating this metal could not be described here within the limitations of our space. At present the only manufacturer of aluminum in this country is the Pittsburg Reduction Company, of Pittsburg and Niagara Falls. You might submit samples of your clay to that company. If you want to post yourself on the subject you should consult "Aluminum; Its Properties, Metallurgy and Alloys," by J. W. Richards (price \$6).

Ferro-Manganese Furnace.—Can you inform me whether there is anything injurious to animal or plant life in the neighborhood of a ferro-manganese furnace? It is proposed to establish one here in close proximity to dwelling houses. I will be much obliged to you if you will inform me whether you think there are serious objections to the establishment of such an industry within the inhabited districts of the city.—J. R. A.

Answer.—There is always a large escape of waste gas from a blast furnace, but there is usually nothing especially noxious or injurious to animal or plant life in such gases. Something would depend upon the nature of the ore. With proper stacks or other arrangements for carrying off the gases, there ought to be nothing in the nature of a nuisance about such a furnace.

Value of Iron Ore.—What is the value of an iron ore in 500-ton lots assaying 63 per cent. iron, 4.0 per cent. silica, 0.025 phosphorus, 2.0 alumina, 1.5 lime and 0.04 sulphur, delivered at or near Chicago, or delivered at or near Denver for use as a flux; and how would the value change with the percentage of iron and silica when used as a flux?—J. H. C.

Answer.—Your iron ore, if delivered in or near Chicago would have to compete with Lake Superior ore. The prices of Lake ore last year, delivered at the lower lake ports, was \$5.50 for Bessemer ores—which would include your ore—and from \$4.25 to \$4.50 for non-Bessemer. The prices for the coming season are not yet fixed, but will probably be somewhat lower. Your ore would have to be delivered in more than 500-ton lots, however, to supply the South Chicago blast furnaces, for instance. With regard to iron ore delivered at Denver for use as flux, there is no fixed scale of prices. The smelters buy such ore as they need, and can usually obtain supplies of silicious or fluxing ores without difficulty. Your ore is better adapted for iron making than for use as flux.

Manganese Ore.—I see in your excellent journal that you quote December 8th, 1900, manganese 70 to 75 per cent., binoxide $1\frac{1}{4}$ to $1\frac{1}{2}$ c. per pound. What is the difference between binoxide and dioxide? I see that for 1900, up to December 8th, there had been imported into this country manganese ore and oxide 249,454 long tons, and exported, 3 long tons. Can you tell me why there is such a quantity of this material imported when it is such a common metal? Is there any way to reduce it and separate it from other material so as to concentrate it and improve the percentage? I am interested in two properties, perhaps upon the same ledge, although they show up about 12 miles apart, but the assay is about the same in each. One is as follows: SiO 2.0, Fe 2.0, Mn 44.0, CaO 11.4, S .02, with traces of gold and silver. In one place this ledge shows up in croppings about 15 ft. long, and about 6 ft. of the distance it is about 3 ft. wide; then it dips under the earth. There are several veins or ledges in view from 2 to 15 ft. wide that I should infer by the looks would only go about 10 per cent. in its natural state. If there is a cheap way to concentrate this ore to, say, 90 per cent., then it would become very valuable, as you quote 90 to 95 per cent. at $2\frac{3}{4}$ to $5\frac{1}{2}$ c. per pound. I would be glad if you would inform me as to this.—E. A. C.

Answer.—1. There is no difference between binoxide and dioxide.
2. Manganese ore is imported because Cuban and Russian ores can be delivered on or near the seaboard at a lower price than ore from our own mines. In Chicago, ore from Leadville is used in large quantities.

3. All that you can do by washing or concentration is to clean the ore, or free it from impurities.

You should consult the article on "Manganese" in "The Mineral Industry," Volume VIII.

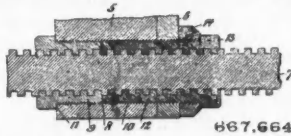
PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of the patents relating to mining and metallurgy and kindred subjects, issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending February 12th.

667,664. **ROCK-DRILLING MACHINERY.** Robert L. Ambrose, Tarrytown, N. Y., assignor to the Rand Drill Company, New York, N. Y. The combination with a cylinder, a cylinder-cover and ratchet-box having a screw-threaded orifice therethrough, and a feed-screw, of a feed-nut comprising two sections, one section thereof fitted in the



667,664.

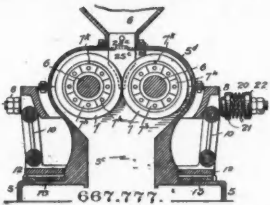
said screw-threaded orifice and rigidly secured to the said cylinder-cover and ratchet-box, and the other section adjustably mounted in the said screw-threaded orifice and having a locking-nut for securing it against movement in either direction in such position, relatively to the stationary section, to which it may have been adjusted.

667,686 and 667,687. **METHOD OF MANUFACTURING SEAMLESS TUBES.** Samuel E. Diescher, Pittsburg, Pa. An improvement in the method of piercing metallic bodies which consists in suitably heating and forcing a mandrel through the same and applying a pressure upon the exterior of said bodies during the operation of piercing, said pressure advancing substantially as and with the operation of piercing.

667,705. **PROCESS OF MAKING TUNGSTATES.** George T. Holloway and Harry W. Lake, London, England. The process consists in adding tungsten ore, in a finely-divided state, to a fused bath of silicate of an alkaline metal, capable of combining freely with the iron and manganese or lime in the ore, whereby practically pure tungstate of the alkaline metal is produced at one operation.

667,759. **NITROCELLULOSE OR SIMILAR SUBSTANCE AND PROCESS OF MAKING SAME.** David Bachrach, Baltimore, Md. A nitro-cellulose or similar compound containing a sulphate constituting 30 per cent or more by weight of the solid constituents of the compound.

667,777. **CRUSHING-ROLLS.** Franklin M. Iler, Denver, Colo. The combination with a stationary bed or frame, of the rolls and superstructure upon which the rolls are mounted, two independently-adjustable plates forming the support for the superstructure, the lower plate

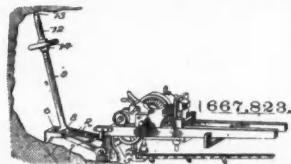


667,777.

resting on the bed and being adjustable in the arc of a circle whose center is located directly beneath the center of the roll, the upper plate resting on the lower plate and being adjustable in an arc whose center is the center of the roll.

667,797. **BLAST-STOP FOR HOT-BLAST VALVES.** James Scott, Pittsburg, Pa. A valve-chamber having a valve-seat therein, a valve, a valve-stem, an elongated guide-bushing through which said guide-stem passes, said guide-bushing having a spherical portion intermediate its ends and a seat in the end thereof, a stop carried by the valve-stem adapted to engage said seat, and a concave socket for engaging the spherical portion of the guide-bushing.

667,823. **REAR JACK FOR COAL-CUTTING MACHINES.** David W. Jones, Rawndale, Ohio. A jack for mining-machines comprising a base having an engaging spur at one end and coupling means at its opposite end for detachable connection with the machine to be anchored, and a stay for connection with the base at a point inter-



667,823.

mediate of its end and composed of adjustable members having telescopic connection, the end portion of one of the members being threaded, and a nut mounted upon the threaded portion of the member and adapted to engage with and move the other member outward.

667,864. **APPARATUS FOR MANUFACTURING GAS.** Henry A. Bradley, New York, N. Y. The combination with an inclosing chamber or furnace, of a gas-generator contained within the same and comprising a chamber into which the oil-vapor is introduced, a fixing-chamber and means for forcing steam through the oil-vapor chamber into the fixing-chamber, one or more hydrocarbon-burners for heating the generator and a receptacle in which the oil is vaporized by applied heat, connected with the said oil-vapor chamber.

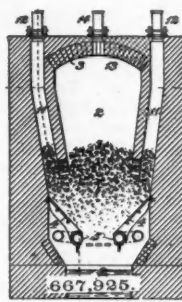
667,870. **REELING OR COILING DEVICE FOR ROD OR WIRE MILLS.** Victor E. Edwards, Worcester, Mass., assignor to the Morgan Construction Company, same place. The combination of a tilting base or floor which normally occupies a horizontal position while the rod or wire bundle is coiled thereon, a core or mandrel around which the rod or wire bundle is coiled, which core or mandrel normally extends up from the surface of the floor or base while the same is in its horizontal position, and means for producing a relative movement of said parts, whereby the core or mandrel will stand in position to leave the surface of the base or floor unobstructed when the same is tipped or tilted to an inclined position.

667,925. **GAS PRODUCER.** William Swindell, Allegheny, Pa. The combination of a generating-chamber, a lower fuel-support therein, and a substantially vertical downwardly-extending fuel-supply passage inclosed in the side wall of the generating-chamber and opening therinto at its lower end.

667,954. **APPARATUS FOR MOLDING CLAY OR OTHER PLASTIC MATERIAL.** Samuel H. Rowley and Thomas Till, Swadlincote, England. The combination with a matrix, a pattern adapted to cooperate therewith, and means for imparting rotary motion to one

of said parts, the contour of said rotary part being in any longitudinal plane of a configuration adapted to roll upon one of the sides of the molded article with a slipping motion, and in any transverse plane the shape of the corresponding contour of the molded article, and the contour of the other of said parts being of the same configuration as the other side of the molded article.

667,969. **ASSAYING DEVICE.** Archibald Campbell, Surf, Cal. An assaying device, comprising a bottle-shaped receiver having an oval outlet-



667,925.



667,969.

opening, a removable closure for said outlet-opening, riffles on the inner side of one of the walls of the device, a magnifying-glass in the opposite side wall of the device, and a closure for an opening in the wall having the riffles.

667,975. **ELEVATING AND CONVEYING APPARATUS.** James M. Dodge, Philadelphia, Pa., assignor to the Link Belt Engineering Company same place. The combination in an elevating-conveyor having upper and lower runs, of a chain, a carrier mounted thereon, and guides for causing said carrier to turn laterally so that the mouth of the carrier will be uppermost both on the upper and lower runs.

667,999. **SOLDERING COMPOUND.** Eugene M. Totten, Buffalo, N. Y., assignor of one-half to Arthur M. Whaley, same place. A soldering compound, consisting, in its entirety, of aluminum, tin, zinc, and a hydrocarbon, all thoroughly mixed together while melted, thereby forming a homogeneous mass.

668,050. **CONVEYOR.** Staunton E. Peck, Chicago, Ill., assignor to the Link Belt Machinery Company, same place. A conveyor, comprising a receptacle in which the material to be acted upon is received, a series of engaging devices within said receptacle, a support provided with one or more downwardly-projecting parts to which each engaging device is movably connected, connecting-pieces to which said supports are removably attached, a carrying-piece separate from each engaging device and interposed between it and the support a stop device located above the connection between the support and the engaging device and adapted to limit the movement of the engaging device in one direction with relation to the support and permit its movement in the other direction, and means for relatively reciprocating said support and receptacle.

668,071. **APPARATUS FOR COALING VESSELS AT SEA.** John E. Walsh, New York, N. Y. The combination with a collier and a vessel to be coaled, of a transmitting cable or track extending from one vessel to the other and having a loop therein, a weight suspended in said loop and a take-up device attached to the end of the cable beyond the loop whereby the weight may always be maintained in a state of suspension and an even tension kept upon the said cable.

668,079. **CONVEYOR.** Howard W. Baker, Chicago, Ill. The combination with an incline extending substantially from the receiving to the delivering level, of a traveling conveyor provided thereon, and a supporting arm or arms rigidly mounted upon said traveling conveyor adapted to effect the automatic delivery of the articles conveyed at the delivering-level.

668,112. **STONE-BORING MACHINE.** Samson Mesropian, Toulon, France. The combination with a rotary shaft of two plates secured thereto, a polygonal piece secured centrally between said plates, hammers having handles pivoted between said plates, cams on the hammer-handles each provided with a flat face to rest on a face on the polygonal piece, rods connecting the plates, and springs, each attached at one end to one of said rods and at the other end to the hammer-handle cams with a tendency to keep the flat faces of the cams in contact with the faces of the polygonal piece.

668,130. **MECHANICAL STOKER.** John W. Kincaid, Covington, Ky., assignor of one-third to Charles A. Kincaid, Covington, Va. The combination of a main engine, a trough or channel leading from the cylinder of the main engine into a furnace above the grate-bars, a plunger reciprocated in the trough or channel by the main engine, an apron connected to the plunger, a hopper on the trough and the cylinder of the main engine leaving ways between it and them in which the apron slides, twin spiral conveyors journaled in the ends of the hopper for feeding fuel to the forward end thereof, a hole in the bottom of the hopper near the forward end through which the fuel passes into the trough when the plunger and apron are retracted, and an engine for rotating the conveyors.

Reissue No. 11,838. **COMPOUND OF SILICON AND HYDROGEN.** Charles B. Jacobs, East Orange, N. J., assignor to the Ampere Electro-Chemical Company, Ampere, N. J. Original No. 656,354, dated August 31st, 1900. A compound consisting of silicon and hydrogen combined in equal molecular proportions, the same being a yellow crystalline non-explosive compound, insoluble in water and in acids and decomposed by caustic alkali solutions.

GREAT BRITAIN.

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

Week Ending January 19th, 1901.

408 of 1900. **SHALE DISTILLING.** J. Beveridge, Linnithgow. Improved form of retort for distilling shale and dealing with the burnt shale.
20,969 of 1900. **AMALGAMATOR.** T. R. Jordan, New York, U. S. A. Improvements in amalgamators which consist of a number of cups placed one underneath the other on a vertical rotating axis.
20,970 of 1900. **CRUSHER.** T. R. Jordan, New York, U. S. A. An improved form of combined crusher and amalgamator.

Week Ending January 26th, 1901.

2,146 of 1900. **SULPHUR SAVING.** J. Dewrance and J. H. Paul, London. A method of precipitating sulphur from sulphuretted hydrogen, especially for use in gas works.
4,426 of 1900. **PICK.** O. Morgan, Penkridge. Improvements in metal holders for pick handles.
17,825 of 1900. **COAL WASHER.** W. H. Baxter, Leeds. Improvements in coal and ore washers of the travelling band type when the water flows in the opposite direction.
18,169 of 1900. **CONCENTRATOR.** W. G. Dodd, San Francisco, U. S. A. An improved form of transversely-inclined concentrating table.

PERSONAL.

Mr. Edgar Rickard recently returned to California from Tasmania.

Mr. Thos. J. Walsh, owner of the famous Camp Bird Mine at Ouray, Colo., is in New York City.

Mr. Phillips Isham, of Rogers, Brown & Company, New York City, returned from Europe recently.

Dr. I. B. Hamilton, of Los Angeles, Cal., is in Northern California looking after mining interests.

Mr. F. Reid, manager of the Doric Mining Company, of Idaho Springs, Colo., has gone to England.

President Lamb and A. B. Turner, a director, have been inspecting the Mass Mine, Ontonagon County, Mich.

Mr. J. N. Esseityn, a mining engineer of Baker City, Ore., is visiting the copper mines of Upper Michigan.

Mr. Algernon Del Mar, lately of Los Angeles, Cal., is now investigating the Good Springs District near Manvel, Cal.

Mr. D. Kane, superintendent of the Copper Mountain Mining Company, Tecoma, Nev., has gone to Denver, Colo.

Prof. W. O. Crosby, of Boston, Mass., recently examined the Centennial Mine at Georgetown, Colo., for Eastern men.

Mr. H. W. Whirlow has resigned as superintendent of the Angels Mine, Angels, Cal., and is succeeded by Mr. T. Fullen.

Prof. G. P. Grimsley, professor of geology in Washburn College, Topeka, Kans., is spending a few months in California.

Mr. L. W. Tatum, mining engineer of Chicago, has just returned to Chicago after a professional trip to Yavapai County, Arizona.

Mr. Jay P. Graves, managing director of the Granby Smelter at Grand Forks, B. C., is at the Waldorf Astoria in New York City.

Mr. R. M. Jesup, of New York City, is examining mining properties in Tuolumne County, Cal., in the interests of Eastern parties.

Prof. William P. Blake, of the Arizona School of Mines, at Tucson, recently visited the Ajo Copper District to examine some mining properties there.

Mr. P. J. Donohue returned to Salt Lake recently from a week's trip in Bingham, Utah, where he was examining properties in the interest of Eastern capitalists.

Mr. D. J. Mahoney, of Boston, Mass., one of the principal owners of the Mount Jefferson Mine in Tuolumne County, Cal., is in California on a business and pleasure trip.

Mr. Thos. Neilson has resigned his position with the Silver Bell Copper Company, of Red Rock, Ariz., to accept a similar one with a mining company in Shasta County, Cal.

Mr. W. T. St. Auburn, formerly employed in South Africa by an English syndicate, recently examined the Niagara Mine in Shasta County, Cal., of which he was formerly superintendent.

Mr. Thomas Lynch, president of the H. C. Frick Coke Company, is on a trip to Florida and California. He will go to Mexico and as far north as Washington and will be gone until May.

Mr. Oscar Szontagh passed through Salt Lake recently on his way home to San Francisco, from a trip to St. George, Utah, where he went for the purpose of examining and sampling the Dixie copper mine.

Mr. H. McK. Twombly was recently elected a director of the Lehigh Valley in place of Mr. Wilson S. Bissell, resigned, and made a member of the executive committee to represent Vanderbilt interests.

Mr. Felix Chappellet, Jr., for a long time superintendent of the Eureka Consolidated Drift Mines of Placer County, Cal., has accepted the management of the Santa Rosalia Mine in Sonora, Mexico.

Prof. Palmer C. Ricketts has been elected president of the Rensselaer Polytechnic Institute at Troy, N. Y., to succeed Prof. John H. Peck, resigned. Professor Ricketts has been a director of the institute for several years.

Prof. William Dewitt Alexander, head of the survey department of Hawaii, has resigned to accept a position on the United States Coast and Geodetic Survey. He will have charge of that branch of the department which has to deal with Hawaii and Samoa.

Mr. R. C. Canby, superintendent of the smelting works of the Compania Metalurgica Mexicana, San Luis Potosi, Mexico, has been ap-

pointed consulting metallurgist of the company's allied interests and is making an extended trip in the United States.

Capt. C. B. Dahlgren, a son of the late Admiral Dahlgren, of the United States Navy, was seriously injured in a runaway accident at Carthage about 3 weeks ago, losing the sight of an eye. He is general manager for the Trenton Zinc Company at Galena, Kan.

Superintendent William Ramsay of the Kansas & Texas Coal Company, has been in the Connellsville Region, Pennsylvania, looking for men. He secured the services of Messrs. Robert Hay and P. J. Slevin, both well-known mine foremen. Ramsay was formerly general manager of the Southwest Connellsville Coke Company.

Mr. George B. Smith, third vice-president of the Pennsylvania Coal Company, has sent in his resignation, which will take effect March 1st, this being in part occasioned by the sale of the company to the Erie. Mr. Smith has been connected with the Pennsylvania Coal Company since a boy. His father, John B. Smith, was for years the general superintendent and one of the principal stockholders of the corporation. Mr. Smith is also president of the Erie & Wyoming Valley Railroad, which is a part of the Erie purchase, and it is thought that he will continue at the head of that company.

OBITUARY.

Col. W. T. Hart, a mining man and promoter known throughout the Northwestern States, committed suicide by jumping into the Snake River near Huntington, Ore., on February 16th. He was formerly connected with the Bimetallic properties at Phillipsburg, Mont. Recently he had been interested in the Seven Devils, Idaho, and had been promoting a railway to run into that section. He was about 65 years old, a native of Georgia and an ex-Confederate colonel. He was connected with the Oregon Railroad and Navigation Company, for which he had done considerable work.

Edward C. Darley, once a prominent mechanical engineer of Pittsburg, Pa., died at his home in Chicago recently. He was western agent of the Cahill Boiler Company. He was born in New York 55 years ago, and was the son of W. G. Darley, an engineer on railroad construction who came from England. Mr. Darley was for many years connected with James P. Witherow & Company, of Pittsburg, and constructed the furnaces for the Watts Iron and Steel Company, of Middletown, Ky.; Oswego Iron and Steel Company, Oswego, Ore.; Ashland Iron Company, Ashland, Wis., and Vulcan Iron Works, St. Louis. Mr. Darley was a member of the British Institute of Engineers, American Society of Mechanical Engineers, the Institute of Mining Engineers, and many other less prominent associations. He is survived by his wife and one son.

SOCIETIES AND TECHNICAL SCHOOLS.

Engineers' Club of Philadelphia.—At the meeting on February 16th there were 66 members and visitors present. Mr. Benjamin Franklin presented the first paper of the evening upon "Variations and Uses of the Standards of Measurements Employed in Field Engineering." After emphasizing the importance of accuracy in measurements, he considered the inaccuracies due to differences in standard and to instrumental methods. What is known as Philadelphia Standard is an excess of .25 of a foot for each 100 ft. United States measure. In Boston the variation ranges from .104 to .02 per 100 ft., and in New York from .1 to .017 per 100 ft. These differences often cause confusion, especially where city engineers are working in conjunction with railroad engineers or others who use United States standard only. The old British standards of about the year 1740 were enumerated, and the use of these by the American colonies was given as the probable reason for the differences in our older cities. The methods of making measurements by the rod, the chain, the steel tape and the stadia wires were then considered, and their advantages and limitations were pointed out.

The second paper of the evening was presented by Mr. A. V. Hoyt upon "Criticism on the Art of Land Surveying, as Followed by Civil and Mining Engineers." Mr. Hoyt referred to an article entitled "A Case of Jurisprudence in Land Surveying," published in the "Proceedings" of July, 1898, stating that it contains conditions which often confront a good land surveyor, and which he thought civil and mining engineers are but rarely capable of solving correctly. The methods of finding the corners and re-locating the old boundaries of a given property were considered at length, and the author contended that a land surveyor, with his Jacob's staff and compass, was better equipped for this work, and for locating the main features of topography, than was the scientific engineer with his more refined methods.

INDUSTRIAL NOTES.

The American Bridge Company has received a contract for the steel work for the electric power plant, to go to Ultimo, New South Wales, Australia.

The office of the Link-Belt Machinery Company in Denver, Colo., A. E. Lindroth, representative, has been moved to 822 17th St.

The United Gas and Coke Company, of New York City, is now building 100 Otto-Hoffman by-product ovens at Camden, N. J.; 252 at Lebanon, Pa., and 564 at Buffalo, N. Y.

The National Steel Company has contracted with Wm. B. Scaife & Sons, of Pittsburg, Pa., for structural steel work for its Ohio works, consisting largely of floor beams, channels and columns.

The Whiting Foundry Equipment Company, of Havey, Ill., has withdrawn its agency from Mr. J. Gilmour, in New York City and vicinity, and will be represented in the future by Mr. Edward J. Etting.

The Sullivan Machinery Company, of Chicago, Ill., manufacturer of mining machinery, has purchased the business and plant of the M. C. Bullock Manufacturing Company, of the same city, taking possession on February 1st.

Adam Cook's Sons, of New York City, report many orders from electric lighting and power plants for Albany grease. The firm is receiving also new orders and testimonials from engineers in charge of high-speed engines.

The El Paso Foundry and Machine Company of El Paso, Texas, is building a 30-ton concentrating mill, comprising 10 stamps, pans and settlers and Wilfley tables, for Francisco Casas, whose mines are located near Guanacavi, Durango, Mex.

The Whitehead Manufacturing Company, of Davenport, Ia., recently incorporated with a capital stock of \$100,000. W. W. Whitehead, manager, has plans and specifications ready for a plant, comprising 3 large buildings, for foundry and machine shops, at Davenport.

The El Paso Mine, Mill and Smelter Supply House, of El Paso, Tex., has made shipment of 2 80-H.-P. boilers and 1 10 by 14 doubledrum hoisting engine to Carlos Deltmar, of the Minas Kuarbrillos, Parral, Chihuahua, Mex. This house has also shipped out a dozen smaller steam plants in the last 30 days to various mines in Arizona and Northern Mexico.

The Jeanesville Iron Works Company, of Jeanesville, Pa., is now building for the Vindicator Gold Mining Company, at Independence, Colo., a compound condensing pump of 1,200 ft. direct lift, this being the highest direct lift in the State. The Jeanesville pump in the Ixex Mine is the next highest lift, 1,100 ft. The Gower Syndicate, of Black Hawk, Colo., has put in a Jeanesville pump of 800 ft. lift.

There is being built in the shops of the Chicago and North Western Railway Company, at Chicago, 5 large steel boilers, to be put in for the Consolidation Coal Company, at its new mining plant at Buxten, Monroe County, Ia. These boilers are 18 ft. long and are 66 in. in diameter, and are built for a steam pressure of 160 lbs. Each boiler will have 54-in. flues. The Consolidation Coal Company is practically the property of the Chicago & Northwestern Railway Company, and the latter takes the entire output of the mine.

Messrs. Charles H. Besly & Company, of Chicago, Ill., report their business as very good. Numerous orders for "Helmet" oil, "Perfection" and "Bonanza" oil cups are being received. The firm is just introducing a new solid oil cup called the "Badger," which has an octagonal, cast-iron cap with round thread for use on agricultural machinery. The firm is very busy in its tap and die department at the factory in Beloit, and is receiving many orders for Gardner disc grinders. Among others, recent shipments have been made to Ohio, Massachusetts and New York, and also to the Rock Island Arsenal at Rock Island, Ill. A 300-page catalogue will be mailed free to any address upon application.

Recent purchases for the Woolwich arsenal and private machine shops in England include 59 gas furnaces for annealing, hardening and tempering projectiles from the American Gas Furnace Company, of New York; automatic screw machines from the Cleveland Machine Screw Company and the Brown & Sharp Company, of Providence. The Armstrong-Whitworth Company, of Newcastle-on-Tyne, is to be equipped with specialties of the Cincinnati Milling Machine Company, Brown & Sharp Company, Cleveland Machine Screw Company and Hendley Machine Company, of Torrington, Conn. The Brown plant at Sheffield, which turns out much armor plate for the British Government, will be equipped with some large double radial drilling machines for drilling armor plates, built

by the Newton Machine Tool Company, of Philadelphia, and they will weigh 20 tons each. Vickers' Sons & Maxim have also called for a number of machine tools for their Barrow-in-Furness shipbuilding yards, the principal order being secured by the Bullard Machine Tool Company, of New York City, for a number of large boring mills.

TRADE CATALOGUES.

Chas. A. Teal, of Philadelphia, Pa., issues a 16-page pamphlet describing elevating and conveying machinery for handling barrels, bags, sand, ore, etc. The devices shown include drag and belt conveyors and coal handling plants.

The Buffalo Forge Company, of Buffalo, N. Y., has issued several of its neat little illustrated pamphlets for free distribution. The more recent of these are "Mechanical Forced Draft," "Buffalo Forge Company Engine," "Buffalo Down Draft Forges" and "Mechanical Induced Draft."

An article from the "Railroad Gazette" discussing the work of railroad men in the problem of pure water for steam boilers has been reprinted as a 42-page pamphlet with a bright red cover, and is sent out by the Industrial Water Company, of New York City. The pamphlet deals with the advisability of purifying feed water and the simplicity of the necessary methods.

The Parker steam generator, a water tube boiler for which several points of merit are claimed, is described in a 26-page pamphlet published by the Parker Engine Company, of San Francisco, Cal. The pamphlet states that this device aims to combine the economizer and boiler in one compact and simple apparatus and eliminate the effects of bad water and hard firing, at the same time securing reliable joints and flexibility of construction.

The Canadian Asbestos Company, of Montreal, Quebec, has issued an illustrated 26-page catalogue printed in colors calling attention to the many uses of asbestos and also to the special applications of the company's two products, "Asbestic" and "Asbestine." The former is used for plastering and as a fireproofing material. "Asbestine," the company states, is a dry powder which by simply adding cold water becomes a fireproof and weatherproof paint that anyone can apply, and is adapted for either outside or inside work. The catalogue gives views of buildings on which these compounds have been used, also views about the company's mines and mills at Black Lake, Quebec. In addition it shows the many forms in which asbestos is used, as in steam pipe covering, locomotive lagging, felt sheathing, packing, gaskets, etc.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" 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 of any kind, and shall be pleased to furnish them information, catalogues, etc.

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, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

ALABAMA.

(From Our Special Correspondent.)

Coal Production.—State Mine Inspector J. deB. Hooper is receiving returns from the various coal mining companies of the output during 1900. The returns are not quite all in, but it is estimated that the production will not be under 8,247,921 tons. According to the figures in hand there are 129 mines in the State, with 14,177 employees, consisting of inside and out and day men. Official returns have been received of 7,628,502 tons, while some of the largest mines in Walker County are yet to report. The production in 1899 amounted to 7,484,778 tons, and in 1898 to 6,466,741 tons. Jefferson County, of which Birmingham is the county seat, has reported the amount produced last year at 5,003,922 tons, while it is estimated that related reports will run that amount up to 5,408,013 tons. Walker County comes next with official and estimated output placed at something over 1,249,000 tons. Bibb County follows with 980,000, officially reported and estimated. There are 12 counties in Alabama producing coal, and in every county there was an increase except in Jackson County, where but a few days' work was done during the year in the single mine.

Bibb County.

On February 20th 13 coal miners were hemmed in in the Insane Hospital mine by water. Eleven other men escaped. The accident was due to a miner digging coal too close to an abandoned shaft that had filled with water some time be-

fore. On February 23d a rescuing party reached the entombed miners. Ten were found alive. Three had died. Prof. George Wilkins, of the State university, and Chief Mine Inspector Hooper directed the rescue work. Fresh air was constantly pumped into the mine and to this the 10 survivors owe their lives.

Jefferson County.

(From Our Special Correspondent.)

Valley Creek Coal Company.—The organizers of this company are Col. T. H. Aldrich, John F. Martin and T. M. Friel. The capital stock is \$200,000, and the purposes of the company are to mine coal, ore and other minerals, and to erect coke ovens, furnaces, etc., for the manufacture of coke and pig iron. The company recently acquired considerable coal property near Bessemer, 12 or 15 miles south of Birmingham.

ARIZONA.

Cochise County.

(From an Occasional Correspondent.)

Commonwealth Gold Mining Company.—The mill at Pearce which was destroyed by fire last year has been rebuilt on a much larger and more complete scale. Forty stamps were ready to drop on December 1st last, and the other 40 commenced dropping on January 1st. There are 2 large Corliss engines and a complete suite of pans and settlers, with all modern improvements and accessories.

Graham County.

Arizona Copper Company, Limited.—The directors of this company have received the results for the year to September 30th, 1900. The balance at the credit of profit and loss (including £46,500 brought forward from September 30th, 1899), after paying £30,000 to the redemption fund and carrying £80,000 to the reserve account toward improvements and extensions at Clifton, etc., is sufficient for a dividend for the year of 12s. 6d. per share, free of tax, on the present ordinary shares of the company. As, however, the whole of the profits cannot be distributed until the provisional order has been passed, the directors have resolved to recommend to the annual meeting, to be held on March 4th, the declaration of a dividend of 9s. per share, free of tax, leaving the balance, which is equivalent to 3s. 6d. per share, to be distributed after the provisional order has been obtained. To account of the dividend of 9s., the sum of 3s. 6d. per share was paid on July 30th, 1900, and the balance of 5s. 6d. per share will be paid on March 7th.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Bunker Hill.—The sump at this mine, on the north side of Amador City, has been cleaned out and sinking is resumed. The drift on the 800-ft. is to be extended about 200 ft., and other exploration work done.

Oneida.—The vertical shaft is down 2,090 ft., and development work is being pushed by Superintendent C. C. Derby. About 120 men are employed in the mine and mill. In December 50 tons of sulphurets were reported shipped.

Calaveras County.

(From Our Special Correspondent.)

California Ophir.—Arrangements have been completed to erect a 20-stamp mill at this mine, about 3 miles south of Angels. At 300 ft. a large body of low-grade ore has been opened. About 400 ft. north of the first another shaft is being sunk, and good ore has been encountered near the surface.

San Justo.—This mine, 2 miles east from Glencoe, has had to shut down. A flood from Carson Creek broke through from the old shaft which had been sunk in the bed of the creek and filled the mine. The shaft is down 700 ft. It is estimated that over \$100,000 has been expended so far on development work and plant, and it is doubtful whether the mine will be able to start up again.

Union Copper.—This old mine at Copperopolis is being prospected by a force of 8 men.

Inyo County.

(From Our Special Correspondent.)

O Be Joyful.—A 1-3 interest in this mine, in the Ballarat District, has been purchased by W. S. James, of Los Angeles, for \$16,000, ½ cash. A new plant was recently installed.

Mariposa County.

(From Our Special Correspondent.)

Alice.—Machinery, consisting of boiler hoist and pumps, is being installed at this mine on the west end of the Grant. J. D. Lunwig holds a lease and will work under the superintendency of H. W. Vance.

Grenshaw.—A tunnel has been run on this property 500 ft. on the ledge, giving about 100 ft. of backs. The ore shoot is not long but very rich. About 50 tons are on the dump.

Long Mary.—Sinking goes on day and night at this mine, and some good ore will be hauled to the Princeton Mill as soon as the roads are in condition.

Quail.—The litigation in regard to this property, which comprises 4 mining claims and 120 acres of timber land, located about 9 miles southeast of Coulterville, has been settled, and the owners have resumed operations after 16 months' idleness. The mine is opened up by 2 tunnels and 4 upraises. The vein is said to average \$7.50 in free gold besides the sulphurets. It is from 18 to 60 in. wide. The plant consists of a 30-H.-P. boiler and 2 Krogh 2-stamp mills.

Nevada County.

(From Our Special Correspondent.)

Dutch Harbor River Mining Company.—At the last meeting of this company the following officers were elected: W. H. Wood, president; F. Boeckman, vice-president; F. C. Boeckman, secretary of the First National Bank of San Francisco, was named as treasurer, and R. J. Thomas was appointed superintendent. A complete river mining plant is to be placed on the property of the company on the Yuba River, below Pleasant Valley.

Lindsay.—At this mine, 5 miles northeast from Washington, ore is being stoped out and the mill is running steadily. The plant includes an air compressor and 2 machine drills.

Providence.—About 65 men are employed at this mine, 1 mile west of Nevada City, 15 being tributors. The mill is crushing continuously on fair grade ore. P. Tautpaus is superintendent.

Placer County.

(From Our Special Correspondent.)

Eureka Consolidated.—The long tunnel in this drift mine, 3 miles north of Sunny South, has at last cut the blue gravel channel, about 5 ft. above the floor of the tunnel. The property comprises over 6 miles on the Dick Channel and 3,600 acres, making it one of the most extensive drift mines in the State. Felix Chappellet, one of the principal owners, is superintendent.

Riverside County.

(From Our Special Correspondent.)

Red Cloud.—About 50 men are employed on this property in the Chuckawalla Mining District, 32 miles from Salton. A 100-ton smelter is installed and the 2 10-stamp mills have been completed. It is said that a large amount of ore is in sight. The erection of new buildings and other improvements are contemplated.

Shasta County.

(From Our Special Correspondent.)

Bully Hill Copper Mining and Smelting Company.—This company has been incorporated under New Jersey laws with a capital of \$2,500,000. The incorporators are Wm. N. Cromwell, Wm. J. Curtis, H. B. Parsons, George H. Sullivan and Henry W. Clark. The company controls copper mining property at Copper City which is said to be partially developed. J. R. De La Mar is the principal promoter.

Mountain Copper.—Only development work is now going on at these mines. It is estimated that there are about 4 months' supply of ore on the calcining heaps.

Trinity Copper Company.—Forty men are now employed at the Shasta King, 9 at the King Copper, and 11 at the Sugarleaf claims on development work. A large air compressor and several thousand feet of pipe have been ordered.

Sonoma County.

(From Our Special Correspondent.)

Socrates.—This quicksilver mine has been reopened and a 54-ton furnace erected; other machinery is on the way. This addition will increase the capacity to about 50 flasks of quicksilver per week. The property is well opened up by tunnels, cross-cuts and upraises. Several hundred tons of ore are on the dump. San Francisco men control the company.

Trinity County.

(From Our Special Correspondent.)

Bob's Farm.—The tunnel on the ledge has been driven about 150 ft., and so far good ore has been developed. A 2-stamp mill is to be installed as soon as spring opens. There is now 18 ft. of snow in the district. The property is located on Rattlesnake Creek, a tributary of the South Fork of the Trinity River.

Enterprise Mining Company.—On the Lone Jack claim on the East Fork of the Trinity River about 1 mile south of Coleridge, miners are still driving the lower tunnel for the ledge, and the ore-body may be cut any day. There are 4 tunnels on the property. Power is obtained from the East Fork of the Trinity River. In the same district the Yellowstone and the Gavin mines are yielding good ore.

Sweepstake.—Another tunnel driven toward the channel about 300 ft. below the exposed rim has reached the gravel, which so far has been found to average \$5 per car-load in coarse gold. In some of the other openings the yield is from \$2 to \$20 per load. This group of claims is located on Oregon Mountains.

Tuolumne County.

(From Our Special Correspondent.)

Clio.—This mine is now being worked with a full force of men, with plenty of fuel on hand.

The new 10-stamp mill is running steadily on high grade ore. The mine is $\frac{1}{2}$ mile south of Jacksonville.

Mayflower.—A new rich body of ore has been struck at this mine, 1 mile southwest from Carriers. The force of 5 men employed will be increased. The property is opened up by several tunnels. Thomas Winwood is superintendent.

Mazeppa.—On the 500-ft. drifting goes on toward the main body of jumper slates, which the management expects to intersect in the next 75 ft. The ore body already cut is said to be 9 ft. wide, averaging \$8 per ton.

COLORADO.

Gilpin County.

(From Our Special Correspondent.)

Receipts of Machinery.—Two 40-H. P. Witte gasoline engines for Crown Point & Virginia mine; air compressor for Lola Montez tunnel at Black Hawk; 35-H. P. boiler for Lillian Mining Company.

Annex.—Boston men have taken this claim under bond and are making preparations to sink the shaft. Wm. Job, Central City, is manager.

Belvidere.—This property, situated north of Central City, has been started up and will be worked by its owner, E. H. Lunken, president of the Lunkenheimer Works of Cincinnati, O., with R. Davey, of Central City, as manager. It has produced a high-grade silver ore.

California.—The Patch Mining Company now has the water down to the 1,800-ft. level and is lowering it 2 ft. per day. The shaft is 2,230 ft. deep. Pat McCann, Central City, is manager.

East Notaway.—Ex-Sheriff Mitchell has sold his lease, which expires January 20th, 1902, to S. A. Joseph, of Denver, for \$25,000 cash, who has assigned it to the Town Topics Mining Company. The company is putting on a number of men and will make heavy shipments. M. E. Draper, Central City, is superintendent.

Grand Central Gold Mining Company.—This company, which recently purchased the East Whiting Mine on Gunnell Hill, has elected the following officers: President, H. H. Barber; vice-president, H. D. McMaster; superintendent, Daniel McMaster; secretary and treasurer, H. F. Avery; with Horace Graufeld, of Denver, as the other director. Active work has started and shipments are made.

P. K.—Denver men are opening up this property after its idleness of 25 years. In cleaning out an old level, a vein of silver ore has been opened carrying high values. A small hoist plant has been installed. G. D. Johnstone, Black Hawk, is manager.

Lake County—Leadville.

(From Our Special Correspondent.)

Banker Mining Company.—Reports from this mine on Brece Hill say the deep shaft, 1,200 ft. deep, has encountered a good body of sulphides.

Bohn Mining Company.—The old shaft is to be sunk another 150 ft. to open up the rich vein followed in the old workings.

Caribou.—This old Bison property in the Leadville basin was formerly known as the Bison. Manager Geo. Campion has run into a large body of carbonate sand from which he can ship regularly. The water flow is very heavy.

Denver City.—This old-time property, long idle, is resuming work. Rich ore in the lower levels, which could not be worked on account of water, is to be mined, as the mine is now dry from pumping in neighboring mines.

Fair View.—Lessees headed by J. C. Hume are sinking a new shaft on the northern part of Poverty Flat south of the old Chrysolite shaft.

Goodman Group.—This tract of 105 acres may be taken by Philadelphia men, the price to be paid being over \$100,000. The ground is in the heart of the gold belt near the Resurrection.

Greenback Mining Company.—The pumps are about in place and sinking will soon be resumed to the big sulphide ore body tapped with the diamond drill. The old working level of the Greenback is 1,050 ft.

Kubera Mining Company.—The company has a lease and bond on the G. M. Favorite on the Gold Belt and has a well-located shaft down 50 ft.

Last Chip.—The Turbot shaft is just resuming after long idleness and will ship from low-grade iron bodies.

Leadville Consolidated Mining Company.—New lessees who recently started up the Gregory shaft, idle for 12 years, and have uncovered a fair grade iron body running about 50% excess and 12 to 18 oz. silver.

Leadville Home Mining Company.—Operations are being pushed on the new Alice shaft. Shipments are over 400 tons daily.

M. N. Fraction.—About 15 tons a day of \$25 to \$30 ore are handled. In addition the company is sinking on a large low-grade sulphide vein.

Modoc.—This property, after a short idleness, has resumed shipments of iron ore. Its present operators are headed by Dr. J. H. Heron.

Nayr Mining Company.—While lessees are

shipping from the iron bodies already opened up in the upper workings, the main shaft is being sunk another lift of 150 ft. and the work will be completed within 90 days.

New Monarch Mining Company.—Shipments are 100 tons daily and will be increased. The new workings are opening up satisfactorily.

Northern.—From the upper level 20 tons of good iron ore are hoisted daily. Arrangements are under way to sink another 100 ft.

Sixth Street.—This property, for several years worked through the Coronado, is to have the shaft sunk 80 ft., the present depth being 485 ft.

Small Hopes Mining Company.—The company is shipping about 180 tons a day of good-grade sulphides from the 1,100-ft. level of the R. A. M. shaft.

Transportation Facilities.—The first heavy snow of the winter has fallen, but as all the leading producers are connected by rail they continue shipping steadily.

Two Bit Gulch.—Recent dispatches in Eastern journals about a rich find made by M. Manquess are without foundation. No find has been made since the collapse of the boom last spring.

Yankee Doodle.—About 50 tons a day of iron ore are shipped by new lessees.

Ouray County.

Camp Bird Mines.—In the suit over the Deadwood Millsite protestants' counsel asked for a continuance, making the request on the grounds that further development work—sinking the discovery shaft 20 ft. more—would disclose facts set forth in the original affidavits. They also wanted government officials to make a personal investigation to prove the truthfulness of their allegations as to the mineral character of the Deadwood millsite. The continuance was denied. The case will be appealed.

San Juan County.

Minnie Gulch Gold Mining Company.—This company, of which W. L. Holmes, of Detroit, Mich, is president and John T. Holmes is treasurer, is capitalized at \$10,000,000. It proposes to work the Tunnel group on Eureka Mountain near the Las Animas River, $\frac{1}{2}$ mile north of Eureka, and the Minnie Gulch group, said to comprise 62 claims, also on Eureka Mountain. The property controlled is said to consist of 1,500 acres. Development is not very extensive, but the lower tunnel is in 1,000 ft., the middle tunnel 160 ft. and the upper tunnel 460 ft. The ore runs in lead, copper, silver and gold. The company has about 50 men at work.

Teller County—Cripple Creek.

Stratton's Independence.—Results for the quarter to December 31st are given as follows: Ore sold, 11,902 tons, yielding 29,702 $\frac{1}{2}$ oz. gold, or average per ton of 2 oz. 9 $\frac{1}{4}$ dwt. (about \$49); gross value, \$122,484; net profit from all sources \$66,986, after charging all expenses, inclusive of construction and new development. From this a dividend at the rate of 10% per annum for the quarter was paid January 14th amounting to \$25,000 3s. 6d., leaving in hand a sum of \$41,985 16s. 6d. on the quarter. The mine manager's reports in January state that a new building is erected to receive the large air compressor for the new developments. The compressor is being put in, and the air pipe has been fixed in the shaft. The work on the flat vein, 400 ft. level, is proving the vein to be of considerable extent and good average values. On the 700-ft. level a drift south of No. 1 shaft in the granite, previously run out 240 ft., has been extended 262 ft. No ore has been encountered. No. 1 shaft has been sunk since December 30th 40 ft.; total depth, 953 ft. A settlement has been made by Mr. Stratton in the Milton suit at his own cost, whereby Milton and all those interested with him have released all claims against the company.

(From Our Special Correspondent.)

Cripple Creek Output.—The output for January was 45,684 tons of ore of the total value of \$1,880,036. Of this 17,016 tons of the value of \$65 per ton, making \$1,106,040, were sent to the smelters and 28,668 tons of the value of \$27 per ton, making \$774,036, were treated by the chemical mills. The tonnage was one of the largest in the history of the district. The amount of smelting ore shows a considerable increase, but probably because the smelters made a considerable cut in treatment charges for low-grade ores and are strong competitors of the mills for such ore.

Elkton Consolidated Gold Mining Company.—Fair progress is being made in unwatering this mine, but it will take a week or 10 days. In the meantime production is curtailed.

Last Dollar.—Rumors are afloat of a find of ore of marvelous richness on the 1,050-ft. level. These reports are undoubtedly exaggerated, but there appears to be no doubt that a good find has been made. Developments will be watched with interest by the mining world. The mine is on Bull Hill between the Lucky Guss and Modoc properties. Charles Waldron has charge.

National Gold Mining Company.—Fitzgerald and associates, leasing on the Red Bird claim,

are shipping some very good ore. The Red Bird is located on Gold Hill, adjoining the Yellow Bird of the Mariposa Company.

Portland.—It is announced that the 1,000-ft. level is proving very satisfactory, and that ore shipped from there averages higher than the average of the ore in the levels above. A heavy flow of water has been encountered just below the 1,000-ft. level.

IDAHO.

Blaine County.

Tiptop.—A strike of good gold ore is reported on the 500-ft. level of this mine at Halley. The mill is expected to start as soon as the weather moderates.

Wood River Mining and Development Company.—This company, with headquarters at Harley, with a capital stock of \$100,000, has been organized to carry on a general mining business. The incorporators are R. F. Buller, J. C. Fox, M. McCormick, H. R. Plughoff and John J. Tracy, of Halley.

Idaho County.

Golden Gate.—This company has had 15 men working on its claims at Pierce City for a year and now contemplates putting up a mill.

Klondike.—This Pierce City mine is equipped with a 5-stamp mill. About 1,000 ft. of development has been done.

Pioneer.—This Pierce City company has its lower tunnel in 1,500 ft., having had 10 men at work all winter. The mill will be enlarged to 20 stamps.

Santiago.—M. A. Ellis is interested in this group, of which D. H. Wilsey is manager. The claim has had about 600 ft. of work done on it this winter. The ore body is 4 or 5 ft. wide and is said to assay \$30 per ton. A mill may be erected this spring.

Shoshone County.

Anchor and Diamond Hitch Groups.—These properties in Burke have consolidated. Development work will be undertaken as soon as permission is secured from the probate court to dispose of certain interests.

Chloride Queen Mining and Milling Company.—At a recent meeting at Wallace the following directors were elected: Henry A. Steinke, C. H. Wentz, James Lyle, A. L. Nicholson, Paul A. Steinke, Henry Ellars and John Kammer. A. L. Nicholson was elected president, Paul A. Steinke vice-president; O. R. Young, secretary; H. A. Steinke, treasurer. It was agreed that work would be resumed about March 1st. An assessment of one mill per share was levied.

Hunter Creek Mining Company, Limited.—This company has filed articles of incorporation. Wallace will be its principal place of business, and the capital stock of \$1,000,000 is divided into 1,000,000 shares. The incorporators and directors are H. W. Scott, president; Edward Fleming, vice-president; H. F. Samuels, secretary and treasurer; F. M. Rothrock and C. M. Sterns. It proposes to develop the Union and Belmont claims lying between the Hunter mine and mill at Mullan.

Idaho-Montana Summit Mining Company, Limited.—This company has filed articles of incorporation at Wallace. Murray is named as the principal place of business and its capital stock of \$100,000 is divided into 1,000,000 shares. The incorporators and directors are William W. Woods, of Wallace; Charles Manley, A. R. Thompson and C. W. Betts, of Murray; Thomas J. Pedicord, of Spokane. It is organized to develop the Rialto, Pedicord and Minnie lodes near the Montana line at the head of Prichard Creek.

Snow Storm Mining Company.—This company has 7 men drifting on the vein in its claims on South Fork above Mullan. The lower tunnel is reported to show 7 ft. of carbonate ore, carrying copper, and the company contemplates erecting a leaching plant.

Sonora.—This property, east of Burke, has been at work over 3 years, running a crosscut tunnel 1,250 ft. It is now drifting on a ledge toward where ore was found in an upper tunnel. Four men are employed.

Tiger-Poorman.—The recent sale of this mine at Mullan by the Buffalo Hump Mining Company to Empire State-Idaho Mining and Development Company has been recorded at Wallace. The consideration is given as \$2,100,000.

West Bell.—This property, just below Gem, adjoining the Bell, is running a tunnel which is expected to cut the vein within the next 2 months.

MICHIGAN.

Copper.

St. Mary's Canal Mineral Land Company.—It is proposed to increase the capitalization of this company and devote money so raised to exploring the company's mineral lands. The company owns nearly 100,000 acres, most of it carrying the copper formations. The new proposition is to form a New Jersey corporation with 200,000 shares having a par value of \$25 each.

Copper—Houghton County.

Rhode Island Copper Company.—This company has issued a report of operations from date of organization to December 31st, which gives these figures: Received on capital stock, \$500,000; received from interest, \$7,056; total, \$507,056. Paid for property, \$300,000; mining expenses, machinery, etc., \$111,511; organization expenses, \$12,007; total, \$423,518. Balance cash on hand, \$83,537.

Tamarack Mining Company.—Work on the Osceola Mill at Tamarack is to start in the spring. A large amount of structural steel is to arrive shortly. The Wisconsin Bridge and Iron Company, of Milwaukee, has the contract. The new mill will have 4 heads.

Wolverine.—This company and the Mohawk are to put in a common pumping plant on Traverse Bay, Lake Superior. The contract has been awarded to the Snow Steam Pump Company, of Buffalo, N. Y., in competition with the Nordberg and other well known makers of pumping engines. The contract calls for a horizontal, triple expansion, crank and fly wheel condensing pumping engine of 20,000,000 gal. capacity every 24 hours. It will have steam cylinders 18, 33 and 54 in. in diameter with 22-in. water plungers and 36-in. stroke. The engine is of the Corliss type with valve motion, identical with the engine now being erected by the same company for the Calumet & Hecla Company. The new pump will be in position next summer by the time the new stamp mills are up.

(From Our Special Correspondent.)

Baltic.—In the northernmost shaft a copper lode nearly 60 ft. wide is reported encountered.

Calumet & Hecla.—Hoisting has been resumed in No. 14 shaft on the amygdaloid, which was closed down a few weeks ago, and mining goes on as usual. This shaft is down nearly 1,500 ft. and is connected to No. 13 and No. 15 by drifts at the 2, 3 and 7 levels.

This week a mill test is being made of the amygdaloid rock which forms the hanging and foot wall of the conglomerate, which has been heretofore considered worthless, but if the test shows copper in sufficient quantities it will from now on be stamped.

The drum shaft and center of the hoisting engine "Osage" have arrived. The large engine houses at each of the amygdaloid shafts are now ready for the hoisting plants and the foundations are being placed. All the amygdaloid shafts will be worked before long and the force employed this summer promises to be as large, if not larger, than that of last summer.

Franklin.—The January product was 245 tons of mineral. Temporary hoisting has begun at the Peninsula shaft of the Junior branch.

Quincy.—The shaft on the Mesnard epidote is down 850 ft.

Copper—Keweenaw County.
(From Our Special Correspondent.)

Phoenix.—The stock has been listed on the Boston exchange. The old bucket shaft on the West vein has been equipped with a skip-rod and a hoisting plant is being installed.

Copper—Ontonagon County.
(From Our Special Correspondent.)

Mass Consolidated.—Work on the stamp mill has started. It is to have 2 heads, will be 90 by 210 ft. and will cost nearly \$150,000.

MINNESOTA.

(From Our Special Correspondent.)

Since the talk of the Morgan combination, including some properties and interests with which the Eastern Minnesota has traffic contracts, this road has been quietly picking up ore lands and securing traffic agreements. Any deal tying up many of the properties will be to its disadvantage, unless it can secure enough traffic to keep its facilities occupied.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Burt.—This lease in section 28, T. 58, R. 20, a portion of the 2,000 acres of Burt lands in the western portion of the range held under a 25c. lease 200,000-ton minimum, by the Lake Superior Consolidated Iron Mines, shows ore, though how much is not stated. It may not be mined for some time. The bulk of these Burt lands lie in T. 58, R. 20, a favorite locality, and are scattered all across the town in the ore formation.

Clark Exploration.—This property, lying just south of the Clark Mine, belonging to M. J. Clark, of Grand Rapids, is to be explored at once. H. Roberts has the lease and is negotiating a sale to outside parties, who will probably explore.

Columbia Mining Company.—This company has resumed development, pumps and boilers having been installed to care for the water.

Genoa Iron Company.—This company has a stockpile of about 130,000 tons, which will be at least 175,000 tons before navigation opens. The mine will ship more than last year. Both shafts are in commission. The new Corsica, another of the Minnesota Iron Company properties, is preparing for mining. Large pumps will be installed.

Howe.—This mine, in T. 58, R. 17, is being opened for shipment in a small way. Great trouble has been experienced in sinking on account of quicksands. There is something like 1,500,000 tons of ore in the property, which is a lease from Minneapolis men.

Penobscot Mining Company.—This Hibbing company is hoisting about 500 tons daily through 1 shaft, and has some 40,000 tons in stock. The mine will make a bigger production this year than ever, but not 350,000 tons.

Stevenson.—This mine, west of Hibbing, is employing 175 men and is hoisting heavily. The mine will ship to the docks of the Eastern Minnesota road. It belongs to Corrigan, McKinney & Company, and is largely a steam shovel mine, though some of the product is from underground. The Drake & Stratton Company have a large stripping contract.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The market for zinc ore was off 50c. but lead advanced to \$23 per 1,000 lbs. The best price paid for zinc ore was \$27 per ton for ore from the Owl and Eagle mines at Belleville, the Amsden Lead and Zinc Company's lease of the Perry & Wise land at Joplin and the Morning Star ore at Oronogo, at the balance of the district ore selling at its value according to grade. The surplus at Aurora was entirely cleaned up, the price in that camp for 60% ore being \$24.50 per ton. The railroads were unable to furnish over 60% of the cars wanted and the shipments of zinc show a very large increase.

During the corresponding week last year the best grades of zinc ore sold at \$34.50 per ton and lead at \$27.50 per 1,000 lbs. The sales were less than last week by 3,173,700 lbs. of zinc and 333,770 lbs. of lead and the value less by \$20,535. For the first 3 weeks last year the sales were less by 2,021,060 lbs. of zinc and 1,442,810 lbs. of lead, but the value was greater by \$199,640.

Compared with the previous week the lead sales were less by 156,770 lbs., the zinc sales greater by 2,767,700 lbs. and the value greater by \$29,824. Following is the output by camps of the Joplin district for the week ending February 23d:

	Zinc lbs.	Lead lbs.	Value.
Joplin	2,837,680	384,610	\$45,236
Galena-Empire	1,550,510	198,110	23,162
Carterville	1,317,560	280,340	21,600
Webb City	891,670	36,140	11,085
Oronogo	596,510	27,050	7,865
Neck City	529,350	.....	7,146
Carthage	133,000	.....	1,663
Ash Grove .....	.....	63,000	1,361
Aurora	970,890	20,420	10,109
Carl Junction	123,210	.....	1,602
Peacock City	66,700	2,940	901
Zincite	388,070	5,150	5,358
Cave Springs	308,060	17,160	4,092
Central City	170,280	9,980	2,273
Spurgeon	144,540	38,080	2,611
Beef Branch	4,450	32,250	770
Duenweg	167,290	44,070	2,686
Roaring Springs	193,160	6,950	2,285
Spring City	105,140	84,540	3,195
Granby	261,000	24,000	2,555

District total 10,759,090 1,253,300 \$157,555
District total 8 weeks 75,267,160 9,538,300 1,113,208
Zinc value for week, \$128,815; lead, \$28,740; zinc value 8 weeks, \$897,551; lead, \$215,657.

Gray Goose.—This mine and mill on the Perry lease at Carterville was sold February 19th to W. W. Mitchell, of Carthage, who immediately transferred the property to A. A. Cass and others, the former owners.

Mastodon.—Plans are being drawn for a mill on this property, which is developing into one of the greatest mines ever opened at Lehigh.

MONTANA.

Carbon County.

Clark's Fork Coal Company.—At the annual meeting at Gebo J. C. McCarthy, of Chestnut, was elected general manager and J. A. Johnson, of Gebo, sales agent. The company is composed of several Omaha men in addition to those of Montana. The company has decided to establish a system of electric light and water works not only for the mine, but the town as well. H. H. Griffith is secretary-treasurer of the company, with headquarters at Gebo.

Jefferson County.

(From Our Special Correspondent.)

Blue Bird.—Jenckings Brothers are operating this Wickes property under a lease and bond. The old tunnel has been repaired and an upraise is being put through to surface. The sulphide ore in the tunnel averages 5% copper with a fair silver value. A concentrator is needed.

Minnie Wilson.—This property, situated 3 miles from Pipestone Springs and formerly owned by the Montana-Chicago Mining Company, is under bond to Butte parties. The bond is for \$10,000 and runs one year.

Lewis & Clarke County.

Columbia Gold Mining Company.—This new cyanide plant at York has been started by C. L. Fredericks under lease and is treating ore from the claims purchased from Cooney & Stevens.

The ore is crushed in the stamp mill and the free gold saved on the plates in the usual way. The tailings then go to a concentrating table, devised by U. S. James, of Helena, which saves the iron, while the coarse sand which contains no values passes away and the slimes are saved. The iron concentrates and the slimes are then treated separately by cyanide. As a result the expense of cyaniding 12 or 14 tons of material that carries no value is avoided; the 2 tons of iron concentrates and the 3 or 4 tons of slimes contain practically all the values. The slimes will be handled by an agitator, to make them leach rapidly. The capital stock of the company has been increased from 300,000 shares to 600,000 shares to consolidate the properties operated by Fredericks with the Columbian company's properties, and also to raise additional capital.

(From Our Special Correspondent.)

Fargo.—This property on Grizzly Gulch, 2 miles above Helena, is operated by Matt W. Alderson, who is shipping to Butte.

Howard.—Sheldon & Low, of Helena, send the ore from this property to the Colorado smelter in Butte. The ore is an iron oxide, the value being mostly gold.

Kenwood.—Senator W. A. Clark is placing machinery on this copper property capable of sinking 800 ft.

Missouri River Power Company.—A mortgage deed of trust to the plant and appurtenances in favor of the Colonial Trust Company, of New Jersey, has been executed in order to secure its liabilities and to enable it to borrow money with which to complete its power line to Butte. The trust deed is for \$750,000.

Madison County.

(From Our Special Correspondent.)

Toledo.—This property at Brandon, 3 miles from Sheridan, has 5 ft. of ore in the shaft at 115 ft. A concentrator is to be built in the spring. Joseph Lortie, of Butte, is superintendent. The ore is heavy in lead and carries a good value in gold and silver.

Wigwam Placer.—At this property, 12 miles from Ennis, the drain tunnel is in something over 700 ft. Messrs. Ward & Marsh, who are driving the tunnel, expect to be in the deep channel in less than 300 ft. more. These diggings are in what is known as the Gravelly Range at the head of Wigwam Gulch.

Missoula County.

(From Our Special Correspondent.)

House Group.—This property in the Wallace District, under the management of J. B. Porter, has the new plant of machinery in good working order. The shaft is now 125 ft. deep. Sinking will continue to the 300-ft. level. Twenty men are on the payroll.

I. X. L.—A complete plant of machinery is en route from the railroad to this claim near Colonia, next the Mammoth Mine. H. B. Browne has returned from the east with ample means to open the mine.

Silver Bow County.

Comanche.—This claim of the Boston & Montana Company at Butte is shut down, throwing 300 men out of work. The shut-down is the result of an injunction granted by Judge Clancy at the instance of F. Aug. Heinze. The injunction has been modified to the extent of permitting the Boston & Montana to keep the mine in repair and free from water.

(From Our Special Correspondent.)

Gem.—Two feet of 15% copper is reported in the bottom of the shaft. Heavier machinery will be put in.

L. E. R.—F. Aug. Heinze has begun suit in partition against the Anaconda Mining Company and to have a receiver appointed pending the suit, to work the property.

Minnie Healy.—Judge Clancy recently made an order giving the Boston & Montana Company permission to sue Receiver E. H. Wilson for damages alleged to have been sustained by reason of ore taken from veins which apex in the Piccolo and Gambetta claims owned by the latter company. The court, however, refused to grant an injunction to restrain the receiver from continuing his operations on the ore bodies in question.

Right Bower.—Henry M. Muntzer and wife and Abraham Buol and wife have sold a ½ interest in this property to the Anaconda Mining Company; consideration, \$30,000.

Sioux Chief.—The shaft is now 450 ft. deep. It is the intention to continue to the 1,000-ft. This property is northeast of Speculator and is worked by the Lary Estate.

NEW MEXICO.

Colfax County.

Bobtail & Senate.—A strike of high-grade ore 18 in. is reported at this mine near Elizabeth-town by a local paper. A Pittsburg company owns the property.

Dona Ana County.

(From an Occasional Correspondent.)

New Mexican Lead Company.—This company,

whose mines are in the San Andres Mountains, 35 miles northeast of Las Cruces, has completed a 100-ton concentrating mill and is said to be producing rich lead concentrates. The main working tunnel, now in 300 ft., is being equipped with a Leyner 4-drill air compressor. The West vein will be reached at a depth of 350 ft. in the course of the next 30 days.

Socorro County.

Cooney.—This mill, at Cooney, on Mineral Creek, is owned by Colorado Springs men. The plant includes a crusher, 5 stamps and 3 concentrating tables. It employs pan-amalgamation and is making good returns. The values are gold, silver and copper.

Queen.—This 10-stamp mill on Upper Mineral Creek, near Mogollon, is running on ore from the Queen Mine.

NORTH CAROLINA.

Mecklenburg County.

A local paper reports considerable activity in mining about Charlotte. C. A. Ames, a Colorado mining man, with Richmond men, has developed the Summerville from a prospect to a producing mine, running a 10-stamp mill day and night. The Grier Mine sold a year ago to F. W. Woolworth, of New York, is opening up well. The Champion Mine, 9 miles northeast of Charlotte, has a 10-stamp mill in operation. The McCombs Mine is being worked by the Atlanta Smelting Company, under the supervision of C. J. Laughren.

OREGON.

Granite County.

Oregon-Colorado.—J. W. Carr and S. N. Ferris, who have been developing this group of 8 claims in the Alamo District, 5 miles from the Red Boy Mine, recently purchased the Quebec group near by on which they will erect a 20-stamp mill. Two Johnson concentrating tables will be used. The power will be furnished by a 50-H.-P. engine and 50-H.-P. boiler. In addition to the stamp mill a complete saw mill has been ordered. It will be furnished with a 25-H.-P. engine and 30-H.-P. boiler and will have a daily capacity of 14,000 ft. The Joshua Hendy Company, of San Francisco, will design the mill building and superintend the installation of the machinery.

PENNSYLVANIA.

Anthracite Coal.

Mine Inspector Hugh MacDonald, of the Third anthracite district, including Scranton, has completed his report for the operations of the collieries in his district for 1900. The total production was 6,293,931 tons, which is 567,780 less than in 1899. The days worked was 154, and notwithstanding the idleness caused by the strike, this is only 12½ days less than in 1899. There are 18,600 persons employed in the district, an increase over 1899 of 1,444. The fatal accidents were 59 and the non-fatal 139, the latter being 67 less than for the year previous.

John Maguire, of Pottsville, mine inspector of the eighth anthracite district, has completed his report for 1900. His district includes 34 collieries and 4 washeries. The total coal production for 1900 was 4,274,528 tons, a decrease of 70,039 tons over the previous year. There were 139 accidents, 32 of them fatal. The coal production for the life lost was 133,579 tons. The 12,041 employees worked on an average 196 days.

Pennsylvania Coal Company.—For the second time within 2 years the mammoth coal breaker, No. 14, at Fort Blanchard, until recently owned by this company, now the property of the Erie company, was entirely destroyed by fire on February 18th. The origin of the fire is a mystery. The loss was fully \$100,000. Five hundred men and boys are thrown out of employment.

William M.—It is stated that William Richmond, of Scranton, has taken possession of this colliery at Yatesville, having purchased it for \$200,000. About 2,000,000 tons of coal are unmined. Several hundred hands will be employed.

Bituminous Coal.

(From Our Special Correspondent.)

Two recent sales at Waynesburg involve 10,000 acres of coal land and \$160,000 in cash. The coal land includes what is known as the William Orndoff block in Richhill Township and the Throckmorton block in Richhill and Center townships. The Orndoff block was optioned by William Orndoff and R. H. Call at \$15 per acre. It embraces 3,000 acres in the vicinity of Graysville. It was purchased by W. H. Bowman, William Hankins, Stephen Wadsworth, C. H. Seaton and J. D. Boyd, all of Uniontown. Orndoff and Call get \$1 per acre, and the farmer \$15 per acre. The Throckmorton tract is on the Pittsburg, Connellsville & Wheeling Railroad, between Rogersville and Rutan. The tract was optioned at \$15 per acre by James B. Throckmorton. Later it was sold to Dr. T. H. Patton, of Brownsville, who sold it at a large profit. The purchasers are J. V. Thompson and others of Uniontown.

John Sherrick & Brothers, of Pennsville, Pa., have closed a deal for 350 acres of coal land in Springhill Township, at \$225 an acre. The Sher-

ricks own 92 ovens at Pennsville, which have been in operation for a long time.

TEXAS.

Navarro County.

Corsicana Oil Field.—The high-grade oil production of this field is now stated to be about 2,500 bbls. a day, while the market price is 82c. per bbl. To the east of Corsicana, where heavy oil is found, only a few of the wells are connected and the production, if all the wells were opened up, might reach 400 bbls. a day. The market price of this product is only 25c. a bbl. and it can be used for fuel.

UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending February 23d there were sent forward from the several smelteries 17 cars, or 715,726 lbs., of silver-lead bullion; 7 cars, or 360,258 lbs., of copper bullion, and 109 cars, or 4,547,850 lbs., of silver-lead ores.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week ending February 23d the shipments from the 3 rail points of the district aggregated 102 cars of ore and 3 cars of bullion, contributed by the various mines as follows: Centennial-Eureka, 41 cars; Bullion-Beck, 2 cars; Gemini, 10 cars; Humbug, 5 cars; May Day, 2 cars; Mammoth, 7 cars; Godiva, 5 cars; Grand Central, 11 cars; Lower Mammoth, 3 cars; Ajax, 2 cars; Carissa, 6 cars; Tesora, 4 cars; Swansea, 5 cars; Star Consolidated, 4 cars; Mammoth Mill, 3 cars bullion.

Summit County.

(From Our Special Correspondent.)

Park City Shipments.—In this week of February 23d the Park City shipments, as reported by the Macintosh sampler, were 3,491,760 lbs., which represents the output of the camp. The several contributors were: Daly-West, concentrates 741,440 lbs.; crude 344,040 lbs. Ontario, crude 301,480 lbs. Quincy, crude 483,290 lbs. Anchor, concentrates 207,950 lbs. Silver King, crude 1,418,160 lbs.

Washington County.

(From Our Special Correspondent.)

The final payment was made February 23d by the St. George Copper Mining Company to the Dixie Mining and Smelting Company, and all property was formally turned over and the Dixie Company disorganized. The sum paid today was \$55,000. Titles to the 12 claims of the Dixie group will be issued by the United States land office in Salt Lake City to the St. George Copper Mining Company.

Dixie.—Thirty tons of copper bullion are reported on hand at the Dixie Smelter as a result of a short run, but it cannot be sent to market on account of bad roads between St. George and Modena, as a result of the recent unprecedented snowfall.

WEST VIRGINIA.

Harrison County.

(From Our Special Correspondent.)

Perry Coal and Coke Company.—Frank Hambray, of Connellsville, has closed a deal with C. D. Williams, of this company of Perryopolis, for 800 acres of coal land in the Pittsburg coal vein at Adamstown. The coal lies along the Baltimore & Ohio and the West Virginia Short Line. It has 2 producing gas wells, the product from which is pumped to Clarksburg. The coal is high enough to work on both railroads at a maximum of 40 ft. to screen or tippie without the use of plane or slope.

Monongahela County.

(From Our Special Correspondent.)

Georges Creek Coal and Coke Company.—Jas. A. Milholland, president of this company, which has recently purchased coal land near Morgantown, states that they will begin at once to develop it. They are building a new railroad from Morgantown to Cassville. It will go up Scott's run, and all the coal from the 15,000 acre tract will be mined from drifts sent in from an entry on Scott's run. Electricity will be used as a motive power in the mine. Nearly \$1,000,000 will be expended in opening the mine and building coke ovens. The plant, when completed, will be the largest in the State.

WYOMING.

Carbon County.

Copper Glance Mining and Milling Company.—M. M. Green & Co., of Grand Encampment, have sold the Garouth group of 3 copper claims to Chicago and Ohio men, who have organized the above company. The greatest development on the property is a 200 ft. tunnel.

C. F. Rosenberg, of Kansas City, Mo., and Isaac Teter, of Baggs, with associates are about to start dredging on the Little Snake River 40 miles below Baggs, between Sunny Peak and the Dry Gulch Mining Company's property. The dredge is a small one and is equipped with a 25-H.-P. steam engine and a ladder having 23 small buckets. The property to be prospected covers about 1,280 acres of placer ground.

Uinta County.

Diamondville Mine Explosion.—At the Diamondville Mine No. 1, at Diamondville, owned by the Oregon Short Line Railroad, a fire started in No. 6 level on February 25th. Only one man in this level, John Anderson, was able to reach the main shaft and make his escape, so quickly did the fire spread. No one knows how it started. The night shift of 36 men, all foreigners except 2, had been at work several hours, and for a time were unaware of their danger. They were scattered along the workings, some distance back from the main gangway. John Anderson was nearest to the mouth of the level. The level was "plugged" at its opening in order to kill the fire. Bands of men went down the shaft repeatedly and tried to face the flames, but were compelled to retreat. None of the imprisoned men can be alive. The output of Mine No. 1 is about 175,000 tons of coal per year. More than 700 miners are employed.

FOREIGN MINING NEWS.

AFRICA.

Rhodesia.

The Rhodesian Chamber of Mines reports the gold production for December at 9,373 oz. crude. The total for the year 1900 was 91,640 oz., which compares with 65,302 oz. in 1899 and 24,561 oz. in 1898. At the usual value of Rhodesian bullion, the production in 1900 was equal to 75,145 oz. fine gold, or \$1,553,247.

AUSTRALASIA.

Queensland.

Mount Morgan Gold Mining Company.—This company reports for January a total of 8,790 tons ore treated, the yield being 4,295 oz. gold; an average return of 0.49 oz. to the ton.

Tasmania.

Mount Lyell Mining Company.—The statement for the four weeks ending February 6th shows 20,276 tons ore smelted, the yield being 682 tons blister copper, containing 674 tons fine copper, 47,624 oz. silver and 1,959 oz. gold. The average return was 3.32% copper, 2.35 oz. silver and 0.10 oz. gold to the ton.

CANADA.

British Columbia.

According to Vancouver dispatches the fight between the Canadian Pacific Railway and the Kootenay smelters on one side and J. J. Hill, the Great Northern Railway, Crow's Nest Coal Company and Smelters on the other, has assumed an acute stage. The Canadian Pacific Railway now refuse to haul the coal cars from the Crow's Nest mines to the States until the coal company carry out their agreement to supply the Kootenay smelters with coal and coke.

British Columbia—Boundary District.

British Columbia Copper Company.—The company's smelter at Greenwood blew in on February 18th, according to dispatches to Spokane papers. The company has on hand ore from the Mother Lode, Gold Bug, No. 7 and Little Bertha mines. Paul Johnson is superintendent.

Granby Smelter Company.—This new company, to consolidate the Granby Smelter and the Knob Hill, Old Ironsides and Gray Eagle mines, was organized at a recent meeting in Montreal. Mr. C. E. Gault acted as secretary and read the various reports, which showed the various departments to be in satisfactory condition. It was shown that 1,044 ft. of development work had been done on the Victoria Mine of the Granby Company. Mr. Miner advocated consolidation as the most effective means of working the properties, and declared that the daily capacity of the smelter would be increased to 1,200 tons by August, and that a converter would be added. The election of directors resulted as follows: S. H. C. Miner, J. H. McKechnie, Fayette Brown, Jay P. Graves, W. Yolen Williams, A. L. White, C. E. Gault. Mr. Miner, at a subsequent meeting, was re-elected president, Mr. Graves vice-president, C. E. Gault secretary and G. W. Worster treasurer.

British Columbia—Lillooet District.

(From Our Special Correspondent.)

Bend d'Or.—A report from the company's office at Vancouver says: "We have now 800 tons ready for the mill. Have 10 ft. of ore in upper tunnel; the mine looks exceedingly well."

British Columbia—West Kootenay District.

Hewitt.—The No. 5 tunnel on this Nelson mine when finished will be over 1,000 ft. long, and will tap the vein at a depth of 600 ft. Fifteen carloads of ore were shipped during January.

Iron Mask.—Work continues on the 400, 450 and 500-ft. levels west at this Rossland mine.

I. X. L.—Work on the lower tunnel has been resumed; its total length is 240 ft. The ore body in No. 3½ tunnel has been drifted on for 40 ft.

Kootenay Mines.—The shaft at this Rossland property is 1,150 ft. below the outcrop. At the bottom a good body of ore known to exist to the eastward of the shaft is cut.

Le Rol.—The machinery is practically finished. Shaft sinking has started and two small en-

gines have been installed at the 900-ft. level which will work over the second and fourth compartments.

Payne Consolidated Mining Company.—The statement for the quarter ending December 31st, 1900, shows 2,957 tons of ore shipped, at a net profit of \$120,668. Deducting \$78,000 for dividends of January 15th, this leaves a surplus of \$42,668.

Portland.—The first shipment of a car-load of ore has been made from this Rossland mine. The Portland is the sister of the Velvet and the New Gold Fields of British Columbia is the parent corporation of both companies. Drifting on the 100-ft. level continues.

Velvet.—Hauling of ore to the railway near Rossland continues, as does the work of installing the 18-drill compressor plant.

War Eagle.—Work on the tramway at this Rossland mine is making good progress. The shaft is still going down. Developments continue on the 7th and 8th levels. Over 100 tons a day are shipped.

White Bear.—The cross-cut on the 350-ft. level of this Rossland mine is in 180 ft. The formation is an altered diorite in which are stringers of pyrrhotite and chalcopryrite.

(From Our Special Correspondent.)

So far as mine development goes Rossland District was never in a better position than to-day. There is, however, a decidedly uneasy feeling in labor circles which is reflected in the business aspect of the camp. This may culminate before spring in some sort of general close-down such as took place this time last year. If a satisfactory settlement of the contract system can be had the year's work would undoubtedly show great progress. The War Eagle and Center Star mines appear to be the storm center of a good deal of trouble and annoying delays. Shipments from the Le Roi and other British American Corporation Mines to Northport smelters have been curtailed some months owing to the lack of smelter facilities. During the present month, however, the enlargement of the smelter will be completed and the ore output will then go up.

Even under adverse circumstances the ore shipments now give an average of over 300,000 per annum.

Strikes of importance have recently been made in the Evening Star and the Green Mountain, in the latter the diamond drill has definitely located 2 ledges of shipping value, one within 2 ft. of the main shaft.

British Columbia—Vancouver Island.

Cumberland.—At this colliery, on February 15th, a terrific explosion in shaft No. 6 wrecked the mine workings and imprisoned 60 miners, about 40 of whom were white men, the others being Chinese and Japanese. The shaft is 600 ft. and its workings connect with shaft No. 5, 1½ miles distant. Determined efforts were made to reach the entombed men through No. 6 shaft and No. 5 shaft, but the rescuers were prevented by gas and several minor explosions.

The Cumberland collieries are at Union, a village of about 700 people, 50 miles north of Nanaimo. No. 6 was only recently opened and has been shipping coal for about 4 months. The inspector's last report says it was properly constructed in accordance with the regulations governing coal mines.

Ontario—Sudbury District.

(From Our Special Correspondent.)

The mine owners of the Sudbury District are almost unanimously opposed to the export tax on nickel ore and matte that the Ontario Government took power to impose last year, being imposed as demanded by the iron and steel men lately. Many mine owners would like to see nickel refined in Ontario, but they say that neither a provincial tax nor an export duty is the true solution.

All the known mines of high grade ore (above 3% nickel) on the main nickel range have been sold except the North Star Mine in the township of Snider and a few smaller properties on the same lead.

Canadian Copper Company.—This company is surveying for a 6-mile branch from the end of the present track at Clarabel Lake, 2 miles west of Copper Cliff, to the Snider Township nickel mine. Most of the way is well parallel to the new Manitoulin & North Shore road.

Great Lakes Copper Company.—This company has done considerable development on the Mount Nickel Mine, showing a fine body of good ore, and a smelting plant is to be erected this coming season.

Lake Superior Power Company.—This company of Sault Ste. Marie is doing some work on the Gertrude Mine in the township of Creighton, but is not shipping ore. The Manitoulin & North Shore Railway will be completed from Sudbury to the mine within 3 months. The Sudbury "Journal" says in a recent issue, in reference to the proposed manufacture of ferro-nickel, that there is not a single deposit of ore in the whole district that does not carry too much copper for this purpose.

Miller.—The sale of this mine in the township of Trill to some Chicago parties has finally been closed. Testing has been going on for over a year, and a large deposit of paying ore has been found.

Mond Nickel Company.—The large smelting plant of this company at the Victoria Mines in the township of Denison will likely be ready to blow in by May 1st. This company is opening 2 other properties, the big Cryderman Mine in Garson, and the Little Stoble Mine in Blezard. On the former a working shaft is being sunk near the middle of the outcrop, and a lot of fine high-grade ore is being quarried out of the hill on the south end of the deposit. It is proving one of the best mines in the district.

Murray.—It is reported that a French company is negotiating for this old mine that has been idle for 5 years. The outlook for the district is better this spring than ever before.

Nickel-Copper Company.—This company, of Hamilton, has a few men working on a nickel property near Worthington Station, and a small experimental plant has been put up there to try and make matte by a new self-roasting process.

MEXICO.

Sonora.

(From an Occasional Correspondent.)

Dos Cabezas.—These mines, Montezuma District, owned by New York parties, and under the management of J. S. Eldridge, of New York, are now working 125 men and producing rich gold and silver ore, which is shipped to El Paso, Tex. for treatment.

SOUTH AMERICA.

British Guiana.

The total production of gold in the colony in the year 1900 is reported at 127,051 oz., which compares with 112,944 oz. in 1899.

The gold production reported by the Mines Department for January on which royalty was paid was \$5,333 oz. This compares with 4,890 oz. in 1900, showing an increase of 443 oz. this year.

COAL TRADE REVIEW.

New York.

Mar. 1.

Anthracite.

Coal-burning weather still prevails and the anthracite trade continues very active. February production was undoubtedly very heavy and the outlook for trade in March is good, though at this season a few warm, bright days curtail retail buying decidedly. The demand for coal is well distributed, though heaviest at inland points and in the West. At the heads of the Lakes supplies on the docks are now very low, and certain sizes are practically out of the market. It looks as though the decks would be well cleaned up before April. In Chicago territory retail buying continues good and the wholesale trade finds no difficulty in disposing of all the coal that arrives. The last heavy storm tangled up transportation badly along the lower lakes and cars are reported as being a month on the road from the mines to Western destinations. At lower lake points demand is brisk and report of a possible shortage is heard unless transportation improves soon. At inland points east consumption is steady and demand correspondingly good. Sales agents at New York report business as excellent. Ice and bad weather have restricted coastwise shipments, but supplies at Boston are good.

As to the possibility of labor troubles at the collieries, it now looks as though the officials of the United Mine Workers are averse to making demands that the powers in control of the trade would promptly turn down. It is probably safe to say that there will be no general suspension of work after April 1st, unless the hot-headed element in the union gets control.

A calm consideration of the testimony presented at the recent sessions of the Industrial Commission in this city confirms our opinion that the commission did not overwork itself in securing evidence. Still, it may have added to the gaiety of nations. For instance, those men in the coal trade who remember past manifestoes regarding discriminating rates and the need of a new railroad may have commented on the poor memory shown by an official of the Anthracite Operators' Association. Perhaps there is stormy weather ahead for the association, and it is well to have a lightning rod up.

Prices are well maintained, except on the largest sizes. There is no talk of a spring schedule yet and probably there will be no action taken regarding prices until after April 1st. We quote for free-burning white ash f. o. b. New York: Broken, \$3.65; egg, \$4; stove and nut, \$4.50.

Bituminous.

The Atlantic seaboard bituminous trade continues quiet. All producers have cut down their outputs by large percentages, finding that the market will not take their full production. Contracts for the coming year are now under consideration, and most consumers having fair

stocks on hand are not inclined to lay in large supplies.

There have been several meetings of the Bituminous Trade Association recently looking toward its continuation. It is currently reported that these meetings were very harmonious and included a very large representation; in fact, larger than last year. There has been some discussion of prices for the coming year, but as yet these are apparently not determined.

The far East is being canvassed by dealers with a lot of coal to sell. Buyers are consequently looking for bargains and seem to expect lower prices this year, though the present outlook, according to sales agents in New York, is against any reductions. Along Long Island Sound demand is slack, even for special grades of coal. New York Harbor trade also is quiet. All-rail trade is taking a fair tonnage.

Transportation from mines to tide is up to schedule. Car supply at the collieries is regulated by the dispatch shown in unloading cars at tidewater. In the coastwise vessel market various harbors are still troubled by ice and few vessels are to be had. Chesapeake Bay and the Delaware River are still in bad condition, but a few days of warm weather would show a great improvement. Coastwise freight rates, owing to the scarcity of vessels, are nominal. We quote as current rates from Philadelphia: Boston, Salem and Portland, 75c.; Providence, New Bedford and the Sound, 65c.; Wareham, 85c.; Lynn, 90c.; Newburyport, \$1; Portsmouth, 80c.; with 5c. above these rates for the further lower ports.

Birmingham, Ala.

Feb. 25.

(From Our Special Correspondent.)

There is much coal being produced in Alabama and every ton seems to be in demand. The production is increasing right along and a fairly good price is being obtained by the producers. There are orders on hand again which will require coal for several months ahead and every indication points to a larger production this year than ever before.

The coke production is holding its own. The Sloss-Sheffield Steel and Iron Co. will commence shortly, receiving some of the coke ordered recently from Virginia.

The President of the United Mine Workers of America, Alabama District, is still at work organizing a sub-district in Walker County. W. R. Fairley, of Alabama, member of the National Executive Committee of the United Mine Workers, is at work among the mines in Kentucky making efforts to straighten out differences thereabout. There are no labor troubles in this State.

Chicago.

Feb. 26.

(From Our Special Correspondent.)

Anthracite Coal.—The colder weather stimulated business while it lasted, but now that the temperature is again normal sales have fallen off to some extent. The buying of the past two weeks and the delay in getting hard coal from the mines has rather depleted supplies, yet there is a plenty of hard coal for all present demands. Prices remain firm at \$5.75 on grate and \$6 for egg, stove and nut.

Bituminous coal sales have not increased in the aggregate for the week, buying having been, as a rule, in small lots, and no tendency is shown to accumulate any large lines, while market continues in present state. Prices are weak and really look like going lower, and this may be a fact if the mines do not restrict production for the time being.

Cleveland, O.

Feb. 27.

(From Our Special Correspondent.)

The coal trade is in better condition now than it has been during the winter. The sales have been heavy during the week and the inquiries are out for more material than the producers have prospects of being able to fill and give dispatch on deliveries. The continuance of the cold weather and the prospects of labor trouble in the anthracite fields are still the chief causes of inspiration in the coal market making business good. The prices of Ohio coal are without change, and might be quoted as follows: Slack, \$1.20; nut, \$1.50; run-of-mine, \$1.16; three-quarters, \$1.80; lump, \$2; Massilon lump, \$2.60.

The lake shippers are commencing to get ready for the opening of the season of navigation and are discussing possible lake freights. The shippers are practically assured that their rates will be satisfactorily low, although the vessel interests are still hoping to get a good stiff carrying freight. The supply of tonnage and the possible movement is against any such possibility. It seems now that the rate will be about 35c. for the first cargoes, with possible contracts made on the same basis.

Pittsburg.

Feb. 27.

(From Our Special Correspondent.)

Coal.—There is no change in the coal situation in this district, the mines continuing in full operation and prices remaining the same. It is reported that independent producers are cutting prices, but officials of the two combinations insist that rates are maintained. The rumor that the Pittsburg Coal Company and the Monongahela River Consolidated Coal and Coke Com-

pany, the two combinations, are to be consolidated, is again revived, but it has not been traced to any authoritative source.

Connellsville Coke.—The production of coke in the Connellsville region last week showed a big gain, but there was a slight decrease in shipments. The demand is increasing and prices are much firmer. While the leading producer continues to quote furnace coke at \$1.75, some sales are reported at \$2. Foundry coke ranges from \$2.35 to \$2.50. Of the 21,423 ovens in the region, 18,476 are active and 2,947 are idle. The production for the week was 214,101 tons, an increase of 5,307 tons. The shipments for the week aggregated 10,243 cars, distributed as follows: To Pittsburg and river tipples, 3,343 cars; to points west of Pittsburg, 4,578 cars; to points east of Connellsville, 2,322 cars. This was a decrease of 69 cars.

Shanghai, China. Jan. 14.
(Special Report of Wheelock & Co.)

Coal.—Japan coal shows small sales only. Cardiff is easier. Sydney Wollongong is slightly weaker. Arrivals of all kinds of coal from December 12th to 29th, inclusive, 26,407 tons. From January 1st to 11th, inclusive, the arrivals were 21,833 tons. Quotations, per ton, are as follows: Welsh Cardiff, 25 taels (\$16.75); Australian Wollongong, cargo, ex-godown, 12 taels (\$8.04), and miscellaneous sorts, 6@7 taels (\$4.02@4.69); Chinese, Kaiping, lump, 7.50@10.00 taels (\$5.02@6.70); dust, 5 taels (\$3.35), and mixed, 5.50@6 taels (\$3.69@4.02); Japan, all contracted for.

Kerosene Oil.—There is at present a good demand for Devoes and Russian bulk oil at native tea shops. Importers are asking 1.88 taels (\$1.30) per case, less 2%. Stocks are comparatively small, but notwithstanding this we do not look for much improvement until the Chinese new year is passed. Arrivals during the fortnight ended January 14th were 431,000 cases. Stocks are: American, 594,700 cases; Russian, 100,450 cases; Sumatra, none. Quotations, per case, are as follows: American Devoes, 1.78½ taels (\$1.20); Russian Anchor Chop, 1.72½ taels (\$1.16), and bulk oil in 2 tins, 1.64½ taels (\$1.10), and loose, 1.27½ taels (85c.); Sumatra, no quotations.

Foreign Coal Markets.

Several new charters were booked from the United States this week. The rate from Baltimore to Mediterranean ports was fixed at 16s. 6d. (\$3.96), while to Palermo, Italy, direct 15s. (\$3.60) was taken.

Messrs. Hull, Blyth & Co., of London and Cardiff, report under date of February 16th that the plague scare at Cardiff has practically died out, and tonnage has been arriving more freely. Colliery stems are now full for prompt loading. Prices for large coal have advanced, though smalls are a trifle weaker. Quotations are: Best Welsh steam coal, \$4.44@4.56; seconds, \$4.32; third, \$4.14; dry coals, \$3.72@3.96; best Monmouthshire, \$4.08@4.20; seconds, \$3.84@3.96; best small steam coal, \$1.80@1.92; seconds, \$1.68; other sorts, \$1.20.

These prices for Cardiff coals are all f. o. b. Cardiff, Penarth and Barry, while those for Monmouthshire coals are all f. o. b. Newport, exclusive of wharfage, and are for cash in 30 days less 2½% discount.

Tonnage has been offering more freely, and the freight market is somewhat weaker. Some rates noted are, from Cardiff to Marseilles, \$1.65; Genoa, \$1.86; Naples, \$1.92; Port Said, \$2.10; Singapore, \$3.96; St. Vincent, \$1.74; Buenos Aires, \$3.12; Rio Janeiro, \$3.60.

SLATE TRADE REVIEW.

New York. March 1.

The list of prices per square for No. 1 slate standard brand f. o. b. at quarries in car-load lots, is given below:

Size, inches	Mason or Br'n. of ville.	Bangor.	Bangor Ribbon.	Alb'n. of Jackson Bangor.	Chap'n Key's ne	Béach Bouton.	Sea Gr'n.	Unf'd g. Green.	Red.
24 x 14	6.50	3.50	3.00	3.00	5.10	3.00	3.75	.....	.....
24 x 12	6.00	3.50	3.00	3.00	3.80	5.25	3.00	3.75	.....
22 x 12	6.00	3.50	3.25	3.00	.....	5.25	3.00	3.75	.....
22 x 11	6.50	3.75	3.25	3.00	4.00	5.25	3.00	4.00	.....
20 x 12	6.90	3.75	.....	3.00	.....	5.25	3.00	3.75	.....
20 x 11	6.80	.....	.....	3.25	.....	5.25	3.00	.....	.....
20 x 10	6.80	4.25	3.50	3.25	4.00	5.35	3.00	4.25	10.50
18 x 12	6.80	3.75	.....	3.00	.....	5.25	3.00	3.50	.....
18 x 11	7.00	.....	.....	.....	.....	.....	3.00	3.75	.....
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	3.00	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	3.00	4.25	10.50
16 x 12	6.80	3.75	.....	3.00	.....	.....	2.90	3.50	.....
16 x 10	7.00	4.00	3.50	3.25	4.00	5.25	2.90	4.00	10.50
16 x 9	7.00	4.25	.....	3.25	4.00	5.35	2.90	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.90	4.25	10.50
14 x 10	6.80	3.75	3.25	3.00	.....	5.25	2.70	3.75	10.50
14 x 9	6.50	.....	.....	.....	.....	.....	2.70	3.75	10.50
14 x 8	6.80	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75	.....	.....	.....	.....	.....	2.50	3.25	.....
12 x 9	5.60	.....	.....	.....	.....	.....	2.50	3.25	.....
12 x 8	5.50	3.50	.....	2.85	.....	4.85	2.50	3.50	9.00
12 x 7	5.00	3.25	.....	2.85	3.25	4.85	2.00	3.50	9.00
12 x 6	4.80	3.25	.....	2.85	3.25	4.75	2.00	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof

There is nothing new to report; most quarries

are shut down, owing to the wintry weather, while sales agents are preparing their fields for the spring and summer trade. Prices are nominally unchanged. Export business is moderate.

IRON MARKET REVIEW.

NEW YORK, Mar. 1, 1901.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending				From Jan., '00.	From Jan., '01.
	Mar. 2, 1900.		Mar. 1, 1901.			
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
An'racite & Coke.	261	291,825	210	270,550	2,527,543	2,202,090
Charcoal.	32	8,125	31	8,125	69,917	65,898
Totals..	296	299,950	241	278,675	2,597,460	2,268,988

The big consolidation is now practically sized up, but there is still much difference of opinion as to its future effect on the iron markets.

At present business is very active. Sales of pig iron have been large, including both foundry and merchant steel pig. The demand for bars, plates and merchant steel is good, while structural steel is called for in large quantities.

The rail mills report that they have now on hand orders for about 1,750,000 tons of steel rails. Not much more business in standard rails is looked for just now, but a number of orders for girder rails are expected in the next month or two.

Birmingham, Ala. Feb. 25.

(From Our Special Correspondent.)

The Alabama pig iron market took on a decided change for the better during the past week. The quotations improved and an advance from 25@50c. on the ton and there were some sales of extraordinary size made. The sales were in the domestic market and shipment thereon will begin in the near future. Some of the furnaces during the past month sold two months' make. Basic iron, for steel making, seems to be in demand, though foundry grades are not forgotten. The sales made during the past week were to parties in the North. The local market is not dull, considerable activity being noted in the various shops, foundries and other plants employing pig iron in their daily operation.

During the past week there was considerable controversy aroused in Birmingham over a statement made that consumers in the district could not purchase pig iron cheaper than purchasers at a distance, though the latter had freight to consider. The controversy started in efforts to prevent the Hardie-Tynes Foundry and Machine Company from removing from the city, their big plant being destroyed by fire a few weeks ago and an offer having been made to them to rebuild in Memphis, Tenn. The statement was made that this firm could purchase pig iron in Birmingham and have it delivered in Memphis as cheaply as it could be purchased right here. This statement was denied with considerable force and figures were shown by the manufacturers to the effect that the freight was added in every transaction made heretofore. The production in Alabama has recently been increased by Gadsden Furnace going into blast.

At Ensley, 5 out of the 10 open-hearth furnaces at the big steel plant are in operation and the output is excellent. The steel wire and rod mill of the Alabama Steel and Wire Company is busy and some big shipments are being made. The steel foundry and plow factory are both doing their quota of work and are requiring no small amount of steel.

The advance in pig iron quotations announced on Thursday was not unexpected in this district. There were indications of an increasing demand a week ago and the improvement in the market conditions were noticed. The following figures are now given as to the pig iron quotations: No. 1 foundry, \$11.50@12; No. 2 foundry, \$11@11.50; No. 3 foundry, \$10.25@10.75; No. 4 foundry, \$10@10.50; gray forge, \$9.50@10; No. 1 soft, \$11.50@12; No. 2 soft, \$10.75@11.50.

There is talk of another pipe factory being constructed at North Birmingham, five miles from Birmingham proper. Work commences within the next week or two on the pressed steel car works of the Southern Car and Foundry Company at Ensley. The company is working the plants at Gadsden and Anniston on almost full time. On March 4th work will be resumed in the Memphis works, one of the railroads in that locality giving an order for 500 cars in consideration that the plant shall not be removed from the district.

Cleveland, O. Feb. 27.

(From Our Special Correspondent.)

Iron Ore.—The Ore Association is still waiting on the market. Prices for the season will not be fixed for several weeks, as it said that conditions in the pig iron trade will not be sufficiently developed before that time to warrant the establishment of prices. The demand for ore is growing steadily as the sales of pig iron increase in size and number. The producers hope by waiting for a while to receive a better value for their product. The vessel men are talking some of season contract carrying freights, but have gone no further than to admit that these will range about 75c. a ton.

Pig Iron.—The sharp demand for Bessemer iron and the heavy sales of late brought the price up this week to \$14.50, Valley furnace. The furnaces are pretty well sold up for March and April, making prompt deliveries almost impossible. Foundry irons also have been marked up, as No. 1 is selling at \$14.25, Valley furnace, and No. 2 at \$13.75. The sales have been heavy enough to demand that all idle furnaces be blown in at once. The trade appears to be better now than it has been in months.

Finished Material.—The big demand for bars and the short supply of them resulted in a stiffer market this week. One Pittsburg mill is asking 1.40c., while other mills are holding for 1.35c. strong. The rail trade is also booming, several large sales to steam lines having been made this week. The pool price, \$26, prevails. The American Ship Building Company and the Lake Shore Railroad have come upon the market asking for structural material in large quantities and the building contractors are doing the same thing, resulting in a big demand for beams and channels. Angles are also in good demand. Tonnage aggregating upwards of 15,000 tons is now in sight and will be placed in the near future. The prices hold firm, no effort being made to shade them. Beams and channels are bringing 1.50, Pittsburg, and angles are still quoted at 1.40, Pittsburg. Some ship orders which are in prospect have occasioned a demand for large quantities of plate, which will be ordered in a short time. The tonnage in sight amounts to about 10,000 tons. The price has not changed from 1.40, Pittsburg. While the spring business is opening up, the amount of it has not been definitely established as yet, leaving some uncertainty as to the future. All prospects are, however, that the business will be very large.

Old Irons.—The scrap market is stronger than it has been and the demand for material is very heavy. Larger sales have been made during the week than at any time in the past four months. The tendency now is to stability in prices. The following might be said to represent the market: Heavy steel, \$13.50; cast iron borings, \$5.75; old car wheels, \$17.50; stove plate, \$10; cast scrap, \$13; No. 1 wrought, \$15.

Philadelphia, Pa. Feb. 28.

(From Our Special Correspondent.)

Pig Iron.—The quotations for certain special brands of No. 1 X and No. 2 X grades of foundry have been nominally advanced 25c., but inquiry to-day developed the interesting fact that there is very little if any of these particular grades of iron to be had—at least makers say their regular trade will probably absorb all they will make. Besides this, since the final announcement of the great deal there is a little more backbone among Pennsylvania pig iron makers. The forge iron makers also have just come in sight of a lot of new business which, even if they do not secure it right away, will be ready for them when they want it. Then there are certain movements in progress for basic and Bessemer iron that may open up suddenly and have a strong influence on the general iron trade. Quotations are fluctuating a little, but the following are as near right as any: No. 1 X foundry, \$16@16.25; No. 2 X foundry, \$15.25@16; No. 2 plain, \$15; forge, best, \$14.50; common, \$14; basic, \$14.50.

Merchant Bars.—Agents representing mills in different parts of the State are quite optimistic about bar iron business for the second quarter of the year, but they say there will be no attempt made to put up prices. There is a likelihood that more steel bars than usual will be ordered and prices are quoted as high as 1.60c. Iron bars, 1.40@1.50c. A good retail business is being done.

Sheets.—The strength of the sheet iron situation continues and some of it is perhaps due to the policy pointed out by two or three manufacturers that the larger users are accumulating stocks or trying to. Common sheets are particularly active on a basis of 2.00@2.05c. for No. 10. All mills are busy up to latest report.

Merchant Steel.—Some shading has to be chronicled this week. The big buyers are standing back, but the market is strong notwithstanding.

Skelp.—More skelp orders; some of them of magnitude have been booked. Business is good at all Eastern skelp mills.

Plates.—The plate mills people repeat what they have been saying concerning the probabilities of another flow of orders. The assurance of a large run of early spring orders has hardened prices and this has moved some buyers to get under cover before the advance comes. Quarter-inch plate is 1.60c.; universals, 1.55c.; flange, 1.65c.; charcoal plates, C. H. No. 7, 2.25c.; flange, 2.75c., and fire box, 3¼c.

Structural Material.—The talk to-day is that an advance of \$2 is close at hand and the main reason is that what amounts to options has been allowed on a good deal of business which must be closed or the option lost next week. Builders who will need material in lots of 50 to 200 tons have been taking things easy and will have to pay for their slowness. The rumor is around that two big railway systems are about

ready to submit specifications. Angles are quoted for quick delivery at 1.75; beams and channels (to suit mills), 1.65@1.70c.

Steel Rails.—A few days will, it is given out, develop something interesting in steel rails. Brokers in touch with rail makers attach little importance to the talk of a \$2 advance, though they say it could be made without trouble and sustained. The girder business will soon be quite a feature of the steel rail output.

Scrap.—The larger buyers who made quite a stir for a few weeks appear to have covered their requirements, but still there is no trouble in selling good heavy stuff, such as railroad scrap, at \$18.50. Some lots were snapped up at this figure. Old iron rails brought \$19.50 and heavy steel scrap \$16. Other kinds are not active, but dealers will not sell at less than former quotations of \$10 for wrought turnings and \$12 for No. 2 light scrap.

Pittsburg. Feb. 27.
(From Our Special Correspondent.)

Bessemer pig iron prices continue to advance, the latest sales being an increase of 75c. a ton during the week and indications point to a still higher asking price. There is but little to be had even at the advanced rate and the sales this week did not exceed 1,000 tons. There is also a scarcity of foundry and forge iron and prices have gone up. No. 2 foundry is 25c. and gray forge 75c. higher than last week. The steel market is strong and considerable new business is being offered, but the mills all seem to be busy on old contracts. It is said that the Carnegie Company and Jones & Laughlin, the Bessemer steel billet mills of this district, are out of the market for the present. The price offered is \$21.75, or \$2 a ton above the pool price. Steel bars are firm at the advanced price, but plate prices remain unchanged. The long expected advance in prices of black and galvanized sheets has been made at last. At a meeting of the executive committee of the American Sheet Steel Company, held in New York on Monday, it was decided to advance prices \$4 a ton, taking effect at once. Notices of the increase were received in Pittsburg yesterday. The price is increased 20c. per 100 lbs. The price of galvanized sheets is advanced from 70, 10 and 5% off to 70 and 10. Wood's patent planished iron is increased 20c. per 100 lbs. on all grades. These quotations make the market price, as mills outside of the combination are sold up and cannot take more orders at any price.

The officials and a committee of the Amalgamated Association of Iron, Steel and Tin Workers held a two days' conference with representatives of the Republic Iron and Steel Company during the week in an endeavor to arrive at some plan to prevent the annual stoppage of the mills while negotiations were pending on the new wage scale. Steps were taken toward the adoption of a continuous scale and either side must give 90 days' notice if any changes are desired. If an agreement cannot be reached in that time the mills are to continue in operation pending a settlement by a board of arbitration. A number of suggestions were made along these lines. The conference had no power to act and all suggestions were printed and copies sent to each lodge of the Amalgamated Association, where the plans will be discussed, and final action will be taken at the annual convention of the association at Milwaukee in May. The national officers of the workers' organization are in favor of the project and there seems to be no doubt but that there will be no more annual suspensions of the mills except for necessary repairs or improvements.

Pig Iron.—As indicated last week, pig iron prices have gone higher, Bessemer advancing to \$14.75, Valley furnaces, or \$15.50, Pittsburg. Foundry No. 2 has advanced 25c. to \$14.50@14.75, Pittsburg, and gray forge has increased 75c. a ton, being now quoted at \$14@14.25, Pittsburg. About 2,000 tons of foundry and 1,000 tons of forge iron were sold this week. The demand for forge iron is strong, but there is but little to be had.

Steel.—The market is unusually strong this week and while there are a number of inquiries for Bessemer steel billets at \$2 above the pool price of \$19.75, Pittsburg, no sales were made. Steel bars are in demand and are quoted this week at 1.35@1.40c. No change has been made in the price of tank plate.

Sheets.—An advance amounting to \$4 a ton was made on Monday by the American Sheet Steel Company. This fixes the price of No. 28 gauge at 3.15c. for car-load lots and 3.20c. for less than car-load lots. The new price of galvanized sheets is 70 and 10% off, with no freight allowance.

Ferro-manganese.—The price of 80% domestic continues, but the demand is stronger.

New York. Mar. 1.

Pig Iron.—The local market shows more activity, though prices are no stronger. We quote for Northern iron, tidewater delivery: No. 1 X foundry, \$16.25@17.25; No. 2 X, \$15.50@16; No. 2 plain, \$14.75@15.25; gray forge, \$14.50@14.75. For

Southern irons on dock, New York, No. 1 foundry, \$15.25@15.75; No. 2, \$14.50@15; No. 3, \$14.25@14.50; No. 4, \$13.50@14; No. 1 soft, \$15.25@15.75; No. 2, \$14.50@15.

Bar Iron and Steel.—Demand is pretty good. Steel bars are higher. We continue to quote common bars at 1.35c. for large lots on dock; refined bars, 1.45c.; soft steel bars, 1.50c.

Plates.—Prices have not been advanced yet. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 1.65c.; flange, 1.75c.; marine, 1.85c.; firebox, 1.85c.; universal, 1.60c.

Steel Rails and Rail Fastenings.—There is little change in the market and few transactions of note. Standard sections are still quoted at \$26 at Eastern mills; light rails at \$26@30, according to weight. Spikes are 1.55c.; splice bars, 1.40c.; bolts, 2.10@2.25c.

Structural Materials.—With the probability of higher prices, demand shows improvement. We continue to quote at tidewater: Beams, 1.65c.; channels, 1.65c.; angles, 1.30c.; tees, 1.70c.; zees, 1.65c.

METAL MARKET.

New York. Mar. 1.

Gold and Silver.

Gold and Silver Exports and Imports At all United States ports in January and year.

Metal.	January.		Year.	
	1900.	1901.	1900.	1901.
GOLD.				
Exports	\$5,691,290	\$8,221,159	\$5,691,290	\$8,221,159
Imports	1,922,692	4,161,012	1,922,692	4,161,012
EXCESS SILVER.				
Exports	E. \$3,698,598	E. \$4,060,147	E. \$3,698,598	E. \$4,060,147
Imports	4,599,199	4,790,239	4,599,199	4,790,239
Imports	2,174,573	3,169,034	2,174,573	3,169,034
EXCESS	E. \$2,424,626	E. \$1,621,205	E. \$2,424,626	E. \$1,621,205

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York For the week ending February 28th, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898.

Period.	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$ 1,500	\$ 64,007	\$1,070,211	\$131,221	E. \$876,483
1901.	9,021,340	5,842,929	6,081,545	662,122	E. 13,881,334
1900.	2,128,638	939,275	6,504,149	622,311	E. 7,071,422
1899.	563,035	3,701,403	5,226,590	536,184	E. 1,553,038
1898.	3,429,886	4,690,581	7,491,635	477,740	E. 6,353,097

Exports of gold were very small; imports were chiefly from the West Indies. The silver exported went chiefly to London; that imported was from the West Indies and Mexico.

The United States Assay Office in New York reports the total receipts of silver at 42,000 oz. for the week. This makes a total of 695,000 oz. from January 1st.

Average Prices of Silver per oz. Troy.

Month.	1901.		1900.		1899.	
	London Pence.	N. Y. Cents.	London Pence.	N. Y. Cents.	London Pence.	N. Y. Cents.
January...	28.97	63.12	27.30	59.30	27.42	59.36
February...	28.13	61.06	27.49	59.76	27.44	59.42
March.....			27.59	59.81	27.48	59.64
April.....			27.41	59.59	27.65	60.10
May.....			27.56	59.96	28.15	61.23
June.....			27.81	60.42	27.77	60.43
July.....			28.23	61.25	27.71	60.26
August.....			28.13	61.14	27.62	60.00
September.....			28.88	62.63	27.15	58.89
October.....			29.58	63.83	26.70	57.98
November.....			29.66	64.04	27.02	58.87
December.....			29.68	64.14	27.21	58.99
Year.....			28.17	61.41	27.44	59.58

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York.

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1901.	1900.	1901.	1900.	1901.	1900.	1901.	1900.
Jan.....	16.2	15.58	24.51	27.07	4.35	4.63	4.13	4.65
Feb.....	16.38	15.78	26.03	30.58	4.35	4.675	4.01	4.64
March.....		16.29		32.90		4.675		4.60
April.....		16.76		30.90		4.675		4.71
May.....		16.34		29.37		4.181		4.53
June.....		15.75		30.50		3.901		4.29
July.....		15.97		33.10		4.630		4.28
Aug.....		16.35		31.28		4.250		4.17
Sept.....		16.44		29.42		4.350		4.11
October.....		16.37		28.54		4.350		4.15
Nov.....		16.40		28.25		4.350		4.29
Dec.....		16.31		26.94		4.350		4.25
Year.....		16.19		29.90		4.37		4.30

The prices given in the table for copper are the averages for electrolytic copper. The average price for Lake copper for the year 1900 was 16.35c.; for the month of January, 1901, it was 16.70c.; for February, 16.9c.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars.....	\$.49	51
Peruvian soles and Chilean pesos.....	.43½	.46¼
Victoria sovereigns.....	4.85	4.88
Twenty francs.....	3.84	3.88
Twenty marks.....	4.73	4.78
Spanish 25 pesetas.....	4.78	4.82

Financial Notes of the Week.

The financing of the big steel combination is the question attracting most attention just now.

Imports and Exports of Metals.

Port.	Week, Feb. 27.		Year 1901.	
	Expts.	Impts.	Expts.	Impts.
New York.				
(N. Y. Metal Exchange.)				
Aluminum.....long tons	12	10	28	25
Antimony ore.....			19	213
Chromium ore.....			50	
Copper, fine.....	895	798	12,665	2,661
" matte.....			371	22
" ore.....			3,720	10,030
" ash.....				
Iron ore.....				
" pig, bar, rod.....	255		4,214	297
" pipe.....	531		3,759	
" plates, sheets.....			149	
Lead.....	1,700	1,450	12,373	8,345
" ore.....				
" dross.....				
Manganese ore.....				1,110
Metals, old, scrap.....	112	115	569	412
Composition.....	627		2,986	
Nails.....	279		1,450	
Nickel.....	31		301	22
" ore, matte.....				3,600
Railroad material.....	176	75	5,621	390
" rails, old.....				
" steel bars, plates.....	2,758	578	15,420	1,868
" rails.....	2,425		11,120	
" wire.....	673		5,353	
Tin.....		705	230	4,272
" and black plates.....		1,426		4,983
" dross.....				
Zinc.....	50		57	50
" dross.....				123
" ashes, skim.....	25		112	
" ore.....			1,959	
Baltimore.				
(Special Correspondence.)				
Chromium ore.....long tons				
Copper, fine.....	843	59	3,805	812
Iron pig, bar, etc.....		272	1,145	1,790
" ore.....		4,246		39,850
Manganese ore.....				3,250
Nails.....	29		306	
Pipe, iron & steel.....	177		582	
Spiegeleisen.....				125
Steel, bars, etc.....	1,196		7,904	67
" wire.....			663	24
" rails.....	2,240		18,190	
Tin.....		75		125
" and black plates.....				97
Zinc.....				
Philadelphia.				
Copper, fine.....long tons				
Iron, pig.....			107	1,140
" ore.....		4,120		31,810
" pipe.....			17	
Metals, old.....			11	
" composition.....			7	
Nails.....			26	
Railroad material.....			21	
" steel bars, etc.....			3,187	
" rails.....			339	
" wire.....			89	
Tin.....				115
" and black plates.....		2		4
Zinc.....				
" ore.....			2,061	
" dross.....	29		77	
" ash.....			6	
Total United States.				
Articles.				
Year, 1900.				
Year, 1899.				
Articles.	Expts.	Impts.	Expts.	Impts.
Antimony.....long tons	11	1,622	8	1,411
" ore.....		2,695		1,778
Copper, in all forms.....	159,564	85,042	118,914	63,745
Iron, pig & bar.....	300,321	71,357	240,211	60,184
" ore.....	51,460	897,792	40,665	674,082
Iron & steel plates.....	55,015	5,143	56,980	7,044
Iron & steel rails.....	361,619	1,448	277,714	2,134
Lead, in all forms.....	78,041	1,848	116,387	2,363
Manganese ore.....	88,934	100,153	67,667	86,106
" and oxide.....	3	256,252	25	188,349
Nickel " & matte.....	2,621	5,393	2,234	4,071
Nails, cut.....	11,163		9,974	
" wire.....	27,404		33,517	
Quicksilver.....	347		564	
Steel, billets.....				
" rods, etc.....	100,548	33,901	72,913	30,565
Tin.....	496	30,834	446	31,507
" & black plates.....	757	60,396	302	58,915
Zinc.....	20,030	890	6,046	1,333
" ore.....	37,555		24,197	

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, 3c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. per lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c. per lb. Spelter or zinc, 1½c. per lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

There is some apprehension that money may be scarce for the time, but this seems hardly justified. What effect it may have on general business is really a more important question and a harder one to answer.

While there is no special feature in the silver situation, the undertone of the market is regarded as good, and all offerings are absorbed at current rates. Forward silver is in request at a small advance over spot.

The statement of the United States Treasury on Wednesday, February 27th, shows balances in excess of outstanding certificates as below, compared with the corresponding day last week:

	Feb. 19.	Feb. 27.	Changes
Gold.....	\$76,246,342	\$79,404,883	I. \$3,158,541
Silver.....	29,059,258	19,187,761	D. 9,871,497
Legal tenders.....	13,587,922	12,335,673	D. 1,252,249
Treas. notes, etc..	131,693	107,086	D. 24,607
Totals.....	\$110,103,455	\$111,736,223	I. \$1,632,768

Treasury deposits with national banks amounted to \$98,072,041, showing a decrease of \$291,290, as compared with the corresponding day last week.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending February 23d, gives the following totals, comparison being made with the corresponding week in 1900 and 1899:

	1899.	1900.	1901.
Loans and discounts.....	\$771,574,900	\$745,435,100	\$901,800,900
Deposits.....	91,573,800	826,876,000	1,009,186,900
Circulation.....	14,516,300	17,971,500	31,225,000
Reserve:			
Specie.....	202,652,300	162,684,900	192,953,300
Legal tenders.....	55,320,000	63,710,300	73,890,100
Total reserve.....	\$257,972,300	\$226,395,200	\$266,843,400
Legal requirements.....	227,643,400	206,716,656	252,296,725
Balance, surplus....	\$30,328,900	\$19,678,550	\$14,546,675

Changes for the week, this year, were increases of \$66,400 in circulation, \$1,418,800 in legal tenders, and \$1,694,225 in surplus reserve; decreases of \$2,822,100 in loans and discounts, \$2,142,100 in deposits, and \$260,100 in specie.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding date last year:

Banks.	1900.		1901.	
	Gold.	Silver.	Gold.	Silver.
N.Y. Ass'n.....	\$162,684,900	.....	\$192,553,300	.....
England.....	178,644,885	.....	175,497,870	.....
France.....	384,093,615	\$228,738,380	477,346,330	\$219,550,750
Germany.....	144,865,000	74,625,000	146,750,000	75,595,000
Spain.....	68,015,000	74,170,000	70,005,000	82,345,000
Neth'ld's.....	26,170,000	30,020,000	25,165,000	23,475,000
Belgium.....	14,555,000	7,275,000	14,475,000	7,240,000
Italy.....	77,000,000	7,765,000	77,065,000	9,295,000
Russia.....	416,820,000	29,345,000	365,120,000	32,875,000

The returns of the Associated Banks of New York are of date February 23d and the others are of date February 22d, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold. The Bank of England reports gold only.

Imports of specie by water at San Francisco in January included \$2,713,087 gold (\$2,666,060 coin and \$47,027 bullion), and \$344,030 silver (\$53,546 coin and \$290,484 bullion). These imports were from the following countries: Mexico, \$380,166; British Columbia, \$4,760; Australia, \$973,300; Japan, \$1,649,200; Central America, \$9,011; China, \$39,840; French Oceania, \$840; total, \$3,057,117.

Indian exchange has been strong, and Council bills sold in London at 15.97d. per rupee. The supply of bills has not been sufficient, and at least £100,000 in gold has been ordered shipped from Australia to India for London account.

Shipments of silver from London to the East for the year up to February 14th, 1901, are reported by Messrs. Pixley & Abell's circular as follows:

	1900.	1901.	Changes
India.....	£697,727	£1,184,500	I. £486,773
China.....	71,229	71,875	I. 646
The Straits.....	3,300	48,976	I. 45,676
Totals.....	£772,256	£1,305,351	I. £533,095

Arrivals for the week, this year, were £251,000 in bar silver from New York, £8,000 from the West Indies, and £2,000 from Australia; total, £261,000. Shipments were £162,000 in bar silver to Bombay, £48,976 to the Straits, £60,000 to Calcutta, £45,000 to Sydney, and £20,000 to China; total, £335,976.

Other Metals.

Daily Prices of Metals in New York.

Feb.-Mar.	Sterling Exchange.	Silver.		Copper.				Spelter.		
		Fine oz. (ts.)	London.	Lake, cts. @ lb.	Electrolytic @ lb.	London @ lb.	Tin, cts. @ lb.	Lead cts. @ lb.	N. Y. cts. @ lb.	St. L. cts. @ lb.
23	4.87	61 3/4	23 1/2	16 1/2	16.40	.....	27	4.32 1/2	4.00	3.82 1/2
25	4.87	61 1/4	23 1/4	16 1/2	16.40	70 1/2	27	4.32 1/2	4.00	3.82 1/2
26	4.87	61	23 1/2	16 1/2	16.40	70 1/2	26 1/2	4.32 1/2	4.00	3.82 1/2
27	4.87	60 3/4	23 1/2	16 1/2	16.40	70 1/2	26 1/2	4.32 1/2	4.00	3.82 1/2
28	4.87 1/2	61 1/2	23 1/2	16 1/2	16.40	70 1/2	26 1/2	4.32 1/2	4.00	3.82 1/2
1	4.87 1/2	61 1/2	23 1/2	16 1/2	16.40	70 1/2	26 1/2	4.32 1/2	4.00	3.85

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market continues firm. Consumption in this country is excellent, while in Europe it has fallen off somewhat. Consumers generally are not well covered ahead. The orders from Europe, which are not abundant, are mainly for early shipment, while on this side there has of late been a large demand for copper for quick shipment. We quote Lake copper at 16 1/2@17c.; electrolytic copper in cakes, wirebars and ingots at 16.40@16.50c.; in cathodes at 16.15@16 1/4c.; and casting copper at 16 1/2@16 1/4c.

The market for standard copper in London has fluctuated but little. It closed last week at £70 15s. for spot, £71 2s. 6d. for three months, and opened on Monday 2s. 6d. higher. It went off a little on Tuesday and was quoted on Wednesday at £70 8s. 9d. for spot, £71 for three months. It closes at £70 13s. 9d. for spot and £71 6s. 3d. for three months. Statistics for the second half of February shows an increase of 700 tons.

Refined and manufactured sorts we quote: English tough, £75@£75 10s.; best selected, £77 15s.@£78 5s.; strong sheets, £86; India sheets, £83; yellow metal, 6 1/2@7d.

Tin.—The market has been dull and weakish and business was of small volume. Early in the week the London market was quite firm, but toward the middle of the week it turned, which had a depressing effect on buyers here. At the close we quote spot tin at 26 1/2c., futures at 26c.

The London market, which closed last week at £122 15s. for spot, £117 5s. for three months, opened at £121 5s. for spot, £116 10s. for three months. On Tuesday it advanced 5s. and on Wednesday a further 10s. Thursday, however, it declined to £120 17s. 6d. for spot and £115 7s. 6d. for three months. It closes at £121 7s. 6d. for spot, £115 15s. for three months. Statistics for the month of February show a decrease of 800 tons.

Lead.—The market continues active and the prospects are that the demand will be very heavy during the spring months, as a good many building operations are under way. We quote St. Louis 4.25@4.32 1/2c., New York at 4.32 1/2@4.37 1/2c.

The foreign market, which early in the week was down to £14, has reacted and is quoted at £14 5s.@£14 7s. 6d. for Spanish lead; English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is firm and fairly active. Missouri brands are salable at 4.22 1/2c. Desilverized lead is held at 4.32 1/2c.

Spelter.—Consumption is very good, both for galvanizing and brass purposes, and much business is reported to have been done both for prompt and future shipment. We quote St. Louis, 3.82 1/2@3.85, New York, 4c.

The foreign market is dull and quiet, good ordinaries being quoted at £17 12s. 6d., specials 5s. higher.

Antimony.—A good business is reported at last prices: Cookson's, 10c.; Hallett's 9@9 1/4c.; Hungarian, 8 1/2@8 3/4c.; Italian at 8 3/4c.; U. S. Star, 8 1/2@9c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of orders.

Platinum.—Consumption continues good and prices are strong. For ingot platinum in large quantities \$18.20 per Troy oz. is quoted in New York. In London a recent quotation gives 75s. per ounce, unmanufactured, and 77s. 6d.@80s. for crucibles, etc. This is very nearly on a parity with New York prices.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 2c. per gram.

Quicksilver.—While \$51 is still nominally quoted in New York, there has been some selling at \$48.75@50 per flask for large lots; while \$50@51 is quoted for small orders. San Francisco quotations are \$47.50@48 for domestic orders, \$45@

\$43.50 for export. The London price is £9 2s. 6d. per flask.

Quicksilver receipts at San Francisco in January were 1,901 flasks, against 1,985 in 1900. Shipments by water for the month were: Mexico, 301 flasks; Central America, 102; British Columbia, 4; New York, 35; total, 442 flasks, against 681 in 1900. This does not include shipments made overland or direct from the mines.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.	Per lb.
No. 1, 99s ingots.....	33@37c.	Ferro-titanium (2%)... \$1.00
No. 2, 90s ingots....	31@34c.	Ferro tungsten (3%)... 32c.
Roller sheets.....	42c up	Magnesium..... \$2.75@3
Alum-bronze.....	20@23c.	Manganese (over 99%)... \$1.00
Nickel-alum.....	33@39c.	Manganese Cop (20% Mn)... 32c.
Bismuth.....	\$2.25	Manganese Cop (30% Mn)... 38c.
Chromium (over 99%)... Low		Molybdenum (Best)... \$1.45
Copper red oxide.....	50c.	Phosphorus..... 50c.
Ferro-Molybdenum (50%)... \$1.00		American..... 70c.
Ferro-Titanium (10%)... 90c.		Tungsten (Best)... 78c.

Variations in prices depend chiefly on the size of the order.

LATE NEWS

A report comes from Philadelphia that the Bethlehem, the Cambria and the Pennsylvania steel companies are arranging to unite their interests for mutual protection, in view of the new consolidation. The report reaches us too late for verification, and is given for what it is worth.

A dispatch from Scranton, Pa., February 28th, says: "Another anthracite coal deal was consummated to-day by the purchase by the Delaware & Hudson Company of the Laffin, Langcliffe, Greenwood and Brooks coal companies. The papers were signed in New York this afternoon. Four collieries and three washeries are included in the deal, and the consideration is \$1,500,000. The total output of the collieries is 650,000 tons per annum. About 1,700 men are employed. The purchased companies were owned by Reese G. Brooks, T. H. Dale and W. J. Lewis."

A dispatch from Northfield, Vt., February 28th, says: "The Union Slate & Real Estate Company of this place, having increased its capital stock to \$50,000, to-day absorbed the property of the Northfield Slate Company, with a capital of \$10,000, and is negotiating for the purchase of the Dole Brill quarry, which represents an investment of \$25,000. It is claimed that this consolidation is projected to bring about a reduction in expenses. This is considered to promise good business here during the coming summer and the prospect is heightened by the fact that a vein of first quality slate, 75 by 200 ft. in area, has just been discovered."

(Special Report of Rogers, Brown & Co.)

Buffalo, N. Y., February 27th.—During the past 10 days there has been a surprising jump from stagnation to great activity. Almost every consumer seems to have come to the conclusion that he ought to buy iron. The furnace companies are meeting this demand by booking at very low figures; indeed, at prices which show little, if any, profit to them. In this way they are building up a strong foundation in their order books with the intention, as soon as this is well laid, of calling for higher figures on the later business. The past week has shown a heavy tonnage in sales, both for prompt delivery and contracts running six months ahead. Prices of foundry iron are accordingly much firmer and some lines, such as Bessemer and minor specialties, have shown an advance. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$14.50; No. 2, \$14; Southern soft, No. 1, \$15.25; No. 2, \$15; Lake Superior charcoal, \$17; coke malleable, \$14.

Ferry County—Washington.

(From Our Special Correspondent.)

Drummers.—This claim at Curlew shows a big outcrop. The ledge has been crosscut 36 ft. on the 75-ft. level. The ore is said to carry good values in gold, silver and copper, with a little lead. Work goes on at the 200-ft. level. Eight men are employed. The same company has 4 men prospecting the Velvet Claim at Nelson.

Park & Central.—Work in this mine is abandoned for the winter on account of inability to get in provisions. The tunnel has been run, in all, 600 ft., and a drift runs 65 ft. on a stringer, showing silver, lead and gold.

Stevens County—Washington.

(From Our Special Correspondent.)

Oregon.—This group of claims, on Myers Creek, has been sold to M. A. Smalley, of Ohio, for a mining company organized in that State. The claim shows a 5-ft. vein developed by open cuts and a shaft down 23 ft. The ore carries silver, lead, gold and copper, with assays running from \$12 to \$313. The vein is a contact between porphyry and slate.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 296.)

New York. Mar. 1.

Cyanide of Potash.—The falling off in demand abroad and subsequent overproduction has resulted in keen competition in Europe. Consequently prices in America have been very unsteady. In New York sales are reported at 25¢ per lb.; and it is understood that large consumers can shade these figures. Concerning the American demand it may be said to be increasing.

The cessation in the consumption of cyanide is reflected in the yellow prussiate of potash trade. Estimates place the loss of trade in South Africa alone at 8,000,000 to 10,000,000 lbs. of yellow prussiate of potash annually. At the present time quotations in New York are 14¢@15¢ per lb., while at the beginning of the Transvaal war sales were made at 19¢@20¢.

Heavy chemicals are weaker in price, as the larger consumers are under contract. There is some export demand for bicarb. soda and caustic soda for Central and South America.

We quote per 100 lbs. as follows: Domestic soda ash in bulk is worth 2¼¢ per 100 lbs. less than quotations below:

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	
Alkali, 58%.	70@80		85@87½
48%.	80@85		
Caustic Soda, high test.	\$1.80@1.85		1.95@1.87½
powd., 60%.		2.75	
70@74%.		2.85	
88%.		3.25	3.75@4.00
Sol Soda, 50.		60	67½
"conc. 1.12½@1.75			1.75
Bicarb. Soda, 1.12½@1.25			1.37½@1.75
" "extra 3.25@3.50			
Bleach Pdr., Eng. prime.			2.00@2.10
other brands.			1.80@1.95
Chl. Pot. Cryst. powd.	8.00@8.25		9.00@9.25
	8.25@8.50		9.25@9.50

Fluorspar.—There is an improved demand from hydrofluoric acid makers, who use No. 1 white lump fluorspar, which is worth \$14.40 per short ton in New York. When ground, this grade is used by glass, enamels, and kindred manufacturers and sells for \$17.90 per short ton. Other qualities of fluorspar are used largely by steel makers, and these grades are quoted as follows: No. 2 lump, \$13.90 per short ton; No. 2 ground, \$16.50; No. 1 gravel, \$13.40, and No. 2 gravel, \$12.40.

Emery.—New York imports this week were 1,410 tons emery ore from Smyrna. Turkish ore is worth \$22@30 per long ton, according to quantity and quality, while high-grade Greek is quoted at \$32. Emery flour in kegs is higher at 3¼¢ per lb., while grains are worth 5@5½¢ per pound.

Pumice Stone.—Arrivals are freer, and during the week New York imports were 35 bbls. and 1,335 bags from Messina, Sicily, and 120 casks from Leghorn, Tuscany. Powdered pumice stone sells at \$1.50@2 per 100 lbs., while lump varies from 4@40¢ per lb., as to quality.

Acids are being delivered on contract. The export demand for blue vitriol is fair, while makers are firm in their views. Tartaric is suffering from keen competition, and sellers quote 28¢ per lb. for crystals, and 29¢ for powdered.

Quotations as below are for large lots delivered in New York and vicinity, per 100 lbs. unless otherwise specified.

Acetic, No. 8	\$1.62½	Nitric, 38°	\$3.87½
Blue Vitriol	5.00@5.25	Nitric, 38°	4.12½
Aqua Fortis, 35°	3.62½	Nitric, 40°	4.37
Aqua Fortis, 35°	3.87½	Nitric, 42°	4.75
Aqua Fortis, 40°	4.12½	Oxalic	5.75@6.00
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 15°	1.20	Sulphuric, 66°	1.05
Muriatic, 20°	1.35	" bulk 50° ton	14.00
Muriatic, 22°	1.50		

Brimstone.—Spot stocks are limited and prices firmer. Small sales of best unmixed seconds are reported ex-store at \$25@26 per ton. The steamer "Jupiter" with 5,100 tons brimstone has been abandoned in a leaking condition some distance off the coast of Bermuda. This also has strengthened the market. Shipments of best unmixed seconds are quoted at \$21.25@21.50 per ton, according to position. Best thirds are worth \$2 per ton less. In January Great Britain imported 2,579 long tons of brimstone, as against 2,429 tons last year. The steamer "Bolivia" arrived with 500 tons.

Exports of brimstone in January were 32,594 long tons, against 42,360 tons last year. The shipments to the United States were 3,750 tons best unmixed seconds and 2,900 tons best thirds; total, 6,650 tons, against 13,940 tons in January, 1900, showing a decrease of 7,290 tons in 1901. Stocks in Sicily on February 1st were 245,527 tons, showing a falling off of 31,826 tons, as compared with a year ago.

Pyrites.—The Pennsylvania Salt Manufacturing Company imported 3,721 metric tons Spanish copper pyrites at New York this week. A char-

ter from Huelva, Spain, is noted of 1,772 tons to Charleston, W. Va., at 9s. (\$2.16), sailing in March. Also one of 1,581 tons to New York at the same rate. Trade is good and prices firm. The imports of pyrites into Great Britain in January amounted to 70,322 long tons, against 72,989 tons last year. We quote as follows: Mineral City, Va., lump ore (basis 45%), \$4.90 per long ton, and fines \$4.50. Charlemont, Mass., lump, \$5.50 and fines \$5. Spanish pyrites, 12s. delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46@51½% of sulphur; American from 42@44%.

Fertilizing Chemicals.—Little is doing outside of Southern buying. Quotations are: Sulphate of ammonia, gas liquor, \$2.77½@2.80 per 100 lbs.; blood, high-grade, \$2.30 per unit, f. o. b. Chicago; tankage, high grade, \$2.10 and 10c. per unit, f. o. b. Chicago; Calcutta bonemeal, \$20@24 per ton, as to quality; domestic steam ground bone, \$18@18.50 per ton. Potash salts for contracts placed prior to March 1st, 1901, New York, Boston or Philadelphia shipment are as follows, and thereafter an additional charge of 2@3c. per 100 lbs. will be made: Muriate of potash, 80@85%, \$1.50 per 100 lbs.; muriate of potash, 95%, \$1.83; sulphate of potash, 90%, \$2.08; sulphate of potash, 96%, \$2.11 per 100 lbs.; double manure salt, 48@53%, \$1.09 per 100 lbs.; kainit, 12.4% potash, \$3.80 per ton at port of shipment, and \$9.05 ex-vessel at port of importation; sylvinit, 38@39c. per unit of sulphate of potash; manure salt, 20% actual potash, 62@64c. per 100 lbs.

Nitrate of Soda.—The steamer "Queen Louise" arrived at New York with 19,215 bags. Market is a little firmer, though consumers still hold off large buying, anticipating lower prices. Spot is worth \$1.80@1.82½ per 100 lbs., while shipments are quoted up to \$1.85.

Phosphates.—An interesting charter this week is of the German ship "Reinbek," 2,768 tons, from Tampa to Yokohama, Japan, at 37s. 6d. (\$9). Our trade in the Mikado Kingdom is growing.

In South Carolina the Coosaw Company recently shut down with fully 60,000 tons of rock ready for market. Complaint is made of the charter rates asked by steamers.

Florida and Tennessee miners are doing a fair business at practically unchanged prices.

Phosphates.	Per Ton F. o. b.	C. I. f. Un'd Kingdom or European Ports.	
		Unit.	Long ton.
* Fla. hard rock (77@80%)	\$6.50@7.00	7¼@8d	\$11.70@12.48
* Fla. land pebble (68@73%)	3.85@4.00	6¼@7d	9.10@9.80
* Fla. Peace River (58@63%)	2.50@2.75	6@6¼d	7.20@7.80
† Tenn. rock 78% export.	3.25@3.50	7@7½d	10.92@11.12
† Tenn. 78% domestic.	3.00		
† Tenn. 75%	2.75		
† Tenn. 72%	2.50		
‡ So. Car. rock, crude....	3.75@4.00		7.80
‡ So. Car. rock, dried....	4.50	6¼d	9.24@9.51
Algerian, rock... (63@70%)		7@7½d	7.80@8.40
Algerian, rock... (58@63%)		6¼@7d	

* Fernandina. † Mt. Pleasant. ‡ At mines. § On ves sels, Ashley River.

Liverpool. Feb. 20.

(Special Report of Joseph P. Brunner & Co.)

Soda ash is firm at late rates. Quotations vary according to market, but nearest range for tierces may be called about as follows: Leblanc ash, 48%, £5 15s. @ £6; 53%, £6 2s. 6d. @ £6 7s. 6d. per ton net cash. Ammonia ash, 48%, £4 10s. @ £4 15s.; 58%, £4 15s. @ £5 per ton net cash. Bags, 5s. per ton under price for tierces. Soda crystals are in fairly good request, and for barrels £3 7s. 6d. @ £3 10s. per ton, less 5%, is quoted, or 7s. less for bags, with special quotations for certain favored markets. Caustic soda ash in moderate demand at steady prices: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.; 76%, £11 @ £11 5s. per ton net cash.

Bleaching powder is quiet as regards general export markets, but quotations are nominally unchanged at £7 @ £7 5s. per ton, net cash for hardwood packages with special terms for Continental orders.

Chlorate of potash is inactive at 3% @ 3¼d. per lb. net cash.

Bicarb. soda is selling at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special terms for a few favored markets.

Sulphate of ammonia is quiet but steady at about £11 2s. 6d. per ton, less 2½% for good gray 24@25% in double bags f. o. b. here.

Nitrate of soda is unchanged and retailing on spot at £3 10s. @ £3 15s. per ton, less 2½% for double bags f. o. b. here, as to quality.

Messina, Sicily. Feb. 1.

(Special Report of Emil Fog & Sons.)

Brimstone.—The principal event during January has been the definite reconstitution of the Anglo-Sicilian Sulphur Company for another 5 years. The exports of brimstone during the last 5 years from Sicily have increased 150,000 tons, owing chiefly to the immense development of the paper trade. The production has not increased in the same proportion. Stocks on December 31st, 1900, were 221,000 tons, against 223,

000 tons a year ago. Efforts will be made to obtain a prolongation of the Anglo-Sicilian Company for another 15 years. Quotations per ton are as follows: Best unmixed seconds, 78s. 6d. (\$18.84); best thirds, 69s. 9d. (\$16.74); refined block sulphur (100%), 82s. 9d. (\$19.86); refined roll sulphur (in casks), 89s. 9d. (\$21.54); sublimed flowers (extra pure), in bags, 97s. 6d. (\$23.40); superior, 95s. (\$22.80); and current quality sublimed flowers, 93s. 6d. (\$22.44). Freight rates are easier. Ballast lots to New York are quoted 7s. (\$1.68), and to Philadelphia, 8s. (\$1.92).

MINING STOCKS.

Complete quotations will be found on pages 293 and 294 of mining stocks listed and dealt in at:

Boston.	Salt Lake.	Montreal.
Colo. Springs.	San Francisco.	London.
Denver.	Spokane.	Mexico.
New York.	St. Louis.	Mexico.
Philadelphia.	Toronto.	Paris.

New York. Feb. 29.

On Tuesday over 46,000 common shares of the American Smelting and Refining Company were sold, breaking the price to \$45, while 19,800 preferred shares brought \$91½@93. A published statement was issued by President Nash in contradiction of the rumors that were circulated concerning the financial condition of the company. Subsequently the market strengthened and prices are again higher.

Another feature was the great iron and steel consolidation. This resulted in heavy trading in the shares of the constituent companies. Thus, on Tuesday alone one-third of the common share-capital of American Steel and Wire was traded in on 'change at \$44½@40½, and on the same day nearly 40% of the American Steel Hoop common stock sold at \$37½@35. On Wednesday the sales of Federal Steel preferred aggregated 55,900 shares, which is over 10% of the issued stock; the sales were made at \$89¼@87¾. There were also enormous sales of the consolidated concern, known as the United States Steel Corporation. The common shares brought \$37½@40 and the preferred \$82½@87 on curb, all sales being on a "when issued" basis. Full particulars about this company and the rates at which the shares of the constituent concerns will be exchanged for new stock are given in our editorial columns this week.

In the copper stocks trading is professional. Amalgamated touched \$90¼ and later recovered to \$92, on large sales, while Anaconda fluctuated between \$45@44½. Nothing was done in British Columbia Copper.

Larger sales of Horn Silver, of Utah, are reported at \$1.15@1.25, and of Ontario at \$7.37½@7.62½.

Colorado stocks are lower. Portland, of Cripple Creek, sold down to \$2.90, Isabella to 70c., while Jack Pot made the first sale in several weeks at 60c.

Brunswick Consolidated, of California, has weakened to 28c., or 3c. less than the opening sale.

Comstock shares are dumpish. Consolidated California & Virginia lost 7c. at \$1.58, and Ophir 8c. at 77c.

Auction sales were 33 shares New Jersey Zinc Company at \$245½ per share and \$5,000 in 6% gold bonds (due 1929) of the Lanyon Zinc Company at 84.

Listings on the New York Stock Exchange this week included \$300,000 additional common stock of the Columbus & Hocking Coal and Iron Company, making \$5,000,000 listed to date.

Stockholders of the National Lead Company held their annual meeting in Jersey City January 21st. The session was a stormy one, but resulted in the re-election of the old board of directors. Objection was made to the acceptance of the annual report, but after a protracted debate the report was accepted. It is said that objection to the report was based chiefly upon its expenditure figures and upon dissatisfaction with a mortgage on the St. Louis smelting works. The directors elected are: L. A. Cole, F. W. Rockwell, D. B. Shipman, W. H. Thompson and E. C. Goshorn. Immediately after the adjournment of the stockholders the directors re-elected the following officers: President, L. A. Cole; vice-president, F. W. Rockwell; second vice-president, John A. Stevens; treasurer, Mr. McBirney; secretary, C. Davisson.

At the recent meeting of the directors of the American Steel and Wire Company the following officers were elected: J. W. Gates, chairman; Wm. P. Palmer, president; Wm. Edenhorn, first vice-president; J. S. Keefe, second vice-president; P. W. Moen, third vice-president; S. R. Chisholm, fourth vice-president; F. L. Watson, treasurer; T. P. Alder, assistant treasurer, New York; A. F. Allen, assistant treasurer, Chicago; C. S. Roberts, secretary; F. E. Patterson, assistant secretary, New York; A. F. Allen, assistant secretary, Chicago; C. A. Honecker, auditor; C. A. Vogt, assistant auditor; Max Pam, general counsel. The executive committee consists of the following: J. W. Gates, Wm. Edenhorn, P. A. B. Widener, Thos. F. Ryan, John Lambert, H. Clay Pierce, Wm. P. Palmer.

Boston. Feb. 28.
(From Our Special Correspondent.)

While the pressure on the market, to which I have referred in recent letters, has been continued, there have been signs of strength. There has been some good buying of Lake coppers, though the shares of the blind pool group have been generally let alone. There is an evident disposition to buy some of the newer stocks which promise well for the future. A special demand this week has been for the stocks known as the Stanton group, and prices have gone up all around.

In the Lake stocks Calumet & Hecla brought \$55; Tamarack, \$32; Quincy, \$17½; Osceola, \$8; Wolverine, \$56; Baltic, \$43; Atlantic, \$36; Mohawk, \$28.

While Amalgamated sold at \$92, Boston & Montana brought \$328; Butte & Boston, \$84, and Arcadian, \$18½.

Among the outside coppers Utah Consolidated sold at \$34 and British Columbia at 20½ @ \$21. Old Dominion was quoted at \$37 and Santa Fe at \$8.

The gold stocks were in better demand than recently and more sales are noted. Centennial-Eureka brought \$27½; Cochiti was quoted at \$9; Merced at \$5@6; Melones at \$1½.

United States Oil sold at \$14@15. Dominion Coal was active at about \$36½@37, while New England Gas and Coke was \$13½. Dominion Steel showed transactions at \$31½. The reported sale of this company's property to the new steel combination is officially denied, and indeed did not seem very probable when all the circumstances were considered.

The big consolidation caused some excitement in Boston, as it affects some of Boston's favorite stocks, notably Federal Steel. The general opinion here is rather unfavorable to the consolidation, but a good many see immediate profit in it.

Money is plentiful here and conditions are good for a strong market for a time.

Colorado Springs. Feb. 23.
(From Our Special Correspondent.)

The El Paso Gold Mining and Milling Company has recently acquired the Australia and Little May claims on Beacon Hill, making 52 acres. The price named is 400,000 shares of El Paso Consolidated stock or \$160,000 in cash. The claims are in a good position to be developed from the El Paso deep shaft.

A special meeting of the stockholders of the Jack Pot Mining Company on February 18th ratified the sale of the Jack Pot Claim to the Doctor-Jack Pot for 850,000 shares of stock in the latter company. The income from this stock will amount to about \$8,500 per month.

The Mary Cashen Mining Company this week has raised its capitalization from 1,500,000 to 2,000,000 shares to raise funds for developing. The property, which adjoins the Gold Coin, was formerly worked by lessees, but will now be worked on company account. The shaft will be sunk to 850 ft.

The control of the Zoe Gold Mining Company has changed hands, J. F. Burns, J. R. McKinnie, R. P. Davie now holding over 1,000,000 of the 1,500,000 shares of stock issued. The office of the company will now be with the Portland Company.

San Francisco. Feb. 23.
(From Our Special Correspondent.)

Business in mining stocks was of the usual character, but prices were a little firmer. The holiday on Friday rather broke up trading toward the close of the week.

Some quotations noted are: Consolidated California & Virginia, \$1.75; Ophir, 79c; Caledonia, 70c; Sierra Nevada, 32c; Gould & Curry, 29c; Best & Belcher, 25c; Mexican, 24c; Potosi, 16c.

Sales on the Producers' Oil Exchange have been fair, though business was hardly as active as last week. Still, public interest seems well maintained and brokers are making very little complaint.

Some quotations noted are: Hanford, \$113; Kern River, \$18; Kern Oil, \$10.75@11; Peerless, \$8.75; Home, \$4.40; Blue Goose, \$2; Caribou, 75c; Four Oil, 59c.

The new or opposition San Francisco Oil Exchange held a formal opening on Wednesday of this week, and a regular business session on Thursday. A number of stocks have been listed. The officers are: A. Gerbording, president; Stephen Otis, vice-president; C. Hirschfeld, treasurer; Gustave Poplmann, secretary; Henry C. McPike, attorney; O. V. Walker, caller.

London. Feb. 21.
(From Our Special Correspondent.)

The South African section of the London mining stock market has had some life infused into it this week by the circulation of rumors that Werner, Belt & Company are selling Transvaal gold shares in America. This rumor is an exaggerated one, for though some Americans who are looking to getting contracts for machinery,

plant, bridges, etc., from the controlling houses when South Africa is once more opened up to commerce, are interesting themselves in the shares of the leading companies, there is no movement such as the rumor mongers allege. There have been some purchases from France and Germany also, and the quotations have, in consequence, strengthened up a little.

By far the most interest is taken nowadays in the West African section, and mining engineers of experience are going out in numbers for the London promoters. Those that I have spoken to express themselves as being quite without information about the country they are going to, and indeed somewhat skeptical about it, though as they are paid well for their services they do not grumble. A good deal of literature is being circulated by various companies who do not care to issue prospectuses. The mainstay of the promoters' arguments is that a banker formation similar to that on the Rand exists in this locality, and it is claimed that the results will be as great. Scientific information on this point is looked forward to with considerable interest, and no doubt some of the eminent mining men now going out will soon have something to tell us. Companies are still being formed privately, and another has been publicly advertised this week. This is the West African Agency, Limited, which has been formed with a capital of £200,000, with the object of doing financial and promoting business of a general kind. The people backing it have been hitherto chiefly identified with Australian companies. The specific object of the company mentioned in the prospectus is to acquire conjointly with another company a number of properties at present belonging to a third company and to individuals connected with it. Nothing is said in the prospectus about these properties, so at present they are of little interest to the outsider.

Other sections of the mining market have been very dull this week, and West Australians have been very depressed. The bears are once more on the track of West Australians and the quotations are again falling. It is now some weeks since Mr. Whitaker Wright announced that his reconstruction scheme for the London & Globe Finance Corporation was practically settled, but the public has not heard a word from him since. The clashing interests of chief shareholders and chief creditors are difficult to arrange, and negotiations do not appear to have progressed. Many shareholders are realizing their holdings and are glad to get the 2s. a share, the figure at which the £1 shares now stand.

The Sultana Mine, of Canada, Limited, was floated in London toward the end of 1899, to acquire from Mr. John F. Caldwell the mine of that name situated near Rat Portage, on the Lake of the Woods. The report for the year ended September 30th, 1900, has just been issued, and it shows that the anticipations of the prospectus have not been realized. It appears that only some £14,000 was raised by the flotation, and of this £13,000 was spent on capital account, in mine development and equipment. Current expenses during the same period were £7,000, while £6,000 was received from the sale of bullion. The mine has not developed so well as was hoped, and the directors can only hope that it may be put on a paying basis at no distant date. It also appears that the Imperial Bank of Canada had advanced £10,000 to the vendor on mortgage, and the directors are trying to raise money to pay off this sum.

Paris. Feb. 17.
(From Our Special Correspondent.)

For the most part the market for mining stocks has been uneventful. Some increase in prices of the Transvaal gold stocks is reported, though it is difficult to see seasons for any change. The rise is chiefly in the shares of the large companies controlling deep level claims, such as the Rand Mines, Limited, and the Consolidated Goldfields.

The exception to the general quiet has been in the Russian group, the shares of which have been much agitated. The industrial depression in Russia and the natural reaction from inflation and over-speculation are making themselves felt. Undoubtedly the prices have been too high, and they are now seeking their normal level. The coal stocks suffered severely, being the first to feel the reaction. Sosnowice, which has been selling up nearly to 3,000 fr., fell back nearly to 2,300 fr.; I hear that some of the parties who introduced this stock have sold large blocks at above 2,900 fr., and are now practically out of the company altogether. The iron mining stocks—such as Krivoi-Rog—have fallen, though less than the coal shares. The metallurgical stocks have also suffered severely, and such shares as Brianks, Huta-Bankowa and Volga-Vichera have lost largely in price.

Le Nickel has again advanced, and sells this week at 499 fr. The prospects of this company appear better than ever before.

The Union des Porteurs Français des Mines d'Or et de Valeurs des Transvaal held its annual meeting recently, when the Council reported the correspondence had during the year, stating that it had received courteous answers to its memorials to the Governments. Its latest action

had been to address to Dr. Leyds, as the representative of the Transvaal in Europe, a remonstrance against the damage done by the Boers to the Kleinfontein, Modderfontein and Van Ryn mines. The report concludes with the following paragraphs: "We are between the hammer and the anvil and must make our petitions to the one as much as the other."

"We must take care that, having been the victims of war, we do not later become victims of peace—that is, of the conditions which will follow peace."

The Union elected the following council for the year 1901: M. Paul Leroy-Beaulieu, president; MM. A. Blondel, Auguste Collignon, L. Etcheverry, E. Flotard, Clement Juglar, Pierre Leroy-Beaulieu, Vicomte de Montureux and Rene Stourm. This list is a sufficiently distinguished one.

The showing made in your number for January 5th continues to excite attention here. The "Economiste Francaise," in its latest number, has a very appreciative article by M. Pierre Leroy-Beaulieu. He quotes and comments on your figures, concluding thus: "In spite of the fall in prices which appears to reach most minerals and metals during recent months, it is with the greatest confidence that Americans confront the future. And they have certainly reason to do so. What competition need be feared by this most energetic of people, in this immense country, where such great riches have been discovered, and where, without doubt, so many others remain to be discovered hereafter?"

The writer has traveled in your country and is a careful observer, who speaks with knowledge. Azote.

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Acacia	Colo	Mar. 15	Colo. Springs, Co'o.
Allouez	Mich	Mar. 12	11 William St. N. Y.
Canton Placer	Cal	Mar. 6	San Francisco, Cal.
C. K. & N	Colo	Mar. 9	Colo. Springs, Colo.
Columbia Lead	Mo	Apr. 18	St. Louis, Mo.
Det't & Deadwd	S. D	Mar. 5	De dwood, S. D.
Hale & Norcross	Nev	Mar. 16	San Francisco, Cal.
Mayflower	Mich	Mar. 20	60 State St., Boston.
National Steel	Nev	Mar. 19	East Orange, N. J.
*Ophir	Nev	Mar. 4	San Francisco, Cal.
Osceola	Mich	Mar. 14	Boston, Mass.
*South Swansea	Utah	Mar. 13	Salt Lake City, Utah.
Tecumseh	Mich	Mar. 13	19 Congress St. Boston.
*Temple Oil	Cal	Apr. 15	San Francisco, Cal.
Tenn. C. I. & K. R .....	.....	Mar. 13	Tracy City, Tenn.

*Special Meeting.

DIVIDENDS.

NAME OF COMPANY	Latest Dividend.			Total to date.
	Date.	Per share.	Total.	
Ala. Con. C. & I. pf	Mar. 1	\$1.75	\$43,750	\$262,500
Arizona Cooper. ord	Mar. 7	1.32	421,153	.....
*Bald Butte, Mont.	Mar. 9	.06	15,000	967,148
*Bunker H. & S., Ida.	Mar. 4	.07	21,000	1,116,000
Central Lead, Mo	Mar. 15	.50	5,000	222,000
Continental Oil Cal.	Apr. 1	.03	7,200	7,200
Four Metals, Colo	Feb. 20	.01	25,000	25,000
*Gwin, Cal	Feb. 19	.10	10,000	176,500
*La Fortuna, Ariz	Mar. 9	.05	12,500	953,000
*Modoc, Colo	Mar. 15	.01	5,000	220,000
*National Lead, pf	Mar. 15	1.75	260,820	10,840,100
*National Tube, pf	Apr. 1	1.75	699,935	4,899,546
*North Star, B. C.	Mar. 15	.03	39,000	156,000
*Republic I. & S. pf	Apr. 1	1.75	355,371	2,477,596
*Rocco Homes'e, Nev	Mar. 11	.01½	4,500	22,500
*Silver Shield, Utah	Mar. 9	.01½	1,500	6,000
*Smuggler, Colo	Mar. 15	.03	30,000	1,820,600
*Swansa, Utah	M. r. 9	.05	5,000	291,500
*Union Z. & L.	Mar. 1	.01	5,000	50,000
Va. Car. Chem. com.	Mar. 15	1.00	90,000	820,000

*Monthly. †Quarterly.

ASSESSMENTS.

NAME OF COMPANY.	Location.	No.	Delinq.	Sale.	Amt.
Alliance	Cal. ..	3	Mar. 18	Apr. 8	.02
Alpha Con.	Nev. ..	24	Mar. 11	Apr. 2	2.00
Centennial	Mich ..	.....	Apr. 12	.....	2.03
Central Mammoth	Utah ..	1	Feb. 15	Mar. 5	.004
Chloride Queen	Ida. ..	.....	Mar. 1	.....	.01
Chollar	Nev. ..	54	Mar. 18	Apr. 9	.10
Contra Costa Oil	Cal. ..	1	Feb. 23	M. r. 12	.01
Eutonia	Utah ..	5	Mar. 12	Mar. 28	.00½
Excelsior	Utah ..	.....	Feb. 14	Mar. 20	.00½
Gold Hill	Utah ..	2	Feb. 13	Mar. 11	.01
Larkin	Cal. ..	9	Feb. 25	Mar. 15	.02
Leo	M'nt ..	.....	Mar. 13	Apr. 4	.00½
Little Chief	Utah ..	6	Mar. 15	Apr. 4	.01
Maple Creek	Cal. ..	1	Mar. 13	Apr. 3	.10
McKinley	Utah ..	.....	Mar. 18	Apr. 13	.00½
Meteor	Utah ..	.....	Jan. 31	Mar. 7	.00½
Mexican	Nev. ..	66	Mar. 2	Apr. 15	.15
Potosi	Nev. ..	58	Feb. 19	Mar. 14	.10
Salt Lake	Utah ..	.....	Mar. 2	Mar. 22	.00½
Shoebridge Bonanza	Utah ..	7	Feb. 25	Mar. 13	.01
Sierra Nevada	Nev. ..	121	Feb. 20	Mar. 14	.15
Sonora	Cal. ..	.....	Mar. 30	Apr. 12	.05
Spanish Con.	Cal. ..	.....	Mar. 19	.....	.05
Tanana	Cal. ..	2	Feb. 13	Mar. 8	.10
Tetro	Utah ..	17	Feb. 14	Mar. 11	.01
West Mtn. Placer	Utah ..	.....	Feb. 23	Mar. 9	.03
Yankee Con.	Utah ..	.....	Mar. 11	.....	.02
Yuba River	Cal. ..	2	Feb. 9	Mar. 5	.03

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing company names, locations, par values, and prices for various dates in February.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock quotations, including companies like Am. Sm. & Ref., Am. S. & W. Co., and others.

* On Pittsburg, Pa. Exchange. Total sales, 925,371. † Holiday.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing companies like Belcher, Best & Belcher, and others.

CALIFORNIA OIL STOCKS.*

Table of California oil stock quotations, listing companies like Blue Goose, Buckhorn, and others.

* Producers' Oil Exchange, San Francisco. Total sales, 64,514 shares. * Holiday

ST. LOUIS, MO.*

Table of stock quotations for St. Louis, Missouri, listing companies like Am. Nettle, Catherine Lead, and others.

* From our special correspondent.

BOSTON, MASS.†

Table of stock quotations for Boston, Massachusetts, listing companies like Adventure Con., Aetna Con., and others.

† Official quotations Boston Stock Exchange. Total sales, 59,112 shares. * Holiday.

PHILADELPHIA, PA.‡

Table of stock quotations for Philadelphia, Pennsylvania, listing companies like Am. Alkali, Am. Cement, and others.

Total shares sold, 11,850. ‡ Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia. * Holiday.

SALT LAKE CITY, UTAH.

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Albion, Alice, and others.

TORONTO, ONT.

Table of stock quotations for Toronto, Ontario, listing companies like Ontario, Golden Star, and others.

Total shares sold, 116,150

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing companies like Acacia, Alamo, Am. Con., and others with columns for par value, bid/ask prices, and sales.

Colorado Springs Mining Stock Exchange. Total sales, 1,629,991 shares. * Holiday.

MONTREAL, CANADA.

Table of stock quotations for Montreal, Canada, listing companies like Big Three, California, and others with columns for par value, bid/ask prices, and sales.

Montreal Stock Exchange. Total sales, 9,900 shares.

MEXICO.

Table of stock quotations for Mexico, listing companies like Durango, Barragan and Cab., and others with columns for no. of shares, last dividend, and prices.

DENVER, COLO.

Table of stock quotations for Denver, Colo., listing companies like Acacia, Alamo, and others with columns for par value, bid/ask prices, and sales.

* Holiday. † Official Quotations Denver Stock Exchange. Total sales, 77,300 shares.

SPOKANE, WASH.

Table of stock quotations for Spokane, Wash., listing companies like Crystal, Deer Trail Con., and others with columns for par value, bid/ask prices, and sales.

PARIS.

Table of international stock quotations for Paris, listing companies like Acleries de Creusot, Anzin, and others with columns for country, product, capital stock, and prices.

LONDON.

Table of international stock quotations for London, listing companies like American, Alaska Goldfields, and others with columns for country, authorized capital, par value, and last dividend.

* Ex-dividend.

DIVIDENDS.

GOLD, SILVER, COPPER, ZINC, LEAD AND QUICKSILVER COMPANIES.

Table with 2 columns of company data. Each column contains: Number, Name and Location of Company, Authorized Capital Stock, Shares Issued (No., Par Val), Dividends (Paid, 1901, Total to Date, Latest Date, Amt.), and another set of the same fields for a second company. The table lists 75 companies in the first column and 75 in the second, including names like Amacia, Adams, and Homestake.

COAL, IRON AND OTHER COMPANIES.

Table with 2 columns of company data. Each column contains: Number, Name and Location of Company, Authorized Capital Stock, Shares Issued (No., Par Val), Dividends (Paid, 1901, Total to Date, Latest Date, Amt.), and another set of the same fields for a second company. The table lists 39 companies in the first column and 39 in the second, including names like Alabama Coal, Altoona Coal, and Lehigh Coal.

This table is corrected up to January 30th. Correspondents are requested to forward changes or additions.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT WHOLESALE PRICES.

Table listing various chemicals and minerals such as Abrasives, Acids, Alum, Ammonia, Antimony, Barium, Bauxite, Bismuth, Bitumen, and Bone Ash, with columns for Cust. Meas. and Price.

Table listing various chemicals and minerals such as Borax, Bromine, Cadmium, Calcium, Carbide, Cement, Ceresine, Chlorine, Chrome Ore, Clay, Coal Tar Pitch, Cobalt, Copper, Cream of Tartar, Cryolite, Explosives, Feldspar, Fluorspar, Fuller's Earth, Graphite, Gypsum, Infusorial Earth, Iodine, Iron, Kaolin, Lead, Lead-oxide, Lead-sulphate, Lime, Magnesia, Magnesium, Marble, Mercury, Mica, Mineral Wool, Nickel, Nitrate, Nitric Acid, Oxide, Potash, Potassium, Pyrites, Quartz, Rosin, Salt, Silica, Silicic Acid, Soapstone, Soda, Sulphate, Sulphur, Sulphuric Acid, Talc, Tar, Turpentine, Vermilion, Zinc, and Zinc Oxide.

Table listing various chemicals and minerals such as Magnesium, Manganese, Marble, Mercury, Mica, Mineral Wool, Nickel, Nitrate, Nitric Acid, Oxide, Potash, Potassium, Pyrites, Quartz, Rosin, Salt, Silica, Silicic Acid, Soapstone, Soda, Sulphate, Sulphur, Sulphuric Acid, Talc, Tar, Turpentine, Vermilion, Zinc, and Zinc Oxide.

Table listing various chemicals and minerals such as Silver, Silicate, Silica, Silicic Acid, Soapstone, Soda, Sulphate, Sulphur, Sulphuric Acid, Talc, Tar, Turpentine, Vermilion, Zinc, and Zinc Oxide.

THE RARE ELEMENTS.

Table listing various rare elements such as Barium, Beryllium, Boron, Cadmium, Calcium, Cerium, Chromium, Cobalt, Dysprosium, Erbium, Germanium, Glucinum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Niobium, Palladium, Potassium, Potassium, Pyrites, Quartz, Rosin, Salt, Silica, Silicic Acid, Soapstone, Soda, Sulphate, Sulphur, Sulphuric Acid, Talc, Tar, Turpentine, Vermilion, Zinc, and Zinc Oxide.

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to Feb. 16. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.