

THE ENGINEERING AND MINING JOURNAL



(Published Every Saturday at 253 Broadway, New York.
Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. LXIX. JANUARY 20, 1900. No. 3.

RICHARD P. ROTHWELL, C. E. M. E., Editor.
ROSSITER W. RAYMOND, Ph. D., M. E., Special Contributor.
THE SCIENTIFIC PUBLISHING CO., Publishers.

Subscriptions are PAYABLE IN ADVANCE. For the United States, Mexico and Canada, \$5 per annum; all other countries in the Postal Union, \$7.
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Main Office: 253 Broadway (P. O. Box 1833), NEW YORK.
Telephone Number, 3,095 Cortlandt.
New York Cable Address—"ROTHWELL." (Use McNeill's or A. B. C. 4th Edition Code.)
London Cable Address—"FULCRUM." (Use McNeill's or A. B. C. 4th Edition Code.)

Chicago, Ill., 737 Monadnock Building, Phone 73 Harrison.
Denver, Colo., Boston Building, Room 206.
Salt Lake City, Utah, Atlas Building.
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City of Mexico, 104 Ave. Madrid. Robt. S. Barrett, Manager.
Vancouver, B. C., Office, Molson's Bank Bldg. Wm. M. Brewer, Manager.
London Eng., Office, 20 Bucklersbury, 368. E. Walker, Manager.
English subscriptions to the JOURNAL may be paid at the London office at the rate of \$7 = £1 8s. 9d.; the publications of the Scientific Publishing Company may be bought at the rate of 4s. 2d. to the dollar, net.

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Mr. William M. Brewer, who has been for some time past the representative of the "Engineering and Mining Journal" in British Columbia, has resigned his position as consulting engineer of the British Pacific Gold Property Company and will hereafter devote all his time to the interests of the "Journal." He will have entire charge of its business in British Columbia and will continue to investigate and describe for the benefit of our readers the great mineral resources of the Province and its rapidly increasing mineral industry.

Mr. Brewer has opened an office for the "Engineering and Mining Journal" in the Molson's Bank Building, Vancouver, B. C.

While the increase in iron production in Alabama was quite moderate in 1899, that in shipments was very large, the stocks at furnaces and yards having been drawn down almost completely. The Alabama Iron Committee reports that the shipments from Alabama and Tennessee furnaces for the year reached a total of 1,571,570 tons of pig iron, by far the largest ever reported, and an increase of 20 per cent. over 1898. Of this iron, Alabama furnaces furnished 1,257,256 tons, no less than 945,969 tons going from the Birmingham District alone. The committee also reports that the shipments of cast-iron pipe for the year amounted to 146,637 tons, an increase of 15 per cent.

While the total shipments of pig iron increased so largely, there was a decrease of 17 per cent. in the pig iron taken for export. The total export iron sent from Alabama—practically all from the Birmingham District—in 1899 was 167,003 tons, which compares with 201,678 tons in 1898. This decrease was due to the large home demand, which made it necessary to refuse foreign orders. The Southern furnaces evidently had their full share of the general activity in the iron trade.

The Western bituminous coal trade is at present in an expectant condition over the miners' meetings and conferences at Columbus and Indianapolis. At these meetings some understanding will be reached as to the rates to be asked for mining after the expiration of the present agreement, on April 1st. Undoubtedly the miners will want a substantial advance, in view of the active condition of trade and the higher prices now obtained from coal. It is equally certain that the operators will not be willing to concede all that is asked. They have several years of poor business to make up for, and also have to meet a general increase in carrying rates on the railroads. At Indianapolis, increases varying from 10 to 20 cents a ton in the mining rate have been spoken of, and it is thought that in most districts at least 15 cents will be asked, with a flat differential of 7 cents between machine and pick mining.

While there may be prolonged discussion over the new rates, the general opinion is that no general strike will result, some compromise settlement being probable. The trade is in a condition just now where any stoppage of production would be disastrous. It would be also severely felt by manufacturing interests.

The Scotch Iron Makers' Association has brought out its statement of production and sales, as usual, long before other statistics of British iron output are available. It is, therefore, of interest as affording a general indication of the course of production. It is rather a surprise to find that in 1899 there was actually a smaller output of pig iron than in 1898, though the decrease was only 1.9 per cent. This was in face of an actual increase in deliveries, the result being a decrease in stocks, which were smaller at the close of 1899 than for many years past.

The movement during the two years past is shown in the following table, in long tons:

	1898.	1899.	Changes.
Stocks, January 1st	464,353	390,345	D. 74,008
Production for the year	1,190,264	1,166,838	D. 23,426
Total supplies	1,654,617	1,557,183	D. 97,434
Deliveries during the year	1,264,272	1,280,143	I. 15,871
Stocks, December 31st	390,345	277,040	D. 113,305

The number of furnaces in blast on December 31st, 1899, was 84; the average for the year was 82.9, showing an average output per furnace of 14,358 tons. This indicates the small size of many of the Scotch furnaces.

The returns for the first half of the year showed an increase in the total production of Great Britain; and it does not seem possible that there was any decrease in the second half. We must conclude that the position of the Scotch furnaces has been somewhat exceptional, and determined chiefly by local causes.

Some months ago—in the "Engineering and Mining Journal," September 9th, 1899, page 317; and again November 18th, page 601—we referred to the Basin Gold and Copper Mining Company of Montana, which was then selling stock in the East on the strength of flaming advertisements and prospectuses. We then stated—what many people in Montana well knew—that while the Hope Mine, the company's chief

property, was at one time very profitable, the rich vein had been worked out and only very low-grade ores were left. Other claims made in the prospectus were at least doubtful, and the exploiting of the property as a copper instead of a gold mine had rather a curious look.

The advertisements were withdrawn after a time, the company having, presumably, sold stock enough for its own purposes. Since then news from the mines has been very scarce and the company has been exceedingly quiet. We have, however, just received a note from a reliable correspondent that the mine of the Basin Gold and Copper Mining Company has not only been closed down, but also that the pumps have been drawn—which looks very much like a final abandonment of the property. It has served its purpose in selling stock, apparently, and there is no further use for it.

As shown by the figures given in our issue of January 6th, the total shipments of iron ore at the Lake Superior ports in the season of 1899 were 17,901,358 tons. Of this ore, 15,222,187 tons were delivered at the 10 receiving ports on Lake Erie, the balance going to points on Lake Michigan. It must be remembered that this freight must all be handled during the season of navigation, usually a little less than seven months. Last year the port of Ashtabula received, unloaded and reloaded in cars, 3,341,526 tons, an average of 477,361 tons a month; while Cleveland handled 3,222,582 tons, or 460,369 tons a month; and Conneaut 2,320,696 tons, or 331,528 tons a month. This means that the Conneaut docks were able to dispose of more than 10,000 tons a day, while Cleveland and Ashtabula each took care of over 15,000 tons a day. The prompt and economical handling of these large quantities is certainly a triumph of mechanical skill. How this freight is transferred from dock to steamer, from steamer to dock, and thence to cars, is shown in an article given on another page. The descriptions and illustrations will show how the work is done almost automatically, and the machinery used to do it, as well as the typical lake carrier, the most economical cargo boat in the world.

ILLINOIS COAL MINES IN 1899.

The State of Illinois is the second in rank in the United States as a coal producer, though its output is still a long way behind that of Pennsylvania, the first State. In 1899 Illinois mined nearly one-tenth of the total coal produced in the United States, or one-eighth of all the bituminous coal. Through the courtesy of the State Bureau of Statistics we have received advance figures from the report for the fiscal year ending June 30th, 1899, some examination of which will be of interest.

The total production for the year is reported as follows, in short tons:

	1898		1899	
	Tons.	Per ct.	Tons.	Per ct.
Coal shipped.....	15,596,888	83.9	20,019,147	85.4
Coal sold at mines.....	2,149,808	11.5	2,321,040	9.9
Coal consumed or wasted at mines..	852,603	4.6	1,094,258	4.7
Total mined.....	18,599,299	100.0	23,434,445	100.0

Of the total coal reported last year, 17,465,583 tons were classed as lump coal and 5,968,862 tons as other grades; the average value of lump coal at the mines being 91.86c. and of other coal 40.08c., making an average for all of 78.52c. a ton. There were 889 mines or openings from which coal was produced; of these 323 were classed as shipping mines, and they produced 22,492,083 tons, or 96 per cent. of all the coal; the remaining 566 openings were operated for local trade, and turned out only 942,362 tons. The number of new mines opened during the year was 129, and the number of mines abandoned 121; leaving a net increase of 8 openings.

The large increase of 4,835,146 tons last year was made not so much by new mines as by greater activity at existing collieries. Thus we find that the average period of work was 205.7 days, against 174.7 days in 1898, an increase of nearly 18 per cent. This condition of affairs was naturally favorable to the miners.

The use of machines is on the increase in the State. Last year coal was worked by machines at 63 mines, or 8 more than in 1898, while 440 machines in all were at work, against 392 in the previous year. In all 6,032,902 tons of coal, or 26 per cent. of the total, were mined by machine. The average price paid for hand mining was 41.27c. a ton; for machine mining 32.4c.

The number of employees at the coal mines was 36,991 last year, 26,449 being classed as miners. The increase over 1898 was 1,965, or much less than the gain in production, while the number of miners was about the same in both years, the gain in output being due, as noted above, to the longer time worked. The average coal mined to each miner was 886 tons; to each employee, 634 tons. Of all the em-

ployees, 33,199 were employed underground and 3,792 on the surface. There were 3,497 horses and mules employed at the mines.

The accident statistics compare as follows for two years past:

	1898.	1899.	Changes.
Number of men killed.....	75	88	I. 13
Number injured.....	438	597	I. 159
Total casualties.....	513	685	I. 172
Killed per 1,000 employed.....	2.14	2.38	I. 0.24
Injured per 1,000.....	12.51	16.14	I. 3.63
Total casualties per 1,000.....	14.65	18.52	I. 3.87

The increase in deaths and injuries was considerable, and the cause is not explained. It may have been due in part to more active work at the mines and rushing production; or perhaps to neglect of precautions, which often occurs in busy seasons. The causes of accident are not explained, as they will be in the full report.

ANDREW CARNEGIE'S LATEST GIFT.

The correspondence between Mr. Carnegie and the trustees of the Cooper Union in New York recording the offer and acceptance of a gift on his part of \$300,000, which, reinforced by the further gift of \$200,000 from Abram S. Hewitt and Edward Cooper, will render possible an important extension of the work of that institution, adds another instance of the long list of Mr. Carnegie's wise and liberal benefactions. It would be superfluous to point out that, in the distribution of his donations, he has chosen, by promoting libraries and schools, the one form of giving which does not pauperize the recipient, and which is certain to make return of blessing to society—namely, the giving of the means and opportunity of knowledge. It is not, however, my present purpose to eulogize either Mr. Carnegie's generosity or his wisdom. I wish rather, at this time, to note one or two points suggested by the correspondence referred to.

1. Mr. Carnegie's letter, with its graceful allusion to Peter Cooper as a leader of whom he would be glad to be counted worthy to be a follower, expresses a great truth. It is, in fact, a favor to any mere giver of money to associate his name with that of one who gave, not merely his money, but himself with it. It was not Peter Cooper's money, but his continuous, life-long, loving personal attention and solicitude, bestowed upon the institution which he had founded, identifying the man with his benefaction, which made him beloved as well as illustrious. And the additional gifts in money from Edward Cooper and Abram S. Hewitt, which now crown a series of similar acts on the part of Mr. Cooper's family circle, are not so worthy of praise as the quiet, unostentatious devotion with which these gentlemen have given time, thought and labor, for more than a generation, to the administration of the Cooper Union, and the wisdom with which they have made it not only the pioneer of similar institutions throughout the world, but also well-nigh unequalled in the ratio of practically valuable results to the means available. A man who simply contributes money to such a work may well consider it an honor to have his gift accepted, and his name enrolled in such company.

2. The New York "Sun," in an editorial upon this subject, points out that the present tyranny of the organized "labor unions" would not permit the employment, in any handicraft, of the graduates of a technical school such as the Cooper Union is expected to become, and asks what is the use of educating our youth, if the practical advantage of such education is to be denied them. The point is, to some extent, well taken. The malignant modern type of trade-unionism is either wholly indifferent or openly hostile to technical education. It strives to obliterate the distinction between good work and bad; it discourages the payment of extra wages for extra merit; and it tends notoriously to discourage all attempts on the part of workmen to rise in station by the exhibition of special industry and zeal, or the acquisition of special knowledge. A ludicrous illustration of this tendency is furnished by the recent announcement that the "Knights of Labor" propose to establish a college for instruction in—Heaven save the mark!—political economy and oratory!

But there need be no fear of the ultimate result. Knowledge is bound to tell. Political economists and orators are not going, in the long run, to monopolize the use of tools and machinery. And we may go on imparting intelligence and training to young men without apprehending that they will be thereby disqualified for conducting the struggle for life against blatherskites and demagogues.

3. It is one of the stereotyped utterances of the class just named that great wealth is necessarily ill-gotten wealth; that no man can be "honestly" worth a million dollars; and that the giving of large sums in public benefactions is simply the disposal of surplus gains obtained by extortion, injustice or deceit. Slanders of this class have been particularly rife with regard to Mr. Carnegie, and the clear, bold tone of the letter addressed to him by the trustees of the Cooper Union is therefore most timely, as a reply to them. Its declaration that Mr. Carnegie's business success has been attended by both increased wages to labor and

decreased cost of product to consumers cannot be disproved. It is the truth. Moreover, a study of the chief means by which these ends, as well as that of personal profit, were gained offers suggestions of great value to capitalists and employers, while it conclusively disproves the malicious and baseless insinuations of the so-called representatives of so-called labor.

I shall point out in another article some of the most important elements in the success of the business with which Mr. Carnegie's name is associated—though he would be the first to disclaim exclusive credit for that success, and to recognize the essential aid of his associates.

R. W. R.

NEW PUBLICATIONS.

"Dictionary of Electrical Engineering and Chemistry; Part III. Spanish-German-English." By Paul Heyne. Dresden, Germany; Gerhard Kuhlmann. Pages, 220. Price (in New York), boards, \$1; cloth, \$1.60.

We have heretofore referred to Parts I and II of this dictionary. It is quite a comprehensive technical vocabulary, including many terms used in mining and mechanical engineering, as well as in electrical work and chemistry. The English is evidently not that of a practical man, but rather a student of the dictionary, who takes his word from books, and indeed does not hesitate sometimes to invent a word when he is at a loss. Thus, to take a few instances, we find "acierable" given as the English equivalent of the Spanish "aceriable" and the German "verstählbar;" to "malleate" as an equivalent for "adelgazar" and "walzen," though it is only fair to say that in this case other words are given. Again, the Spanish "cohobar," German "kohobiesen," is translated into English by "to cohobate," whatever that may mean—we confess that we do not know. A more flagrant instance is that of the Spanish "agua destilada," German "distilliertes wasser," the meaning of which seems easy enough, but we find the English equivalent given as "water of holy." There are other translations which are a little puzzling, and show the danger of relying on dictionaries entirely, without a good working knowledge of the language. In the main, however, the book is a fairly good technical vocabulary and will be useful to any one who has to translate technical articles from the Spanish, or to read them in that language.

"Electric Power Transmission." Second Edition; Revised and Enlarged. By Louis Bell. New York; "Electrical World and Engineer (Incorporated)." Pages, 506; illustrated. Price, \$2.50.

This volume is intended for the use of practical men who have neither the time nor disposition to go deeply into the theory of the subject, rather than for scientific electricians. The author's purpose has been to set forth as simply and directly as possible the fundamental facts concerning present practice in the electrical transmission of power. He has given little or no space to discussion of theories, but deals with accepted facts and results. Where it is necessary to take theoretical considerations into account, he has made his explanations in a direct way, avoiding mathematical complications, and taking the results of investigations. In describing machinery he has taken such apparatus as is generally typical of the methods used.

A work compiled and written on these lines is exceedingly serviceable at the present time when so many manufacturers are called upon to decide upon the adoption of electrical transmission of power, and when so many power projects are offered for investment. The work cannot and does not offer to enable one to dispense with the advice of an engineer; but a general knowledge of the question is surely of great service in reaching final decisions.

There are 14 chapters, dealing respectively with elementary principles; general conditions of power transmission; transmission by continuous currents; properties of alternating currents; transmission by alternating currents; current reorganizers; prime movers; hydraulic development; organization of a power station; transmission lines; line construction; centers of distribution; the commercial problem of transmission; present state of high-voltage transmission. These, it will be seen, cover the subject quite thoroughly.

The electrical machinery used is generally well and concisely described and is illustrated by many engravings. The chapter on prime movers has to cover a great deal in a small space. It treats of steam engines and water wheels as thoroughly as might be expected, but neglects gas engines altogether, a somewhat singular omission. Many engineers look to the gas or explosive engine as of great importance, and possibly as the motor of the future; and it surely ought to be considered with prime movers. From a remark (on page 473) made, Dr. Bell seems to look on the gas engine only as a rival to electric power, and not at all as a prime mover for the generation of electricity.

With this exception the book is to be commended and is a useful one to the large class of persons referred to above. Anyone who takes an interest in electrical development can read it with profit, and without the labor needed to comprehend many of the books on electrical questions which are now put out and whose authors seem to delight in an extreme technicality which repels the general reader.

BOOKS RECEIVED.

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

"American Telephone Practice." By Kempster B. Miller. New York; the American Electrician Company. Pages, 458; illustrated. Price, \$2.00.

"Annuaire pour l'An 1900, Publie par le Bureau des Longitudes." Paris, France; Gauthier-Villars. Pages, 800; with tables. Price (in New York), 50 cents.

"Bulletin of the United States Fish Commission." Volume XVIII, for 1898. George M. Bowers, Commissioner. Washington; Government Printing Office. Pages, 576; illustrated.

"Proceedings of the Twenty-fifth Annual Convention of the American Bankers' Association, Held at Cleveland, Ohio, September 5th-7th, 1899." New York; published by the Association. Pages, 412; illustrated.

"Journal of the Iron and Steel Institute." Volume LVI, being No. II of 1899. Edited by Bennett H. Brough, Secretary. London; published for the Institute by E. & T. N. Spon, Limited. New York; Spon & Chamberlain. Pages, 554; illustrated.

"Handbook of Testing Materials for the Constructor; Part I. Methods, Machines and Auxiliary Apparatus." By Professor Adolf Martens. Authorized translations and additions by Gus. C. Henning. New York; John Wiley & Sons, and London; Chapman & Hall, Limited. Volume I, text, 622 pages; Volume II, illustrations, 240 pages. Price, \$7.50.

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.

Concentrating Zinc-Lead Sulphides.

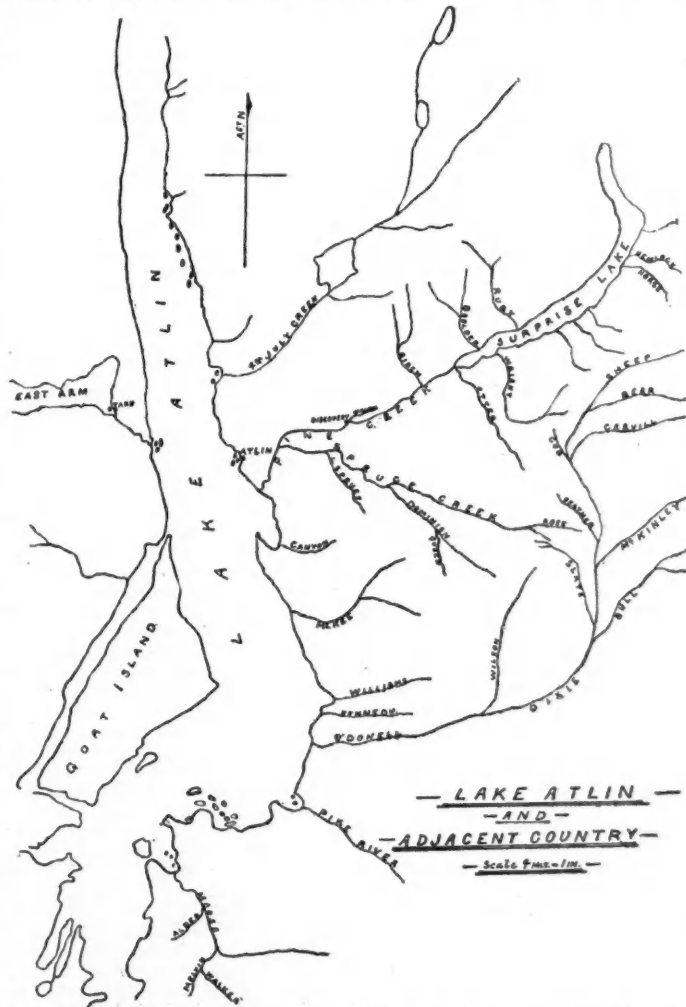
Sir: As there is a growing interest in the treatment of iron and lead-zinc silver ores, we wish that you would publish another extract from the report of the Sulphide Corporation—an abstract of which was given in the "Engineering and Mining Journal" for December 23d, page 762—giving the percentage of iron, zinc, silica, manganese, silver and gold contained in the ore before it was milled, if shown in the report; also such other facts as might be of interest.

F. Simmons.

Chicago, Dec. 26, 1899.
(The report of the Sulphide Corporation does not go into details, and the only figures given are for the assay value of the crude ore treated. This showed for the first half of the year, 18.1 per cent. lead, 22.0 per cent. zinc, 12.2 oz. silver; second half, 18.9 per cent. lead, 22.1 per cent. zinc, 12.8 oz. silver to the ton. The tailings showed by assay for the first half of the year 4.5 per cent. lead, 24.0 per cent. zinc, 6.8 oz. silver; second half, 4.4 per cent. lead, 24.0 per cent. zinc and 6.8 oz. silver. The iron, silica, etc., are not given.—Editor E. & M. J.)

The Atlin District, British Columbia.

Sir: In your issue of November 18th appears an interesting article on the Atlin District, B. C., by W. M. Brook, in the course of which,



referring to lode mines, it is stated that 10 claims near Atlin City have been sold to an English syndicate for \$250,000. As I personally examined

and reported upon these claims on behalf of the Nimrod Syndicate, Limited, of London, the following statement may be in order and also serve to dispel any exaggerated idea of value of Atlin claims. The original terms asked for the ground, in London, were £25,000 in cash and 25,000 shares of £1, so that your correspondent's statement is correct in part. Had the claims advanced in respect to these properties been substantiated upon examination, this sum would have been given. Ultimately the owners agreed to take a small cash sum and the major portion of their remuneration as an interest.

I forward you a sketch map of Atlin District, which may be of interest and for which I am indebted to Messrs. Brownlee & Lowry, surveyors, of Atlin. From inquiries instituted personally, I consider the estimate of this season's output, as given in above mentioned article, will be proved correct. The season was very short, as owing to the uncertainty of Atlin being in British Columbia, or the Northwest Territories, claims were staked according to the varying regulations of these two provinces. In consequence of this nothing could be done until matters had been straightened out by Judge Irvine this summer. Also the passage of the absurd alien act considerably retarded development of the district at the outset.

Over a radius of some miles from Atlin City the geology shows great metamorphism. The principal rock is an altered country, serpentine to a varying extent, but particularly upon the joints. Enclosed in this serpentine are belts of altered dike, or country, bearing evidences of extensive secondary action. These quartz ore dikes everywhere appear to be slightly auriferous, and carry numerous small veins and stringers of quartz. In the entire absence of development work it is too early yet to give any figures as to values, but the general formation of the district is distinctly favorable.

Next season should see preparations for hydraulicking well in hand, which will eventually increase the output of the creeks. The following schedule, given me by the Bank of British North America, shows the gold fineness of the principal creeks:

	Fineness	Value.
Pine .....	.808	\$16.70 per oz.
Spruce .....	.836	17.28 "
McKee .....	.838	17.32 "
Boulder .....	.800	16.53 "
Wright .....	.809	16.72 "

The climate in summer is ideal, and in winter less severe than in places further south. The lowest temperature recorded last winter was -32° F. The operation of the White Pass Railway and excellent steamer service upon the lakes, will enable supplies and materials to be brought in and operations carried on at a very reasonable cost, and on a much reduced scale compared with that appertaining in South Africa 10 years ago.

London, Nov. 29, 1899.

A. H. Bromly.

THOMAS EGGLESTON.

Thomas Eggleston, founder of the School of Mines of Columbia University, and for 33 years professor of mineralogy and metallurgy in that school, died at his residence in New York, January 15th, aged 67 years. His death was not unexpected, as he had been suffering from a complication of diseases for several years.

Professor Eggleston was born in New York City December 9th, 1832, of an old New York family, whose members had served with distinction in the Revolution. He entered Yale College in 1850, graduated in 1854, and shortly after began his studies in metallurgy and mining in the Ecole des Mines, at Paris, France, where he graduated in 1860. During these years abroad Professor Eggleston became imbued with a love for the study of mineralogy and geology; the former was his delight and recreation all his life, and the latter secured for him an appointment for some time in one of the museums of Paris, where he busied himself arranging the collections of fossils. The young student and engineer made many friends during his life in Paris, a number of whom are now leaders in mineralogy and metallurgy in France. On returning to America he was for a time in charge of the collection of mineralogical and metallurgical products at the Smithsonian Institution and also engaged in the practice of mining engineering, with headquarters in New York. The subject of a school of mines in New York had been vaguely and unsuccessfully agitated for some time before this, but in March, 1863, Professor Eggleston drew up a plan and submitted it to the trustees of Columbia College. It met at the start with no great sympathy from some members of the board, but was finally adopted, and in the following December the appointment of a professor without salary was authorized, and the sum of \$500 for equipment was appropriated. February 1st, 1864, Mr. Thomas Eggleston was appointed professor of mineralogy and metallurgy, which chair he held up to July 1st, 1897. Dr. F. A. P. Barnard was elected president of Columbia in June, 1864, and took a great interest in the development of the School of Mines; the quickly succeeding appointments of Professors Vinton, Chandler, Van Amringe, Newberry and Rood firmly established it. Professor Eggleston busily devoted himself to building up the work in mineralogy and metallurgy, and year by year saw the collections expand and the work become more and more systematized.

He was often called upon for public and other services outside of his professorship. In 1866 he examined and reported upon the geology and resources of a portion of Nebraska for the Union Pacific Railway surveys, and took with him a squad of his students. In 1868 he was a member of a commission to examine the fortifications of the country, and on three occasions, in 1870, in 1878, and in 1885, he was a member of the commission that annually verifies the assays and coinage of the mints. In 1873 he was one of the jurors of the International Exposition at Vienna.

In 1861 Professor Eggleston became a member of the Lyceum of Natural History, now the New York Academy of Sciences, and was one of its supporters for over 35 years. He was a prime mover in this connection in the erection of the beautiful monument to Audubon, placed by the Academy in Trinity Cemetery in 1893. Professor Eggleston was one of the founders of the American Metallurgical Society, and year in and year out stoutly advocated the introduction of the metric

system. At the inception of the American Institute of Mining Engineers in 1871, Professor Eggleston became an earnest worker in it, and was chosen one of its first board of managers. In 1872, 1873, 1874, 1877, 1878, 1884 and 1885 he was vice-president, and in 1887 he was elected president. Many papers scattered through its "Transactions" attest the deep interest felt by him in its success. He was also a member of the American Society of Civil Engineers; of the Iron and Steel Institute of Great Britain, and of several other technical societies.

He received many honors in the course of his long and active career. Princeton and Trinity Colleges conferred on him the degrees of Ph. D. and LL. D. The French Government made him Chevalier and afterward officer of the Legion of Honor. He was chosen honorary member of various learned bodies.

Besides his papers for the American Institute of Mining Engineers, he published numerous other papers in technical journals, several general works in mineralogy and metallurgy, and was a prolific writer, especially in the latter field.

Professor Eggleston was always a faithful and devoted instructor, and won the respect of his students in all his years of work by his sincerity. While somewhat formal toward his students, few, if any, failed to appreciate that a singularly kind disposition was behind his rather severe manner, or that he always endeavored to be strictly just. In the lecture room he was a rapid speaker, whose thoughts seemed to crowd for utterance, and sometimes outran his speech. He often developed a pithy conciseness of speech, and not a few of his sayings, current among his old students, have the wit and force of proverbs.

In addition to his strictly professional work, Dr. Eggleston interested himself in not a few philanthropic enterprises, giving them much time and attention, and showing here again his kindly disposition and the energy which he displayed in every field which he entered.

In 1897 the condition of his health, which had been precarious for some time, led him to retire from active work, and on July 1st of that year he became professor emeritus. Since then he has lived quietly in the house on Washington Square, which he occupied for



THOMAS EGGLESTON.

over 30 years; but he did not by any means lose interest in the School of Mines, nor in the progress of knowledge. He was a student up to the last, and was constantly interested in experimental work, as is shown by letters received from him but a short time ago.

With all his activities Thomas Eggleston's greatest work was as a teacher. To him is due the formation of the School of Mines and its success. The work which this required can only be appreciated by those who remember the composition of the board of trustees and the faculty of Columbia 45 years ago and the narrow and bitter opposition which was aroused by his project. Dr. Eggleston's success and the subsequent election of Dr. Barnard to the presidency of the College were the first steps toward the utilization of its large means according to modern ideas.

His old students and friends all over the country will hear of his death with sincere regret.

BY-PRODUCTS FROM COAL IN FRANCE.—Owing to the great demand for tar, especially for the briquette manufacture, the Liber court Works in the north of France are being enlarged for producing 10,000 tons of tar, instead of 4,000 tons as at present, the erection in the coalfield of new coke ovens, with recovery of the by-products being very favorable to this industry. Moreover, the distillation is not pushed very far at Liber court, because some of the by-products do not give a sufficient return. For instance, anthracene, which was worth 12 fr. per kg. a few years ago, only brings 50c. per kg. at the present time; but on the other hand the price of pitch is now well maintained.

NEWFOUNDLAND IRON ORES.—The Nova Scotia Steel Company has been selling Great Bell Island ore in Rotterdam at a price which amounted to \$1.15 per ton at the mine, after deducting the cost of transportation, giving them a profit of 85 or 90c. per ton, and it is said that the Dominion Iron and Steel Company has assurances that they can sell ore in Rotterdam for delivery next year at prices which would give \$1.65 to \$1.90 a ton at the mine after paying the cost of mining and transportation. The iron mines on Bell Island, in Conception Bay, Newfoundland, are said to constitute a remarkable deposit of hematite iron. No. 3 seam, which is now being worked, is 10 ft. thick, 300 ft. wide, and 3 miles long.

THE COLOR NAMES FOR HIGH TEMPERATURES.

Written for the Engineering & Mining Journal by Henry M. Howe.

An important paper by Messrs. Maunsel White and F. W. Taylor* brings up the question of temperature, in degrees Fahrenheit or Centigrade, which corresponds to each of the color names "A dull red," "A light yellow," etc., etc. They give the temperatures which in their own opinion, as the result of observing carefully the color impression produced on their own eyes and those of other experts by known temperatures as determined by the Le Chatelier pyrometer, correspond to these various color-names.

In the accompanying table I give their results, together with Pouillet's and my own†, each line being so arranged as to contain that color-name of Pouillet and my own which correspond most closely to a given color-name of Messrs. White and Taylor.

White my own results agree in all cases within 55° C. (98° F.) with those of White and Taylor, Pouillet's differ from theirs by much larger amounts, ranging from 172° to 467° F. On an algebraic average, my results differ from theirs by some 28° C. (say 51° F.), while Pouillet's differ from theirs by some 167° C. (300° F.), or five times as much.

The difference between my results and those of White and Taylor can readily be referred to the personal equation. First, one and the same red-hot object will produce on different eyes different impressions of color; and secondly, different minds will select different names for one and the same impression of color. Hence it is not to be expected that the temperatures which we have picked out as typical of the different color-names should agree accurately. Next, each name really corresponds, not to a single precise degree Fahrenheit, but rather to a range of temperature. Now even if by a series of coincidences we had agreed exactly as to the limits of each range, we should hardly agree as to the individual degree Fahrenheit in any range which typifies most accurately the name of that range.

But the difference between Pouillet's results and those of White and

their mean. Yet, strange to say, these old and discredited melting-points and melting-points of other metals determined under the same false conditions, though they are no more fit to be set up against modern determinations than are the maps of the Chaldeans to be set up against those of a modern survey, still linger in well-known and reputable books.

But Pouillet's determinations of the melting-point of gold and silver (2,192° and 1,832° F. respectively) differ from the mean of these nine later investigators by only 12 per cent. in case of gold and by only 4 per cent. in case of silver. In each case his results are above theirs.

Let the foregoing show that in advising abandoning Pouillet's data I am not ignorant of his worth. But, much as I respect his work, I am convinced that the temperatures which he has assigned to the different tints do not agree with common usage, be it because of his attempt to assign a special tint to each even hundred degrees of the Centigrade scale*, or because of some peculiarity of his eye, or because the names conventionally assigned in his country at that time to the color-impressions produced by different temperatures differed greatly from those now assigned to them here, or for whatever reason. I certainly have found my own color-impressions in reasonable agreement with those of other metallurgists; and on examining carefully my own color-impressions caused by definitely-known temperatures, I cannot force them into agreement with Pouillet's.

It is to be hoped that Messrs. White and Taylor will carry their work a little farther. They give a definite degree Fahrenheit corresponding to each color-name. While it is well to give such a temperature as the typical or specific one to which each name most precisely corresponds, will it not be well to give, in addition, the whole range of temperature to which each name may more generically apply? For instance, while 1,975° is the temperature to which "Light yellow" most specifically applies, shall we not further give the boundaries between "Light yellow" and "yellow" on one hand and "White" on the other hand, saying "Light yellow," specifically 1,975°, generically 1,900° to 2,050°, etc.?

White and Taylor.			Pouillet.*			Howe.				
Name of color.	Temperature.		Name of color.	Temperature.		Excess + (or deficit -) over (or under) White & Taylor, deg. F.	Name of color.	Temperature.		Excess + (or deficit -) over (or under) White & Taylor, deg. F.
	C.	F.		C.	F.			C.	F.	
Dark red, blood red, low red.....	566	1,050	(Rouge naissant) Incipient red.....	525	977		Lowest red visible in the dark.....	470	876	.....
Dark cherry red.....	635	1,175	(Rouge sombre) Dark red.....	700	1,292	+242	Lowest red visible in daylight.....	475	887	(under Pouillet)
Cherry, full red.....	746	1,375	(Cerise naissant) Incipient cherry red.....	800	1,472	+297	Dull red.....	550 @ 625	1,022 @ 1,157	-23 @ -18
Light cherry, bright cherry, light red.	843	1,550	(Cerise) Cherry red.....	950	1,652	+277	Full cherry.....	700	1,292	-83
Orange.....	899	1,650	(Cerise clair) Light cherry red.....	1,000	1,832	+282	Light red.....	850	1,562	+12
Light orange.....	941	1,725	(Orange foncé) Dark orange.....	1,100	2,012	+362				
Yellow.....	996	1,825	(Orange clair) Light orange.....	1,200	2,192	+467	Full yellow.....	950 @ 1,000 @ 1,050	1,742 @ 1,832 @ 1,922	-83 @ +7 @ -53
Light yellow.....	1,079	1,975	(Blanc) White.....	1,300	2,372	+172	Light yellow.....	1,150	2,102	-98
White.....	1,205	2,200	(Blanc éclatant) Brilliant white.....	1,400	2,552		White.....			
			(Blanc éblouissant) Dazzling white.....	1,500 @ 1,600	2,732 @ 2,912					

*Comptes Rendus, III, p. 784, A. D. 1836.

Taylor are far too great to be referred to the causes just mentioned, and must, I think, be referred to gross errors of color-naming on Pouillet's part.

In view of the reasonable agreement between the results of White and Taylor and my own, they may be regarded as in a measure confirming each other and opposing those of Pouillet. The latter, while in my opinion widely at variance with the common acceptance of the color-names, are the ones usually given in text books. I wish to remonstrate against their further retention, because I believe them to be far wrong and extremely misleading, and I recommend that the results of Messrs. White and Taylor be adopted in their stead.

Of course, when we attempt to displace data which have been so widely circulated and replace them with others, we must proceed carefully, especially in view of the high standing of Pouillet, who certainly played a most important part in advancing pyrometry. Barus, in his late classical work on pyrometry, has justly testified to the worth of Pouillet's work. And, from comparing his melting-point results with those of modern observers, I have been struck with the closeness of their agreement, especially when this is contrasted with the great discrepancy between modern results and those of Pouillet's predecessors.

Thus comparing the results of nine respectable pyrometricians who have, since Pouillet, determined the melting-points of pure gold and of pure silver independently, by different methods and under different conditions, I find that the greatest deviation from the mean is only 3 per cent. in case of gold and 2.2 per cent. in case of silver. Compare this modern accuracy with Wedgwood's determination of the melting-point of silver, 165 per cent. above the mean of these nine observers; and even with Daniell's melting-point of gold, about 33 per cent. above

It may not be amiss to touch on the question whether different substances give out different color tints for one and the same temperature. I think that there is a general belief that they do, but that this is a mistake. My reason for thinking so is the following:

We of course see objects only through differences either in the tint or intensity of the light reflected from them. Objects which emit the same tint and intensity of light cannot be distinguished from each other, no matter how different their texture, surface or shape may be. I have often, in operating on relatively small furnaces, brought the temperature at all parts of the heating chamber to very closely the same point. When this is done, all the different objects inside the furnace (fire-brick, sand, platinum, iron) after growing fainter and fainter, finally become absolutely invisible. The effect is often very striking. It is not at all due to the eye being dazzled, because this effect can be produced at a low yellow heat which does not dazzle the eye in the least. It is simply because every object, being at exactly the same temperature, emits the same tint and intensity of light; as all light from without is shut out by the enclosing walls of the furnace, the light which reaches the eye from objects within the furnace comes solely from their incandescence; and as the incandescence of all is exactly the same, they cease to be distinguishable from each other and from the furnace walls; or, in short, they become invisible. This phenomenon, which I have never seen described by any other observer, seems to me to show very clearly that these different substances must emit exactly the same tint for any one given temperature; for if they emitted different tints they would remain distinguishable from each other, or visible.

*American Society of Mechanical Engineers, December, 1899, Meeting. See "Engineering and Mining Journal," December 23d, 1899.

†My results were obtained in 1891 by means of the Le Chatelier pyrometer, but were not published till Messrs. White and Taylor published them for comparison with their own. Their results deserve much greater weight than mine because based on the color-impressions of several different people.

‡"Bulletin No. 54," United States Geological Survey, p. 28, A. D. 1889.

*In proposing these color names, Pouillet tried, not as might have been well, to assign to each color-name the temperature, or better, range of temperature to which it corresponds, but to assign a color-name to each even hundred degrees of the Centigrade scale; and this he did evidently with some misgiving, saying that he "believes that, without departing too far from the accepted meanings, we can make a distinct color-tint correspond to each hundred degrees." Thus his data should be taken as tentative; but the text-book writers have taken them as ex cathedra (Comptes Rendus, III, p. 784, A. D. 1836).

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

WHEN INCOME MEANS GROSS INCOME.—Where a lessor's royalty, by the terms of a lease, was fixed at one-eighth part of all oil produced and saved, delivered free of expense, into tanks or pipe lines, and on gas "at the rate of one-eighth of income in dollars per year," the income referred to was the gross income.—*Busbey vs. Russell* (18 Ohio Circuit Court Reports, 12); Circuit Court of Ohio.

OIL RIGHTS IN PENNSYLVANIA.—A. and B. were the owners of the oil rights on adjoining farms, on which wells were drilled. The wells were old and B. employed gas pumps on his wells, which, by their powerful suction, increased the flow of oil in B.'s wells and decreased the flow in those of A. The latter filed a bill to restrain B. from using such pumps. The Court held that the owner of land owns the oil and gas under it only so long as it remains in the land, and that B. was only exercising his lawful rights.—*Jones vs. Forest Oil Company* (30 Pittsburg Law Journal, 58); Court of Common Pleas of Pennsylvania.

WHAT WELLS MUST BE DRILLED BY LESSEES.—The lessee of an oil and gas lease is bound to drill, without unnecessary delay, as many wells on the leased premises as may be reasonably necessary to secure the oil for the common advantage of the lessor and lessee, and in so doing must take into consideration the number and location of wells on adjoining lands. Where one having a lease of lands confined

ABSTRACTS OF OFFICIAL REPORTS.

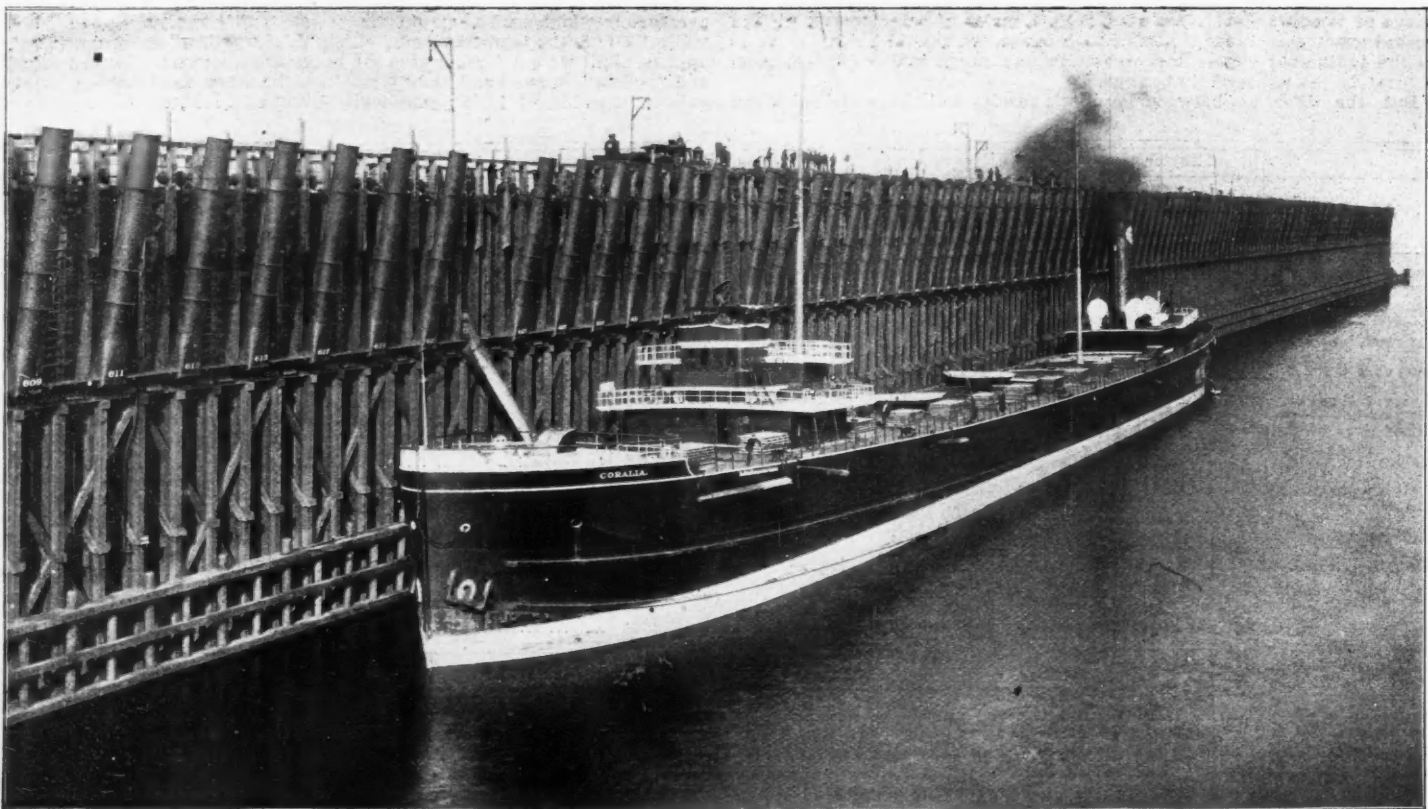
Utah Consolidated Gold Mines, Limited, Utah.

This company has issued a preliminary report, in circular form, which is as follows: "The directors consider that it would be better to have the accounts for the future made up to December 31st in every year, instead of to September 30th, as was done in the year 1898. It will not be possible to submit to a general meeting of the shareholders completed accounts and report for 1899 until later in the year. In view of this delay the directors think it desirable to give to the stockholders some information with regard to the present position of the property.

"When the present management assumed control, in April last, there had been developed by means of tunnels Nos. 4, 5 and 6 three distinct bodies of sulphide copper ore, estimated to contain 550,000 tons. Since that time, in addition to systematic cross-cutting of the existing ore bodies, work has been vigorously pushed on tunnel No. 7 (which is 100 ft. below tunnel No. 6), with the object of determining the existence and extent of these three ore bodies on that level. In September last ore body No. 1 was struck in tunnel No. 7, and cross-cutting is now being carried on to determine its area, and the tunnel is also being carried forward to determine the existence of ore bodies Nos. 2 and 3.

"From developments made since April last it is safe to estimate at present upon the existence in mine of 900,000 tons of sulphide copper ore. Shipments of ore have been made from the mine to the smelter since last May.

"The existing buildings and equipment at the mine are inadequate, so plans have been made for a new power house, office, upper tramway



ORE DOCK AT ESCANABA, WITH VESSEL LOADING.

his operations to one portion of such land, having wells on adjoining lands near the other portions, it was held by the court that unless lessee stipulated within 20 days after notice to commence to drill a well within 20 days afterward, the lessee should be held to have abandoned the lands with the exception of the well in operation and a space of 500 ft., together with rights of way, etc., incident to the operation of such wells.—*Colgan vs. Forest Oil Company* (30 Pittsburg Law Journal, 68); Court of Common Pleas of Pennsylvania.

"PERMANENT MONUMENTS."—Posts from 5 to 7 in. in diameter, firmly planted in the ground at the corners and ends of a mining claim, and standing not less than 5 ft. above ground, are permanent monuments, within the meaning of the Revised Statutes of the United States, section 2,324, requiring all records of such claims to contain a description of the claim by reference to some natural object or permanent monument as will identify the claim, and a recorded notice, which, in addition to a reference to such posts, also gives the general direction and distance of the claim from a lake and a river, is a sufficient compliance with the statute.

Where there is a conflict of evidence as to which one of two posts is the one set by the locator of a mining claim to mark one of the corners, one of which would exclude, and one include the discovery on which the location was based, and the work done by the locator, and the official survey for a patent was based on the latter on information by the locator who set the posts, the testimony in favor of that as the true corner which sustains the survey and the validity of the location will be preferred.—*Credo Mining and Smelting Company vs. Highland Mining and Milling Company* (95 Federal Reporter, 911); Circuit Court of the United States.

terminal, coal pockets, freight elevator, warehouse and shops, which, with the necessary machinery equipment, will cost about \$60,000. When these improvements are carried out the company will be in a position to mine and handle its ore more economically than at present.

"The smelter was put in commission in the last of May and during the first two months of its operation the usual trouble in starting a new plant was experienced. It was found that the capacity of the three calcining furnaces was considerably in excess of the three reverberatories, so a fourth reverberatory furnace is now being built. Complete plans have been prepared for doubling the present smelter capacity. This will only necessitate the building of three or four more reverberatory furnaces with the necessary calcining apparatus and the addition of two converter stands, as the smelter, as it is now built, is provided with a power plant of sufficient capacity to take care of double the tonnage. No new buildings will have to be erected, but simply extensions of those which are at present existing. The total cost of this enlargement of the plant will be, approximately, \$150,000. Our smelting plant is the most modern in existence in the United States to-day. The mechanical handling of the ore and products has been carried out to perfection.

"The following summary of results is calculated from the time the smelter was put in commission up to and including November 30th, 1899. As has been stated above, the smelter did not get into regular running order until July 1st. From the time of its blowing-in until November 30th, the total production of fine copper was 3,016,975 lbs. The gross receipts from sales of copper, silver and gold were \$589,845; the expenses at mine and smelter, including all expenses of handling copper, such as freight, commissions and expense account, \$284,245. This leaves \$305,600 as net income for the period."

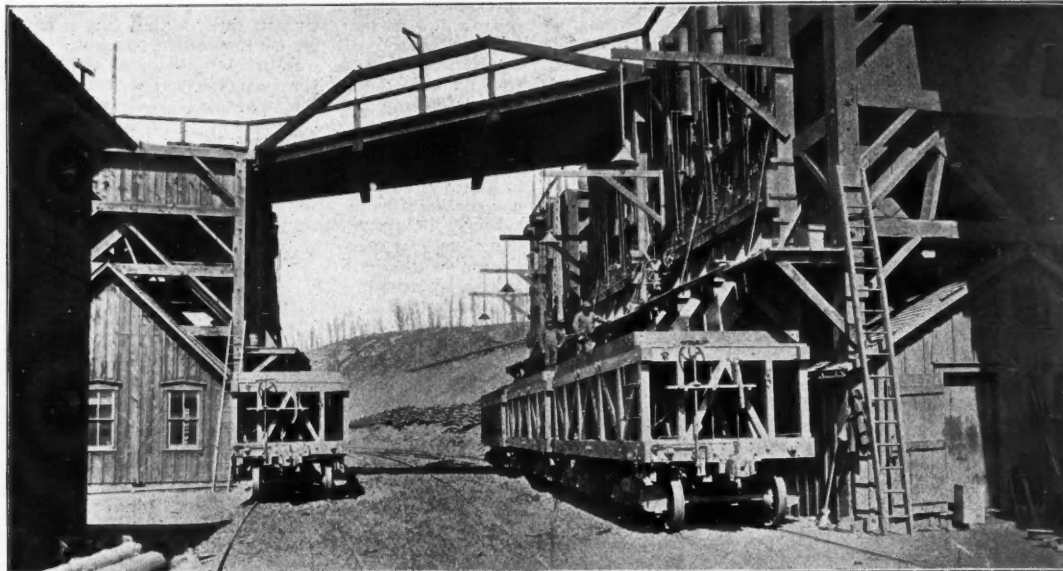
IRON ORE—FROM MINE TO FURNACE.

Written for the Engineering and Mining Journal by Waldon Fawcett.

In this age of engineering and industrial marvels none is more striking than the methods employed in the transportation of iron ore from the mines in the district surrounding Lake Superior to the furnaces in the Mahoning Valley and the vicinity of Pittsburg. Almost every link in the whole system is unique. Nowhere else in the world

The ore docks contain bins or pockets with chute attachments and the ore, which is always stored in large quantities, is easily allowed to escape through the chutes into the holds of the vessels. In this way huge steel freighters, each carrying anywhere from 5,000 to 8,000 tons of ore may be loaded at these docks in the space of a few hours.

Engaged in carrying ore on the great lakes is a fleet of several hundred vessels, capable of moving in a single season more than 18,000,000 tons of iron ore. Almost all of these vessels are of steel construction; many of them are of between 400 and 500 ft. in length—the



ORE CARS LOADING FROM BREAKER.

is freight moved so cheaply as on the great Lakes and likewise, nowhere else are cargoes transferred from cars to ships and from ships to cars with such rapidity. The whole plan of handling iron ore from the time it is taken from the ground until its conversion into pig iron has, by reason of the economy of time and money involved, excited the unbounded admiration of the great numbers of foreign engineers who have within the past few years visited the Lake district, and has been one of the principal factors in inducing a proper appreciation of the possibilities of American competition in the future.

In the half century which has intervened since the first shipments of iron ore were made from Marquette the total output of iron ore from the Lake Superior District has amounted to nearly 150,000,000 tons, and at such a pace has development gone forward that the product of the region now represents fully three-fourths of the total consumption of iron ore in the United States. That the climax has by no means been reached even yet is evidenced, however, by the record of the season of 1899 and the preparations in progress for 1900. During the year just closed the output from the Lake Superior iron mines aggregated between 18,000,000 and 18,400,000 tons. This is more ore than was mined during the whole 30-year period of shipments previous to 1882. In the period from 1890 to 1895 shipments were regarded as very heavy but the movement of the season of 1899 is equal to that of any two seasons within the years named.

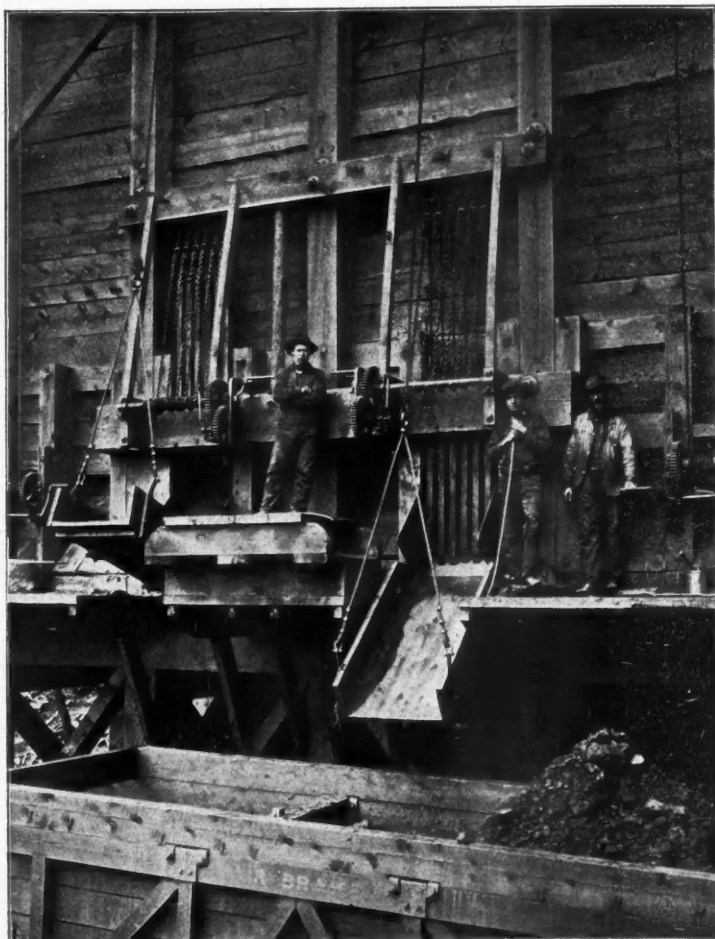
For the year 1900 the record will be even greater in proportions. Supreme efforts are being made to attain maximum capacity in every phase of the industry and there can be hardly a doubt but that the total output for the year 1900 will be over 19,000,000 tons of ore and there may be found plenty of well informed men who are ready to predict with the utmost confidence that 20,000,000 tons will be reached.

The development of the existing condition of affairs in the iron ore industry commenced of course at the mines with the provision of additional men, steam shovels of greater capacity, etc., but it may be attributed chiefly to the improvement of transportation methods and facilities. Of primal importance in this connection has been the betterment of the railroads which afford communication between the mines and the shipping ports on Lake Superior. Within the past few years the lines have been greatly extended, opening up communication with many mines and the roadbeds underwent much needed repairs. The real era of changed conditions may be said to date from the time John D. Rockefeller came into control of one of the ore carrying roads at the head of the lakes. More powerful locomotives and larger cars were secured and thus with the increase of speed in the operation of trains the carrying capacity was increased, both directly and indirectly.

The link which joins the rail and water transportation of the ore at the upper lake ports is furnished by more than a score of ore-shipping docks. They are located at Two Harbors, Duluth, West Superior, Ashland and Marquette on Lake Superior and at Escanaba and Gladstone on Lake Michigan. There are four docks at Escanaba; two at Ashland; five at Two Harbors; two at Duluth; four at Marquette, and one each at Superior and Gladstone. Several other docks are either in course of erection or will be constructed by next season.

The ore docks range in length from 500 to 2,300 ft.; in the number of pockets from 90 to over 300 and in storage capacity from 12,000 to 70,000 tons each. The aggregate length of the docks exceeds five miles and their 4,500 pockets will afford storage room at one time for over 660,000 tons of iron ore. In the matter of the amount of ore shipped the ports of Escanaba, Ashland, Two Harbors, Duluth and Marquette are approximately on a par in that each ships annually between 2,000,000 and 3,000,000 tons.

size of the transatlantic liners of a few years ago—and single vessels in the fleet are capable of carrying a cargo of more than 8,000 tons. Some idea of the magnitude of this great fleet may be imagined when it is stated that there pass through the Sault Ste. Marie Canal connecting



ORE CAR LOADING AT MINE.

Lakes Huron and Superior each year many more tons of freight that pass through the Suez Canal in the same period. The Lake ships, the best examples of which are engaged in the iron ore carrying trade, are unique among the shipping of the world. The

boats are, of course, very long with rounded ends and no deck is laid on the maindeck beams in the cargo holds. The season of navigation is limited by ice to seven or eight months each year and during that time an average ore boat will make 20 round trips down and up the 1,000 mile stretch of the Lakes, usually making the return trip empty save for water ballast. Almost all the vessels could secure cargoes of coal for transit up the lakes on the return trips, but such is the anxiety of the great iron and steel producing interests to move every ton of raw material possible in the limited season of navigation that the owners prefer to send the ore carriers back light rather than to allow the delay necessary to take on and discharge cargoes of coal.

Inasmuch as the ore is put into the vessels by means of chutes, as has been explained, and is removed by automatic machinery the vessels themselves carry no hoisting machinery but are in all cases fitted with the greatest possible number of hatches in order to facilitate the work of loading and unloading. It is possible to load with ore to nearly the full capacity of a boat since coal for fuel may be readily procured at various points in the rivers which connect the lakes and thus it is unnecessary to give up any great amount of space on board to the storage of fuel.

The monster type of ore carrying vessel which has been developed on the Great Lakes within the past few years owes its existence to the entrance into the field of the Rockefellers, the Carnegie Company and other great producing interests. The Rockefellers were the first of the great moneyed interests to enter the field, and the policy of their representatives from the outset was to secure not only larger vessels than had previously been constructed, but the strongest vessels which could be built. For instance, in the planning of the steamers there was discarded the old idea of securing a vessel that could be loaded with every ton of ore which could possibly be moved in a hull of her dimensions. Thus in the case of the steamers there was a sacrifice, but it was to gain indirectly a greater benefit, for Rockefeller's larger and more powerfully engine steamers are each able to tow down the lakes two of the largest steel barges on the inland seas. Thus a single engine will traverse the entire length of the lakes at an average speed of 11 miles per hour, moving cargoes representing in the aggregate fully 20,000 tons.

Fully two-thirds of the ore-carrying vessels on the great lakes are now controlled either by outright ownership or long time charter, by the great iron and steel-producing interests of the country. John D. Rockefeller controls a fleet of upward of 70 vessels; Pickands, Mather & Company probably have half as many; the Carnegie Steel Company will have in service on the lakes in 1900 a fleet of about 15 good-sized vessels. M. A. Hanna & Company have a good fleet and the American Steel & Wire Company and other interests secured fleets of varying size by purchase during the autumn of 1899. Eventually the entire ore carrying fleet will be practically in the hands of the large industrial combinations. This is to be expected as a natural sequence of the manifest policy of the large interests to control not only the ore in the ground and the furnaces, but every step of the transition through which the raw material passes between those two points.

(To be concluded.)

SAN MIGUEL COUNTY, COLORADO, MINES IN 1899.

By Our Special Correspondent.

San Miguel County has enjoyed its usual prosperity and maintained its reputation as one of the most substantial mining districts in the State; but for the smelters of the State shutting down last summer its output in both tonnage and value would have been considerably larger. The smelter strike came when several new companies were preparing to take hold of promising propositions, and resulted in all these negotiations being abandoned or suspended. The strike, however, did not seriously affect the older and larger mines, whose product, consisting of either concentrates or gold retorts, or both, is shipped to smelters or the mint, as the companies managed to store their products, and the value of the total output for the year is thought to be about the same as that for 1898, which was estimated at \$3,000,000.

More new mills have been constructed than during any previous year in the history of the county, and the milling facilities for 1900 will be double what they have been. The cyanide process has been introduced, and there will probably be more than half a dozen such plants in operation before 1901.

The number of men employed in and around the mines and mills of the county have probably aggregated 1,450, as follows: Smuggler-Union, 300; Tomboy, 225; Liberty Bell, 125; Nellie & Ella, 40; Gold Run Placer, 25; San Juan Gold Mining Company, 75; Palmyra, 20; Terrible & Butterfly, 60; San Bernardo, 10; Silver Bell, 15; Butler, 10; Silver Pick, 75; Special Session, 15, and miscellaneous, including those employed in the Saw Pit District, 100. The eight-hour system started at the mines last June, pending a decision on the constitutionality of the so-called eight-hour law, and still holds at all the larger properties. The mill men work 12 hours, and the majority of those on outside work, 10 hours. The eight-hour schedule has proven so satisfactory, the miners going to and returning from work on their own time, that it is not likely to be changed so long as the present agreeable conditions prevail. The average wage paid to miners are \$3 per day; to outside laborers, \$2.50; mill men, \$4, and to carpenters, \$4. Most of the miners board at the company boarding houses, and for their meals and a place to sleep are charged \$1 per day. It is estimated that more than \$1,500,000 have been paid out in wages in connection with the mining industry during the year, and that the wages paid in industrial lines would bring the total up to \$2,000,000. There have been more transfers of mines than in any previous year. The purchasers as a rule have been Eastern companies, with abundant means to equip and develop the properties on a large scale.

The largest sale of the year was that of the Smuggler-Union mines and mill, about May 1st, to the New England Exploration Company, composed largely of Boston men, on a basis of \$2,000,000. Soon after

the purchase the new company started work for a new mill, which was hurried to completion. By well posted persons, the mill is considered, without exception, the finest in the State. It cost approximately \$200,000, and will have a capacity of 200 tons of mineral in 24 hours. It contains 60 rapid-drop stamps 1,050 lbs., and a large number of concentrating tables. It shows an innovation in the treatment of ores in San Miguel County by adopting what is known as triple concentration. From the stamps the product goes to Gilpin County bumping tables, thence to arrastras, in which it is re-ground, thence to Wilfley concentrating tables and from them to Frue vanners. By this treatment a closer saving is obtained than ever before. The new mill has been in operation only a few days. The old mill, which has a capacity of from 175 to 200 tons daily, will be kept steadily running. The two will therefore consume about 400 tons in 24 hours, just double the amount taken by the old mill during the past year. In 1900 the mines will employ between 500 and 600 men, whereas heretofore from 200 to 250 were carried on the pay roll. At a consumption of 200 tons daily, it has been estimated there is enough mineral blocked out to last many years. The vein is variable and ranges from 2 to 10 ft. wide. In one stope there is a body of mineral between 5,000 and 6,000 ft. long by 250 ft. deep exposed. The levels are 250 ft. apart, and the lowest workings are about 1,600 ft. below surface. A large tunnel is being run on the Pennsylvania vein, a lead reported to be almost as valuable as the Smuggler-Union, which will cut the Smuggler vein 600 ft. below the present lowest workings. The Pennsylvania will no doubt begin to figure as a producer in the near future. The more important mines are careful about making the value of their production public, but from a reliable source it is learned that the tonnage output of the Smuggler-Union mines for 1899 was approximately 70,000 tons, worth approximately \$600,000, the values about evenly divided in gold and silver. Arthur L. Collins of Telluride is manager of this property.

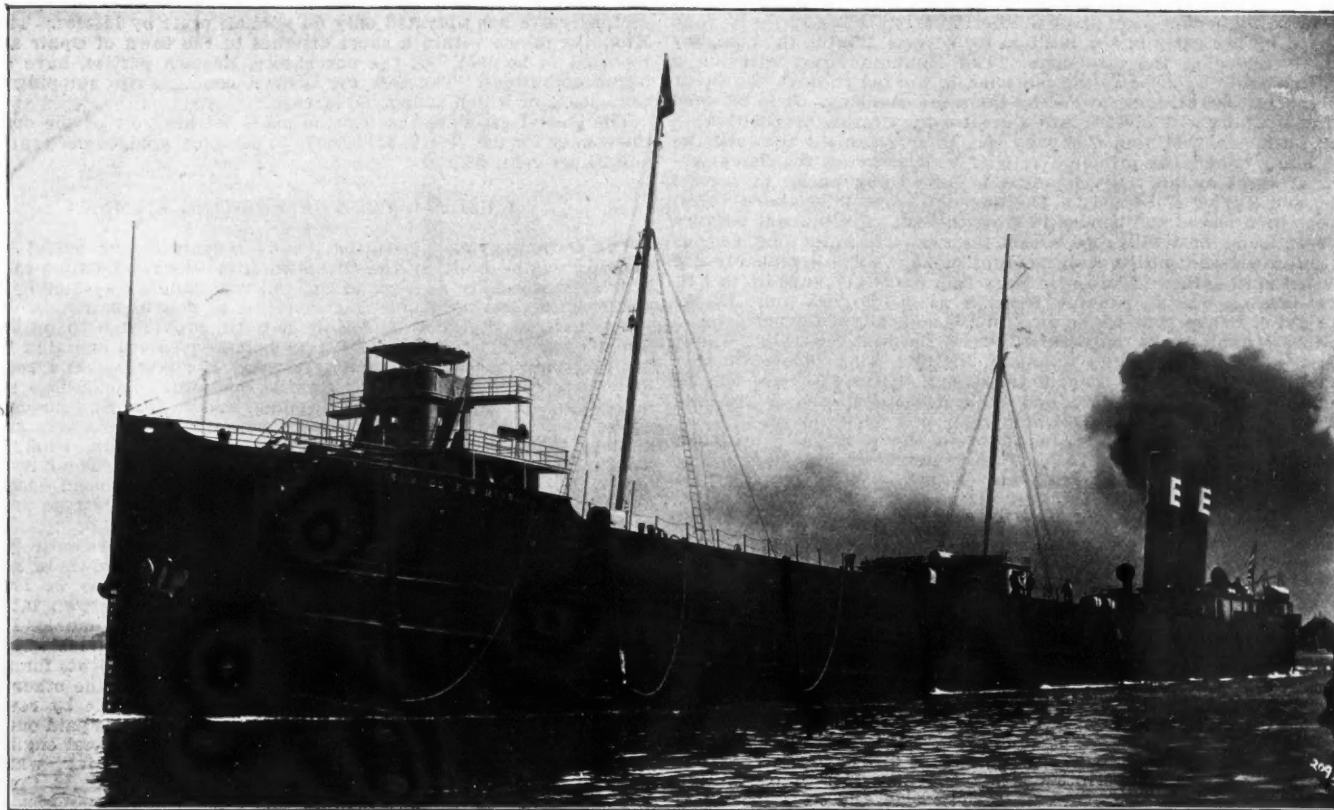
The Tomboy mines and mill have been running like clockwork, under the management of General Superintendent John Herron of Telluride. This property has made the highest record in value of any in the county for the year. While the statement is not official, the figures can be absolutely relied on; the value of the output is between \$610,000 and \$625,000, nearly all in gold. Heavy development work has gone on in various parts of the mine, and there are $3\frac{1}{2}$ miles of drifts, etc., on the vein. A three-compartment vertical shaft is down to the 800-ft. level, and will be sunk deeper. Sinking has been handicapped by a small hoist, but this difficulty will soon be remedied by a first class 12 by 15-in. engine with 4-ft. drums, with a capacity of handling 400 to 500 tons daily from a depth of 500 ft. The 2,100-ft. mill cross-cut tunnel intersects the vein at the 600-ft. level, and through it the ore goes to the mill. The new hoist will be on this level, so it can handle the above tonnage for 500 ft. below. The vein is being opened in both directions from the 700-ft. station, and as good ore is being opened as in the upper workings. The vein is the largest in the district, being from 8 to 16 and 20 ft. wide, while it is soft and easily mined compared with most of the mines. Pockets of rich mineral are occasionally met, one struck two or three months ago being worth from \$5 to \$6 a pound. The mill is supplied with water from Lake Farmigan, about 12,000 ft. distant on the opposite side of the range. Last summer wire was run to the lake, and the pumps can now be driven by electricity. All the mill machinery is run by electricity, but the mill is also equipped with steam power sufficient to operate the entire plant, should there be necessity. There are stated to be great reserves of ore in sight, but not all of this is adapted to the present treatment. The mill contains seven large Huntington mills and between 20 and 30 concentrating tables. Four-fifths of the values, if not more, are saved on the plates by amalgamation, giving the property the reputation of being one of the greatest free milling gold propositions in Colorado. The ore produced for the year is approximately 54,000 tons.

The Japan mines, just below the Tomboy in Savage Basin, owned by David Swickheimer, T. Walter Beam, A. J. Clark and B. W. Thayer of Denver, produced about 12,000 tons of ore, which yielded approximately \$250,000, one-half silver, one-fourth gold and one-fourth lead. The low and medium-grade ore was concentrated on the basis of four and five tons into one, while the high grade was shipped crude to smelters. The concentrates average about \$100 per ton in the three metals, and the high grade usually nets from \$750 to \$1,000 per car. The production was not as great as in 1898, on account of the mill not running smoothly, and Mr. Swickheimer, who is in Telluride most of the time, says that it is intended to renovate the entire plant the coming spring and summer. The mill recently closed down on account of a scarcity of water for milling, but in the mine systematic development will continue. The Japan vein on Japan ground carries 14 in. of solid ore and on Climax ground, an adjoining property, $2\frac{1}{2}$ ft. For uniformity of size and value it has no superior in the county. Number 2 level, below the tunnel level, has been opened by 1,200 ft. of drifting; No. 3 level by about 800 ft., and from these levels practically no ore has been taken. The shaft will be sunk still deeper and levels will be run from the 100-ft. stations.

The Liberty Bell Gold Mining Company, J. W. Mercer, of Telluride, general manager, has made considerable progress the past year, and for 1900 promises to work the second largest proposition in the county. At the beginning of 1899 and during the year most of the mill work has been experimental. Notwithstanding this, the tonnage output is estimated at 24,000 tons by the manager. The principal value is gold, the other being silver. It is not the policy of this company to make public the value of its ore or the production within a given period. The mill, located one-half mile east of Telluride, in the spring of 1899 contained only 20 stamps. During the summer 20 more were added, and the framing is done for 40 more. This capacity of 80 stamps will enable the mill to treat 300 tons of Liberty Bell ore in 24 hours. For more than a year the manager has been experimenting on the mill tailings with cyanide and has demonstrated that gold and silver values which have been allowed to flow into the river could, by cyaniding, be recovered at a profit. Having no place to store tailings, the mill

recently closed down until a cyanide plant can be erected to handle the tailings from 300 tons of ore daily. It is expected to have these works and the 40-stamp addition to the mill ready for work by spring. The former will contain 10 leaching vats each holding about 250 tons.

miles above Telluride. Carl Anderson, now of Telluride, negotiated the deal and is manager of the property. In two months a cyanide plant of 100 tons daily capacity has been constructed, containing six leaching vats 25 ft. in diameter by 5½ ft. deep, each capable of holding 100 tons,



ORE CARRYING STEAMER "SAMUEL F. B. MORSE," OF THE ROCKEFELLER FLEET.

The mines are a low-grade proposition, and for this reason the manager says work on the improvements is being hurried in every possible way. The mining force has been reduced temporarily, but an equivalent number of men has been put to work above ground. The mines are

and a solution department embracing seven tanks 22 ft. in diameter by 6 ft. 6 in. deep. The plant has been built to treat 200,000 or 300,000 tons of mill tailings which have come down from the Smuggler-Union, Tom Boy, and other mills in Marshall and Savage Basins, and settled



WHALEBACK ORE CARRIER "ALEXANDER McDUGALL."

being systematically developed, and it is said they are easily capable of outputting 300 tons of ore daily.

A few months ago the San Juan Gold and Silver Recovery Company purchased the Gold Run placer at the head of San Miguel River, 1½

on the placer, in places more than 10 ft. deep. By repeated tests it has been shown that the tailings carry from \$5 to \$6 per ton in gold and silver, and the manager expects to save about 75 per cent. of the values. A contract has been made with the Smuggler-Union Company to handle

the tailings direct from its old and new mills. The manager is experimenting with the pneumatic cyanide process, and believes that in a few months the capacity of the plant will be increased to 200 tons daily. The company is composed largely of St. Louis men.

The Ophir Tunnel and Development Company's boarding and bunk houses and air compressor plant at the Cimarron Mine and mill were destroyed by fire early in the fall and for several months the company has been replacing the structures. The Montana Mine, carrying a very large vein of concentrating material, is worked through the Ophir Tunnel, over 3,000 ft. long, owned by the same company. It is believed that the Montana will develop into a great concentrating proposition.

The Little Mary Mining Company has been organized to work the Little Mary mines, the principal vein of which crosses the Smuggler-Union at right angles. Development is now going ahead in several places, and Taylor & Leonard's 20-stamp mill, one mile above Telluride, has been leased and bonded to treat the ore. Preliminary surveys have been made for a wire rope bucket tramway 2.67 miles long, to connect the mines and mill, but on account of snow it will probably not be erected until spring. The Little Mary vein carries from 20 in. to 4 ft. of gold-bearing quartz, running as high as \$60 to the ton. E. W. Waybright of Denver, one of the directors, is manager of the company.

Another cyanide plant that has only recently been completed is that of the San Juan Gold Mines Company in Gold King Basin. It is a steel tank plant after the plan of the Argall works at Florence. As it stands to-day it cost \$125,000, and has a normal capacity of 200 tons in 24 hours, which can be materially increased under pressure. The company has treated scarcely any mineral the past year, the time being consumed in building the new mill and developing the mines. A wire rope tramway of the Finlayson pattern, a little over 4,000 ft. long, was lately completed between the mill and the Bessie group of mines. Everything is ready and the mill and mines will start in a few days. The mines are opened by 2,200 ft. of work; above this it is calculated there are 230,000 tons of ore which can be extracted with scarcely any more development, while 6,000 tons are on the dump. Samples have been taken every 5 ft. along the vein, and it is definitely known that the product will average \$10 per ton. The southeastern extension of the Gold King, the oldest gold producer in the county, crosses this group and it is on this lead that some of the finest mineral is blocked out. The coming year it is thought this property will be one of the largest producers in the county. Senator W. S. Buckley of Telluride is Western manager.

The Alta Mine, at the head of Gold King Basin, forged rapidly to the front during the last half of the year. It is owned by N. T. Mansfield, formerly general superintendent of the Smuggler-Union Mines; J. L. Brown and Frank W. Graham of Telluride and A. J. Clark of Denver. Development has been the main object, and there are now two levels on the vein 227 ft. apart, one in 1,400 ft. and the other 900. Shipments have been made at regular intervals, and the ore has netted as high as \$900 per car at smelters, the values being about evenly divided in silver and lead with some gold. The mine has the reputation of being the nearest strictly lead mine in the county. Late in the fall 10 stamps of the Gold King 40-stamp mill were leased for treating the dump ore and the low medium from the mine, which would not pay to ship crude, and a bucket tramway 2,000 ft. long was built from the dump to the mill. The ore is concentrated on the basis of 6 tons into 1, and the product carries high values. The vein averages 4 ft. of milling and smelting ore, and the coming season the mine will doubtless be the second largest shipper in the county. Sixty-three cars of ore and concentrates were shipped the past year, most of it from development work.

Twenty to 25 stamps of the Gold King mill have been constantly dropping on ore from the Gold King Mine, which has been worked by several sets of leasers most of the year. This property is owned by the Gold King Consolidated Mining Company, of which L. L. Nunn of Telluride is general manager, most of the stockholders being residents of Ohio. The ore is low grade, but is absolutely free milling, which enables it to be treated at a profit. The output for the year is probably less than \$100,000.

The Palmyra group in Gold King Basin was late in the fall purchased by the Four Metals Mining Company, which immediately started systematic development work. Recent disclosures indicate that the property is destined to be a profitable producer when equipped with a mill and tramway. A tunnel in progress on the Palmyra vein for more than two months past has shown from 4 to 5 ft. of ore, some of it running as high as \$600 per ton in gold and silver, but the bulk of it milling rock. The group comprises seven claims and three mill sites, and in addition to the Palmyra development is being carried on on the Atlanta. New boarding and bunk houses have been built and work will go on throughout the winter. Next spring work may start on a 30-stamp mill. J. H. Shockey of Telluride is resident manager.

The Nellie & Ella Mines in Bear Creek, near Telluride, owned by the North American Exploration Company, and the Silver Pick Mine, on Mt. Wilson, owned by the Mt. Wilson Gold and Silver Mining Company, have been worked but a few months the past year, the former on account of litigation over a portion of the Nellie vein, and the latter by a series of mishaps beyond the control of the management. These two properties heretofore have been among the foremost gold producers of the county.

The Ophir District is thought to have produced upwards of \$225,000 in all metals. Of this amount the Carribeau & Montezuma mines have probably yielded \$75,000, and the Terrible & Butterfly about the same. The former properties are reported sold to the Venture Corporation, Limited, of London, for \$350,000. By the terms of sale the present milling plant is to be increased to 50 stamps within a few months, and one-third of the purchase price is to be paid on the completion of the mill. The old company is, however, still working the property. Papers were recently filed in the county clerk's office, transferring the Terrible & Butterfly group, owned by Knute Benson, Helen Benson and Gus Paro, to Calvin Bullock, for a consideration of \$200,000, and the instrument acknowledges the receipt of a cash payment of \$75,000. The balance is to be paid in two payments of \$62,500 each. There are large areas of

ore opened in both groups and they have never been worked to more than a third of their capacity.

The other principal producers have been the San Bernardo, Silver Bell and Suffolk, the two former being silver and lead producers and the latter gold. The Suffolk is a large mine, but for the past three or four years has operated only on a small scale by lessees. The New Klondike mines within a short distance of the town of Ophir are also reported to be sold, but the purchasers, Eastern parties, have not yet begun operations. The Saw Pit District contains two shipping mines, the output of which cannot be learned.

The closest estimate that can be made at this time of the output of the county for the year is \$2,500,000; 50 per cent. gold, 30 per cent. silver and 20 per cent. lead and copper.

A USEFUL TYPE OF HOISTING ENGINE.

The accompanying illustration shows a compact and useful type of hoisting engine built by the Ottumwa Iron Works at Ottumwa, Iowa. It is also especially adapted to the tail-rope haulage system in mines, and to mines having double-track inclines or double shafts.

The hoist is of the double-drum pattern, provided with brakes and jaw clutch. The two cylinders have balanced valves and link motion for reversing and for operating valves. The starting and reversing levers are conveniently placed for the operator. The beds are made in sections, for convenience in shipping, and in lowering down shafts where that is required. The usual sizes built by the makers are 7 in number, the smallest having 6½ by 8 in. cylinders, 24-in. drum, with a working load of 2,000 lbs.; the total weight is 6,000 lbs. The largest size has 15 by 18-in. cylinders and 66-in. drum, working load 8,500 lbs.; weight, 46,000 lbs. Special forms and sizes of the same type are built to suit special conditions in mines.

In this engine both drums have separate shafts and are entirely independent of each other in operation. They may be thrown in and out of gear either separately or together, or one drum may be lowering while the other is hoisting, or both drums may be thrown into gear and the engine used as a regular reversible engine, one load being hoisted while the empty cages are lowering. The obvious advantage of this style of engine for the tail-rope system is evident, for as one drum being thrown into gear winds up the main rope, the other drum, being loose with its shaft, pays out the tail-rope, while by reversing the engine the tail-rope is wound up and the main rope is paid out.

The makers claim that this is one of the most economical engines for general mining work, as no steam is used for lowering, while for hoisting the links may be hooked up, cutting off steam in the early part of the stroke, thereby making this equal to an automatic engine in the consumption of fuel. The post-brake foot treadles are held with a ratchet and located in a group with the clutch, reverse and throttle valve levers.

GRANITE QUARRYING IN MASSACHUSETTS IN 1899.

It is gratifying to chronicle a marked improvement in the granite business of Massachusetts during the past year. Certainly the quarrymen have waited long enough for a revival in the industry. The labor difficulties early in the year interrupted business considerably, but by the middle of March, after repeated committee meetings, the stone cutters compromised with the manufacturers on a scale of prices. But the number of workmen employed was reduced owing to the enforcement of the weekly payment law and the increased minimum price per hour. Since March the industry has been prosperous, and shipments have steadily increased. It is almost impossible to give statistics of the finished products shipped during the year, as no distinction is made between the rough and manufactured stone by the railroads. However, a nearly accurate estimate can be given, as much the larger quantity of rough stone is transported by the Quincy Quarry Railroad and but very little from the West Quincy or Quincy Adams terminal. The total amount of granite shipped in 1899 was approximately 264,100,347 lbs., of which about 176,066,898 lbs. were finished stock and the remaining 88,033,449 lbs. rough stone. In the year 1898 the total shipments were 217,043,110 lbs., or 47,057,237 lbs. less than 1899. These figures do not include the granite sent forward by teams or by water, of which there is a considerable amount, and of which no estimate is obtainable.

A feature of the industry was the attempt made early in the year to combine all the quarries in Quincy, but nothing definite resulted.

The minimum wages to be paid by the Quincy Granite Manufacturers' Association to their cutters from March 1st, 1900, are \$3 per day of eight hours. This is the request of the Cutters' Union. A change was also demanded in the price list for piece work, an increase of 35 per cent., so as to equalize the minimum price for day work. As yet no action has been taken on this matter by the Quincy Granite Manufacturers' Association. The granite men claim that the business is in no condition to stand such an increase in wages.

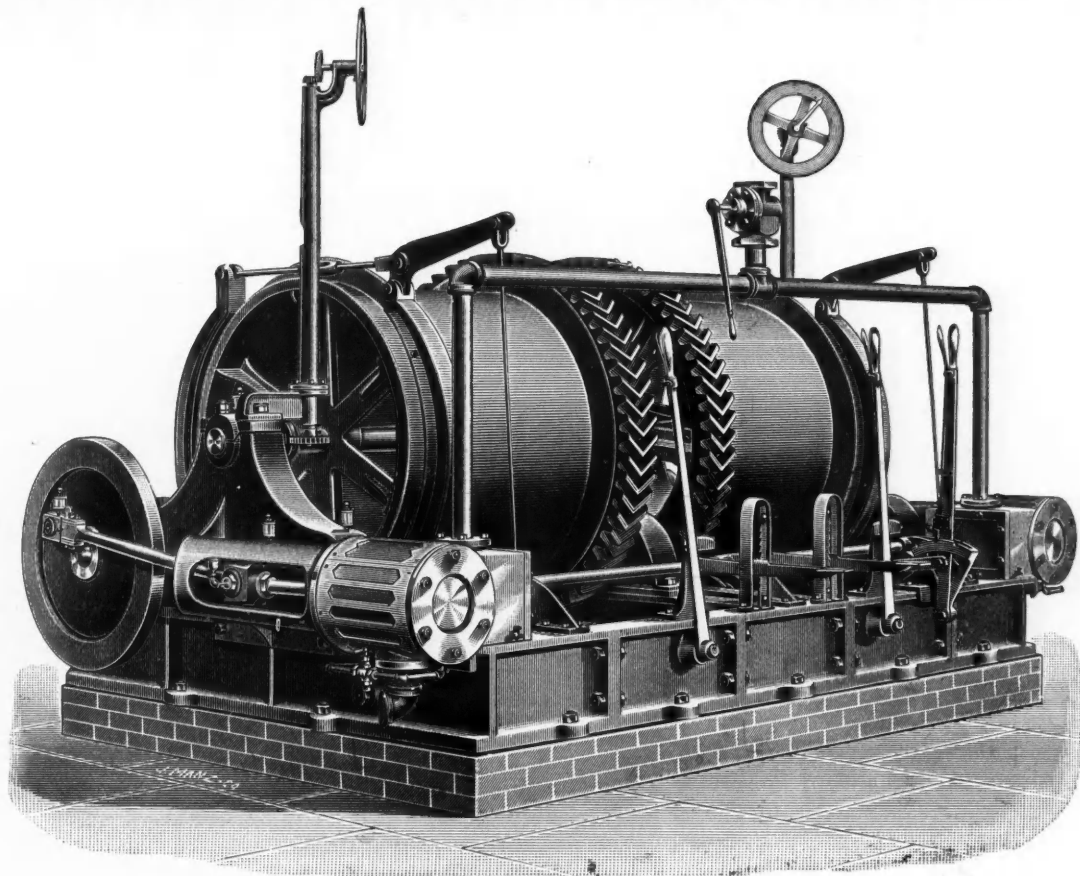
BORING FOR COAL IN FRANCE.—The London "Colliery Guardian" says that a bore hole, which it is intended to put down to a great depth by the diamond method, has been undertaken at Villerval, in the French department of the Nord, by the Chatillon-Commentry Company, and has now attained 150 m., after having passed through 140 m. of cretaceous measures. A declaration has also been made to the Administration des Mines by the Société des Acieries de Micheville of its intention to put down two holes to the south of the Pas-de-Calais coal basin. Other iron-smelting companies in the east of France, who are fearing that their supplies of German coke will fail them before long, and are naturally anxious to insure their supply, have made arrangements to put up coke ovens, not only in their own district, but also in the Pas-de-Calais, especially at Boulogne and Pont-a-Vendin, choosing this last named town because of its being provided with both railway and water communication.

THE BRISTOL ROUND RECORDING PRESSURE GAUGE.

The illustrations, Figs. 1 and 2, show exterior and interior views of a new round recording pressure gauge that is being placed on the market by the Bristol Company of Waterbury, Conn. This new form has been designed to meet a demand for a recording gauge at a lower price than the standard gauges of this company, which have, during the

tube, which causes the pen arm to move over the range of the chart without the necessity of any intervening multiplying devices.

COST OF WIRES FOR ELECTRICAL TRANSMISSION.—A convenient formula for calculating the costs of copper, iron or aluminum conductors is given by "L'Industrie Electrique." For a line of given



OTTUMWA IRON WORKS DOUBLE INDEPENDENT HOISTING ENGINE.

10 years they have been in use, acquired a high reputation for accuracy and durability. A special feature of the round form is that the dial is located slightly eccentrically to the main body of the case, thus

length and resistance the weight of the conductor is proportional to the product of the specific resistance and the specific gravity of the material used. The product is 78 for iron, 14.24 for copper and 7.54

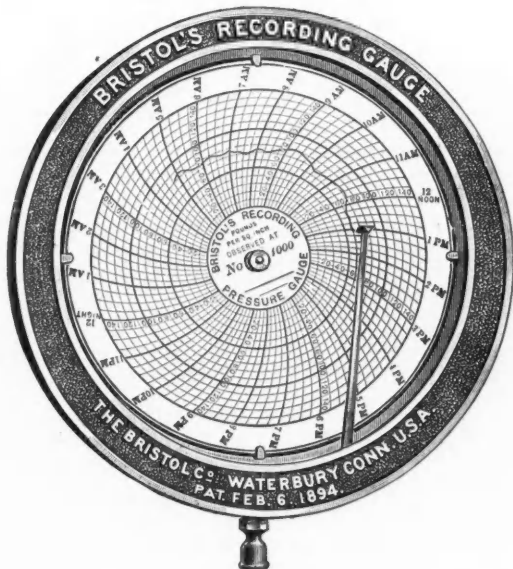


FIG. 1.

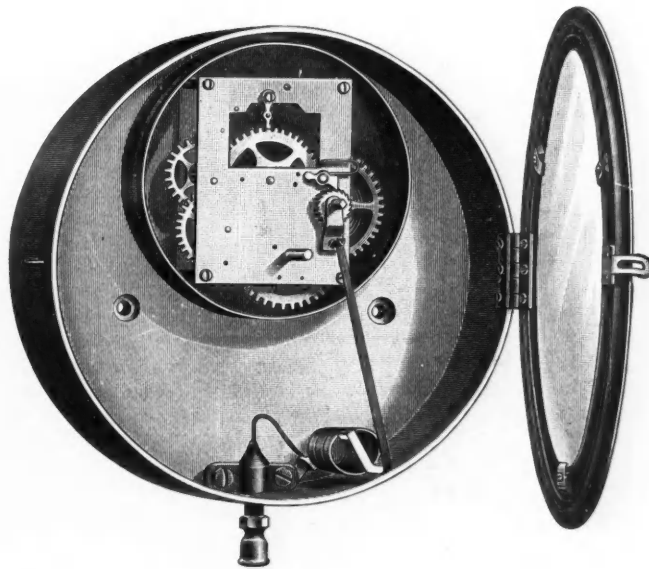


FIG. 2.

THE BRISTOL ROUND RECORDING PRESSURE GAUGE.

allowing sufficient space on lower side of the dial for the pen arm to pass out between dial and the case.

Fig. 1 shows the exterior of the gauge complete and ready for application. Fig. 2 shows the interior construction of the instrument and the extreme simplicity upon which its accuracy and durability depend to a large degree. The pen arm is directly attached to the free end of a tube of flattened cross-section which is bent into a helical form. The tendency of pressure applied is to straighten or uncoil the helical

for pure aluminum. If aluminum costs twice as much as copper, the cost of the line will be the same for the two materials. The actual

weight of the line will be $W = \frac{0.000205 L^2 r S}{R}$ where W = weight in pounds; L equals total length of line in feet; r equals specific resistance in microhms per cubic centimeter; S equals specific gravity, and R equals resistance of line in ohms.

MINERALS FOR COLLECTORS.

(We shall be pleased to receive specimens of ores and minerals from any of our readers, and to describe and classify them, as far as possible, in this column. We shall also be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like, will be acceptable, and will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid; we cannot undertake to return them, except in special cases. We cannot undertake to make analyses of minerals, but will turn them over to a competent assayer, should our correspondents instruct us to do and send the necessary money.—Editor E. & M. J.)

No. 11.—J. Q. C.—Zinc-Blende.—The mineral you send is a specimen of zinc sulphide or sphalerite, known to miners as "jack" or "resin-jack." It is determined by the tetrahedral crystallization, which the specimen shows remarkably well, and also by its cleavage, reddish color and brilliant resinous luster. Pure zinc blende contains 67 per cent. zinc. It is the chief ore of zinc in the Joplin District, but the Joplin ore, as shipped, runs about 63 per cent. zinc for high grade. Whether or not the specimen you send contains silver can only be obtained by analysis, but similar mineral is often found in gold and silver-bearing veins.

No. 12.—N. B. S.—Bornite.—This specimen is probably the copper-iron sulphide, bornite. It is massive, showing no crystal faces, whatever. It is brittle and breaks with an uneven fracture. It is distinguished from some other copper-iron sulphides by its peculiar reddish-yellow color on a fresh fracture, which soon shows a brilliant iridescent tarnish. It is one of the common ores of copper and may contain as high as 55 per cent. of that metal, but varies greatly in its proportion of copper and iron, and the percentage of copper is usually below 50 per cent. Gold and silver are frequently associated with the different copper-iron sulphides. The amount present in your specimen, if any, can only be obtained by analysis.

No. 13.—B. S.—Sandstone.—This specimen was apparently a feldspathic sandstone. The feldspathic material, however, is now decomposed to a white kaolinic material. The specimen shows no trace of any gold or gold ore.

No. 14.—R. M. T.—Andesite.—An acid eruptive rock, fine grained, and showing no distinguishable crystals to the eye. It is probably one of the ancient lavas so common in the Rocky Mountain Region which are classified as andesites.

No. 15.—H. T.—Gypsum.—A piece of crystallized hydrous sulphate of lime, or gypsum. It is easily distinguished from the feldspars by its softness, its hardness being only 1.5 to 2. It is told also by its cleavage; it splits into thin plates. It can be told from calcite, crystallized carbonate of lime, by its not effervescing when touched with acid.

No. 16.—W. A. M.—Actinolite Rock.—The specimen you send can hardly be called asbestos. The rock is composed of a hornblende mineral, showing the characteristic radiated needle-like crystals of actinolite, a calcium-magnesium-iron silicate. The crystals are somewhat fibrous and the rock is a mass of what is called asbestiform actinolite. True asbestos is a variety of actinolite in which the fibers are long, fine, flexible and easily separated by the fingers. The fibers in your specimen are short and not easily separable. They are too dark to be used as filling in the manufacture of paper. Similar rock in Canada, when ground fine and mixed with tar, is used as a roofing material.

No. 17.—J. J. G.—Slate.—This is a dark red rock and splits into even plates. Its color is not uniform, however, and it contains small nodular masses of quartz, with apparently some iron pyrites which would greatly detract from its value as roofing material. As you say the ledge is not near a railroad, we do not think it would pay you to try to open it.

No. 18.—N. C. Q.—Talc.—A remarkably fine specimen of massive talc. It is greenish-white, and is easily told by its greasy feel and its softness, being easily scratched with the finger nail. Similar rock is found in many mineral-bearing veins, and constitutes extensive beds in some places, and is associated often with serpentine and similar rocks.

No. 19.—O. B. I.—Spodumene.—The mineral shows a well-marked prismatic cleavage and is heavier than feldspar, besides showing a more pearly luster. The crystallization can be determined quite well and the specimen is evidently the lithia-alumina silicate spodumene. Pure spodumene contains about 8.5 per cent. lithia.

No. 20.—M. C.—Tourmaline.—The mineral is determined by its lustrous prismatic crystals—which are nine-sided—by the absence of any cleavage, and its peculiar uneven fracture, like coal. It is the aluminum-

boron-silicate tourmaline. The specimens are black, hence probably contain some iron. The mineral is of rather common occurrence in pegmatite veins in granite rocks, and particularly along the contact of a granite mass with a limestone. The crystals in limestones are often brighter colored, a single crystal being sometimes blue, red and green.

LAKE SUPERIOR IRON ORE MOVEMENT.

In our issue of January 6th we published a statement of the shipments of iron ore from all upper lake docks in the season of 1899, the total being 17,901,358 tons. Official returns are now available showing the amount of ore received in the past season of navigation, at all Lake Erie ports, and are given in the Cleveland "Iron Trade Review." This total, like that for Lake Superior and Lake Michigan docks, establishes a new record—an increase of 38 per cent. over 1898, which had been the record year.

The receipts at Lake Erie ports up to December 1st, the close of navigation, have been as follows, for five years:

Ports.	1895	1896	1897	1898	1899.
Toledo	260,730	301,794	416,438	414,012	792,348
Sandusky	12,361	58,667	79,792	136,200	87,499
Huron	146,442	226,515	198,231	126,755	263,600
Lorain	214,219	191,445	355,188	536,086	1,112,946
Cleveland	2,312,370	2,313,170	2,456,704	2,645,318	3,222,582
Fairport	914,617	941,446	1,008,340	912,879	1,241,013
Ashtabula	2,474,791	2,272,822	3,001,914	2,684,563	3,341,526
Conneaut	244,967	327,623	495,327	1,404,169	2,320,696
Erie	811,989	847,849	1,311,526	1,082,364	1,309,961
Buffalo and Tonawanda.....	719,742	545,101	797,446	1,075,975	1,530,016
Totals.....	8,112,228	8,026,432	10,129,906	11,028,321	15,222,187

Ashtabula and Cleveland are close together, as was the case last year. Conneaut will do much in the coming year toward closing the gap between it and the leaders, and may indeed in two years, if not in one, become the leader among Lake Erie ports. The combined receipts at Erie and Buffalo were about 700,000 tons in excess of those for 1898, mainly due to the increase in the shipments to Eastern furnaces.

The stocks on the docks at the various Lake Erie ports on December 1st for five years past are reported as below:

Ports.	1895	1896	1897	1898	1899.
Toledo	113,132	115,959	194,644	146,568	186,422
Sandusky	34,375	59,491	84,786	48,500	23,184
Huron	101,000	200,675	230,029	139,982	164,480
Lorain	224,264	231,288	317,509	324,034	337,822
Cleveland	1,200,792	1,419,311	1,478,355	1,175,970	1,200,806
Fairport	605,470	773,905	825,312	719,794	692,147
Ashtabula	1,301,382	1,441,666	1,835,694	1,732,671	1,902,598
Conneaut	292,468	275,800	260,895	288,101	468,808
Erie	335,718	355,222	484,871	439,167	361,335
Buffalo	207,199	82,267	111,660	121,620	192,681
Totals.....	4,415,712	4,954,984	5,923,755	5,136,507	5,530,283

As the stocks on May 1st, 1899, were reported at 2,073,254 tons, there were 3,063,153 tons shipped from the various ports to furnaces during the winter of 1898-99. The movement during the present winter will probably be larger still; and the shipments during December were very large.

For the seven months of the season, May 1st—December 1st, the shipments by rail from the ports were as follows:

Stock on Lake Erie docks, May 1st.....	Tons. 2,073,254
Receipts from May 1st to December 1st.....	15,222,187
Total.....	17,295,441
Deduct stock on docks December 1st.....	5,530,283
Shipments to furnaces.....	11,765,158

These shipments—which include ore taken directly into the furnace yards of the Lorain Steel Company, Lorain, O.; American Steel and Wire Company and River Furnace, Cleveland; Buffalo Furnace Company, Buffalo, and Tonawanda Iron and Steel Company, North Tonawanda, N. Y., are to be compared with 9,059,829 tons in 1898, 7,453,648 tons in 1897 and 5,021,146 tons in 1896. Apart from the figures which point very clearly to that conclusion, it is known that the direct shipment of ore out of vessel to furnace yard has been increasing largely, and would be still greater, but for the inadequacy of car supply in the summer and fall months. These shipments to furnaces for the season show an average of 1,680,737 tons a month.

The difference between the 17,901,358 tons reported recently as shipped from upper lake ports last season, and the 15,222,187 tons received at Lake Erie docks, is 2,679,171 tons, representing in the main shipments to South Chicago, Bay View and to such charcoal furnaces as can be reached by water. The balance of the 2,679,171 tons is the difference of 1 per cent. between mine weights, in which the figures from upper lake ports are given, and bill of lading weights, which are used exclusively in the statements of Lake Erie docks.

LARGE FORGING-PRESSES.—According to "Stahl und Eisen," Messrs. Breuer, Schumacher & Co., of Kalk, Germany, have recently constructed two forging presses, giving a maximum pressure of 10,000 tons each. One of these is intended for the Dillingen Iron Works, Saarbrücken, and the other for the Obuchoff Steel Works in St. Petersburg. The power obtained by steam engines acting directly upon the pressure-pump is directed over three rams, which can be used either together, singly or combined in pairs, so as to give full, two-thirds or one-third power as required, each ram having its own steam-pressure pump. The four steel columns carrying the press are about 12 m. long and 150 tons weight; the upper box, containing the three press cylinders, weighs 150 tons, the lower movable part, with the rams and pressing face, 400 tons, and the anvil plate about 110 tons. The nuts fixing the different parts upon the columns are 1,220 mm. in diameter; there are sixteen in all, with a collective weight of about 50 tons. The Obuchoff press is intended to be used in combination with two smaller ones of 2,500 tons collectively for side forging.

THE PARIS STOCK MARKET IN 1899.

By Our Special Correspondent.

The Paris Bourse might have expected much activity and prosperity in a year of almost unexampled industrial activity and progress all over the world; but values of all securities were disturbed by three malignant influences. There was the Fashoda incident, and the consequent apprehensions of war with Great Britain, which served to disturb financiers seriously. Much more serious was the Dreyfus affair and its attendant political disturbances, which for months unsettled our home politics and created apprehensions of troubles which were finally and most fortunately averted. Finally there was the war in South Africa, unsettling values in which our people are investors to an enormous amount.

In addition to these, speculation in the closing months of the year was discouraged by high rates of interest, which were in part the legitimate result of great business and industrial activity and the investment of great sums in new loans and industrial enterprises; and were in part caused by the African war and its attendant disturbances.

A study of the accompanying table will show the course of the prominent stocks during the year.

The shares of the coal companies have been the strongest and best maintained throughout, which was indeed justified by the great demand for fuel and the consequent high prices. The stocks of the metallurgi-

The various influences which the great Exposition of 1900 and its near approach have set in motion have had their effect upon our Bourse. While they have in the main worked for quiet, they have been in some respects unfavorable. In fact the results of the Exposition are regarded by financiers with considerable doubt.

The more exacting taxation on securities, and especially on foreign securities dealt in here, has had a bad effect on the Bourse. This, with the more stringent regulations adopted in relation to dealings—the strengthening of the monopolies and powers of the "agents du change," and the partial suppression of the "coulisse"—have had unfavorable results, and have driven much business which belongs really in Paris to London and Brussels. Another instance of the bad results of governmental meddling with trade.

I have said nothing of American mining stocks for a very good reason—there is nothing to say. At present only one or two such stocks are mentioned here at all; and those in such a limited way that one has difficulty in finding quotations. With a wrongheadedness much to be deplored, our people have missed a great opportunity to invest in America.

LINING MINE SHAFTS.—The "London Colliery Guardian" says that for obtaining an absolutely water-tight coating with Portland cement, when lining mine shafts with concrete—as in the new method tried in Belgium and Germany, for instance—that substance must be laid on with a brush instead of the trowel; and a brick, after receiving four

FLUCTUATIONS OF STOCKS AT PARIS DURING 1899.

Name of Company.	Location.	Par Value.	Latest Dividend.	January—March.		April—June.		July—September.		October—December.		Year.	
				H.	L.	H.	L.	H.	L.	H.	L.	H.	L.
Aciéries de Creusot.....	France.....	Fr. 2,000	Fr. 75.00	Fr. 2,192.50	Fr. 2,040.00	Fr. 2,290.00	Fr. 2,020.00	Fr. 2,075.00	Fr. 1,935.00	Fr. 1,980.00	Fr. 1,900.00	Fr. 2,900.00	Fr. 1,900.00
Aciéries de Firminy.....	France.....	500	125.00	3,700.00	3,225.00	3,875.00	3,500.00	3,895.00	3,500.00	3,850.00	3,640.00	3,875.00	3,225.00
Aciéries de Fives-Lille.....	France.....	500	35.00	615.00	500.00	625.00	575.00	582.00	560.00	561.00	540.00	625.00	500.00
Aciéries de Huta-Bankowa.....	Russia.....	500	.....	4,650.00	4,275.00	4,720.00	4,375.00	4,530.00	4,275.00	4,720.00	4,545.00	4,720.00	4,275.00
Aciéries de la Marine.....	France.....	500	50.00	1,690.00	1,555.00	1,769.00	1,620.00	1,748.00	1,620.00	1,770.00	1,740.00	1,770.00	1,555.00
Aciéries de Longwy.....	France.....	500	35.00	1,135.00	1,115.00	1,285.00	1,160.00	1,300.00	1,260.00	1,270.00	1,240.00	1,300.00	1,115.00
Anzin, c.....	France.....	1,000	230.00	5,490.00	5,400.00	5,975.00	5,400.00	6,150.00	5,800.00	7,500.00	6,240.00	7,500.00	5,400.00
Biache-St. Vaast.....	France.....	500	160.00	3,830.00	3,800.00	3,800.00	3,800.00	3,800.00	3,800.00	3,800.00	3,800.00	3,800.00	3,800.00
Boleo, c.....	Lower Cal.....	500	1.70	2,304.00	1,880.00	2,820.00	2,420.00	2,890.00	2,505.00	2,950.00	2,825.00	2,950.00	1,880.00
Briansk, c. i.....	Russia.....	500	.....	1,392.00	1,289.00	1,487.50	1,290.00	1,297.00	1,252.50	1,252.50	1,225.00	1,487.50	1,225.00
Bruay, c.....	France.....	400	1,000.00	39,400.00	38,605.00	46,000.00	38,475.00	49,800.00	45,000.00	51,000.00	50,900.00	51,000.00	38,400.00
Cape Copper.....	Cape Colony.....	50	1.50	126.00	90.00	123.00	106.00	111.00	101.50	133.25	103.25	126.00	96.00
Champ d'Or, g.....	S. Africa.....	25	3.75	63.00	44.00	63.75	51.00	56.75	37.50	38.50	36.50	63.75	36.50
Courrières, c.....	France.....	300	70.00	2,196.00	2,100.00	2,590.00	2,155.00	2,700.00	2,450.00	3,025.00	2,735.00	3,025.00	2,100.00
De Beers Con., d.....	S. Africa.....	125	15.63	763.00	676.50	761.00	687.00	730.00	605.00	682.00	621.00	763.00	605.00
Denain-Anzin.....	France.....	500	25.00	950.00	794.00	965.00	896.00	1,169.00	930.00	1,275.00	1,160.00	1,275.00	794.00
Dombrowa, c.....	Russia.....	500	12.50	1,240.00	1,057.00	1,175.00	1,090.00	1,090.00	998.00	1,225.00	1,010.00	1,240.00	998.00
Donetz, Steel.....	Russia.....	1,000	400.00	21,000.00	21,000.00	25,000.00	20,800.00	28,990.00	24,750.00	29,200.00	29,000.00	29,200.00	20,800.00
Dourges, c.....	France.....	500	12.40	542.00	485.00	560.00	520.00	525.00	500.00	470.00	469.50	560.00	469.50
Dynamite Centrale.....	France.....	2,500	31.25	600.00	590.00	663.00	610.00	663.00	642.50	671.50	660.00	671.50	590.00
Epinac, c.....	France.....	500	35.00	1,190.00	1,025.00	1,249.00	1,097.00	1,115.00	1,025.00	1,115.00	1,115.00	1,249.00	1,025.00
Escombre-Bischoff.....	B. Columbia.....	25	.....	10.00	7.00	9.50	7.00	7.00	7.00	7.00	6.00	10.00	6.00
Fraser River, g.....	B. Columbia.....	125	5.00	61.50	47.75	71.00	85.00	85.00	56.00	54.25	54.25	85.00	46.00
Huanachaca, s.....	B. Columbia.....	25	11.25	109.00	90.00	96.00	84.00	91.00	80.00	89.00	80.00	109.00	80.00
Langlaagte Estate.....	S. Africa.....	125	12.50	38.00	33.00	38.00	35.00	38.00	31.00	30.00	38.00	38.00	28.00
Lagunas, Nitrate.....	Chile.....	500	30.00	645.00	570.00	680.00	605.00	625.00	600.00	610.00	595.00	680.00	570.00
Laurium, l. z.....	Greece.....	125	.....	111.00	95.09	106.00	103.00	109.00	90.00	105.00	100.00	111.00	90.00
Lautaro, Nitrat.....	Chile.....	500	50.00	1,300.00	1,080.00	1,500.00	1,240.00	1,425.00	1,280.00	1,405.00	1,335.00	1,425.00	1,080.00
Malfidano, z.....	Italy.....	500	30.00	685.00	603.00	645.00	572.00	572.00	450.00	550.00	470.00	685.00	450.00
Metéaux Cie Fran. de.....	France.....	500	40.00	1,185.00	1,000.00	1,325.00	1,160.00	1,250.00	1,200.00	1,255.00	1,220.00	1,325.00	1,000.00
Mokta-el-Hadid.....	Algeria.....	500	.....	924.00	744.00	880.00	826.00	880.00	775.00	807.00	778.00	924.00	744.00
Napthe Baku.....	Russia.....	2,500	.....	2,500.00	2,400.00	2,400.00	1,875.00	2,000.00	1,400.00	1,310.00	1,300.00	2,500.00	1,300.00
Napthe, Le.....	Russia.....	500	.....	665.00	502.00	663.00	610.00	663.00	642.50	671.50	660.00	671.50	502.00
Napthe Nobel.....	Russia.....	13,400	.....	10,000.00	10,000.00	13,375.00	12,450.00	13,300.00	12,800.00	13,770.00	13,770.00	13,770.00	10,000.00
Napthe Nobel Paris.....	Russia.....	500	.....	430.00	330.00	415.00	385.00	398.00	367.00	367.50	366.50	430.00	330.00
Nickel.....	N. Caedonia.....	500	65.00	2,650.00	2,360.00	2,685.00	2,599.00	2,600.00	2,420.00	2,725.00	2,430.00	2,725.00	2,360.00
Rebecca, c.....	Colorado.....	25	.....	6.50	3.50	8.50	5.50	7.00	4.50	5.50	4.50	8.50	3.50
Rio Tinto, c.....	Spain.....	125	33.84	1,020.00	802.00	1,270.00	1,040.00	1,195.00	1,125.00	1,239.00	1,171.00	1,270.00	802.00
Rio Tinto, pref.....	Spain.....	125	2.40	170.00	153.00	162.00	153.50	158.50	136.75	154.00	153.00	170.00	136.75
Rive-de-Gier.....	France.....	25	.....	24.75	22.00	23.25	19.50	24.00	22.50	21.50	24.75	22.00	19.50
Robinson, g.....	S. Africa.....	125	12.50	285.00	233.00	284.00	269.00	280.00	215.00	240.00	220.00	285.00	215.00
St. Etienne, c.....	France.....	18.00	.....	473.00	441.00	499.00	475.00	479.75	465.00	483.00	465.00	499.00	441.00
Salines de l'Est, s.....	France.....	500	11.50	285.00	270.00	275.00	255.00	265.00	250.00	255.00	231.00	285.00	231.00
Salines du Midi.....	France.....	500	25.00	890.00	840.00	905.00	855.00	900.00	850.00	925.00	850.00	925.00	840.00
Sels Gem de la Rus. Mer.....	Russia.....	500	25.00	669.00	540.00	631.00	531.00	595.00	540.00	568.00	565.00	669.00	531.00
Tharsis.....	Spain.....	50	10.56	296.00	198.00	345.00	207.00	309.00	205.00	221.50	205.50	245.00	198.00
Vieille-Neux.....	France.....	1,000	75.00	23,245.00	22,495.00	25,865.00	22,495.00	26,000.00	21,125.00	27,300.00	27,005.00	27,300.00	22,495.00
Vielles Montagne.....	Belgium.....	80	30.00	811.25	717.50	890.00	875.00	882.50	775.00	810.00	774.00	890.00	717.50

C, copper; d, diamonds; g, gold; i, iron; l, lead; s, silver; z, zinc.

cal companies were generally well supported also, but their prosperity had been so far discounted in the latter part of 1898 that there was little room for a further rise. Shares of electrical companies, which too conservative investors had previously regarded with some distrust, came very much into favor during the year.

The stocks of the companies mining and preparing the industrial metals showed much strength. The lead, zinc and nickel shares were uniformly high and improved in price; but copper stocks fluctuated more, especially in the last quarter of the year.

The Russian stocks, chiefly of metallurgical companies, in which our people have been large investors, were affected in some degree by the financial crisis in the Empire, though less than might have been expected.

For the first half of the year the Transvaal gold stocks were very quiet, the great increase in the production of the precious metal having but little apparent influence. War rumors and, later actual war, disturbed values very much and finally started a movement to sell among investors, which attained very large dimensions. Just how large it is difficult to say, since much of the business was transacted through London, and the stock sold was taken up by operators there, whose interest it was to keep this business as quiet as possible. It is certain that there have been very large losses on shares bought two or three years ago for investment.

All this has caused a very bitter feeling against Great Britain; much the same as the losses on Spanish and Cuban securities resulted in a very similar feeling against the United States a year earlier. This financial enmity has served to strengthen the political jealousy and distrust which already existed in a marked way.

such coats and drying for several months, is stated by the Rieschelt Patent-Anstalt of Berlin to be impermeable by water under very great pressure.

IRON PRODUCTION IN BELGIUM.—The production of pig iron in Belgium for the 11 months ending November 30th was: Foundry iron, 95,670; forge iron, 303,740; steel pig, 715,500; total, 1,114,910 metric tons. This is an increase of 217,102 tons, or 24.1 per cent., over 1898.

A NEW FRENCH COLLIERY.—The new Arenberg pit which the Anzin Company began last May in the forest of Wallers, between Somain and Valenciennes, is being pushed on with great activity; and of the shafts, 30 m. apart, the principal one, sunk with a clear diameter of 5 m., is lined with cast-iron rings in its upper portion. It will be equipped with cages carrying 12 tubs, four on a deck, and fitted with Briart guides. The greatest thickness of the seams is 1 m. and a very large shaft pillar will be left in for protection. The four-cylinder compound winding engine will (believes the "Echo des Mines") be the first of that kind erected in France. The steel pithead frame, 30 m. high, which is to be shown at the Paris Exhibition of next year, is being constructed at Anzin by M. Malissard-Taza; and a system of rapid automatic caging both at bank and at the underground landing is being got out. The other shaft, No. 2, of 3.65 m. clear diameter, is also lined in its upper part with cast-iron rings. In both shafts, which have now attained the depth of 60 m., the sands and sterile rocks were passed through without difficulty by the cutting shoe. This new pit is intended to put out yearly 400,000 tons of coal.

QUESTIONS AND ANSWERS.

(Queries addressed to this department should relate to matters within the special province of this periodical, such as mining, metallurgy, chemistry, geology, mineralogy, machinery, supplies, etc. As it is manifestly impossible to devote space to all the questions and notes constantly received, preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot here undertake to give professional advice on problems requiring special investigation and which should be obtained from a consulting expert. Nor can we undertake to give advice about mining companies or mining stocks. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers should send their names and addresses. Anonymous questions will not be answered. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Chrome Ore.—Your price lists quote "chrome ore" and "chrome ore sand." What is the difference? Is the sand concentrated or cleaned ore?—C. L. C.

Answer.—The chrome ore includes both lump and fines and is the ore as it comes from the mine. That sold in New York is usually imported ore, some of it coming from Asia Minor, some from Canada and some from Newfoundland. The "sand" is not concentrated, but is fine; it runs from 38 to 43 per cent. chromic acid.

Iron Pyrites.—We have a deposit of iron pyrites running 26 to 27 per cent. sulphur on surface. Will you kindly advise what such material is worth f. o. b. New York, its uses and whether it could be concentrated.—R. G. D.

Answer.—Iron pyrites are valued chiefly for their sulphur contents. They are used in the manufacture of sulphuric acid. There is no market in New York for pyrites running as low in sulphur as those you mention. Pyrites from Massachusetts and Virginia running 42 to 45 per cent. bring \$4.50 to \$5.50 a ton f. o. b. New York; Newfoundland pyrites, 50 per cent., \$4.50. Whether your ore could be concentrated depends on circumstances and the nature of the deposit. If the surface showing is 27 per cent. sulphur, where the ore may be partially oxidized, it may improve in value with depth. Pyrites under 40 per cent. sulphur are not salable.

Concentrating Copper Ores.—Would ore—peacock and glance in quartz—which runs 2 per cent. copper pay for cost of concentration? Could a vein of the above ore, averaging from 10 to 12 ft. in width, be made to pay under very favorable conditions for mining and concentrating? The cost of mining would not exceed \$1.25 per ton, and all water necessary for concentrating, etc., can be obtained within 1,200 ft. of the shaft.—R. G. L.

Answer.—Under ordinary conditions sulphide ores carrying only 2 per cent. copper would not be considered paying propositions. Such ores might possibly be made to pay under exceptionally favorable conditions, such as you mention, and at present prices of copper. After making allowances for cost of concentrating, losses in concentration, cost of smelting and other charges, the margin would be a very narrow one, and would probably disappear altogether when copper falls to 10c. or even 12c., as it will in due time.

Of course, we can give only a very general opinion here. A definite one could only be given after a thorough inspection of the property and tests of the ores. You should consult an expert before deciding on anything.

Mining in Alaska.—May I ask you to give in a general way the conditions existing in the gravel working gold region of Alaska that renders the work of mining so difficult and limits the season of operations. Understanding that frozen ground cannot ordinarily be blasted, how is that difficulty overcome and how during extreme cold weather is the work of washing out the gold conducted?—J. W. M.

Answer.—The great difficulty in the way of gravel mining in the interior of Alaska and the Yukon Region is, of course, the severity of the climate. The temperature is too low to permit work in the open for nearly two-thirds of the year, and the water supply is practically shut off, the streams being frozen solid for the most part. Moreover, the ground is always frozen to within a short distance of the surface and cannot be worked by ordinary means. The usual practice so far adopted is to soften or thaw out the ground by fire. A fire is built in the bottom of the shaft and when it has burned out the gravel is taken out as far as possible, and the process repeated. Of course this is a slow and expensive way. The same plan is in use in the Siberian placers, where the conditions are similar to those in the Yukon. The Siberian method was described and illustrated in the "Engineering and Mining Journal" June 12th, 1897, page 599.

Hardening Copper and Aluminum.—Are there any processes operated on a commercial scale for hardening (1) copper, and (2) aluminum? Would new processes be of value if they can be devised and perfected? Would they be of commercial value?—W.

Answer.—1. Hardening copper is, according to tradition, an ancient art, now lost; but we believe that those traditions should be accepted with caution. No substantial proof of their correctness can, as a rule, be produced. In recent times several inventors have claimed the discovery of processes for hardening and tempering copper; but none of

these have been commercially successful. A process for hardening copper would have certain uses, though somewhat limited ones. It is the general opinion in the trade that a successful process for that purpose would be of but little importance. If a metal is needed which can be hardened and tempered, steel is so much more convenient and so much cheaper than copper that there is no special object in converting the latter.

2. The usual method of hardening aluminum is by alloying it with some other metal. No process of hardening pure aluminum is in use. If one could be devised, it is not at all clear that it would have any wider uses than a process for hardening copper, and for very much the same reasons.

Grading Pig Iron.—How is pig iron graded, that is, what constitutes No. 1 X foundry, No. 2, No. 2 plain, gray forge, Scotch, Ohio Scotch, etc.?—G. N. P.

Answer.—We gladly answer this question, as it interests many of our readers, but an exact answer can hardly be given. The foundry irons, which include those named above, are not bought and sold on analysis, as Bessemer or basic irons which are used in steel making, often are. The grading is based on the appearance of the fracture of the pigs. Occasionally a buyer will specify that his iron must contain so much silicon or be within such and such limits in phosphorus or sulphur, and the furnaceman will furnish iron accordingly; but no furnaceman will sell a lot by both analysis and fracture. The grades do not necessarily bear any relation to the contents of the pig in phosphorus, manganese, sulphur or silicon. Several grades of iron may come from one run of a furnace, the fracture of the pigs—that is, their crystalline structure—being due in large part to the rapidity of cooling. Thus, in making a run, the iron cast nearest the furnace may be No. 1 X foundry, that some distance farther down the casting shed No. 2 X, still farther No. 2 plain, while at the last, where the iron has cooled more, we may have forge iron. If the furnace is running well, it may produce all No. 1 and No. 2; if not running as well, there may be more No. 2 X and considerable No. 2 plain. Most Northern irons are made by furnaces running on a variety of ores, often with a considerable percentage of magnetic ore in the furnace burden, and the Ohio irons in particular are often high in silicon. High silicon irons are brittle, but fluid, and take patterns well. Southern irons are made by furnaces running chiefly on limonite and hematite ores from near-by mines, and are, generally speaking, lower in silicon than Northern irons, No. 3 foundry and No. 4 foundry being low silicon grades not made by Northern furnaces.

To tell just how the various grades are determined is almost impossible. It can be learnt only by studying the fractures; we know of no other way than experience.

PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

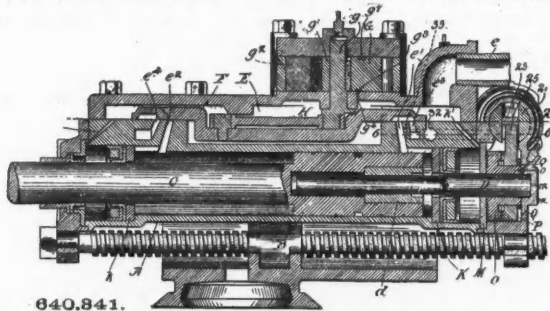
The following is a list of the patents relating to mining and metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending January 2d, 1900.

- 640,184. **AIR PROPELLER.** Andrew Duffner, Jr., Toledo, Ohio. An air propeller, comprising a driven arbor having mounted thereon a spider, a plurality of concentric rims secured to the spider, two or more concentric series of buckets secured to the spider and the rims, curving outward and forward in the plane of rotation, and forming shoulders for intercepting the radial flow of gases and discharging the same in a plane at right angles to that of rotation.
- 640,186. **OBTAINING USEFUL PRODUCTS FROM LIQUORS RESULTING FROM MANUFACTURING CELLULOSE BY SULPHITE PROCESSES.** Carl D. Ekman, London, England. The process of treating sulphite liquor which consists in first dissolving a zinc salt in said liquor and in then converting said zinc salt into oxide of zinc by the addition of a base.
- 640,213. **PROCESS OF MAKING SMOKELESS POWDER.** Hudson Maxim and Robert C. Schupphaus, New York, N. Y. The process consists in pulping or reducing a pyroxilin to a fine state of division, then treating it with a solvent, and before it is completely freed from the solvent treating it with a zinc, and then granulating and drying the same.
- 640,246. **DOWNDRAFT KILN.** Herbert A. Wheeler, St. Louis, Mo. The combination of under-floor flues with a solid bottom, transverse flues, return corner-flues, with escape-flues located above the floor.
- 640,283. **ELECTRIC FURNACE.** Francis E. Hatch, Norway, Mich. A process for treating ore, metal or the like, which consists in heating a refractory electric conductor to a high state of temperature by the direct application of an electric current, withdrawing the current and subjecting the material to be treated to the thermic effect of the said electric conductor.
- 640,324. **FLUID-COMPRESSOR.** James B. Sample, Columbus, Ga. The combination with a compressing chamber or cylinder having suitable inlet and outlet valves and an open upper end, of a freely-moving piston, a track or way for guiding the piston to the cylinder, means for elevating the piston out from and beyond the cylinder, means for releasing the piston so that it will fall of its own weight into the compressing cylinder, a storage tank communicating with the cylinder and a regulating valve.
- 640,326. **PRODUCTION OF INCANDESCENT MANTLES.** Willy Saulmann, Berlin, Germany. The process consists in impregnating a combustible substance with a solution of thorium salt, and also with a solution of a compound of cerium or equivalent incandescing rare earth with a triatomic element, such as arsenic, boron, anti-

mony, chromium, and then burning out the combustible substance.

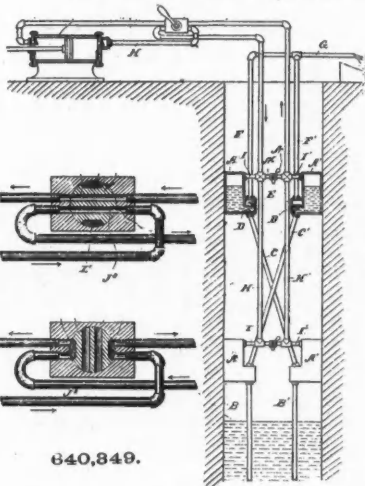
- 640,341. **ROCK DRILL.** George D. Whitcomb, Glendora, Cal., and William K. Millholland, Chicago, Ill. In combination a cylinder, a reciprocating piston therein, a rotating bar in sliding and non-rotating



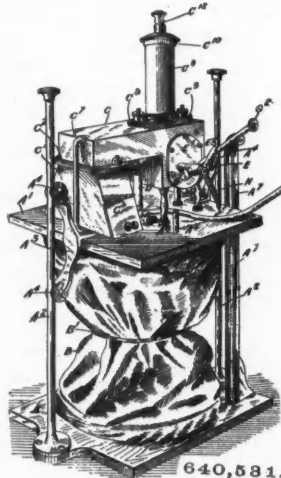
640,341.

engagement with the piston, a ratchet wheel fixed upon the rotating bar and having ratchet teeth on its disk face, an annular pawl in parallel plane and concentric with the ratchet and having teeth on its disk face for engaging the teeth of the ratchet wheel, means for forcing the pawl toward the ratchet, and means for causing the oscillation of the pawl.

- 640,349. **PUMPING SYSTEM.** Charles Wright, Ironton, Ohio. In combination a series of reservoirs, a pump adapted to create an air pressure and a vacuum, pipes connected to each end of the pump and suitable valved connections from the pump to the reservoirs, short pipes connecting the air pipes and a valve in each short pipe and



640,349.



640,531.

connections whereby the water, through suction, is drawn into the reservoir, and through a combined suction and pressure expelled therefrom.

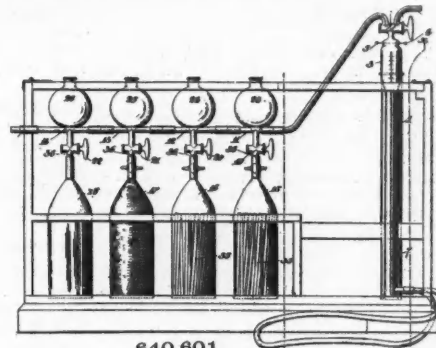
- 640,387. **BRACKET FOR MINERS' LAMPS.** Thomas R. Jones, Wilkes-Barre, Pa. A lamp bracket for miners' caps consisting of a plate adapted to be vertically arranged in front of the cap and having its upper and lower ends adapted to be attached to the crown and peak thereof, respectively.
- 640,419. **PROCESS OF COATING OXIDIZABLE-METAL WIRE WITH GAS-TIGHT COATING.** Friedrich O. Schott, Jena, Germany. The process consists in melting an enveloping glass coating on the wire in the presence of an envelop of inert or non-oxidizing gas preventing the access of air between the glass and the wire during the fusing operation.
- 640,424. **MANUFACTURE OF METAL TUBES OR CYLINDERS.** Eugene C. Smith and Victor E. Smith, Providence, R. I., assignors to the American Lithographic Company, New York, N. Y. A sheet-metal tube or cylinder formed with parallel grooves adjacent to its abutting edges and with a flanged T-shaped bar interposed between said abutting edges and filling the parallel grooves so as to mutually interlock with the edges of the sheet.
- 640,481. **COAL-BIT.** Job J. Morgan, Youngstown, Ohio. Combination of a bit formed hollow and the inner periphery thereof formed tapering toward its top or upper end, and teeth located upon the larger or



640,481.

lower end thereof, a valve seat located within the bit and provided with a hinged valve, and rivets passed through the bit below the valve seat to form a support therefor.

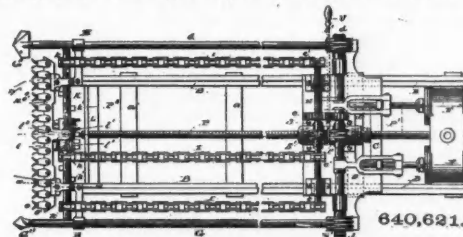
- 640,491. **COMPOSITION FOR PICKLING METAL BARS, PLATES, SHEETS, ETC.** Chauncey E. Robinson and William L. Sutherland, South Connellsville, Pa. A composition consisting of a strained starchy substance obtained from a mixture of wheat bran and water, and an equal part of sulphuric acid thoroughly commingled with the starchy substance.
- 640,531. **APPARATUS FOR MAKING OXYGEN.** Frederick Brown, London, England, assignor of one-half to Frederick Joseph Stedman, same place. The combination of a closed chamber, means for heating a portion of such chamber, a feeding device within the chamber, an expansible gas-container, a conduit between the latter and the closed chamber, and means outside the closed chamber, and controlled by the gas-container, for automatically operating the feed device to cause the latter to feed charges of material successively to the heated portion of the chamber.
- 640,601. **APPARATUS FOR GAS ANALYSIS.** Geo. E. Thomas, Philadelphia, Pa. The combination with a burette of a plurality of absorption reservoirs and a storing reservoir, all connected with the burette by capillary tubing, each reservoir provided with a funnel having a funnel-tube extending downward through the top of the reservoir to near the bottom of same, and means for raising and lowering liquid in the burette to cause the introduction therefrom of gas into the reservoirs to the displacement of liquid therefrom and



640,601.

the withdrawal of the gas from the reservoirs back into the burette.

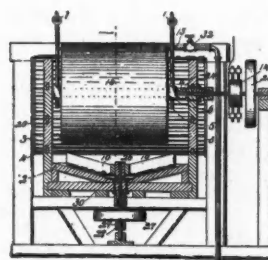
- 640,621 and 640,622. **MINING MACHINE.** Archibald Bailey, Phillipsburg, Pa. The combination with the bed, the carriage, the two reciprocating cutters, each forming a separate kerf, and means for simultane-



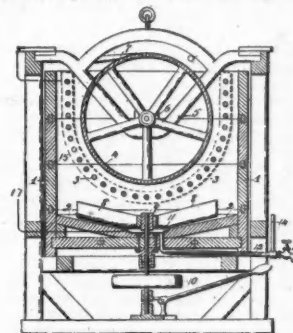
640,621.

ously reciprocating said cutters in opposite directions whereby they balance the machine laterally, of a drill mounted on each side of the carriage and forming an aperture at the end of the kerf.

- 640,628. **DRIER FOR FERTILIZER MATERIAL.** Josephus F. Bussells, Irvington, Va., assignor of one-half to Albro J. Morse, Harborton, Va. The combination of a drying receiver having parallel walls for a distance from the feeding-in end and flared or cone-shaped walls toward the discharge end; and a revoluble agitator shaft extending longitudinally through the receiver.
- 640,695. **CARBURETER.** Elijah D. Parrott, Portland, Ore., assignor to the Northwestern Light and Manufacturing Company, Goldendale, Wash. An apparatus for manufacturing gas, provided with a water tank, an evaporating pan connected with a gasoline supply and an air supply, an evaporating coil leading from the pan, the pan and the coil being submerged in the water in the tank, and a pump connected with said coil.
- 640,717. **ELECTROLYTIC APPARATUS FOR EXTRACTING PRECIOUS METALS.** Charles P. Tatro and George Dellus, Seattle, Wash., assignors to Harry S. Sharpe, same place. A bath having in it a



640,717.



640,718.

series of rods as an anode; a drum journaled to revolve partially immersed in the tub and connected as a cathode, the said rods being parallel with the drum; a scraper located tangent to the surface of the drum, and an agitator upon a vertical shaft and having upward-slanting arms located to revolve below the said anode rods.

- 640,718. **PROCESS OF EXTRACTING PRECIOUS METALS.** Charles P. Tatro and George Dellus, Seattle, Wash., assignors to Harry S. Sharpe, same place. In the process of separating precious metals from ores, the steps comprising electrolytically depositing a portion of the precious metals in the bath upon a drum cathode revolving partially immersed in the bath, at the same time scraping the said deposit from the drum; also simultaneously depositing other portions of similar precious metals in the same bath upon a cathode of sodium amalgam.

GREAT BRITAIN.

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

Week Ending December 2d, 1899.

- 21,138 of 1898. **ROASTING ORES.** E. Peterson, Brussels, Belgium. Expelling antimony and arsenic from gold ores by roasting with carbon to get rid of arsenic, and roasting and leaching with acid to get rid of antimony.
- 23,437 of 1898. **BRAZING FOR ALUMINUM.** G. E. Bourgoin, Paris. A brazing composition for aluminum and its alloys.
- 25,852 of 1898. **COAL WASHER.** C. Burnett and H. T. Newbigin, Newcastle-on-Tyne. A coal and mineral washer with perforated traveling belts and an upward current of water.
- 1,859 of 1899. **PYRITES FURNACE.** Verein Chemische Fabrik, Mannheim, Germany. An improved pyrites-roasting furnace for use in making sulphuric acid.
- 7,357 of 1899. **FUME RECOVERY.** A. Troment, Tavagrasso, Italy. A spirally formed collector for arsenic and other metallic fumes.
- 20,199 of 1899. **CRUSHER.** W. H. Baxter, Leeds. Detailed improvement in the mechanism for operating jaw crushers.

PERSONAL.

Mr. Chas. F. Howe, consulting and mining engineer, of Chicago, is on professional business in New York City.

Mr. A. C. Burrage is making his semi-annual trip of inspection to the various copper mines in which he is interested in upper Michigan.

Mr. J. K. Mackenzie, mining engineer of Chicago, has gone to Montana, where he will examine mining property for Chicago people.

Mr. E. C. Kingswell, owner of the Cumberland cyanide works at Reefton, New Zealand, has been looking over mining properties around Nelson, B. C.

Mr. Henry C. Brown has severed his connection with the Mountain Pride Gold Mining Company to act as manager for a Kansas City Company that is erecting a mill in Yecorato, Sinaloa, Mexico.

Mr. William Reinhardt, who has been acting as inside foreman of the Lykens Collieries of the Susquehanna Coal Company, is now superintendent of the Union Company Collieries of the Susquehanna Company.

Capt. Alexander McDougall of Duluth, Minn., inventor of that peculiar looking vessel, the "whaleback," has been in New York City. He is reported to be interested in a new shipyard that is to be built near Sydney, Nova Scotia.

Dr. Fr. Kolbeck, professor at the Freiberg Mining School, took editorial charge of the metallurgical department of the "Berg- und Huettenmannische Zeitung" on January 1st, succeeding Dr. C. Schnabel, of Clausthal, who retires.

Mr. R. L. Newman, formerly general manager of the Globe Iron Works Company, Cleveland, O., has been appointed general manager of the New York Shipbuilding Company, that is erecting a large shipbuilding plant at Camden, N. J.

Mr. Willet G. Miller, Professor of Geology in the School of Mining, Kingston, Ont., passed through New York a few days ago on his way north after paying a visit to some of the corundum and mica mines of North Carolina and Georgia.

Mr. James Cooper, who recently resigned his position as superintendent of the Foss Gas Engine Company, Springfield, O., has accepted a position as assistant superintendent of the Fairbanks & Morse Gas Engine Company of New York City.

Mr. W. E. Terhune, who for a number of years has been connected with the Hardener Smelter, Salt Lake, Utah, has become superintendent of the Vulcan Copper Mining and Smelting Company mines at Sodaville, Esmeralda County, Nev.

Gov. Murphy of Arizona has appointed as delegates to the Mining Congress in Milwaukee next June, Messrs. James Douglas, President of the Copper Queen Company; S. A. Parnell, of the Globe Company, and J. B. Seager, of the Helvetia Company.

Mr. N. L. Amster, formerly of Globe, Ariz., has taken up his residence in Boston and opened offices in the Equitable Building. He intends to do a general commission brokerage business in mining and will also act as consulting engineer for several concerns.

Mr. James E. Beveridge, of Salt Lake City, Utah, has been in New York, and sailed on January 17th for Zaruma, Ecuador, where he will take the position of superintendent of the mines of the South American Development Company. Mr. Edwin A. Buttolph goes with him as general manager of the property and not as superintendent, as was stated last week.

Mr. Ikuzo Ooka, a member of the lower house of the Japanese legislature, is in this country inspecting industrial plants and trolley systems. He came to the United States in the interest of traction road building in Tokio. He was also commissioned to investigate the systems of manufacturing combinations in the United States.

OBITUARY.

Siegfried Rudolf Zunz, who died in London, Eng., recently, had for many years been connected with the metal trade in that city and was a prominent figure in the financial world. At the time of his death he was chairman of Henry R. Merten & Company, of which firm he was a founder. He had been president of the London Metal Exchange.

George H. Nichols, the head of the Nichols Chemical Company of New York City, died January 10th, at his home in Brooklyn. He retired from the active management of the company some years ago. Mr. Nichols was born in Rhode Island 77 years ago, but had been a resident of Brooklyn for the last 50 years. He was the

founder of the company of which he was the head. He leaves 3 sons, one of whom is William H. Nichols, the active manager of the chemical company.

SOCIETIES AND TECHNICAL SCHOOLS.

Illinois Society of Engineers and Surveyors.—The 15th annual meeting will be held in Moline, Ill., January 24th to 26th, inclusive, and the papers and discussions will be published soon thereafter.

Michigan College of Mines.—This school at Houghton began the second half year's work on January 8th. Ten new students were enrolled, making the total enrollment for the year 108, a gain over last year.

Engineers' Club of Philadelphia.—At the meeting on January 6th, 72 members and visitors were present. The secretary announced the death of Dr. Edward H. Williams, active member, on December 21st, 1899, and the president was requested to appoint a committee to prepare a suitable memorial for the Club. Mr. William B. Wilson, visitor, presented biographical sketches of the professional careers of William Hasell Wilson and Herman Haupt.

Messrs. Thos. J. Buckley, John De Gray, George B. Ferrier, Jr., and Richard Wm. Tull were elected to junior membership, and Mr. J. S. Alexander was elected to associate membership.

Franklin Institute.—The Mining and Metallurgical Section held its monthly meeting January 10th. The following officers were elected: Joseph Richards, president; A. E. Outerbridge Jr., and David Tuttle, vice-presidents; G. H. Clamer, secretary; Wm. Wahl, conservator. Prof. Lynwood Garrison read a paper on the "Lead and Zinc Mines of Southwestern Missouri." During 1899 Prof. Garrison estimated that \$40,000,000 were expended in the development of mines and in organizing companies. The increased output, however, was only 9% for 1899 over 1898, while 1898 showed 29% increase over 1897, and 1897 show 23% increase over 1896. The value of the district's production was nearly \$11,000,000 in 1899, and the cost of production was estimated at about \$8,000,000.

Prof. Garrison's paper was well illustrated by slides and specimens.

American Society of Civil Engineers.—The 47th annual meeting of the society was held in New York City January 17th and 18th. President Desmond Fitzgerald of Boston presided at the opening session. The report of the Committee on Standard Time, recommending the adoption of the French system of counting hours from 1 to 20 was accepted, but no definite expression of the society on the recommendations of the report was made.

William Barclay Parsons of New York City delivered an illustrated lecture describing the survey recently made by him in China, and giving an account of Chinese life as he found it on a journey of 1,100 miles, 500 of which were through the unexplored Province of Hunan, the most anti-foreign section of the Chinese Empire. In the evening a reception for members and their families was held. On the 18th the society visited the power houses of the Metropolitan and the Third Avenue Railroad companies.

The following officers were elected at the opening session: President, John Findlay Wallace, Chicago; Vice-Presidents, Rudolph Herring, New York, and Alfred Noble, Chicago; Treasurer, Joseph M. Knap, New York; Directors, John F. O'Rourke and Henry B. Seaman, New York; Thomas H. Johnson, Pittsburg; Joseph Ramsey, Jr., St. Louis; Henry B. Richardson, New Orleans, and George A. Quinlan, Houston, Texas.

INDUSTRIAL NOTES.

The Detroit White Lead Company of Detroit, Mich., has increased its capital stock from \$300,000 to \$400,000.

The Magnus Metal Company of New York City has increased its capital stock from \$1,200,000 to \$3,000,000.

The Cling-Surface Manufacturing Company of Buffalo, N. Y., has established a branch office in the Postal Building, New York City.

A company with \$3,500,000 capital, promoted by G. W. Mackey of New York City, it is said, has acquired all the building brick plants in Allegheny County, Pa.

Recent shipments of iron and steel pipe by the National Tube Company of Pittsburg, Pa., include nearly 1,000 tons to South America and 500 tons to Japan.

The El Paso Foundry and Machine Company of El Paso, Tex., it is stated, will furnish the La Descubridora Mine in Durango, Mex., 30 miles west of Mapini, with two new 300-ton smelting furnaces.

Fraser & Chalmers, of Chicago, has outgrown its new manufacturing plant, the company hav-

ing concluded to build an addition to the machine shop. Plans have been prepared for such an extension, 206 by 60 ft., at a cost of \$75,000.

On account of increased business secured during the past year, Messrs. Simonds & Wainwright, assayers and mining engineers, 159 Front street, New York City, have found it necessary to enlarge their assaying and chemical laboratories.

The Summerville Fernoline Works of Summerville, N. C., manufacturing wood distillation products, states that though a fire recently damaged its plant somewhat, it is prepared to take orders for prompt deliveries of "Fernoline." The buildings damaged by the fire are being rapidly rebuilt.

The Otto Gas Engine Company is to install for the Oliver Iron and Steel Company of Pittsburg a 100 H. P. and a 60 H. P. Otto engine, new type; also one 60 H. P. Otto gas engine, special electric type, for Zug & Company. The latter concern recently installed a 35 H. P. Otto gas engine in its new galvanizing plant in Pittsburg.

The large steel frame palace which is being constructed for the Crown Prince of Japan contains over 72,000 sq. ft. of floor area. Corrugated arches of No. 16 gage steel are to be placed between the floor beams. About 125 tons of curved corrugated steel sheets manufactured by Wm. B. Scaff & Sons, Pittsburgh, Pa., will be required in this connection.

C. A. Grasselli, E. R. Grasselli, I. P. Lihone, S. R. Harrison, John Hart, F. S. Coke and J. M. Hughes, of the Grasselli Chemical Company, of Cleveland, O., are in the Birmingham (Ala.) district locating sites for the construction of a big factory for the manufacture of heavy chemicals. It is proposed to construct a plant costing several hundred thousand dollars.

The Robins Conveying Belt Company of New York has recently installed a belt conveying system at the new boiler house of the New Jersey Zinc Company for handling its coal. The conveyor receives the coal through a hopper below the railroad tracks, elevates it to the top of the building and distributes it into six storage hoppers in front of the boilers. The capacity is 40 tons buckwheat coal per hour.

The New York Air Compressor Company's new shops at Arlington, N. J., began work in all departments but the foundry January 2d, and the company expects to have its foundry at work by February 1st. Although organized but a little over sixty days, orders have been placed with the company sufficient to tax its capacity for 3 months. Plans have been made to double the shop equipment at once, and the plant will run day and night until this is done.

The annual meeting of the American Tin Plate Company was held at Orange, N. J., January 16th, when officers and directors were elected. The balance sheet of December 31st shows:

Assets—Plants, real estate, patents, machinery, etc., \$43,404,508; merchandise, inventory, \$4,951,926; accounts receivable, \$1,518,247; cash, \$989,984; total, \$50,864,665. Liabilities—Capital stock, preferred, \$18,325,000; common stock, \$28,000,000; purchase money, mortgages assumed, \$270,000; accounts payable, \$1,656,239; surplus, \$2,613,426; total, \$50,864,665.

A statement issued by a majority of the directors at the conclusion of the meeting said: "The amount of capital stock and the amount authorized to be issued is \$50,000,000. The proportion actually issued is \$46,325,000. The amount of debts does not exceed the sum of \$1,926,238.99. The amount of assets is at least the sum of \$7,460,157.09."

The officers elected were: President, D. G. Reid; 1st vice-president, William B. Leeds; 2d vice-president, William T. Graham; 3d vice-president, Warner Arms; treasurer, F. S. Wheeler; secretary and treasurer, E. G. Applegate; assistant secretary, W. B. Wheeler; counsel, James B. Dill.

The directors of the company, with their terms of office, elected are: To serve 1 year more, George Greer, William H. Donner, and Cecil A. Robinson; to serve 2 years more, Warner Arms, James B. Dill, and Frederick S. Wheeler; to serve 3 years more, William T. Graham, James McLean, and James H. Moore; to serve 4 years more, Daniel G. Reid, William B. Leeds, and William H. Moore; to serve five years more, William E. Reis, Richard R. Quay, and James A. Mathews.

TRADE CATALOGUES.

Intending purchasers of gas or gasoline engines will find matter of interest in the 20-page special catalogue published by the Columbus Machine Company of Columbus, O. Details of construction of the company's engines are given, and among other engines a very compact portable engine is shown.

The Goodsell Packing Company of Chicago, Ill., has published a 16-page illustrated pamphlet describing rubber back flax piston-rod packing,

sleeve packing, pump packing, "metal-bestos," "rubber-bestos," and Swain's improved metallic packing. The company states that it adheres to its belief in the value of clean, dry fiber as a packing material for general service.

The Rand Drill Company of New York City publish a very finely illustrated catalogue of 125 pages describing at length the many styles of air compressors the company manufactures. The catalogue will interest all users of compressed air, the illustrations showing the great advance made in air compressing machinery in the last 10 or 15 years.

The company states that its compressors are adapted for all kinds of work and range from small belt compressors to cross-compound Corliss compressors producing 1 H.P. on less than 2 lbs. of coal per hour. Details of construction are described, special attention being given to the Corliss valves and the intercooler used in the large compressors. The catalogues also give some general information about compressed air, reheating, etc.

The Buff & Buff Instrument Manufacturing Company, successor to Buff & Berger, of Boston, Mass., is out with its 1900 edition of high grade engineering, surveying and astronomical instruments. The company states that its factory since the incorporation of the new firm has been fitted with tools and machine of latest design, while the same skilled experts are employed. As a result, prices have been somewhat lowered. The firm continues to concentrate its efforts on its B. & B. standard transit and claims to produce an instrument that cannot be surpassed for general engineering work. The firm also endeavors to maintain the high reputation of its wye levels, in which it offers as a special feature for particularly accurate work a steel socket in an annealed iron center. The catalogue is a pamphlet of 62 pages.

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, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

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

GENERAL MINING NEWS.

Oil Exports.—In 1899 the United States exported 117,683,967 gals. crude (114,915,082 gals. in 1898); 17,904,015 gals. naphthas (17,026,626 gals.); 724,562,993 gals. illuminating (761,152,107 gals.); 69,329,188 gals. lubricating and paraffin (63,968,341 gals.), and 21,544,278 gals. residuum (28,418,454 gals.); total, 951,024,441 gals., valued at \$64,982,249, as against 986,480,610 gals., valued at \$52,551,048, in 1898, showing a decrease of 35,456,169 gals. in quantity and an increase of \$12,431,201 in value.

ALABAMA.

Subscription books to the stock of the Ensley Southern Railway Company will open in Birmingham in February. The railroad will extend from Parrish, a small station on the Southern Railway, and the southern terminal of the Northern Alabama Railroad, to Ensley, traversing a rich coal field, and making a route from Birmingham to Memphis via Ensley, Parrish, Sheffield and the Memphis & Charleston Railroad, all properties of the Southern Railway system. A commission to raise the subscriptions has been granted by the Secretary of State to A. G. Smith, C. A. Wickersham, A. J. Frazer and James Weatherly, of Birmingham.

ALASKA.

Pande Basin Gold Mining Company.—At the recent annual meeting of the directors of this company in New York City, Benjamin P. Moore, who had acted as manager, was not present. He has resigned. The old directors were re-elected, with the exception of H. C. Pande, who "discovered" the property. He was succeeded by D. S. Ritterband. The company is capitalized at \$2,500,000 in \$1 shares.

ARIZONA.

Mohave County.

Elkhart.—The mine is keeping its concentrating plant near Kingman busy night and day.

Pay Roll.—A large gasoline hoist has been installed at this mine near Kingman.

Yavapai County.

Seven Stars Gold Mining Company.—H. H. Warner, the patent medicine manufacturer, recently filed a petition in bankruptcy with \$2,719,027 liabilities and no assets. It is stated that one of the unsecured creditors was John Griffin of Hudson, N. Y., receiver in the Seven Stars Gold Mining Company.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Lincoln Gold Mining and Development Company.—At the annual meeting of the stockholders at Sutter Creek, the following officers and directors were elected: E. C. Voorhies, president; C. R. Downs, vice-president; T. J. Clavering, secretary; F. F. Thomas and F. A. Voorhies. The company is operating a group of mines ½ mile north of Sutter Creek.

Calaveras County.

(From Our Special Correspondent.)

Gwin.—At this mine, 4 miles southwest from Mokelumne, 80 stamps are crushing, and 170 men are employed in the mine and mill.

Ross.—The channel in this gravel mine, 3 miles from Valley Springs, which is over 100 ft. wide, has been prospected in several places with good results. Prospectors have been making wages on "lay-outs" on this property for years past.

El Dorado County.

(From Our Special Correspondent.)

Blue Gouge.—At this mine on Camp Creek, 9 miles east from Pleasant Valley, the buildings have been completed and the new machinery is almost all in. Thirty men are employed under the superintendent, E. Bind.

Schneider.—This mine, 2 miles south from Diamond Springs, has been worked under bond by Hill & Bryant, who have run a tunnel 750 ft. and have crosscut 40 ft. to a ledge about 3 ft. wide, showing free gold.

Kern County.

(From Our Special Correspondent.)

Phoenix Mining Company.—This company, composed of Los Angeles men, is developing some promising copper claims in Copper Basin, 16 miles northwest from Randsburg. Quite a force of men is at work. Several buildings are completed.

Nevada County.

(From Our Special Correspondent.)

Giant King.—This property, 1½ miles south from Washington, comprising 3 claims, is worked under bond by San Francisco parties, who have decided to sink a shaft from the face of the upper tunnel, which will follow the ledge. The property has been opened up by 2 tunnels. The ore carries from 1% to 3% sulphurets.

La Suerte.—At a depth of 100 ft., Superintendent Kirkham reports a 20-in. ledge estimated to yield from \$10 to \$12 per ton in free gold besides fair grade sulphurets. The shaft is to continue down the ledge, and drifting will begin on the 250-ft. Three shifts of 10 men each are worked.

Placer County.

(From Our Special Correspondent.)

Clark.—An incline runs 500 ft. from the tunnel mouth to reach the bottom of the channel, at this mine at Yankee Jim's. The gravel, which looks well, is raised by a water wheel at the top of the incline. Five men are employed.

Plumas County.

(From Our Special Correspondent.)

Plumas-Eureka.—This old mine, ½ mile west of Johnsville, is again operated by Pasetta & Tresidder, tributers, who are working 30 men. Twenty of the 60 stamps are crushing ore.

San Bernardino County.

(From Our Special Correspondent.)

Gold Mountain.—This group of mines, 40 miles east of Victor and 5 miles northeast of Bear Valley Lake, is owned by Capt. J. R. De La Mar, who is constructing a 40-stamp mill preparatory to working the property on a large scale.

John R. Gentry.—It is reported that in this group of 8 claims, in the Buckeye District, 8 miles south from Ludlow, high grade gold and copper ore has been struck, and that several carloads have been shipped to the smelter for treatment.

Warwick.—The 10-stamp mill recently completed at this mine in Old Woman's Mountain District, has started. Other mines in the district are doing well, high grade ore carrying gold and silver having been struck in the Jack Pot, Stemwinder and Silver Wave mines.

Santa Clara County.

(From Our Special Correspondent.)

Silver Creek Mining Company.—This company has recently been organized at San Jose to develop an old quicksilver property located about 10 miles east of San Jose, on Silver Creek. The mine is said to have yielded over \$300,000 worth of quicksilver in former years. A smelter is to be erected.

Shasta County.

(From Our Special Correspondent.)

Cleveland Consolidated.—At these mines, about 22 miles east of Redding, 25 men are employed. The 10-stamp mill is going day and night. Thirty stamps are to be added in the spring. W. R. Beall is superintendent.

Mammoth Copper.—This mine near Copley, in the Backbone District, has been bonded for \$103,000 by an English syndicate, which is represented by W. A. Temple.

Siskiyou County.

(From Our Special Correspondent.)

Phillips.—This placer mine on Selad Creek, about 5 miles north from Selad, is worked with a small supply of water. The ditch ½ mile long takes its water from Salt Creek. It is the intention of the owners to dig a new ditch 10½ miles long to bring in about 1,000 in. of water from the main creek.

Sheba.—At this mine on Patterson Creek, an air compressor and other machinery has been put in and work resumed with a large force.

Tuolumne County.

(From Our Special Correspondent.)

Little Wonder.—The main shaft at this mine at Big Oak Flat is down 150 ft., the vein averaging 4 ft. and assaying about \$8 per ton. A crosscut to the hanging wall and a drift to the west are being run, and some high-grade rock encountered. Arrangements are being made to put in a 10-stamp mill. Mulligan and McCallum are superintendents.

Mount Jefferson.—At this mine at Groveland drifting goes on, and a large body of ore is blocked out. A new shaft is expected to cut the ledge at a depth of 500 ft. The 10-stamp will be almost completed. J. M. Meighan is superintendent.

COLORADO.

Custer County.

Bertha.—This claim at Rosita is being opened by Carl Wulsten for James Callanan of Des Moines, Ia. The shaft is down 75 ft., showing a vein 4 ft. wide that carries from 0.2 to 1.2 oz. gold and 13 to 18 oz. silver with some copper. The shaft is 2,100 ft. west of the shaft of the Bassick Mine.

Dolores County.

(From Our Special Correspondent.)

Production, 1899.—Dolores County added nearly \$500,000 worth of precious metals to Colorado's output last year. Actual figures are: Gold, \$97,000; silver, \$270,000; lead, \$27,500; copper, \$20,000; total, \$414,500.

Black Hawk.—J. O. Campbell is pushing work with a large force and ships regularly to the Durango Smelter.

Colorado Milling and Concentrating Company.—January 1st the machinery in the new concentrates started a trial run. The capacity is 100 tons daily on ore from the Enterprise and other near-by dumps, over 600,000 tons being contracted for. The test run was successful. A meeting of the stockholders was held in Ouray recently and the following were elected: S. R. Fitzgerald, president; M. Mawhiney, vice-president; Robert Thompson, treasurer; S. Montgomery, secretary. Board of directors: H. B. Pringle, W. J. Moore, Geo. F. Kim, E. L. Kidney, Mrs. S. R. Fitzgerald.

Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—J. H. Johnston to J. J. Hagus et al, the Surprise lode; T. J. Stroud to A. R. Gangloff, 3/100 interest in Old Ann group of 4 claims; A. F. Scotney to Hal Saye, ½ interest Klondike lode; W. J. Berry to the Davis Investment Company, 1/5 interest in the Root Ranch situated in Pleasant Valley mining district.

Receipts of Machinery.—A 100-H. P. boiler, 2 4-drill Norwalk compressors and small boiler for Topeka mine; a 50-H.P. boiler for Aldorf concentrator at Black Hawk; Cameron pump for the Waincross Mining and Milling Company.

Clay County.—Sinking has started at 480 ft., with probabilities of going down 200 ft. Eastern and Colorado capital is interested, with W. H. Tripp, Central City, as manager.

Cook Mining Company.—Over 100 men are laid off, acting under instructions from Boston owners. The reason given by the management is an injunction issued by the District Court giving the Big Hatchet Mining Company authority to do certain work. The Big Hatchet claims that the Cook is extracting ore from its vein. It is believed, however, that the recent bank troubles in Boston have more to do with stopping work. The case of Big Hatchet Mining Company vs. Cook Mining Company is set before the district court for March 19th.

Lake County—Leadville.

(From Our Special Correspondent.)

Daily Production.—Owing to car shortage, many properties that could produce 150 to 175 tons daily are limited to 100 tons. The average output this week was 2,750 tons per day of all classes of ore. The Rio Grande Company has 1,000 new cars en route from the east.

Banker Mining Company.—This New York Company is pushing down its deep shaft on Breece Hill. Manager Guth will put in a fine pumping plant at 1,000 ft. Samples from the bottom of the shaft show heavy masses of pyrites.

Bison.—The Caribou Mining Company is arranging to resume work on this claim, which was a heavy iron producer, but has been flooded since 1896.

Columbia No. 7.—This is a part of 2 tracts of ground leased to A. F. Wuensch et al, from the Emmet and Arvus Mining Companies west of the Iron fault on Rock Hill. The old shaft on the Columbia, already 700 ft. deep, is now penetrating a large body of manganese iron ore.

Corodano.—Shipments have stopped for the present to permit placing a 2,000 gal. pump at the 500-ft. level.

Denver City.—J. B. Parks has taken a lease on this old mine that has been idle a long time.

Elgin Smelter.—About 175 tons of ore, too low grade to be sold to the other smelters, values ranging from \$6 to \$20 per ton, are now being treated by the Boston Gold-Copper Smelting Company by means of the Loder pyritic furnace. Two large Baker blowers and a new engine will soon be in place. Only two small blowers are in use now. The matte is shipped to Pueblo, but the company intends before long to increase the capacity to about 1,000 tons daily by the addition of 2 new furnaces. The treatment charges only run from \$1.60 to \$7.50, so that miners can find a market for very low grade ores. Mr. Loder will soon leave for Oakdale, near Atlanta, Ga., to erect a 300-ton furnace. He has also a contract for one of the same capacity to be erected at Kettle River, B. C.

K. & C.—This new location in Lake Park has its tunnel workings in 175 ft. The ore carries pay values in gold, silver and lead.

Maid & Henriett.—Sixty-five men are working on the 2 shafts sub-let to lessees from the Maid of Erin Silver Mines Company. The output is 100 tons of good grade ore per day.

Minneapolis Group.—Manager J. M. Peck has charge for eastern parties. The company controls 72 acres of patented ground on the west slope of Canterbury Hill. The shaft is 360 ft. deep. A drift in 157 ft. at the 340 ft. level has gone 35 ft. into a mass of iron sulphides showing substantial gold values.

Oro Mining Ditch and Fluming Company.—This company's territory, known as Brooklyn Heights, has been leased to a syndicate headed by A. Sherwin of the American National Bank. Operations are to resume through the old Lucky Weber shaft started by New York people some years ago.

Tarshish Mining Company.—The new shaft on the Seneca reserve is down 185 ft.

The Best Friend.—Work has just been resumed through the Johnson shaft by lessees who are putting in machinery.

Valley.—This old-time property on Little Ellen Hill resumes work January 20th under direction of lessees, with John McAllister in charge. The old shaft is 120 ft. deep with 170 ft. incline. A body of carbonates is known to exist 60 ft. from the shaft. The lessees intend sinking 100 ft. to get under this ore.

Zinc Production.—This output shows a steady increase. Three zinc mills are running, the Moyer on ore from the Moyer Mine, the Golob-Calley on Maid of Erin ore, and the Maid Mill also handles 20 tons daily from its own workings. The Maid of Erin lessees are also mining 50 to 75 tons daily of crude zinc ore which goes to the Langon Works at Iola, Kan.

Ouray County.

(From Our Special Correspondent.)

Output, 1899.—The tonnage produced in Ouray last year, notwithstanding the closing of several large mines temporarily, was much greater than during 1898, and the values were almost trebled. The value of ore shipped was as follows: Gold, \$2,250,000; silver, \$910,000; copper, \$127,300; lead, \$122,000.

Bachelor Mining Company.—The 1899 product of the Bachelor exceeded 250 cars of high grade silver ore. The Armstrong mill working the dump is turning out about 8 cars per month of rich concentrates. One Cammett table is in operation and another, received January 7th, will be running soon. Four Bartlett tables act as sizers, and canvas tables treat the slimes.

Camp Bird Mines and Mills Company.—This property added \$2,000,000 gold to the Colorado output for 1899 and will increase this amount in 1900. Several buildings are in course of construction. Electricity for lighting is now supplied from Telluride.

Teller County—Cripple Creek.

(From an Occasional Correspondent.)

Dividends.—Among those declared for the first 2 weeks of 1900 are: Portland, \$30,000; Amazon, \$12,000; Mary McKinney, \$30,000; Gold King, \$30,000; Raven, \$13,000; and Vindicator, \$50,075.

Gillette Mill.—This mill has recently been sold to A. E. Carleton, L. X. Smith and F. J. Campbell, and it is said that the mill will be in shape to treat ore in 30 days. Mr. Campbell is manager of the Vindicator and it is understood that the bulk of the ore treated will come from that mine. Mr. Smith is the manager of the Rio Grande samplers in Victor and Cripple Creek

and he will have charge of the mill. The mill has been idle since the smelter strike last summer.

Independence Town and Mining Company.—At the annual meeting the following directors were elected: W. S. Montgomery, A. D. Craigue, J. F. Burns, J. F. Smith and R. P. Davie. The reports of the manager show that the company is in very good condition. The main working shaft is down 570 ft. and the shaft will reach 750 ft. by April 1st; 2,240 ft. of levels have been run during the year, and 138,847 cu. ft. of stoping done. The pay roll amounted to \$92,786. A fine surface plant has been erected. Crosscuts have cut several veins not heretofore known to exist. Several leases are still running, the principal one being the Whiting. Three suits are pending against the property of the company which involve the title to considerable of the ground. The management, however, has no misgivings as to the result of these. The treasurer's report shows that the machinery is valued at \$59,354. The royalties paid to the company from December 1st, 1898, to December 1st, 1899, amounted to \$42,324. The total ore produced by the company from January 1st, 1899, to December 1st, 1899, amounted to 4,148,017 tons of the gross value of \$191,957, and of the net value of \$142,554. The cash on hand in the treasury amounts to \$47,024. At a meeting of the directors W. S. Montgomery was chosen president, James E. Gregg secretary and A. D. Craigue treasurer.

Raven Gold Mining Company.—At the annual meeting the following directors were elected: E. M. De La Vergne, E. R. Stark, C. E. Noble, M. F. Stark and Thomas Stark. Mr. De La Vergne was chosen president, E. R. Stark vice-president and treasurer, Tom Stark secretary and A. W. Conacher assistant secretary. The reports of the officials show the company to be in good condition. The property produced 4,500 tons of ore during the year of the gross value of \$250,000. The company has on hand a balance of \$70,000 in cash as well as 50,000 shares in the treasury. The company owns property on Raven Hill.

(From an Occasional Correspondent.)

Lillie.—With the retirement of F. Gilpin from the management of this mine at Independence, and the substitution of Mr. De Camp, late superintendent of the Portland, comes the news that the ore body which has produced all the gold in the Lillie during the past 3 years, has given out, the 8th level being practically barren. The probability of this was pointed out by those familiar with the district, over a year ago, when the present large hoist, compressor and ore houses were bought, as indications pointed to the same conditions being encountered as in the Victor, Isabella and other mines, where a barren zone was found, below which rich ore was again discovered. It is to be hoped this may happen in the Lillie, though the old ore body appears to have gone into Vindicator ground, following the well-known rule of the district, that ore shoots pitch to the north. Nothing of any value has been found south of the shaft. Over a year ago this company was converted into an English corporation, retaining the old Colorado management, and people are wondering whether the British speculators now own the stock.

The Christmas Mine, adjoining and south of the great nepheline syenite dyke, has struck a third vein in phonolite, which promises to be very rich and continues into Vindicator ground at shaft No. 6, now leased by F. Gilpin, succeeding the Baltimore Company. This adds to the already large productive power of the Vindicator Consolidated.

The increase of treatment charges makes it impossible to mine profitably great quantities of ore formerly worked, and lease holders anxiously await some cheaper plan of reduction, as there is little possibility of further reducing mining costs.

IDAHO.

Blaine County.

Tip Top.—At this mine, near Donaphin, an 8-ft. ore is reported cut which runs well in gold and silver.

Elmore County.

Manawa.—This group of 5 claims is situated in the Bennett Mountains 40 miles northeast of Mountain Home. Three ledges are reported to show values in gold, silver and copper.

Owyhee County.

De Lamar Mining Company, Limited.—The report of Manager D. B. Huntley for November states that the "silver stopes" which have yielded the shipping ore are exhausted. A refinery for the cyanide product is nearly completed. The output for the month was 1,792 oz. gold and 4,605 oz. silver from 4,272 tons of ore. The total income was \$45,923, and the expenses were \$37,770, leaving a profit of \$8,153.

Shoshone County.

Mining Conditions.—The mineral industry in this county was never in better shape than at present. The leaders of the old element which caused so much trouble have been run out of the district, local militia companies have been or-

ganized, the miners are making \$3.50 a day, and work goes on without a hitch. The old Butte element continues its efforts to make trouble, but is meeting with unsatisfactory results, as shown by interviews in Butte papers. In the county, in 1899, there were 836 quartz locations made, in spite of the interruption to all work that followed the riot of April 29th. The number in 1898 was but 361. The number of claims located in the Cœur d'Alene district proper in 1899 was 643; 463 were in the silver-lead belt, and 105 in the gold belt. There were but 14 new incorporations in 1898, while in 1899 there were 58. The mining outlook is excellent.

Gold Mountain Mining and Milling Company.—This company, recently formed at Moscow with a capital stock of 1,000,000 shares, par value 10c., proposes to develop the Gold Mountain, Eldorado and Hindoo Queen claims in the new camp of Mascot. George Speake of Moscow will have charge of development. The officers are: Clarence E. Eddy, president and general manager; S. C. Herren, vice-president; D. S. Elder, secretary and treasurer; George W. Speake, J. F. Baird, S. C. Herren, H. C. Stoddard, D. S. Elder, Clarence E. Eddy and Chauncey Wallace, directors.

Tiger-Poorman.—This mine at Burke is run by the Buffalo Hump Mining Company. The mine and mill are running full time, the daily shipments of concentrates being 40 tons.

16 to 1.—The new mill near Wallace is running steadily.

MICHIGAN.

Copper.

Tamarack.—According to a local newspaper, there are 3 shafts now producing copper rock at the mine—No. 1, No. 2 and No. 3. No. 1 is down 3,225 ft. and is producing fairly well. Stopping is in progress from the 14th to the 18th levels. This shaft was originally sunk in 1882 to tap the Calumet & Hecla conglomerate at a depth of 2,270 ft. The conglomerate in the vicinity of the shaft was exhausted a year or two ago, and the lode known as the Osceola amygdaloid is now mined with profit. No. 2 shaft is down 4,000 ft. No. 3 shaft is the main producer and has been sunk 4,450 ft. No. 4 shaft, which has been sunk to the 11th level, is not a producer, and is not equipped with machinery. The 13th level has been extended north from No. 3 and shows some good rock.

No. 5 shaft was started August 7th, 1895. Since then the shaft has been sunk 3,635 ft., and it will have to go about 1,200 ft. before the lode is reached. The first day of July, 1900, is fixed as the probable date upon which the lode will be struck.

Nos. 4 and 5 shafts will get power from a triple expansion 2-stage air compressor made by the Nordberg Manufacturing Company of Milwaukee. Formerly the feed water from the boilers at the mine was supplied from two points, which became heavily impregnated with mine water containing acids, which were very injurious to the boilers. The company decided to put in a pumping station on the shore of Lake Superior, 4½ miles away, and a Nordberg double pump has been installed which has a capacity of 1,000,000 gal. every 24 hours. The water is pumped through a 10-in. pipe to a tank on high ground not far from the mines, which furnishes feed water for the boilers and water supply for all the mine buildings and dwellings. Thirty-four dwellings, which were contracted for in the summer, are about completed.

Quincy.—The new shaft on the old Mesnard property, to be known as No. 8, is down 275 ft., according to a Lake paper. On the 1st level a drift over 240 ft. long has been run, showing some fairly good copper ore. The new shaft is 3 compartments, 8 by 18 ft.

Iron—Marquette Range.

Argyle.—This mine at Humboldt may be opened again. It was last worked 7 years or so ago by the Sampson Iron Company.

Rolling Mill.—The American Mining Company is preparing to work this mine near Ishpeming. The ore is lean but low in phosphorus and the visible supply is great.

Iron—Menominee Range.

Menominee Exploring Company.—This company is working the Sheridan Mine near Iron River. The Sheridan shaft is being sunk to the 4th level. Little ore will be hoisted this winter, but it will be broken down and left in the drifts and stopes until spring.

MINNESOTA.

(From Our Special Correspondent.)

Stockpiles are increasing very fast. There will be fully as much ore on surface at Vermilion range mines as in any preceding spring, though surface stocks were practically nothing last fall. The same is true of the Mesabi. The additional stocks of new mines will be many.

The Oliver Iron Mining Company's general office will be in the Exchange Building, Duluth. In the same building are the offices of the American, the Colonial, the Robert, iron mining companies, and the Aggasiz, a gold company, hav-

ing locations in the Rainy Lake region. Mr. I. W. Powell, lately of the Farms, on the Gogebic Range, has been selected as another one of the general officers at Duluth.

Cargoes of ore from the Duluth, Missaba and Northern docks last season averaged 3,873 gross tons each. The average cargo in 1898 was 3,484 tons. These are averages for all cargoes the season through.

Iron—Mesabi Range.

(From Our Special Correspondent.)

New Mesabi Mines.—There will be at least 6 new mines on the Mesabi Range this year. The Stevens, in T. 59, R. 15, belongs to the Oliver Company, and will be opened for a minimum output of 100,000 tons. It is a very large body of ore, good physically, though not high chemically, and is deeply mined. Elba and Maita, which shipped a trifle last year, should ship 150,000 tons. The first belongs to the Minnesota Iron Company, and the second to parties closely affiliated. Spruce, at Eveleth, is being opened by P. L. Kimberly, for a large production, and will ship over the Duluth, Mesabi & Northern. Cloquet, owned by Kimberly, is to be reopened on a larger scale, and will ship over the same road. The Hill Mine, in T. 57, R. 21, will be a large shipper.

American Mining Company.—This company has begun sinking at the Clark Mine, east of Hibbing. The work is under charge of Captains Thomas and Goldsworthy, formerly of the Chandler. It is intended to ship 100,000 tons this year. This is one of the important new properties on the western part of the range.

Chandler Iron Company.—This company has begun active work in section 23, T. 53, R. 20. It is expected a mine will be opened. General Manager John Pengilly has charge.

Explorations are going on in section 32, near Hibbing, in a body of ore shown to be deep and important. It is under option for lease on a 25c. royalty, and with a 50,000-ton annual minimum output.

Corrigan, McKinney & Company.—This firm has begun work on the Hill Mine, in sections 7 and 8, west of Hibbing, and will strip it for steam shovel mining. Captain J. H. Pearce, of the Commodore Mine, will have charge. Shafts will be sunk for immediate development.

Elba Iron Company.—This company has the water under control and the men are working in dry ore. It will probably mine 100,000 tons this year.

Fay Explorations.—M. L. Fay has proved ore in section 4, just east of Virginia. While the body is not large, there is some very fine Bessemer grade. Close to this, on the Jones and McEwen lands, ore is supposed to exist. Mr. Fay also has ore on land in section 6, west of Virginia. Four holes are bottomed in ore.

Franklin Mining Company.—The company has about 70,000 tons in stock and is hoisting 1,000 tons a day, with less than 200 men on the rolls. Much new work is laid out and the mine will produce 300,000 tons this year.

Northern Development Company.—The C. N. Nelson Lumber Company has sold 240 acres of land in sections 17 and 20, T. 53, R. 17, to the Northern Development Company, which has been exploring them, for \$50,000. Ore has been found on these lands.

Oliver Iron Mining Company.—This company has taken a lease of 160 acres in section 10, close to the Mountain Iron Mine, where it has had E. J. Longyear at work with drills for some time. A large body of ore has been shown up which will be examined more thoroughly at once.

Thomas Iron Company.—This company, interested in the Duluth blast furnace, is exploring the Carlson lands, adjoining the Sauntry Mine. The work is done by Superintendent Mewhinney, of the Williams Mine, also belonging to Thomas interests. Indications are favorable.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The early part of the week was not favorable for mining, owing to wet weather, and the output was restricted, while much zinc ore produced and sold could not be hauled on account of the bad roads. Galena, Central City, Neck City and Belleville all sold ore that will not be loaded until this week. Zinc ore was cut from \$1.50 to \$3 per ton, the lower grades most. Top grade zinc ore sold at \$35 per ton, against \$36.50 the previous week, but lead was strong at \$28 per 1,000 lbs.

During the corresponding week last year top grade zinc ore sold at \$32 per ton and lead brought \$24 per 1,000 lbs. The lead sales were less than last week by 160,780 lbs., the zinc sales greater by 3,044,780 lbs. and the value greater by \$24,777. For the first 2 weeks of last year the lead turnin was less by 259,390 lbs., the zinc turnin greater by 5,458,380 lbs. and the value greater by \$26,506. As compared with the previous week, the lead sales were greater by 31,860 lbs., the zinc sales less by 144,050 lbs. and

the value was less by \$10,024. Following is the turnin by camps:

	Zinc lbs.	Lead lbs.	Value.
Joplin	1,377,610	357,580	\$32,743
Carterville	963,640	263,010	22,782
Webb City	385,470	41,800	7,338
Central City	178,620	20,280	3,426
Oronogo	512,210	.....	8,544
Belleville	106,730	12,150	2,048
South Jackson	90,820	33,420	2,389
Cave Springs	175,360	6,120	2,977
Duenweg	182,240	3,680	2,846
Stotts City	148,090	.....	2,457
Carthage	86,880	.....	1,114
Granby	316,000	16,000	4,900
Alba	44,130	.....	750
Lehigh	94,070	2,210	1,708
Galena-Empire	2,002,330	222,390	37,703
Aurora	336,000	21,420	11,555
Dade County	134,350	.....	1,618
Total	7,635,050	1,000,060	\$145,898
District total, 2 weeks.....	15,255,970	2,012,780	302,106

The usual inactivity after the holidays has been shorter than usual this year and several deals have been recorded. The Midland Mining Company of Philadelphia purchased the Lead Hill mines near Mansfield in Wright County. The transfer includes the fee of 600 acres and the price is reported at \$1,000,000, but no one here believes that any such price was paid, although the property may be stocked for that amount. The Jones tract of 165 acres, in Cherokee County, Kansas, was sold by J. T. Owen of Joplin to Eastern parties for \$80,000. The Monarch Mine and Mill in Chitwood Hollow, west of Joplin, was sold to the Lackawanna Mining Company for \$50,000. The mine averages 60 tons per week.

Thayer & Wilkins of Boston have purchased a mine and lease on the Guengerich land, southeast of Joplin, for \$20,000. B. W. Dillard & Company sold their mine on the Kentucky ground at Aurora last week to West Virginia parties for \$6,000. Seven new companies were incorporated last week with a combined capital of \$684,000. They are the Lackawanna, capital \$150,000; the Excel Mining and Prospecting Company, capital \$10,000; Great Western Zinc Company of Chicago, capital \$300,000; the Digby Mill and Mining Company, capital \$24,000; the New Century Zinc and Lead Company, capital \$60,000, and the Valley Queen Mining Company, capital stock \$100,000. All these companies will have offices in Joplin.

Boston-Springfield Zinc Company.—This company has issued its prospectus, which states that the capital stock is \$500,000 in \$25 shares, and the company is organized under the laws of Maine. The property comprises a partly developed tract of 320 acres owned in fee and an undeveloped tract of 160 acres, lying from 3 1/2 to 5 miles southwest of Joplin near Roaring Springs. The officers of the company are: J. W. Ground, Joplin, president; Ira Miller, Westfield, Mass., vice-president; H. S. Sprague, Providence, R. I., treasurer. Directors, the above and A. H. Waite, Joplin; H. H. Bowman, Springfield, Mass., and W. E. Colley, of Colley & Company.

MONTANA.

Fergus County.

Harmon.—Two quartz claims belonging to Jacob Harmon, adjoining the New Year Mine in the Moccasin Mountains, were sold recently to W. H. Day of Dubuque, Ia. Mr. Day is interested in the Standard Exploration Company, which owns the New Year.

Flathead County.

Buzz Saw.—This group of claims on Shaughnessy Creek near Libby is owned by the United States & British Columbia Mining Company; it has shut down temporarily to give a chance to overhaul the mill machinery, which is stated to have given unsatisfactory results. The vein is opened by a 550-ft. tunnel, and by 2 drifts 400 ft. long on the ledge. The ledge is 6 to 20 ft. wide and the mining cost is said to be but 60c. per ton. The ore concentrates 11 into 1, the values being in gold, silver and lead. The mill has a capacity of 150 tons of crude ore daily.

Fisher Creek Mining Company.—About 35 men are now employed at this company's mine and mill above Libby. The ore is mostly free milling. The mill has 10 stamps and 2 Alliance vanners, and handles about 25 tons per day.

Snowshoe.—At this mine, near Libby, about 50 men are employed. The tunnel is in 1,900 ft. and will be driven clear through the mountain a distance of 3,500 ft. A winze from the tunnel is down 200 ft. and is reported to show better ore than the upper workings, the vein being 7 ft. wide. H. E. West is manager.

Jefferson County.

(From Our Special Correspondent.)

Grey Eagle.—This mine in Bishop's Gulch, 9 miles from Boulder, belonging to J. J. Holmes, will have machinery to sink a shaft from the No. 3 tunnel. This property has been a constant shipper for 3 years, and has netted something over \$200,000.

High Ore.—This property has been bonded by Edward & Calhoun of Minneapolis, who contemplate driving the tunnel now in 1,800 ft., 1,000 ft. additional, with crosscuts each 100 ft. When completed a 500-ton concentrator is to be built.

It is under the management of C. T. Weideman and is 6 miles from Boulder.

Hope.—This property at Basin, belonging to the Basin Gold and Copper Mining Company, is again closed down. The pumps are being drawn.

Red Cloud.—This property, 6 miles east of Clancy, is worked by Messrs. Knight & Herman, who have struck a good body of concentrating ore at the 100 level.

Relief.—This mine, owned and worked by F. E. Willard and situated 7 miles east of Alhambra, will be equipped with machinery in the spring. The ore is a lead-silver carbonate and sulphide carrying an average of \$8 gold.

Towanda.—This property on Warm Springs Creek, 6 miles east of Alhambra, has been purchased by C. D. Donnelly, who has a small force at work.

Lewis & Clarke County.

Montana Mining Company, Limited.—The tailings plant closed for the winter on December 20th. The total output for December was 22,270 oz. gold and 7,070 oz. silver from 4,200 tons of ore and 7,087 tons of tailings. The 7,087 tons of tailings yielded \$24,000, the cost of treatment being \$8,520. The total estimated income is \$49,200, and expenditure \$37,700, leaving a profit of \$11,500.

Madison County.

(From Our Special Correspondent.)

Conrey Placer.—The German Bar Mining Company of Virginia City has made the last payment of \$10,000 and secured title to this property.

Copper Bell Mining and Milling Company.—This company of Milwaukee, Wis., citizens has been organized to develop copper properties near Clinton. H. M. Benjamin is president and W. M. Williams general manager. Nine claims are owned, comprising nearly all of the important mines outside of the Mady and contiguous claims owned in Missoula, and the W. J. Stephens properties. The new company has exploited the district carefully and will do development work that will have a very material effect on the whole Clinton district.

Northern Pacific Railway.—The locating engineering party, consisting of T. A. Clark, chief, and 12 assistants, has started from Missoula to survey the preliminary route for the cut-off through the Clearwater country in Idaho to Lewistown. This party has surveyed from Lewistown toward the Bitter Root divide as far as practicable and now is starting from the Missoula side through the Lolo pass. It seems quite certain that this pass will be finally adopted by the road.

Park County.

(From Our Special Correspondent.)

Daisy.—This property at Cooke City, under the management of Dr. Van Auken, will use the old Republic smelter to treat its ores.

Bush Consolidated Mining and Investment Company.—This new organization has taken over all the interests of H. Bush at Jardine, including the Revenue Mine and new 40-stamp mill, electric light plant, Empire Mine and other property, with a capital of \$1,250,000. The officers are Judge Frank Henry, president; H. Bush, vice-president and manager; Geo. Welcome, secretary.

Silver Bow County.

Anaconda Copper Company.—Work is under way to increase the capacity of the electrolytic refining plant at Anaconda from 1,200 to 1,800 tanks. Work has stopped for the winter in the long tunnel to be driven to bring water to the smelters from Silver Lake. Progress on it has been hampered by a troublesome body of quicksand. At the smelter rapid progress is being made on the 3 new blast furnaces. At the upper concentrator and smelter the Gates crusher and rolls are all ready to begin work, and are only waiting for the completion of the jig section, and appearances indicate that this will soon start.

The 40 Bruckner calcining furnaces at the upper smelter are revolving regularly, while the 4 100-ft. 2-story Wetheys are working just as steadily. The average day's work of a Bruckner is about 14 tons of concentrates, while each Wethey takes care of from 60 to 65 tons every 24 hours. Excavation is in progress for 2 McDougal roasting furnaces, which will be upright and cylindrical in form, with a number of floors, the material being fed at the top and worked down from floor to floor.

Berline Mining Company.—According to Butte papers, George Savage of that city has interested Boston capital in a group of 5 claims north of the Snowball on Butte Hill. Preparations for development have started. The company has \$1,000,000 capital.

Butte Mountain Mining Company.—Boston men are interested in this company, which is sinking a shaft on the Snowball claim on Butte Hill. The shaft is down 100 ft.

NORTH CAROLINA.

Granville County.

(From Our Special Correspondent.)

Blue Wing.—This copper mine belonging to the Boston & Carolina Copper Mining Company is

working day and night. The main shaft is down 170 ft. At the 100 ft. level the drift on the vein is 300 ft. in north and 190 ft. south. Five hundred feet south of the main shaft another shaft is down on the vein 50 ft. The company ships about one car-load per week to the Orford Copper Company of New York, employs 60 hands and runs 5 air drills with boiler, engine and compressors. The ore shipped is said to average 16% copper. H. C. Crowell, Blue Wing, is superintendent.

Person County.

(From Our Special Correspondent.)

Copper World.—This company employs 20 hands and is down 60 ft. Col. F. H. Stith is manager, and one steam drill is in operation, together with boiler and hoister. Some good ore is on the dump.

Gancey.—This mine has just been re-opened by Georgia capitalists. The shaft is 100 ft. down and there is good copper ore on the dump.

Holloway.—This copper mine is shipping a car-load of 12% copper ore per day to its own smelter at Norfolk, Va. The shaft is down 260 ft. and there are reserves of ore in the mine and on the dump. Employment is given to 100 hands and 4 air drills are running.

OREGON.

Josephine County.

(From Our Special Correspondent.)

A. & B.—This Galice Creek placer mine, under the management of B. E. Stahl, is working with an abundance of water under 350 ft. pressure, nearly 800 ft. of dump, and over 1,000 acres of gravel, most of it over 50 ft. deep and some over 100 ft.

Big Yank Mining and Milling Company.—This Galice Creek Company, incorporated a short time ago in Portland for \$1,000,000, with John Wickum as president and general manager, has begun development work on the Big Yank ledge. It has also secured a large body of placer ground adjoining its quartz property for plant site, etc.

Sugar Pine.—This Galice Creek claim is being cleaned out and retimbered by the bonding parties, Messrs. Hamil & Deverrillo. They have shipped a few hundred pounds of high-grade ore to Portland last week for a mill test.

The Golden Wedge.—This Galice Creek Claim under the management of H. T. Hutchins is showing up well. A shaft is down on the pay shoot about 30 ft. and showing an average of 18 in. of high-grade free milling gold ore.

Lane County.

(From Our Special Correspondent.)

Blue River District.—This district is 50 miles east of Eugene by wagon road along the Mackenzie River. Although claims have been held here for 15 years, no capital entered the district until about a year ago, when Mr. Zimmerman of Portland and F. E. Sharkey of New York became interested in the Lucky Boy group of 3 claims. The character of the region is much the same as that of the Bohemia District in Lane and Douglas counties, 50 miles south. Blue River District is about 3 by 4 miles in extent, has an average altitude of 3,500 ft. and is well supplied with timber and water. The average snowfall is 5 ft.

Lucky Boy.—This mine is the first to have a mill in the Blue River District—a 10-stamp Fraser & Chalmers outfit. The company has 3 claims along a contact vein 30 ft. wide between walls of porphyry and syenite, 10 ft. of which is free milling quartz, almost free from sulphides. The remaining 20 ft. is lower grade, \$5 to \$6 in gold, and carrying considerable copper and lead sulphides, making a fine concentrating ore. Only the free milling portion of the ledge is mined at present, assaying from \$10 to \$30. A 300-ft. tunnel shows the vein at a depth of 200 ft. The mill is running continuously on the old dump. F. C. Sharkey is superintendent.

PENNSYLVANIA.

Anthracite Coal.

Jeddo Coal Company.—This company is to begin work in February at the Harleigh Colliery near Hazleton, which has been closed for many years.

Lehigh Valley Coal Company.—Packer No. 4 colliery at Shenandoah, which shut down recently, throwing 600 hands out of work, is being replaced by a mammoth breaker taking the output of Nos. 2, 3 and 4. The new breaker will not be completed before August.

SOUTH DAKOTA.

Lawrence County.

(From Our Special Correspondent.)

Anita Mining Company.—This is a new organization of Council Bluffs, Ia., men, and is capitalized at \$500,000. Mining ground has been bonded near Rochford.

British American Gold and Copper Company.—This company has struck a vertical of what is called good cyanide ore in the Butcher Gulch property, east of Deadwood. At the 110-ft. level of the main shaft a crosscut was run east. It

is now in 40 ft. The company has been re-organized.

Cascade Water Power and Electrical Transmission Company.—This company has begun suit in the Federal Court against the Homestake Company and the Black Hills Canal and Water Company, to prevent the above companies from diverting the upper waters of Spearfish Creek. A temporary restraining order is asked for. The Cascade Company owns several claims along the Spearfish.

Detroit & Deadwood.—This company is putting in an air compressor at its City Creek copper property in Deadwood. The tunnel is now in 530 ft.

Gold Hill Mining Company.—The following officers have been elected: President, D. C. Griffith; vice-president, Rome Miller; secretary and treasurer, R. C. Patterson, all of Omaha, Neb.; general manager, Thomas H. Goodman, Portland, S. D.; director, W. S. Balduff, Omaha. The company has purchased a hoisting plant and will sink in Johnson's Gulch, near Ragged Top. The company is capitalized at 500,000 shares; par value, \$1.

Homestake Company.—The Star shaft is down 1,100 ft. Work is progressing on the new cyanide plant of 1,000 tons capacity. About 130 men are employed on the ditch to bring water from Spearfish Creek. The Ellison hoist and shaft house is practically completed, the crushers having been put in this month. The hoist will not be used for some time. Steel pipes are being laid from the mills to the site of the new cyanide plant. There is a rumor that the company may erect a new stamp mill, near the Ellison hoist.

North Lead District.—Frank T. Sanders and H. Wattson, of Colorado Springs, Colo., have arrived in Deadwood to develop the old Emerald and Virginia mines, located north of Lead, adjoining the Grantz ground on the south. Associated with them is Asa T. Baldwin, of Colorado Springs.

Squaw Creek District.—Jno. Harnan, vice-president of the Portland Gold Mining Company, of Cripple Creek, who is also the vice-president and general manager of the Colorado & Deadwood Mining Company, which is working the old Ironsides Mine, is in Deadwood. His company has installed a 4-drill compressor plant for 4 drills. A new tunnel, started near the old workings, is to run in about 120 ft. and connect with old workings. It crosscuts the formation nearly at right angles. The company has 21 claims on the west side of Squaw Creek. A wagon road is being completed from the mine to the Burlington Railway. C. D. Wood, of Colorado Springs, is working a proposition near the Ironsides.

VIRGINIA.

Halifax County.

(From Our Special Correspondent.)

High Hill.—This company has the largest outcrop vein in this section. It can be traced for a mile, in which distance it is developed by 18 shafts and crosscuts. The company has shipped in the past month about 6 car-loads and has a quantity on the dump. The vein in places is 9 ft. wide. It now expects to ship 2 car-loads per week to the Orford Copper Company's works at Constable's Hook, N. J. The ore will average 12 to 15%, as it is well selected.

WASHINGTON.

Okanogan County.

(From Our Special Correspondent.)

Black Bear-War Eagle.—The company is breaking into several hundred feet of stoping ground at 100 and 150 ft. level. Will start the mill February 1st.

Marietta.—A tunnel is in 50 ft. to be driven 350 ft. to tap the main vein at 250 ft. vertical depth. The shaft is now down 85 ft. in galena ore.

Palmer Mountain Tunnel.—The total length of 2,700 ft. has crossed 16 veins, while drifting on 8 is under way.

Wehe Consolidated.—The main shaft is down 160 ft., and will be sunk 500. The tunnel on the Pasco location is 175 ft. in.

Ferry County—Republic.

(From Our Special Correspondent.)

Big Jim.—On this group north of the Park and Central group, on the South Half of Colville Reservation, a shaft is down 30 ft. Samples of the ore brought to Republic ran \$15 per ton in gold, silver and lead.

Gold Ledge.—The vein is opened 40 ft. east and 10 ft. west on the 100-ft. level. About 100 tons of ore have been raised and remain on the dump.

Hercules.—No. 2 shaft is down 15 ft., the vein being 3½ to 4 ft. wide, of which 2 ft. is clean quartz. The balance of the filling is quartz and porphyrite.

El Capitan.—This claim lies about 2 miles northwest of the Ignas and shows ore 9 or 10 ft. wide, averaging \$12 per ton. A tunnel is under way.

Ignas Group.—This group is 12 miles south of Republic. The manager reports a 4 ft. quartz ledge carrying gold, silver and copper, running through 3 claims. A shaft is down 30 ft. on the Buena Vista claim, the ore running from \$11.70 up to over \$600 in gold, silver and copper per ton. He also reports 2 carloads of pay ore read for shipment.

Lone Pine-Surprise Gold Mining Company.—The Lone Pine tunnel has cut the 3d Lone Pine vein, and drifts are being driven. The filling is quartz, and the values run from \$15 to \$35 per ton, averaging about \$25.

Little Chester.—Work has been started at the surface, where the vein is 100 ft. wide. A shaft is down 25 ft. The ore is said to be very heavy in zinc and iron sulphide.

Republic Consolidated Gold Mining Company.—D. C. Jackling, late of Mercur, Utah, will bring with him plans and specifications for the new 200-ton mill. Hugh C. Baker, of Rossland, B. C., who has had charge of the mining interests of Messrs. McCraig, Rykart & Co., of Montreal, Canada, at Rossland, is in Republic and will assist Major R. G. Edwards Leckie, manager of the Republic and other mines in which the Canadian firm is interested in République and in the Boundary country, B. C.

Valley.—The shaft is down over 50 ft. Work is pushed. Twelve men are employed on 3 shifts.

WISCONSIN.

Florence County.

Commonwealth Iron Company.—This company is opening a new property near Commonwealth. The lens opened is 30 ft. thick, of clean ore. The ore averages over 60% iron, better than the company's Badger ore. A permanent shaft house is erected and ore will be shipped this season.

Douglass County.

North Wisconsin Copper Company.—This company, in which B. J. Van Vleck and other Superior men are interested, has been exploring for copper on the South Range back of Superior for a year. James Maker recently took a contract to sink the shaft at the Chippewa location 100 ft., making its total depth over 200 ft.

WYOMING.

Converse County.

Black Hills Coal Company.—This company is shipping 100 tons of coal from its Aladdin mines daily. A cave-in in one of the slopes has delayed operations, and as soon as the slope is retimbered, the capacity will be increased to 300 tons per day. A diamond drill hole has been put down several thousand feet back of the headings of the mine and a better grade of coal is said to have been found. The work in the mine is done by contract, the miners averaging 90c. per ton. There is a great scarcity of coal miners and men are wanted. The coal produced is considered about the best mined near the Black Hills for steam.

Glenrock Coal Company.—The explosion of a boiler at the mines of this company at Glenrock recently caused a fire practically destroying the whole surface plant. The company took over the property of the Deer Creek Coal Company about a year ago. The fire stopped mining and shipments are interrupted in consequence.

FOREIGN MINING NEWS.

AFRICA.

Rhodesia.

The Rhodesia Chamber of Mines reports the output of gold in October at 4,276 crude oz. For the 10 months ending October 31st the total was 67,170 oz., against 6,260 oz. reported in 1898. The war in the Transvaal seems to have had little effect on the Rhodesian mines thus far.

AUSTRALASIA.

New South Wales.

The Mines Department reports the gold production for November at 40,183 crude oz. For the 11 months ending November 30th the total was 448,659 oz., an increase of 162,730 oz., or 56.7% over 1898.

Broken Hill Proprietary Company.—This company reports for the four weeks ending January 3d a total output from the refinery of 2,390 tons lead, 62 tons hard (antimonial) lead, 327,655 oz. silver and 1,277 oz. gold.

New Zealand.

The Mines Department reports the output of gold and silver for the 11 months ending November 30th as below, in ounces:

	Gold.		Silver.	
	1898.	1899.	1898.	1899.
October.....	30,039	36,557	33,595	30,778
November.....	15,721	26,829	22,291	26,291
Eleven months....	249,433	349,512	273,960	311,323

There was an increase in 1899 of 100,079 oz., or 40%, in gold, and of 37,363 oz., or 14%, in silver.

The West Coast gold-field appears to be in a languishing state, and the monthly returns more often show a decrease than an increase. The

Progress Mines at Reefton, however, continue to give good returns.

The Waihi Mine shares have risen to £10. This represents a capital value of £3,200,000 (\$16,000,000). The new lode has been named the Empire, and is opening up splendidly.

The Thames-Hauraki Company has made a claim of £44,878 (\$224,390) against the New Zealand Government as compensation for extra expenses incurred in altering plans and construction of its pumping plant as required by the Government inspector, and for loss of title to part of its ground which proved to be private property. The Government has replied that it does not admit or recognize the claim. Costly legal proceedings seem inevitable. The whole thing appears to be a sequel to the dispute between the Thames-Hauraki Company and the Thames Drainage Board.

Queensland.

The mines department reports the output of gold for November at \$3,774 oz., of which only 973 oz. came from alluvial or placer workings. For the 11 months ending November 30th the total reported was 853,414 oz. crude gold.

Western Australia.

Exports of gold from Western Australia and receipts at the Perth Mint amounted in all to 139,868 crude oz. in November. For the 11 months ending November 30th the total reported was 1,505,257 crude oz. This was equivalent, at the usual rates, to 1,347,205 oz. fine gold, or \$27,846,727.

CANADA.

British Columbia—East Kootenay District.
Crows' Nest Pass Coal Company.—The output of the mines at Fernie at present is 700 tons daily or about 1,800 tons per month. Of this about 4,000 tons monthly go to the coke ovens. The company has also started to open 2 more mines on Michel Creek, 1 at Sparwood 24 miles east of Fernie, and 1 at Ericson 27 miles east of Fernie, both close to the railway track. The seam being opened at Sparwood is reported 12 ft. thick, and the one at Ericson 15 ft. thick. Coal is shipped from both places. In the mines at Fernie 2 new seams were opened last year, which makes 4 seams now being worked, 2 of 6 ft. each, 1 of 30 ft. and 1 of 8 ft.

The company completed 152 ovens in 1899 and laid the foundation of 38 more. It has also let contracts for the building of 300 more. Large orders for machinery of all kinds necessary for colliery use have been placed.

The company has built a large number of miners' cottages at Fernie, and is erecting a large storage bin with a capacity of 4,500 tons for slack for the coke ovens.

Yukon District.

According to press dispatches from Skagway via Seattle, a large part of Dawson was wiped out by fire on January 9th. The loss is estimated at over \$500,000.

MEXICO.

Guanajuato.

Guanajuato Consolidated Mining and Milling Company.—At the annual meeting in New York City the purchase of the outstanding 46 per cent. interest in the Sirena Mine was ratified. The old board of directors was re-elected and the following officers elected: Frederick G. Corning, president; Sidney Green, vice-president; E. A. Wiltsee, second vice-president; Thomas J. Hurley, secretary and treasurer. The Exploration Syndicate were re-appointed New York fiscal agents. The present output is stated to average about \$22,000 per month.

COAL TRADE REVIEW.

New York.

Jan. 20.

Anthracite.

The anthracite coal trade during the week has been generally quiet. Retail buying has been affected by the warmer weather and dealers who laid in large supplies when the scare was on in November or December see no need of ordering more coal yet. As has been pointed out before in this column, the prospects all favor a much milder winter than last year. As yet the outlook has not changed for the worse. There is no attempt to force coal on the market; car supply is poor at the collieries and mining is not pushed. Consequently there is a general reduction in output without any particular effort to put on the brakes.

Threats of trouble continue to come from the labor organizers in the Wyoming Valley. The companies generally refuse to notice newspaper threats, though professing willingness to deal directly with their employees. The various questions that the labor organizers offer for settlement are extremely complicated. It is doubtful if any general mining rate would be fair, owing to the great difference in conditions, and consequently in mining costs in different collieries. The question of "dockage," for instance, cannot be settled off-hand, and a change in the price of supplies means a change in the mining rate.

There is evidently coal enough on hand at the head of the Lakes to last till spring. Trade at

Chicago drags and is decidedly quiet. In the East the only activity is in the steam sizes, which continue in good demand. Broken and egg sizes continue poor sellers. We quote free burning white ash f. o. b. New York, broken, \$3.30; egg, \$3.80; stove, \$4.15; nut, \$4.25.

Bituminous.

The demand for soft coal in the Atlantic seaboard soft coal trade continues great. There is some talk of coal being offered, but investigation shows such offers to be a minus quantity. There was some coal offered last week at \$3.50 or so, New York Harbor. It was snapped up quickly, and this week there is none offering. Producers, however, continue to get their business better in hand and are able to tend to orders more promptly.

There have been no prices made on the coming season's business so far as determined. One West Virginia concern is reported to have taken some new business, but nothing definite is known. It is clear that prices at the mine will be \$1 higher. What railroad and ocean freight rates may be, time alone can show. The whole situation is too uncertain for producers to make figures. The rumored interest of the Pennsylvania in the Baltimore & Ohio and Chesapeake & Ohio should steady rates, and there should be fewer concessions.

One thing is evident, and that is the producers expect to have a share of the profits this year. Last year the middlemen had the best of it. Consumers in the far East who have been bearing the market the past 10 years had to take some very unpleasant medicine last fall, and this year they may be expected to remember the dose. They have suffered most from the advance, and, it is reported, are now paying as high as \$5 at Boston for coal from outside parties. Sound business continues very heavy, but producers see light ahead and are working toward it. At New York Harbor points consumers are making their full wants known ahead, not relying as much on getting coal as they want it. The all-rail trade is taking considerable coal. Some old contracts are nearly filled.

Transportation from mines to tide continues slow; trains are frequently 10 days making what is normally a 3 or 4 days' journey. The railroads continue to seize coal in transit. Some of the roads are taking more than they have been. Car supply shows a slight improvement. It is now perhaps 3/4 of the demand. Vessels are in poor supply, caused by detentions at shipping ports from the poor dispatch given by the railroads. We hear of vessels lying at Chesapeake Bay ports for several weeks with shippers paying demurrage charges. Ocean freight rates from Philadelphia to Boston are \$1.75; from Philadelphia to Sound ports, \$1.25; to other ports rates are made by agreements with captains and vessel owners, but captains are apt to ask about the chances of detention at shipping ports and want demurrage charges at the rate of 6c. per ton per day or so. Rates from Chesapeake Bay ports are about 25c. per ton higher than from Philadelphia.

Birmingham, Ala.

Jan. 15.

(From Our Special Correspondent.)

There is no change in the coal market in this State. The production is very heavy, the demand excellent, and no prospects of a change for the worse for some time to come. The local demands are great; in fact, it is a difficult matter to accept much business from other sources.

During the past week State Mine Inspector J. de B. Hooper held an examination for first and second class mine foremen certificates. There were quite a number of good miners to stand the examination in quest of the certificates, there being plenty of positions to be had in this State.

There are several new mines being opened. The books in the Probate Judge's office in this Jefferson, Walker and St. Clair counties show that several new mining companies have been organized in the last 6 months. In the case of the Superior Coal Company, organized in this county, a mine in full operation in Shelby County, an adjoining county to this, has been purchased, and will be operated on a larger scale than before.

There is an active demand for coke, as the furnaces are using great quantities of the article. More coke ovens are being constructed at the various mines, and it is believed that all requirements will be met. Mr. J. M. Meighan, a local contractor, is working on a big contract for coke ovens.

Chicago.

Jan. 16.

(From Our Special Correspondent.)

Anthracite coal continues in but small demand, the mild weather having kept sales down. There has been only a limited buying of hard coal since the year opened, but it is entirely due to warm weather, and not to business conditions. Previous to the opening of the year dealers in hard coal bought lavishly in the expectation of disposing of large quantities through the better industrial conditions and the expectation of frigid weather, but they have been disappointed. Prices have not as yet been

affected, they being steady, with no signs of any weakening; \$5.75 being quoted on egg and stove, and \$6 for chestnut.

Bituminous coal is being bought quite freely, but through larger supply from the mines prices have eased off to some extent. Much coal has come to town during the past week, greatly augmenting the supply, and now the indications are that there will continue an ample supply. Inquiry from manufacturing lines indicates a continued good demand.

Pittsburg.

Jan. 18.

(From Our Special Correspondent.)

There is but little new in the coal situation. Prices remain the same as last week, and no change is likely to occur until after the mining rate is fixed for the year, which begins April 1st. It is reported that the Pittsburg Coal Company, the consolidation of the railroad interests, has made contracts with several of the large industrial combinations to furnish coal for two or three years at a certain price above the mining rate. The officials of the company refuse to confirm or deny the report. Operators in this district seem to be willing to grant the diggers an advance of 10c. a ton at the Inter-State Convention, which will open in Indianapolis next week. The Monongahela River Consolidated Coal and Coke Company during the week sent 2,000,000 bus. of coal to Southern ports. There are about 6,000,000 bus. ready to go out, and it is likely that it will all be shipped during the week and next week, if navigation is favorable.

Connellsville Coke.—The production for the week amounted to 203,543 tons, an increase of over 15,000 tons, compared with the previous week. It is expected that from 300 to 500 new ovens will be completed and put in operation within a week. There were 80 new ovens completed last week, and 272 added to the active list. The shipments aggregated 10,477 cars, distributed as follows: To Pittsburg and river tipples, 3,270 cars; to points west of Pittsburg, 5,479 cars; to points east of Connellsville, 1,728 cars. The price of furnace coke at the ovens is higher this week, and is quoted at \$3@3.25 a ton. Foundry coke is quoted at \$2.90@3.10.

Shanghai, China.

Dec. 12.

(Special Report of Wheelock & Co.)

Coal.—Japan coal has weakened owing to a decline in freight rates. Welsh Cardiff is featureless. Australian Wallongong is selling in a retail way. Arrivals of all kinds of coal for the fortnight were 34,807 tons. We quote per ton as follows: Welsh Cardiff, 21 taels; Australian Wallongong, cargo, ex-godown, 13 taels, and other sorts, 6.50@7 taels; Chinese, Liusi lump, 8 taels, and mixed, 5.50 taels; Chinese Tongshan, No. 9 lump, 8 taels; mixed, 5.75 taels, and dust, 5 taels; Japan all contracted for.

Kerosene Oil.—Only a small business has been done in American oil. Stocks in hands of natives are understood to be small; hence higher prices are expected for hard cargoes. Two arrivals aggregating 293,000 cases bring stocks up to 686,000 cases. Russian Batum is quiet. Arrivals were 190,000 cases, making stocks 215,000 cases. Sumatra Langkat is also quiet; stocks are 248,000 cases. We quote per case as follows: American Devoe's, 2.24@2.37 taels; Russian Batum, Anchor and Horse Chop, 2.13 1/2 taels, and Star & Crescent Chop, 2.11 taels; Batum bulk, loose, 1.67 1/2 taels; and Sumatra Langkat, 2.04 taels per two tins.

SLATE TRADE REVIEW.

New York.

Jan. 19.

After much consideration the roofing slate manufacturers and dealers have formulated a price list. In Pennsylvania the Lehigh people have put up prices 15c. per square on 20 by 11 in., but on sizes 24 by 14, 20 by 12, 20 by 10, 16 by 8, 14 by 8, and 14 by 7 in. quotations have been lowered from 10 to 15c. per square, and on size 12 by 8 in., 45c. less is asked. The Pen Argyle section has dropped 10 to 35c. per square, while the Peach Bottom Association's prices remain unchanged. In the Vermont region sea green manufacturers have raised prices 10 to 15c. per square on some sizes, but on export sizes, 20 by 10 and 18 by 10 in., they are asking 10c. less. Unfading green shows no change. The red slate people have run up prices from 75c. to \$2 per square, as we reported last week. No change has been made in Maine slate prices. In the smaller producing States quarrymen are asking prices to conform with the schedule of the Pennsylvania and Vermont people.

Manufactured slate, such as blackboards, school slates, etc., will probably be easier in price, when the raw material schedule has been adjusted. Competition is still keen in this direction, and it is difficult to give exact selling prices.

We hear much dissatisfaction in export circles over the policy of certain quarrymen in catering to foreign business. It is averred that Pennsylvania roofing slate is selling delivered in British territory at £4 9s. 7d. (\$21.74) for size 16 by 8 in., to £12 2s. 7d. (\$58.94) for 24 by 14 in. per mille of 1,260 slates, which, we are told, is

5s. 5d (\$1.30) to £1 17s. 11d. (\$9.16) less per mille than could be gotten if harmony ruled among the few exporters that are still in the business. Taking the lower prices mentioned above, and deducting the necessary charges for transportation, etc., we find that the actual selling price of 16 by 8 in. roofing slate at quarry is \$2.75 per square, or 95c. less per square than the schedule for home consumption. The price at which 24 by 14 in. slate is selling abroad equals \$2.50 per square at quarry, and this is 80c. less per square than was quoted at home. Using the figures at which American roofing slate could be sold abroad, as noted above, we find that the price at quarry would equal \$2.95 per square for 16 by 8 in., and \$3.25 for 24 by 14 in. In making these comparisons we have taken the average price of the customary kinds of Pennsylvania roofing slates that are exported, and based our ocean transportation on 12s. 6d. (\$3) per ton to London—the minimum rate.

The freight market is very firm, restricting shipments for a time at least. Rates to London are now 15s., or about \$1. per square of roofing slate. Vessel room is extremely scarce, and no long-time contracts will be booked by shipping brokers.

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

Prices of Roofing Slate.

Size, inches	Monson or Br. Vile.		Bangor.		Bangor Ribbon.		Alb. n. or Jackson Bangor.		Lehigh.	Peach Bottom.	Sea Gr'n.	Unad'g Green.	Red.
	\$	¢	\$	¢	\$	¢	\$	¢					
24 x 14	6.10	3.50	3.00	3.25	3.10	5.10	3.15	3.15	3.15	3.15	3.75	.....
24 x 12	6.60	3.50	3.00	3.25	3.10	5.25	3.15	3.15	3.15	3.15	3.75	.....
22 x 12	6.60	3.50	3.25	3.50	3.25	5.25	3.15	3.15	3.15	3.15	3.75	.....
22 x 11	6.50	3.75	3.25	3.50	3.25	5.25	3.15	3.15	3.15	3.15	4.00	.....
20 x 12	6.90	3.75	.....	3.75	3.25	5.25	3.15	3.15	3.15	3.15	3.75	.....
20 x 11	6.90	.....	.....	3.75	3.25	5.25	3.15	3.15	3.15	3.15	3.75	.....
20 x 10	6.80	4.50	.....	3.75	3.50	5.25	3.15	3.15	3.15	3.15	3.75	.....
18 x 12	6.80	3.75	.....	3.50	3.25	5.25	3.15	3.15	3.15	3.15	4.25	11.00
18 x 11	7.00	.....	.....	3.50	3.25	5.25	3.15	3.15	3.15	3.15	3.75	.....
18 x 10	7.20	4.50	3.50	3.75	3.50	5.35	3.15	3.15	3.15	3.15	4.00	11.00	
16 x 9	7.10	4.50	3.50	3.75	3.50	5.35	3.15	3.15	3.15	3.15	4.25	11.00	
16 x 12	6.80	3.75	3.50	3.50	3.50	5.00	2.95	3.50	3.50	3.50	3.50	.....
16 x 10	7.10	4.25	3.50	3.75	3.50	5.25	2.95	4.00	4.00	4.00	4.00	11.00	
16 x 9	7.00	4.25	3.75	3.75	3.50	5.35	2.95	4.25	4.25	4.25	4.25	11.00	
16 x 8	7.20	4.50	3.50	3.75	3.10	5.35	2.95	4.25	4.25	4.25	4.25	11.00	
14 x 10	6.60	3.75	3.25	3.25	.....	5.25	2.86	3.75	3.75	3.75	3.75	11.00
14 x 9	6.50	.....	.....	3.25	3.10	5.10	2.85	3.75	3.75	3.75	3.75	11.00
14 x 8	6.60	3.75	3.25	3.25	3.10	5.10	2.85	4.25	4.25	4.25	4.25	11.00	
14 x 7	6.40	3.75	3.25	3.25	3.10	5.10	2.60	4.25	4.25	4.25	4.25	11.00	
12 x 10	5.80	.....	.....	.....	.....	.....	2.60	3.25	3.25	3.25	3.25	.....
12 x 9	5.60	.....	.....	.....	.....	.....	2.60	3.50	3.50	3.50	3.50	.....
12 x 8	5.50	3.50	.....	3.00	2.80	4.85	2.60	3.50	3.50	3.50	3.50	9.50
12 x 7	5.00	3.25	.....	3.00	2.80	4.85	2.50	3.50	3.50	3.50	3.50	9.50
12 x 6	4.80	3.25	.....	3.00	2.80	4.75	2.50	3.50	3.50	3.50	3.50	9.50

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

In Brownville and Monson delivery quotations can be had somewhat lower than above, which is also true of other brands. No. 1 Bangor are 50c. extra when full 3/16 in.

IRON MARKET REVIEW.

NEW YORK, Jan. 19, 1900.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending				From Jan., '99.	From Jan., '00.
	Jan. 20, 1899.	Jan. 19, 1900.		Jan., '99.		
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
An' coke	180	239,100	254	298,325	683,142	782,595
Charcoal.	20	6,120	30	7,925	17,484	21,510
Totals..	200	245,220	284	296,250	700,626	804,105

The iron market continues generally quiet. In raw iron and steel the new business has not been large, though a good deal of discussion is going on over prices. There are reports that concessions have been made on foundry irons to some large buyers, but they cannot be verified, and probably amount to but little. There is a demand for basic pig, and it is quite probable that some large orders will be placed. A good deal of dickering is going on over steel billets, but sellers have the best of it so far.

In finished iron and steel the chief incidents have been negotiations for large contracts for bridge material. The Pennsylvania and the New York Central, in the East, the Chicago & Northwestern, the Chicago, Milwaukee & St. Paul and the Illinois Central, in the West, are understood to be in the market for large quantities. There is some speculation as to material for the new rapid transit line in New York, the contract for which has just been let; but no large quantities will be needed for some time to come, perhaps a year. Some steel rail contracts are said to have been offered.

Stocks of pig iron at the Southern furnaces are lower than was ever known before. In fact, they have practically disappeared, and iron is shipped almost before it is cold.

The statement of the American Pig Iron Storage Warrant Company for the year 1899 is as follows: Entries in yards, 14,500 tons; withdrawals, 160,400 tons; stocks in yards December 31st, 4,900 tons. Receipts were light all through the year.

The statement of the American Pig Iron Stor-

age Warrant Company for the year 1899 is as follows: Entries in yards, 14,500 tons; withdrawals, 160,400 tons; stocks in yards December 31st, 4,900 tons. Receipts were light all through the year.

Birmingham, Ala. Jan. 15.

(From Our Special Correspondent.)

The pig iron market moves along smoothly, and all defects as far as the production goes are being corrected. There is more raw material being gotten out, and the furnaces need not hesitate in their output any longer from this cause. The local consumption is still slack, caused by the Birmingham rolling mills and the big pipe works at Bessemer being closed down, but in a few days now both of these plants will resume operation.

During the present week the old Baxter stove works plant, in this city, idle for years, was purchased by F. E. Glenn and C. A. Day, of St. Charles, Ill.; J. F. Hatcher, of Columbus, O., and H. K. Spencer, of Chester, Ill., and it will be converted into a soil pipe factory at once. These parties intend to give employment to 150 men, and will consider the manufacture of hollow ware, anticipating an investment all told of something near \$200,000. They will use something like 50 tons of pig iron a day. The Dimmick pipe plant, within the next 2 months will be ready for operation. Within a few weeks the Bessemer rolling mills will be in operation. Additions are to be made at the big pipe works at Bessemer, while another soil pipe factory at Bessemer will be in operation soon. In the immediate Birmingham district there are no furnaces to go into blast, with the exception of the second Oxmoor Furnace, belonging to the Tennessee Coal, Iron and Railroad Company, the fifth furnace, now building at Ensley, belonging to the same company, and which will not be completed for some weeks yet, and the Trusville Furnace, belonging to the Birmingham Mining and Manufacturing Company. In the State, however, there are several furnaces getting ready to go into blast. It will be some little time before the furnaces belonging to the Sloss-Sheffield Steel and Iron Company, which have been in the course of repairing for some time, will be ready for the torch. The Alabama Consolidated Coal and Iron Company, has the Gadsden furnace in blast, and shortly their second Ironaton furnace will be ready. The Jenifer Furnace is almost ready.

There have been changes in quotations, and, generally speaking, they are steady and firm. The following prices are quoted: No. 1 foundry, \$18.50; No. 2, \$17.50@18; No. 3, \$16.75@17; No. 4, \$16@16.50; gray forge, \$15.50@16; No. 1 soft, \$18.50; No. 2, \$17.75.

The demand for finished iron is very good, with prices above the average. The Birmingham mills are still idle. The contract for metal and fuel seems to be causing the shutdown. The repair work about the mills has been completed. The Bessemer mills will start up shortly. Notwithstanding denials, it is currently believed that the Republic Iron and Steel Company has purchased this plant.

Buffalo. Jan. 17.

(Special Report of Rogers, Brown & Co.)

The foundry iron market during the past week has shown considerably more life than for some time past. At first, numerous inquiries were received for prices for both early delivery and for extended contracts. In many cases after prices were named the buyers held off and decided to defer purchases until later on. For the past few days, however, we have seen more real interest shown by the larger buyers and several fair sized contracts have been made. It is becoming evident that there is considerable tonnage for the first half that has not yet been placed. Prices have remained very firm, with the exception of what might be called a weak spot here and there. Buyers have been taking advantage of these occasional special prices and buying accordingly. Local furnaces that have for the past few weeks enjoyed a little let up in the way of shipments on existing contracts are now again experiencing the same trouble to satisfy the demands of their regular trade. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 Strong Foundry coke iron, Lake Superior ore, \$24@24.50; No. 2 Strong Foundry coke iron, Lake Superior ore, \$23.50@24; Ohio Strong softener No. 1, \$24.25@24.75; Ohio Strong softener No. 2, \$23.25@23.75; Jackson County silvery, 8%, \$31; Southern soft No. 1, \$23.50; Southern soft No. 2, \$22.50; Lake Superior charcoal, \$26@27; coke malleable, \$24@25.

Chicago. Jan. 16.

(From Our Special Correspondent.)

Pig Iron.—Inquiries on shipments for first half of the year are coming in in fair quality, and look like business in many instances. Business during the week was wholly in small lots, and not large in the aggregate. Shipments on contracts continue heavy, and it looks as though the furnaces would not catch up on orders on hand for months to come. Southern iron is in a very firm condition, prices being strictly maintained. The present quiet in buying is merely taken as being due to the close of the year, stock taking, etc., but sales agents look for an-

other boom. Prices continue firm as follows: Lake Superior charcoal, \$25.50@26; local coke foundry No. 1, \$24.50@25; No. 2, \$23.50@24; No. 3, \$22.50@23; local Scotch No. 1, \$25@25.50; Ohio strong softeners No. 1, \$25.50; Southern coke No. 1, \$22.85@23.85; No. 2, \$21.85@22.85; No. 3, \$21.10@21.85; Southern coke No. 1, soft, \$22.85@23.85; No. 2 soft, \$21.85@22.85; Southern silvery, \$26.

Cleveland, O. Jan. 16.

(From Our Special Correspondent.)

Iron Ore.—Little or no change in the condition of the iron ore market was noticed here during the last week. The sales were very few and the general belief is that the present condition of the market will continue throughout the month. A large business is being looked forward to, the expectation being that there will be more ore mined, sold and consumed than any year in the history of the iron business. The following are the prices for the year 1900: Specular and magnetic ores, Bessemer quality, \$6@6.50; specular and magnetic ores, non-Bessemer quality, \$5@5.25. Red hematite ores, Bessemer quality, \$5@5.50; red hematite ores, non-Bessemer quality, \$4@4.50.

Pig Iron.—Quite a liberal movement in the sale of pig iron has started during the past week. The fact that many manufacturers failed to make contracts before the holidays for iron for consumption for the fore part of the year is now being felt. The result is that the competition will be very fierce. The manufacturers who have no contracts say that even if they made contracts they would not have been protected, because of the varied prices at which iron was sold. The substance of their remarks on the situation is that what contracts have been made will probably not stand. In support of this stand they recall the contracts which were made for the last six months of last year, and were not fulfilled by the iron men. The iron men admit that they did not deliver all iron they contracted for, but deny that they sold it to other parties who offered higher prices. They say that they were unable to fill all their contracts, for the reason that there was not enough mined. The market remains very firm at the advanced prices previously reported. The following are the present quotations for iron f. o. b. Cleveland: Lake Superior charcoal, \$26; Bessemer, \$25; No. 1 foundry, \$24.25; No. 2, \$23.75; No. 1 Ohio Scotch, \$24.75; No. 2, \$23.75; gray forge, \$21.

Pittsburg. Jan. 17.

(From Our Special Correspondent.)

Scarcely any iron and steel is being sold, but the market continues firm and there is no indication of a decline. Bessemer pig iron is still quoted at \$25@25.25 at Pittsburg, and \$24 at the Valley furnaces. The production of Bessemer pig iron has been curtailed during the week, partly on account of accidents at two furnaces and also on account of an increased demand for gray forge or mill iron. An explosion on Sunday last blew the top off the Douglass Furnace, of the Shenango Furnace Company, at Sharpsville, Pa., and the damage cannot be repaired in less than two weeks. The greatest loss, however, will be in production. An accident at the Hannah Furnace of the Republic Iron and Steel Company, at Youngstown, O., will keep it idle for some time. Clinton Furnace, on the South Side, Pittsburg, the furnace at Girard and Andrews & Hitchcock's furnace at Youngstown, have changed from Bessemer to mill iron. The increased demand for foundry iron has strengthened prices somewhat. No. 2 foundry is quoted this week at \$23.25, and gray forge is \$21.50@21.75. Old contracts have nearly all been filled, and mills are now on new business. There were no sales of steel billets during the week, but the price remains unchanged. Billets are still quoted at \$35@35.50, and are not likely to go any lower—at least for delivery during the first quarter. The plate market has been disturbed somewhat by a cutting of prices, but this has been stopped, and former prices are likely to be soon restored. Sheets continue to be the only weak line in the iron and steel industry. There is no profit in the sheet business, with sheet bars at \$36 a ton and sheets at 3c. a pound and less. At these figures manufacturers only receive the actual cost of production. The demand for sheets is good, but buyers refuse to pay more than the rates now being quoted. There is a good deal of inquiry, but manufacturers who are willing to sell at all at present prices will accept orders for January and February delivery only. Buyers are trying to place orders for delivery up to July 1, but without success. The strike of the rod mill workers, which began on Tuesday morning, is not likely to affect the market for wire and wire nails. The American Steel and Wire Company, it is stated, has enough material in stock to supply the wire mills for at least six weeks. The South Pittsburg plant has been idle since Christmas for repairs, and the New Castle plant has not been operated for several months. The Beaver Falls works are closed by the strike, and the plant at Brad-dock is crippled. The works at Rankin are not affected by the strike. All these mills are in the Pittsburg district.

Pig Iron.—The market continues firm, and

prices remain unchanged. There is an increased demand for foundry iron, and prices are stiffening somewhat. No. 2 is quoted at \$23@ \$23.25, and gray forge at \$21.50@ \$21.75.

Steel.—There were no sales during the week, but prices remain unchanged. Billets are still quoted at \$35@ \$35.50. Plates have declined a little owing to some manufacturers shading their ruling rates. The lowest price quoted for tank plates during the week was 2.40c.

Ferro-manganese.—The demand is stronger than last week, and the price is firm at \$125 a ton.

Cartagena, Spain. Jan. 8.

(Special Report of Barrington & Holt.) Iron and Manganiferous Ores.—The market continues satisfactory. Demand for all classes of ore is fully maintained, and the local prices continue to advance. Heavy gales and rain in the middle of December and the Christmas holidays have somewhat interfered with shipping operations and production. Freight rates are easier, and several fixtures were made for the United States for 10s. and 9s., December and January loading. During December 22 cargoes of iron ore have been shipped from here, 13 of which were dry ore and 9 cargoes manganiferous ore. We quote iron ore per ton f. o. b. Cartagena or Portman, as follows: Ordinary 50% Portman 7s. @ 7s. 6d.; special low phosphorus, 7s. 4d. @ 7s. 8d.; extra quality low phosphorus, 8s.; special iron ore, 8s. 6d.; specular, 10s. 6d. For manganiferous ore we quote f. o. b. Cartagena, 15s. for No. 1, containing 20% iron and 20% manganese; 12s. for No. 1 B., 25% iron and 17% manganese; 11s. 6d. for No. 2, 30% iron and 15% manganese, and 9s. 6d. for No. 3, containing 35% iron and 12% manganese. Any new tax that may be levied by the Government to be paid by the buyers.

New York. Jan. 20.

The local iron market shows improvement. Inquiries are coming in faster, though actual buying lags. In foreign trade we note shipments of \$50,000 worth of machine tools to France, \$11,000 worth of iron pipe for Belgium and a continued movement of finished products to Germany and England.

Pig Iron.—Transactions are more numerous; prices fairly firm. We quote for delivery to July, Northern brands, tidewater delivery: No. 1 X foundry, \$22.75@ \$25.25; No. 2, \$23.25@ \$24; No. 2 plain, \$22.50@ \$23; Southern brands, New York delivery: No. 1 foundry, \$23@ \$23.50; No. 2 foundry, \$22@ \$22.50; No. 1 soft, \$21.75@ \$22.25; No. 2 soft, \$20.75@ \$21.25; No. 3 foundry, \$21.50.

Warrant irons show only minor fluctuations, Alabama No. 2 being firm at \$17@ \$17.30; No. 3, \$15½@ \$15; No. 4, \$15; gray forge, \$15.

Bar Iron and Steel.—The demand for bars is still pretty easy, but shows signs of improving, inquiries being more numerous. We quote refined iron as high as 2.30c. on dock, and common up to 2.15c. Soft steel bars, 2.45c.

Plates.—Buying is still light and prices are lower. We quote for larger lots at tidewater: Tank, ¼-in. and heavier, 2.50c.; tank, 3/16-in., 2.60c.; shell, 2.70c.; flange, 2.80c.; marine, 3c.; fire-box, 3c.; universals, 2.60c.

Steel Rails and Rail Fastenings.—But little change in the local market in spite of reports of tonnage placed in the West. We quote for standard sections \$35@ \$36 f. o. b. Eastern mills. Smaller rails are quoted: 12-lb., \$40; 16-lb., \$40; 20-lb., \$40; 30-lb. to 40-lb., \$38; 40-lb. to standard, \$37, with the usual advance for small orders. We quote angle bars, 2.45c.; fish plates, 2.40c.; spikes, 2.75c.

Structural Material.—The outlook for a considerable tonnage for municipal work before long improves. We quote for large lots of steel at tidewater: Beams, 15-in., 2.45c.; tees, 2.45c., channels, 2.45c.; angles, 2.45c.

Nails.—Sales continue light and mostly for small lots. Prices for wire nails are \$3.55 for carload lots on dock; for cut nails in carloads on dock, \$2.70.

METAL MARKET.

NEW YORK, Jan. 19, 1900.

Gold and Silver.

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

Table with columns: Metal, December (1898, 1899), Year (1898, 1899). Rows: GOLD Exports, Imports, Excess; SILVER Exports, Imports, Excess.

This statement includes the exports and im-

ports at all United States ports, the figures being furnished by the Treasury Department.

Gold and Silver Exports and Imports, New York For the week ending January 18th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Table with columns: Period, Gold (Exports, Imports), Silver (Exports, Imports), Total Excess or Imp.

Exports of gold and silver were chiefly to Great Britain. Imports of gold were from the West Indies; of silver from Mexico and South America.

The United States Assay Office in New York reports the total receipts of silver at 132,000 oz. for the week.

Prices of Foreign Coins.

Table with columns: Coin, Bid, Asked. Rows: Mexican dollars, Peruvian and Chilean pesos, Victoria sovereigns, Twenty francs, Twenty marks, Spanish 25 pesetas.

Average Prices of Silver per oz. Troy.

Table with columns: Month, 1899 (London, N.Y.), 1898 (London, N.Y.), 1897 (London, N.Y.).

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

Average Prices of Metals per lb., New York.

Table with columns: Month, COPPER, TIN, LEAD, SPECTER.

The price given in the table is for Lake Copper. The average price of electrolytic copper in January was 14.26c.; in February it was 17.02c.; in March, 16.35c.; in April, 17.13c.; in May, 17.2c.; in June, 16.89c.; in July, 17.089c.; in August, 17.42c.; in September, 17.34c.; in October, 16.94c.; in November, 16.49c.; in December, 15.85c.; for the year 1899 the average was 16.67c.

Financial Notes of the Week.

Silver has advanced under the impression that India's requirements may compel the purchase of a considerable quantity of the metal. There is, however, no positive information as yet that such demands will be imperative.

Exports of merchandise from the United States in December were valued at \$123,285,163, an amount exceeded only in two other months of 1899. For the calendar year the statement of the Bureau of Statistics is as follows:

Table with columns: Exports, Imports, Excess exports, Add excess of exports, silver, Total, Deduct excess of imports, gold, Apparent balance, exports.

The gold and silver movement in detail will be found in the usual place at the head of this column.

The statement of the United States Treasury on Wednesday, January 17th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week.

Table with columns: Jan. 10, Jan. 17, Changes. Rows: Gold, Silver, Legal tenders, Treas. notes, etc., Totals, Treasury deposits with national banks amount.

Imports and Exports of Metals.

Large table with columns: Port, Week, Jan. 17, Year 1900 (Expts, Impts). Rows: New York (Antimony, Chrome, Copper, Ferro-manganese, Iron, Lead, Manganese, Metals, Nails, Nickel, Ore, Rail material, Rails, Spiegeleisen, Steel bars, Tin, Zinc), Baltimore (Alumina, Antimony, Chrome, Copper, Ferro-manganese, Iron, Manganese, Metals, Nails, Pipe, Spiegeleisen, Steel, Tin, Zinc), Philadelphia (Antimony, Chrome, Copper, Ferro-manganese, Iron, Manganese, Metals, Nails, Steel, Tin, Zinc).

Total United States.

Table with columns: Articles, November, Jan.-Nov. (Expts, Impts). Rows: Antimony, Chrome, Copper, Ferro-manganese, Iron, Manganese, Metals, Nails, Steel, Tin, Zinc.

*New York Metal Exchange returns. †By our Special Correspondent. ‡Not specified. §Week ending Jan. 12th. ¶Monthly returns of the Treasury Department.

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, 3/4c. a lb. Lead, 1/4c. a lb. on lead in ores; 2/4c. per lb. on pigs, bars, etc.; 2/4c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c. per lb. Spelter or zinc, 1/4c. per lb. in pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

ed to \$97,688,285, an increase of \$5,560,857 during the week.

The Treasury Department's estimate of the money in the United States on January 1st, 1900, is given below. The form of the statement has been changed and much improved, removing the duplications which have heretofore existed. For redemption of outstanding certificates an exact equivalent in amount of the appropriate kinds of money is held in the Treasury, and is not included in the account of money held as assets of the Government. The statement of money held in the Treasury as assets of the Government does not include deposits of public money in National Bank depositaries. The item gold coin includes bullion in the Treasury. The statement is as follows:

	Total stock.	In treasury.	In circulation.
Gold Coin.....	\$1,016,009,857	\$236,909,230	\$617,977,830
Gold certificates.....	161,122,797		
Silver dollars.....	476,201,344	10,740,478	70,420,047
Silver certificates.....			395,040,816
Subsidiary silver.....	79,643,721	2,992,400	76,651,321
Treas. Notes of 1890.....	88,320,280	1,305,929	86,934,351
U. S. Notes.....	346,681,016	16,431,651	318,289,365
Currency certifi.....			11,980,000
Nat. Bank Notes.....	246,277,223	4,275,590	242,001,643
Total.....	\$2,253,143,438	\$272,735,268	\$1,980,398,170

The estimated circulation per capita was \$25.73. The total amount in circulation showed an increase of \$83,096,758 over January 1st, 1899.

The statement of the New York banks—including the 63 banks represented in the Clearing House—for the week ending January 13th gives the following totals, comparison being made with the corresponding weeks in 1899 and 1898:

	1898.	1899.	1900.
Loans and discounts.....	\$610,992,600	\$716,846,000	\$676,238,100
Deposits.....	681,612,900	835,805,700	749,287,400
Circulation.....	15,061,300	15,608,100	16,316,400
Reserve:			
Specie.....	108,639,000	178,184,600	145,266,100
Legal tenders.....	90,233,000	59,029,900	58,763,100
Total reserve.....	\$198,872,000	\$237,214,500	\$204,029,200
Legal requirements.....	172,903,225	208,951,425	187,321,850

Balance, surplus... \$25,968,775 \$28,203,075 \$16,707,350
Changes for the week, this year, were increases of \$334,300 in deposits, \$82,300 in circulation; \$1,264,400 in specie, \$3,768,800 in legal tenders, and \$4,949,625 in surplus reserve, a decrease of \$1,558,900 in loans and discounts.

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 of the corresponding dates last year:

Banks.	1899.		1900.	
	Gold.	Silver.	Gold.	Silver.
N. Y. Ass'n.....	\$178,184,600		\$145,266,100	
England.....	154,902,040		166,688,555	
France.....	362,108,810	\$239,248,480	375,655,785	\$228,984,985
Germany.....	133,700,000	68,875,000	120,575,000	62,115,000
Spain.....	53,310,000	40,785,000	68,000,000	72,830,000
Aus. Hun.....	179,625,000	61,900,000	197,060,000	53,060,000
Neth. Inds.....	21,570,000	33,740,000	18,850,000	29,770,000
Belgium.....	16,100,000	8,950,000	15,065,000	7,550,000
Italy.....	74,366,000	11,710,000	77,345,000	7,505,000
Russia.....	505,270,000	20,950,000	428,650,000	27,575,000

The returns of the Associated Banks of New York are of date of January 13th, and the others are of date of January 11, 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 coin. The Bank of England reports gold only.

The British Royal Mint makes the following statement of work done in 1899, the number of pieces coined being given:

	United Kingdom.	Colonial.	Totals.
Gold.....	10,978,000		10,978,000
Silver.....	32,254,000	15,605,800	47,859,800
Nickel.....		3,458,900	3,458,900
Bronze.....	42,413,700	294,000	44,707,700
Totals.....	\$85,649,700	59,358,700	145,008,400
Totals, 1898.....	59,521,500	38,577,717	98,099,217

The face or coinage value of the coins was: Gold, \$8,520,311; silver, \$1,615,850; bronze, \$139,065. Old and worn coins received at the Mint and withdrawn from circulation amounted to \$1,800,000 gold and \$412,728 silver.

Shipments of silver from London to the East for the year up to January 4th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India.....	\$35,000	\$79,500	I. \$44,500
China.....	34,380		D. 34,380
The Straits.....			
Totals.....	\$69,380	\$79,500	I. \$10,120

Arrivals for the week, this year, were \$307,000 from New York and \$6,000 from Chile; total, \$313,000; all bar silver. The shipments were in bar silver to Bombay, India.

Indian exchange is rather stronger and the council bills offered in London were taken at an average price of 16.06d. per rupee. The Indian Government will soon be called on for heavy expenditures on famine account.

Other Metals.

Daily Prices of Metals in New York.

January.	Sterling Exchange.	Silver.			Copper.			Lead.	Spelter.
		Fine oz. Cts.	Lon-don. P'nce	Lake cts. @ lb.	Electro-lytic. @ lb.	Lon-d'n stand-ard @ ton.	Tin, cts. @ lb.		
13	4.863/4	59	27 3/4	16 3/4	15 3/4	.....	27 3/4	4.70	4.50
15	4.863/4	59 1/2	27 3/4	16 3/4	15 3/4	70 12 6	28	4.67 1/2	4.55
16	4.863/4	59 1/2	27 3/4	16 3/4	15 3/4	70 15 0	27 3/4	4.67 1/2	4.60
17	4.87	59 1/2	27 3/4	16 3/4	15 3/4	70 12 6	27	4.67 1/2	4.60
18	4.87	59 1/2	27 3/4	16 3/4	15 3/4	71 10 0	27 3/4	4.67 1/2	4.65
19	4.87	59 1/2	27 3/4	16 3/4	15 3/4	71 0 0	28	4.67 1/2	4.65

The quotations given for electrolytic copper are for cakes, ingots and wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The steady tone which has been characteristic of the market during the last few weeks is still in evidence and the general conditions prevailing are reassuring as to the immediate future. Prices remain unchanged, being 16 3/4 @ 16 1/2 c. for Lake; 15 1/2 @ 15 1/4 c. for electrolytic in cakes, bars or ingots, and 15 1/4 @ 15 1/2 c. for cathodes. Casting copper remains nominal at 15 1/4 @ 15 1/2 c.

The easier money markets abroad did not fail to have a beneficial influence on values for merchandise; thus g. m. bs, which closed last week at about £70, opened on Monday at £70 12s. 6d., advanced yesterday to £71 10s. for spot and close to-day at £71 @ £71 2s. 6d. for spot, and 5s. lower for three months.

For refined and manufactured we quote: English tough, £75 @ £75 10s.; best selected, £76 @ £76 10s.; strong sheets, £82 @ £82 10s.; India sheets, £80 @ £80 10s.; yellow metal, 6 1/2 @ 6 1/4 d.

Statistics for the first half of the month again show a decrease of 800 tons, thus bringing the visible supplies down to 22,000 tons, which is about 5,000 tons less than for the same time last year.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the companies, was as follows for December and the year, stated in long tons (2,240 lbs.) of fine copper:

Production.	December.		Year.	
	1898.	1899.	1898.	1899.
U. S. reporting mines.....	16,632	20,388	216,222	233,606
U. S. outside sources.....	1,850	3,400	18,050	31,400
Total United States.....	18,482	23,788	234,272	265,006
Europe reporting mines.....	8,436	7,360	84,554	89,240
Total.....	26,918	30,148	318,826	354,246
Exports, United States.....	13,222	15,550	145,115	118,914

The production in December was about the same as in November. For the year United States production shows an increase of 27,734 tons, or 11.9%; of which 14,384 tons came from the reporting mines and 13,350 tons from outside sources. The United States exports showed a decrease of 26,201 tons, or 18.0%, last year.

Tin.—Our market opened considerably higher at the beginning of the week than it closed at the end of last, business having been transacted at about 28c.; but this price was not maintained very long, for on Tuesday values already receded to 27 1/2 c., the following day to 27c., from which subsequently there was a sudden recovery to 27 1/2 c. for spot tin, closing to-day at 28c.

In London the market opened on Monday at £120, being an advance of nearly £4 over the closing price on Friday, but on Tuesday the quotation was only £117 10s.; on Wednesday, £116 10s.; on Thursday, £118 10s., closing to-day at £120 12s. 6d. @ £120 15s. for spot and 17s. 6d. lower for three months.

Lead is somewhat easier at 4.65 @ 4.70c. for New York and 4.57 1/2 @ 4.62 1/2 c. at St. Louis.

In the London market, too, values have given way, the quotation for Spanish being now £16 5s. and for English £16 10s.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is quiet but firm. Latest sales are on the basis of 4.60c. for desilverized and 4.65c. for chemical. The demand is reasonably good.

Spanish Lead Market.—In December the report of Messrs. Barrington & Holt, of Cartagena, gives the average price of lead at 88.10 reales per qtl. (£15 7s. 1d per long ton) f. o. b. Cartagena, on an average exchange of 32.12 pesetas to £1. The average price of silver was 13.87 reales per oz. Exports of pig lead in December were 2,049,469 kilos to Newcastle; 950,000 kilos to London, and 1,180,276 kilos to Marseilles; total, 4,176,745 kilos. Also 10,000 kilos sulphurous lead to Marseilles.

Spelter.—The tendency which for several weeks past has been in a downward direction has at last changed for the better on account of an improved demand for domestic consumption more than as the result of an advance in the foreign market. We quote the metal 4.60 @ 4.65c. New York and 4.35 @ 4.40c. St. Louis.

In London the price for good ordinaries has advanced to £20 15s. and for specials to £21.

Spanish Zinc Market.—Prices for blende and

calamine continue very flat. Messrs. Barrington & Holt, of Cartagena, advise us that one of the biggest buyers of this class of ore on the Continent it is said will stop buying in Spain, having obtained better and cheaper ore in South America. Exports in December were 2,270,000 kilos zinc blende, and 1,200,000 kilos calamine to Antwerp.

Antimony is unchanged. Cookson's can be had at 10 1/2 @ 11c.; Hallett's, 9 1/4 @ 9 1/2 c.; U. S. Star, 9 1/2 @ 9 1/4 c.

Nickel is firm and demand very brisk. Quotations are firm at 40 and 45c., according to size of order.

Platinum.—Demand is good, and prices are firmer. In large lots we quote \$17.75, and for smaller quantities, \$18 per oz., in New York.

For chemical ware (crucibles and dishes), best hammered metal, we quote as follows: In lots of 250 grams or more, 67 1/2 c. per gram, and for smaller quantities, 70c. per gram; unmanufactured platinum will be supplied in same quantities at 2c. less per gram.

Quicksilver.—The New York price is unchanged at \$51 per flask for large lots. Smaller quantities sell at \$52.50 @ \$54. The London quotation is £9 12s. 6d., with £9 11s. 3d. named from second hands.

The Minor Metals.—Quotations are given below for New York delivery:

Aluminum.	Per lb.	Bismuth.....	Per lb.
No. 1, 99% ingots.....	33 @ 37c.	.....	\$1.60
No. 2, 90% ingots.....	31 @ 34c.	Magnesium.....	\$2.75 @ \$5
Roll sheets.....	42c. up	Phosphorus.....	40 @ 50c.
Alum-bronze.....	20 @ 23c.	Tungsten.....	..... 70c.
Nickel-alum.....	33 @ 30c.	Ferro-tungsten, 60%.....	60c.

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

LATE NEWS.

A group of claims, among them being the Black Jack, Hemlock, Poor, Josie, Spruce, Ella, Frankie, Minnie and Mamie, in Shoshone County, Idaho, has been incorporated as the Black Jack Mining Company, the principal place of business being Wallace. The capital stock is \$100,000, divided into shares of 10c. each. The promoters are W. R. Leonard, superintendent of the Mammoth, acting president; Matt Baumgartner, secretary; John Callahan, Hugh Callahan, J. F. Callahan, James White and B. F. Hansum being the trustees. The property is located in Placer Center district on the middle fork of Nine-Mile Creek, about 6 miles from Wallace, and adjoining the Sixteen to One group. A contract for a 500-ft. tunnel has been let. A wagon road is graded to the property and active development work has started.

Dispatches from Wilkes-Barre, Pa., January 18th, say: "The miners of the Baltimore No. 3 Colliery of the Delaware & Hudson Company went on strike this morning. They demanded an increase from 77c. to 94c. in the price of a car, and gave notice that they would strike if it was not granted. They were offered 10c. increase for tight places, but refused it. The mine employs 600 men.

"The breaker boys at the No. 5 Colliery of the Susquehanna Coal Company at Nanticoke struck this morning for higher wages, and work at the mine was suspended, 800 hands being made idle. Work was resumed at this colliery recently after a five months' strike, but the breaker boys were not included in the advance.

"The door boys at the Hollenbeck Colliery of the Lehigh & Wilkes-Barre Coal Company went on strike this morning because they were refused an increase of wages. They get from 75 to 90c. a day, and want \$1. Although only 50 or 60 door boys are employed at the mine, their strike has thrown 600 men out of work."

(From Our Special Correspondent.)

Philadelphia, Pa., January 18th.—Brokers decline to admit any change in pig iron. Buyers are looking for lower quotations, or, at least, say so; but there appears to be no good reason for any reduction. No. 1 foundry is \$25 @ \$25.50; No. 2 X foundry \$23.25 @ \$24; Standard mill iron, \$20 @ \$21; basic iron, \$23; Bessemer, \$24.50 @ \$25.50.

The necessities of car builders and of certain other large buyers of bar iron have begun to appear, and it is said that some of the business coming in has been due to secret concessions extended. On the contrary, many manufacturers say that the tendency of merchant iron is upward.

While there is not much business being done in merchant steel, there is a good deal of inquiry, but most of the inquiries rest on an anticipation that something in the way of a concession will be extended, which is not at all possible.

Further concessions have been made in plates. Large buyers are uncertain whether to order heavily or not. Steel plates are 2.40 @ 2.50c.; shell, 2.60c.; flange, 2.80c.; firebox, 3.10c.

In structural material the prospects are that a good deal of bridge work will be contracted for within a few days and quotations range from 2.40 @ 2.65c.

For old rails the quotations are nominal at \$26 @ \$28.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 100.)

New York, Jan. 19.

The New Year opened with prospects of an increased consumption and higher prices. Home production promises to grow, while imports will suffer from the scarcity of vessel room, owing to the Transvaal war. On the other hand, the advance in raw materials will greatly increase the cost of manufactures, both here and abroad. In short, the year 1900 will reflect the activity in 1899, but only more extensively.

Heavy Chemicals.—This year's business in domestic alkali has been booked at quotations, while second hands seek an advance of 5c. per 100 lbs. f. o. b. works. Foreign alkali continues scarce, and sales are reported at 95c. to arrive, while the spot market is held at \$1.10@1.12½, though a good customer can shade these figures. Caustic soda of high test domestic make is limited in supply, and sales by second hands are being made f. o. b. works at \$2.12½@2.25. A large business of 1901 has been done at \$2 f. o. b. works, and in a few instances at slightly higher figures. The "mercerizing" process for giving a silky texture to cotton goods is becoming quite a consumer of caustic soda, and is likely to greatly increase in the near future. Sal soda finds better sale, and an advance in prices is not unlikely. Bleaching powder is pretty well cleaned up on spot, while prime Liverpool is held at \$3 to arrive. Chlorate of potash crystals are still limited in stock, while powdered is quiet. Practically no imports of heavy chemicals at this port are noted this week.

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali in bags.	85@90c.	95@1.00	\$1.10@1.12½
Caustic Soda, high test ...	\$2.00@2.10	\$2.10@2.20	\$2.30@2.40
88% powd. ...	...	3.67½@4.00	...
80@74% pwd	...	2.75@2.87½	...
Sai Soda	60@70c.	...	67½
" conc.	1.45@1.75	...	1.60@1.65
Bicarb Soda...	1.25@1.37½	...	2.25@2.37½
" extra	3.25@3.50	...	...
Bleach, Pdr., Eng. prime...	...	...	3.00
other brnds.	...	...	25@2.37½
Chl. Pot. cryst	...	9.00@9.25	9.50@9.75
powd.	...	9.00@9.12½	9.25@9.37½

Prices per 10 lbs., and are generally for large quantities, and in many cases depend upon make, test and package.

Acids.—Acetic is higher, sulphuric and nitric are expected to rise owing to increased cost of raw material, and blue vitriol is in fair request for export. Muriatic and oxalic are in good demand. Carbolic is unsettled by report that the British Government has prohibited exports. Latest prices are 25@26c. per lb. for crystals in drums, and 27@30c. for bottles. Higher prices are expected. Copper sulphate exports from the United States in 1899 were 9,569 long tons, as against — tons in 1898. Of the shipments in 1899, Italy received 5,997 tons, Germany 1,480 tons, and 1,101 tons to Austria, the balance going to Holland, Great Britain, Buenos Ayres, France, Belgium, Mexico and Venezuela.

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

Acetic, No. 8.	\$1.75	Nitric, 42°	4.75@5.00
Blue Vitriol, best	5.00@5.12½	Oxalic	5.75@6.00
Muriatic, 15°	1.20@1.25	Sulphuric, 66°	1.20@1.25
Muriatic, 20°	1.35@1.40	Sulphuric, 60°	1.05@1.10
Muriatic, 22°	1.50@1.55	Bulk 50° ton	16@17.00
Nitric, 38°	3.87@4.12	Sulphurous, 100%	...
Nitric, 38°	4.12@4.37½	SO ₂ anhydrous	8.00@10.00
Nitric, 40°	4.37@4.75		

Brimstone.—No arrivals this week. Dock lots recently sold at \$21.50, but to-day spot best unmixed seconds are held at \$21.75 per ton, while shipments are \$20.50@20.75. Thirds are \$2 less per ton.

Pyrites.—A good consumptive demand in the spring is looked for. Imports of Spanish pyrites are practically at a standstill just now, owing to limited freight room and high rates. Prices are pretty firm, but unchanged.

We quote American pyrites as follows: Mineral City, Va., lump ores, \$4.50 per long ton (basis 42%), and fines \$4.20; Charlemont, Mass., lump, \$5.50, and fines, \$4.75; Piley's Island, lump, \$6.50, and fines \$4.50 per long ton, delivered in New York. Spanish pyrites, 13@15c. per unit, according to percentage of sulphur contents, delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46% to 51% of sulphur; American, 42% to 44%, and Piley's Island, N. F., 50%.

Fertilizing Chemicals.—Leading ammoniates are in good request, though deliveries are hampered by small stocks in producers' hands. Sulphate of ammonia foreign gas liquor is stronger at \$2.95@3 per 100 lbs., while the domestic is quoted \$2.90 f. o. b. Boston, and \$3 Pittsburg. Arrivals at this port of 9,450 bags muriate of potash are noted this week. The American Agricultural Chemical Company now controls the Lister Agricultural Chemical Works at Harrison, N. J.

Articles.	F. o. b. Wks.	In N. Y.
Potash, muriate, 80@85% 100 lbs.	...	\$1.75
" sulphate, 90% "	...	1.81
" " 90% "	...	1.98½
" " 90% "	...	2.10½
" d'ble m' resalt, 48@53% 100 lbs.	...	66c.
" " 30% "	...	89c.
" kainit, 12.4% long ton.	...	8.70@9.95
" sylvanit, per unit.	...	37@38c.
Sulph. Am., gas (25%) 100 lbs.	...	2.90@3.00
" bone.	...	2.80
Blood, dried, h-gr. Chi. per unit	1.90@1.95	...
" N.Y.	...	2.90@2.35
Azotine	1.75@1.80	1.80@1.85
Bone black, diss., 17@18% ton	...	15.00@16.00
Fish scrap, acid	11.50@12.00	13.50
" dried	21.00@21.50	22.50
Tankage h. gr. Chicago	16.50@17.00	22.00
" concentrated unit.	1.70	2.05
" bone, ton.	...	20.50@21.50
Bone, steam gd. domestic	...	22.00@23.00

The quotations on potash are on the basis of foreign in voice weights, taxes and analysis, in quantities of not less than 500 tons bulk salts or 50 tons concentrated salts.

Nitrate of Soda.—The arrival of 13,687 bags at this port has relieved the market. Sales on spot early in the week were reported at \$1.85@1.87½ per 100 lbs., but later \$1.80 ruled. Future shipments are quoted \$1.60 and upward, according to position. In their latest circular Messrs. W. Montgomery & Co. of London give the consumption of nitrate of soda in the world in 1899 at 1,330,000 long tons, as against 1,186,000 tons in 1898, showing an increase of 144,000 tons, due principally to heavier buying on the Continent of Europe. Of this total the United States is credited with 160,000 tons, against 142,000 tons in 1898, and Great Britain with 123,000 tons, against 132,000 tons in 1898. The visible supply on December 31st, 1899 (including the quantity afloat for Europe and stocks in the United Kingdom and Continent) amounted to 730,000 tons, or 27,000 tons greater than at the same time in 1898. The outlook for consumption for the coming season is, on the whole, satisfactory.

Paints.—Since January 1st corrodors of white lead have advanced price ¼c. per lb. Large business was done in domestic dry lead at 5½@5¾c. per lb. The schedule for domestic white lead, dry or in oil, red lead and litharge in kegs, in lots of less than 500 lbs., is 7c. per lb. net; 500 lbs. and over, 6½c.; dry white lead in bbls., ½c. per lb. less than in kegs; red lead and litharge in bbls. and half bbls., same as in kegs.

Phosphates.—The market is quiet owing to limited freight room. Abroad the supply of Tennessee and land pebble phosphates is good though the demand is comparatively small. An importation of 1,308 bags of phosphates from Belgium is noted this week.

Latest quotations for the European market c. i. f. United Kingdom or North Sea ports, are as follows: Florida high grade rock (77@80%), 8½ per unit (\$13.65 per long ton); Florida pebble (68@73%), 7d. (\$9.80 per ton); Florida Peace River (58@63%), 7d. (\$8.40 per ton); Tennessee high grade rock (78@80%), 6¾d. (\$10.67 per ton); South Carolina rock, 6¾d. (\$8.19 per ton); Algerian (63@70%) rock, 7d. (\$9.38 per ton); and (58@63%) rock, 6¾d. (\$8.10 per ton).

We quote: Florida high grade, 78@80% rock, \$9.50@10 per long ton f. o. b. Fernandina. The freight rate to New York is about \$2 per ton. Florida land pebble, 68@73%, \$7@7.50 per ton, delivered in New York. Florida Peace River, rock, 58@63%, \$4.50 per ton f. o. b. Punta Gorda. South Carolina crude rock, \$4.25@4.50; hot-air dried, \$4.50@5 per long ton f. o. b. Fetteressa, S. C. Tennessee, 78@80% rock, \$4.50 f. o. b. Mt. Pleasant, and 75% rock, \$2.75@3 f. o. b. High grade Tennessee rock, ex-vessel New York, \$9 @10 per ton. Hickman county blue-gray rock, 65%, \$2.50@2.75 per ton f. o. b. mines. Concentrated phosphates, 13@15% av. P₂O₅ 60c. per unit at sellers' works. Acid phosphates, \$6.25 per ton for 14% in bulk, f. o. b. Charleston, S. C.

Valparaiso, Chile. Dec. 2. (Special Report of Jackson Bros.)

Nitrate of Soda.—Owing to the little interest shown by exporters to operate, coupled with less favorable advices from consuming markets, prices have receded still further, 5c. ordinary terms being accepted for December shipments of 95%. In next year's delivery sellers have offered their produce at 4s. 11½d. for January-February, and 5s. ¼d. for January-June, both steamer terms, without eliciting any responses. Several sales have taken place in the refined quality at 5s. 2d. and 5s. 1¼d. alongside for January-February delivery for the United States, but buyers will no longer repeat these figures. The exports for November have fallen short of the calculated total, owing to several days of heavy surf on the coast which has prevented shipping; they amount to 3,370,000 qtls., making 26,860,000 qtls. for the 11 months, against 24,196,000 qtls. in 1898. We quote 95%, December 5s., January-February 4s. 11d., and 96%, December 5s. 2d., January-April 5s. 1¼d., all ordinary terms, sellers. The price of 5s. with 2s. 9d. all round freight stand in 4s. per cwt. net cost and freight without purchasing commission.

Reported sales for the fortnight are 140,000 qtls. 95%, and 114,000 qtls. 96%, making 254,000 qtls. in all.

MINING STOCKS.

Complete quotations will be found on pages 97 and 98 of mining stocks listed and dealt in at:

Boston.	Spokane.	Paris.
Colorado Springs.	Salt Lake.	Toronto.
Denver.	San Francisco.	Valparaiso.
New York.	London.	
Philadelphia.	Mexico.	

New York, Jan. 19.

Comparative quiet characterized the market this week, though firmer prices ruled in some of the better class securities. In the copper section Amalgamated showed very little trading and after selling up to \$85½ receded on Wednesday to \$83½. In Anaconda, however, a slightly better feeling prevailed, and the shares rose to \$40. Arizona Lead sold on curb at \$10½.

The Cripple Creek stocks are in request, the dividend payers attracting most attention. Elkton Consolidated held firm at \$1.15 and Isabella at \$1.35. Pharmacist Consolidated brought 14½c., Cripple Creek Consolidated, 15½c., Work 32c., Anaconda 46c., Zenobia 22c., Union 41c., Mollie Gibson 22c., Jack Pot 60c. and Argentum Junata 22c. Damon made a sale at 28c. This company is now practically under the control of the Woods Investment Company as a result of the recent annual meeting. The cash balance in the treasury amounts to \$7,430. Iron Silver of Leadville gained 5 points at 55c.

Few Comstocks were dealt in. Consolidated California & Virginia rose from \$1.50 to \$1.60, Mexican from 33c. to 34c.; Best & Belcher brought 25c., Crown Point and Belcher each 10c., and Potosi 30c.

Ontario of Utah made a sale at \$8.50, or 50c. more than the last transaction. Standard Consolidated of California brought \$2.85, and though there is a call for Brunswick no sales are reported. Kingston & Pembroke of Ontario recovered from 50c. to 60c., while Deadwood Terra of South Dakota sold at 65c.

The New York Industrial Exchange to which we called attention some time ago owing to the questionable shares which it called, has been served with a \$755 judgment for rent due the General Electric Company from October 1st last.

Auction sales this week were 25 shares Landon Iron Company (par \$100) at \$8; 2 shares Kentucky Coal, Iron and Development Company (par \$100) at \$2; 100 shares Essex Mining Company (par \$100) at \$1; 45 preferred shares Empire Steel and Iron Company of New York at \$70. In addition to these there was a lot of securities sold for \$29 which included 25 shares Bloomingdale Graphite Company (par \$100); 30 shares Maritime Coal Company (par \$100); 50 shares Excelsior Water and Mining Company (par \$100); 1,000 shares Joselyn Mining Company (par \$10); 100 shares South Pacific Mining Company (par \$100), and 46 shares Montezuma Silver Mining Company (par \$100).

Boston, Jan. 18.

(From Our Special Correspondent.)

The exchange has been generally quiet for mining stocks. On Saturday we had the usual prophecies of improvement, and of a coming bull movement, but no one paid any attention to this stereotyped talk, and we have had a dull and narrow market throughout. The Quincy dividend had been generally discounted, and had no appreciable effect.

On yesterday's list Calumet & Hecla was off \$3 at \$74½; Montana off \$2 at \$263; Tamarack off \$2 at \$175; Quincy, \$145; Osceola, \$69; Amalgamated, \$83½; Arcadian, \$20; Old Dominion, \$19; Butte, \$43½ bid; Franklin, \$14; Centennial-Eureka, \$22; Mass., \$8½; Elm River, \$5; Michigan, \$6½; Merced, \$8; Isle Royale, \$23; Continental Zinc, \$3½; Santa Fe, \$5½; Utah, \$28; Parrot, \$40; Copper Range, \$26; Centennial, \$17½; Mayflower, \$2½; Trimountain, \$7½; American Zinc, \$15½ bid; Cochiti, \$12½.

Dominion coal common sold at \$41; New England Gas and Coke, \$19½; United States Oil, \$20; Central Oil, \$19.

The more we hear about the Globe Bank affair the worse it seems. The latest result is the assignment of H. C. Wainwright & Company, which is much regretted, as they were a very popular firm. The house was carrying a large amount of United States Mining for men prominent in the management of that company. The cloud over the Stock Exchange is pretty heavy yet, and it will take a long time to clear off.

Colorado Springs, Jan. 12.

(From Our Special Correspondent.)

Mr. W. S. Stratton, the well known Cripple Creek mine operator, has decided to build a fine structure for the Colorado Springs Mining Stock Association, which will cost about \$200,000. This building will contain about 80 offices, beside magnificent quarters for the transaction of the mining stock business, which is assuming such large proportions. Mr. Stratton has bought a seat in the Association for \$2,000. The membership has been increased recently from 93 to 110. Considering the erection of this new building and that of the magnificent new Antlers Hotel and of a fine new courthouse, the future for Colorado Springs looks very bright. The Cripple Creek short line, to be built entirely by Colorado Springs capital, will undoubtedly control

the travel from this point to the great gold camp which is making such a wonderful reputation at present.

Salt Lake City. Jan. 13.
(From Our Special Correspondent.)

January shows no improvement over the closing weeks of 1899. There is practically no outside demand and the bulk of the inquiries are for opportunities to sell rather than to buy.

Chloride Point put on a small show of strength in the middle of the week. Daisy's champions predict pleasing returns from the enlarged mill capacity. Daly-West sags around \$12 in spite of dividends and good reports from the mines. Geyser-Marion slides down the toboggan with slight hope of profits soon. Grand Central lags. Horn Silver is lower, with no business. The softening of Joe Bowers is hardly accounted for by the increase of the capital stock. Lower Mammoth droops. Mammoth still keeps the talent guessing. Mercur is an offering at \$6, notwithstanding the \$50,000 dividend to be paid on the 20th. Ontario pays a 30c. dividend, or \$45,000, on January 20th. Silver King paid a \$75,000 dividend on the 10th.

San Francisco. Jan. 13.
(From Our Special Correspondent.)

The opening week of the year show a dull and quiet market, with few variations, but better prices than might be expected.

Some quotations noted are: Consolidated California & Virginia, \$1.45@1.50; Sierra Nevada, 42@44c.; Hale & Norcross, 38@40c.; Chollar, 28c.

The Consolidated California & Virginia Mining Company has advices of a second shipment of bullion from the present run of the Morgan Mill. This shipment consists of two bars, valued together at \$6,986, making total shipments to date of \$16,326, of which a little more than one-half is gold. This is from the newly opened ore body.

The following mining companies report having had cash on hand January 1st, 1900, as per sworn statements filed, with expenses paid to that date unless otherwise stated: Alpha Consolidated, \$2,182; Andes, \$1,537; Belcher, \$789, with an assessment being collected; Bullion, \$3,852; Caledonia, \$2,956, with December expenses at mine unpaid; Consolidated California & Virginia, \$908 in cash and unsold bullion assaying \$9,339, with further shipments to arrive. The mine expenses are partly paid, the balance being unknown, and there is an indebtedness at the bank of \$10,000 on the company's note. Consolidated New York, \$218; Challenge Consolidated, \$479, with December mining expenses unpaid and an assessment being collected; Consolidated Imperial, \$1,126, with December mining expenses unpaid; Confidence, \$2,414, with December mining expenses unpaid; Crown Point, \$6,187, with December mining expenses partly unpaid; Exchequer, \$88; Gould & Curry, \$6,944, with an assessment being collected; Hale & Norcross, \$4,117; Justice, \$470; Julia Consolidated, \$564; Mexican, \$7,159; Lady Washington, \$396, with an indebtedness of \$2,543; Ophir, \$3,960; Overman, \$2,634, with December mining expenses unpaid; Savage, \$166, with an assessment being collected; Sierra Nevada, \$5,925; Silver Hill, \$307; Segregated Belcher, \$2,065; Syndicate, \$1,683; Scorpion, \$99; Standard Consolidated, \$129,750, with bullion clean-up for the past month to be received and mine expenses to be paid; Union Consolidated, \$10,153.

The following companies report having had an indebtedness January 1st, 1900, and all are collecting assessments: Best & Belcher, \$167; Chollar, \$736; Potosi, \$2,111.

Business on both the California and the Producers' Oil exchanges has been fair. Some prices are noted as follows: National, \$6.75; Home Oil, \$4.15@4.20; Anaconda, \$1.75; Yukon, \$1.70; Burker Ranch, \$1.15; Century, \$1.05@1.10; Burlington, \$1; Dominion, 40@45c. Prices were generally strong.

London. Jan. 5.
(From Our Special Correspondent.)

Christmas and New Years have been anxious times in the mining section of the London Stock Exchange. Dear money has caused many forced realizations, and there has been much consequent depression.

The outlook for South African mines is very gloomy. We entered the war in a light-hearted manner, thinking all would be over with the new year; but the impression now prevails that affairs in South Africa are taking the complexion of the American Civil War and that the duration of strife may extend to years instead of months. Shareholders have quite abandoned the idea of receiving any dividends for at least a couple of years, and the directors of such mines as are working are beginning to find that they are in an awkward position. If they cease working they incur the hostility of the Transvaal Government, and if they continue working they become English rebels, aiders and abettors of the enemy. As the British Government is more lenient than that of the Transvaal, the directors can see their own self-interest, though their action in supplying an enemy with £100,000 a month even in the way of a loan would not be tolerated by any other country.

The records of the output of the Transvaal mines are slow in appearing, and their accuracy

may be doubted. The Rhodesian output is not so much interfered with as might be supposed, the November output being 4,670 oz. Two of the leading producers are still shut down for want of labor, but the others do not appear to have this difficulty.

During the earlier part of last year much attention was drawn in England to the Utah Consolidated and the Boston Consolidated companies that were being introduced in London by Mr. Newhouse. The Boston Company, as will be remembered, has immense deposits of low grade copper ores, the commercial value of which is not at all settled. From a report now made by Mr. Newhouse and circulated in London it appears that the system of concentration is not yet decided on. He mentions "water concentration," but ignores practical details and he also says that he is consulting with Mr. Edison, who has proposed a new process of his own. What the nature of this process is he does not say, but the name of Edison is one to conjure with in this country, and shareholders are in extremely good humor with themselves. Mr. Newhouse is also developing the deposits on the principle that in such huge bodies of ore there must be surely some shoot of higher grade ore, and in certain parts of the property small seams of concentrated ore have already been struck. Further reports from this property will be received.

Only a few weeks ago I recorded that Mr. J. Morris Catton had proposed to amalgamate three of his failures and so raise further funds from his unfortunate shareholders. These companies all dealt with Canada and the Klondike and appeared to have no assets of any value. Now comes an exactly similar proposal from a group of Klondike companies run by Mr. John Lowles & Sir Charles Tupper. These are the Bennett Lake & Klondike Navigation Company, the Klondike Mining, Trading and Transport Company, and the Klondike Gold Fields Co. Number three of these was formed to acquire claims in the Klondike which were supposed to be wonders, but though gold had been found in them, no pay streak has yet been discovered. Consequently new claims are wanted and more money to buy them. The Klondike Mining, Trading & Transport Company was formed to exploit the trading and transport route by the Stikine River, but the whole thing proved a fiasco and a large sum of money was lost. The Bennett Lake & Klondike Navigation Company was formed subsequently to this failure to run steamers on part of the present Klondike route. Just a year ago at the end of the first season Mr. Lowles and Sir Charles Tupper jubilantly heralded the success of the enterprise and showed a profit of £28,000. A dividend amounting to £21,000 was paid and an issue of new shares at a premium of 25% was made. Now comes the thunderclap in the form of an announcement that the profits for 1898 were not £28,000, but only £14,500. The former figure was given by the directors and the latter by the auditors, so the directors find themselves in the awkward position of having distributed dividends that had not been earned. It seems odd that the directors should allow this error to remain unknown to the shareholders for so long a time. I should think justice might be met if Messrs. Lowles, Tupper & Co. provided out of their private pockets the balance of unearned profit, but instead they propose to amalgamate with two other rotten affairs and squeeze shareholders by means of an assessment. A mighty impudent proposition!

Rather over a year ago reference was made in the "Journal" to a London company, called Klondike Bonanza, Limited, which was formed at the end of 1897 to acquire claims in the Klondike from M. Ironmonger Sola, and it was mentioned that when inquiry was made on the spot by Mr. Macfarlane, the manager, the vendors' titles were found to be defective. Mr. Macfarlane accordingly refused to complete the purchase and acquired other claims on behalf of the company. His judgment has been thoroughly substantiated by events since, for he has obtained 6,526 oz. gold up to the end of the past season out of the claims he chose, and obtained a profit sufficient to warrant the payment of a dividend to shareholders of 10%. Mr. Sola harassed the company and Mr. Macfarlane, with a considerable amount of litigation, but this is all at an end and the money forming part of the purchase price that was put in escrow has been recovered by the company. I am of opinion that the London expenses are really unnecessarily high, but, on the other hand, I think that the ability and energy of Mr. Macfarlane will provide funds more than enough to atone for such liberality.

Paris. Jan. 7.
(From Our Special Correspondent.)

The New Year has opened with somewhat doubtful prospects. Both at home and abroad there are complications of which one cannot easily foresee the result. The speculation in mining stocks—as in other directions—is at present limited by high rates of interest, while there is a large amount of capital locked up in enterprises which are not returning any profit.

The formation of a strong committee to watch

and protect French interests in the Transvaal seems now to be secured. M. Paul Leroy-Beaulieu has been the chief mover, and has secured the co-operation of some capitalists of standing.

The movement of gold and silver in France for the 17 months ending November 30th is reported by the Ministry of Commerce as below:

	Imports.	Exports.	Excess.
Gold:	France.	France.	France.
1899.....	292,882,535	145,206,351	Imp. 147,676,184
1898.....	175,400,250	237,449,930	Exp. 172,049,725
1897.....	366,178,308	119,362,059	Imp. 246,816,249
Silver:			
1899.....	172,261,779	209,917,684	Exp. 37,655,905
1898.....	171,954,619	162,101,263	Imp. 9,853,356
1897.....	151,925,653	166,695,128	Exp. 14,769,475

The imports of nickel and bronze coins, taken at their face or coinage value, were 71,000 fr., against 86,400 fr. in 1898, and 86,700 fr. in 1897. Exports were 562,500 fr., against 536,400 fr. in 1898, and 2,839,500 fr. in 1897.

The strike at the St. Etienne collieries has been settled by the intervention of the Government. Our coal situation remains nevertheless a precarious one, and is regarded with a good deal of apprehension.

Azote.

DIVIDENDS.

NAME OF COMPANY.	Latest Dividend.			Total to date.
	Date.	Per share.	Total.	
Amalgamated, Mont.	Jan. 22	\$2.00	\$1,500,000	\$3,000,000
Amazon, Colo.	Jan. 15	.02	12,000	32,000
Am. Steel Hoop, pf.	Jan. 31	1.75	245,000	575,000
Am. Tin Plate, pf.	Jan. 31	1.75	315,000	1,260,000
Boston & Mont.	Feb. 20	8.00	1,200,000	15,700,000
Buffalo Hump, Idaho	Feb. 1	.01	10,000	10,000
Cambria Steel.	Feb. 15	.50	160,000	1,280,000
Central Oil.	Feb. 1	.37½	22,519	45,000
Colo. Fuel & Iron, pf.	Feb. 15	8.00	16,000	1,625,000
Consolidation Coal.	Feb. 1	2.00	205,000	5,921,650
Empire State, Idaho.	Jan. 15	.30	29,554	347,592
Federal Steel, com.	Jan. 20	1.25	581,054	581,054
Federal Steel, pf.	Jan. 20	3.00	1,697,830	4,795,490
Grass Valley Expl.	Jan. 20	.25	7,500	37,500
Gold King, Colo.	Jan. 20	.03	30,000	120,000
Homestake, So. Dak.	Jan. 25	.50	105,000	8,248,750
Iowa, Colo.	Jan. 11	.01	2,500	97,500
Int'l Steam Pump, pf.	Feb. 1	1.50	132,750	398,150
Mary McKinney, Colo.	Jan. 10	.03	70,000	60,000
Mercur, Utah.	Jan. 10	.25	50,000	1,391,000
National Salt, pf.	Jan. 24	1.75	42,000	126,000
Ontario, Utah.	Jan. 20	.30	45,000	13,617,500
Press. Steel Car. com.	Feb. 9	1.50	187,500	187,500
Quincy, Mich.	Feb. 1	5.00	500,000	11,570,000
Raven, Colo.	Jan. 20	.01	10,000	79,500
Silver King, Utah.	Jan. 10	.50	75,000	2,525,000
Indicator, Colo.	Jan. 25	.05	53,250	357,750

ASSESSMENTS.

NAME OF COMPANY.	Location.	Div.	Sale.	Amt.
Belcher	Nev. 63	Feb. 6	Feb. 27	.15
Ben Butler	Utah 2	Feb. 5	Mar. 3	.00½
Best & Belcher	Nev. 69	Feb. 9	Mar. 2	.15
Biesinger & Beck	Mont. 1	Feb. 5	Feb. 20	.00½
Brigham City Cop & S.	Utah 1	Jan. 13	Feb. 1	.00½
Bunker Hill	Utah 3	Jan. 16	Feb. 2	.01
Challenge Con.	Nev. 28	Jan. 11	Feb. 1	.10
Chollar	Nev. 56	Jan. 11	Jan. 31	.01
Cleveland	Utah 2	Jan. 15	Feb. 14	.01
Con. New York	Nev. 16	Feb. 5	Feb. 27	.03
Eureka Con. Drift	Cal. 22	Jan. 6	Jan. 27	.00½
Goleta Con.	Cal. 1	Feb. 1	Mar. 5	.06
Golden Star	Cal. 1	Jan. 20	.....	.01
Grape Vine Canyon	Cal. 1	Jan. 8	Jan. 29	.10
Justice	Nev. 9	Feb. 7	.....	.05
Martha Washington	Utah 3	Jan. 4	Jan. 25	.01
Mayday	Utah 3	Jan. 9	Feb. 20	.10
Meteor	Cal. 10	Dec. 18	Jan. 22	.00½
National Con.	Cal. 10	Feb. 7	Mar. 5	.05
New Imperial	Utah 1	Jan. 2	Jan. 20	.01
Occidental	Nev. 34	Jan. 3	Jan. 24	.05
Old Home Con.	Cal. 1	Jan. 27	.....	.01½
Omaha Con.	Cal. 1	Jan. 30	.....	.10
Potosi	Nev. 54	Jan. 16	Feb. 7	.13
Quincey	Cal. 2	Feb. 8	Mar. 5	.40
R. G. W.	Utah 3	Jan. 14	Jan. 29	.00½
Savage	Nev. 96	Jan. 10	Jan. 30	.10
South Paloma	Cal. 1	Feb. 3	.....	.006
Tetro	Utah 11	Feb. 15	Mar. 10	.01
Utah Con.	Nev. 32	Feb. 14	Mar. 7	.05
Yankee Con.	Utah 1	Jan. 12	Feb. 12	.01
Yellow Jacket	Nev. 2	Dec. 26	Jan. 31	.15

ANNUAL MEETINGS.

Name of Company.	Location.	Date.	Place of Meeting
Battle Min. Con.	Colo.	Feb. 23	Victor, Colo.
Cannell n Co l.	W. Va.	Feb. 1	115 Broadway N. Y. City
Dalton	Utah	Jan. 29	McCormick Bldg., Salt Lake City, Utah
Daly	Utah	Feb. 15	Salt Lake City, Utah
-etroit & Deadw'd	So. Dak.	Mar. 5	Dea'wo d. So. Dak.
General Chemical.	Utah	Jan. 31	Phillipstown N. Y.
Great Eastern.	Utah	Feb. 13	Salt Lake City, Utah
*Home	Colo.	Feb. 4	Leadville, Colo.
Little Pittsburg	Utah	Feb. 8	Salt Lake City, Utah
Mammoth	Utah.	Feb. 1	St. A. S. Side, Salt Lake City, Utah
Maryland Coal.	Md.	Feb. 6	1 Broadway, N. Y. City
Moon Anchor	Colo.	Feb. 15	Colorado Springs, Colo.
Morgan	Utah	Feb. 19	Salt Lake City, Utah
Ophir Hill	Utah	Jan. 23	230 D. F. Walker Bldg., Salt Lake City, Utah
Pacific	Utah	Jan. 24	Di mond, Utah
*Rab' l Foot	Utah	Feb. 2	.06 So. W. at Temple t.
Santa Fe	N. Mex.	Jan. 23	Jersey City, N. J.
Utah Con.	Nev.	Jan. 25	39 Mont omercy st., San Francisco, Cal.

*Special meeting.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Adams, Alamo, Alice, and various mining and industrial firms with their respective prices and sales.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Aetna, Adams, and various local and regional firms with their respective prices and sales.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock quotations, listing companies like Am. Sm. & Ref., Am. S. & W. Con., and various coal and industrial firms.

* Official quotations Boston Stock Exchange. Total sales, \$1,436. * Ex-dividend.

SALT LAKE CITY, UTAH.

Jan. 13.

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Alice, Buckeye, and various local firms.

* From Our Special Correspondent.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, Pa., listing companies like Am. Alkali, Bethlehem Iron, and various industrial firms.

Total shares sold, 16,451.

DENVER, COLO.

Table of stock quotations for Denver, Colo., listing companies like C. C. Imp., De Beers, and various mining and industrial firms.

* Official Quotations Denver Stock Exchange. Total sales, 17,060 shares.

SPOKANE, WASH.

Jan. 6.

Table of stock quotations for Spokane, Wash., listing companies like Butte & Boston, Conjecture, and various mining and industrial firms.

* Official quotations Spokane Stock Exchange. Total sales, 17,000.

TORONTO, ONT.

Table of stock quotations for Toronto, Ont., listing companies like Ontario, Alice A., and various mining and industrial firms.

* Official quotations of the Standard and Toronto Mining and Industrial Exchanges. Total shares sold, 16,700.

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colorado, listing various companies and their prices from Jan. 8 to Jan. 17.

Colorado Springs Mining Stock Exchange. Sales for four days ending Jan. 11th 1,686,034 shares; quotations for Jan. 16th and 17th by telegraph.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various companies and their prices.

Official telegraphic quotations of San Francisco Stock Exchange

VALPARAISO, CHILE.

Nov. 4.

Table of stock quotations for Valparaiso, Chile, listing various companies and their prices.

Special report of Jackson Bros. Values are in Chilean pesos or dollars.

MEXICO.

Jan. 6.

Table of stock quotations for Mexico, listing various companies and their prices.

PARIS.

Dec. 28.

Table of stock quotations for Paris, listing various companies and their prices.

LONDON.

Jan. 5.

Table of stock quotations for London, listing various companies and their prices.

DIVIDEND-PAYING MINES.

Table with columns: Name and Location of Company, Capital Stock, Shares (No., Par Val), Dividends (Paid, Total to Date, Date and Amount of Last), Name and Location of Company, Capital Stock, Shares (No., Par Val), Dividends (Paid, Total to Date, Date and Amount of Last).

NON-DIVIDEND-PAYING MINES.

Table with columns: Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Levied 1899, Total to Date, Date and Amount of Last), Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Levied 1899, Total to Date, Date and Amount of Last).

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. This table is corrected up to Dec. 1. Correspondents are requested to forward changes or additions.

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

Table with multiple columns listing various chemical and mineral products (e.g., Abrasives, Acids, Calcium, Copperas, Explosives, Fluorspar, Gypsum, Iron, Lead, Magnesia, Manganese, Potassium, Quartz, Rosin, Salt, Sulphur, Zinc) along with their respective units and current market prices.

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 Dec 29th. 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 Review of Chemicals and Minerals.