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CONTENTS.

We have received letters from parties in Chile who are anxious to open correspondence with smelters or buyers of copper ores in New York or San Francisco, in order to ascertain whether they cannot make shipments to this country on better terms than they are now receiving in England. The points on which information is chiefly desired are the lowest grade which smelters will accept and the approximate prices paid per unit of copper. We shall be pleased to receive communications from parties who may be interested in opening a trade of this kind with the Chilean mines.

In the article on the Batopilas Mining Company, which was published in our columns last week, we omitted to state that the receipts and expenses of the company as given were in Mexican (silver) dollars and not in American currency. The Mexican dollar is now worth about 45 cents, gold.

We are informed that the receipts of the company from its mines, which at the opening of the year averaged about $15,000 per week, have recently risen to nearly four times that sum and are now averaging between $50,000 and $60,000 (Mexican) a week. This indicates a great improvement.

We regret very much to see that a bill slipped through the New York Legislature at its last session which abolishes the State Land Survey. This bill is now in the hands of the Governor, and it is to be hoped that he will veto it. The Survey, under the charge of Mr. Verplanck Colvin, has done some very good work, and it should be allowed to continue it. The motive for the attack upon it is easily understood. The Survey has done a great deal to establish the rights of the State and to defeat or delay the schemes of the land grabbers, and the lumbermen and pulp companies. The survey has aided in calling the attention of the people to the value of the Adirondack Region, and to the results which would follow the destruction of the forests there. The pains which were taken to work the bill quietly through the Legislature without attracting attention are alone quite sufficient to show that its motive was not a good one. The whole matter is now in the Governor's hands, and it is to be hoped that he will promptly veto the bill.

The development and working of Georgia gold mines on a large scale and with improved machinery will soon be in progress. One company at least has gone into the work, having purchased and consolidated a number of the old mines near Dahlonega. It is now erecting a large mill, of 100 stamps, and chlorination works, and is spending a large amount of money in the construction of tramways, electric power plants and other facilities for working its properties. It is understood also that the company will try, on some of its properties, deeper mining than has yet been undertaken in the district. The results will be watched with a great deal of interest, and several other companies have already been organized to operate in the same region. In the case referred to, the company seems to be spending the money with the intention of doing the best work and fairly testing the possibilities of mining in its field. A tendency to organize speculative companies is apparent, however, which is to be regretted. It is to be hoped that success will follow the attempts to develop the Dahlonega mines on business lines, but no boom is wanted.

It is interesting to compare the figures of steel production for 1899 in the two chief producing countries. In the statement below, which is in long tons, we give the output of open-hearth and converter steel in the United States and Great Britain, omitting the small quantity of crucible and special steels, for which the figures are not complete:

	Great Britain.			United States.		
	Acid.	Basic.	Totals.	Acid.	Basic.	Totals.
Open-hearth	2,735,563	294,688	3,030,251	866,890	2,080,426	2,947,316
Bessemer	1,307,696	517,378	1,825,074	7,586,354	.....	7,586,354
Totals	4,043,259	812,066	4,855,325	8,453,244	2,080,426	10,533,670

These figures show the preference still given to the Bessemer process in this country, since we made 72 per cent. of our steel by that process last year, while in Great Britain only 37.6 per cent. was so made, 62.4 per cent. of the total being open-hearth steel. The proportion of basic steel to the total was 16.7 per cent., while in this country it was 19.7 per cent. All our basic steel was made in open-hearth furnaces.

The steel production of the United States was last year over twice that of Great Britain, exceeding that of its rival by 5,678,345 tons. The proportion of our pig iron converted into steel is much greater than in Great Britain, and the difference increases each year.

The full returns for British steel and wrought iron production, which are given on the following page, show some interesting changes.

IRON AND STEEL PRODUCTION IN GREAT BRITAIN.

The production of steel in Great Britain, as collected and reported by the British Iron Trade Association, is given for 1898 and 1899 as below, in long tons:

	1898.			1899.		
	Acid.	Basic.	Totals.	Acid.	Basic.	Totals.
Open-hearth	2,590,512	216,088	2,806,600	2,235,563	294,688	3,030,251
Bessemer	1,255,252	504,134	1,759,386	1,307,696	517,378	1,825,074
Totals	3,845,764	720,222	4,565,986	4,043,259	812,066	4,855,325

The British makers continue to emphasize their preference for the open-hearth process, 62.4 per cent. of all the steel reported last year having been made by that process. From the other statistics given we find that there were in existence in Great Britain last year 76 Bessemer converters, of which 65 were in use; of the latter number 24 made basic and 41 acid steel. The average output per converter was, therefore, 28,078 tons. There were 438 open-hearth furnaces, the average number at work being 381; which gives an average output for the year of 7,953 tons.

The table above shows the ingots and direct castings made. The figures for finished steel are not quite complete, as all works do not report; those given are as follows, showing the form in which the steel was sold or exported:

	Open-hearth.	Bessemer.	Totals.
Blooms and billets	398,581	355,335	753,916
Rails	41,007	838,148	879,155
Plates and angles	1,265,747	158,878	1,424,625
Bars, etc	675,519	214,951	890,470
Railroad ties and sleepers	.....	35,743	35,743
Castings	40,758	.....	40,758
Totals	2,421,612	1,603,055	4,024,667

It will be noted that the Bessemer steel is largely used for rails, while for all other uses the open-hearth steel has the preference.

The use of wrought iron still continues in Great Britain to a much greater extent than either the United States or Germany. The total make of wrought or puddled iron in 1899 was 1,201,606 tons, which was an increase of 85,907 tons over 1898. The output of finished iron in various forms was as follows:

	1898.	1899.	Changes.	
Bar iron	600,566	568,956	D.	31,610
Plates	149,678	121,398	D.	28,280
Sheets	147,926	170,556	I.	22,630
Hoops	78,275	96,243	I.	17,968
Angles, etc	140,076	146,522	I.	6,446
Totals	1,116,521	1,103,675	D.	12,846

Bars are the most notable item in this list. The total number of puddling furnaces reported last year was 1,320, and the average number at work during the year was 1,149, showing only 171 idle, a very small proportion.

OPEN-HEARTH STEEL PRODUCTION IN THE UNITED STATES.

The American Iron and Steel Association has now completed the collection of figures for the production of open-hearth steel in the United States in 1899. The total exceeded all expectations and shows the rapid growth of the industry in even a more striking way than the reports heretofore issued of pig iron and Bessemer steel output. The totals, including ingots and castings made direct from the furnaces, were as follows, in long tons:

	1898.		1899.		Changes.	
	Tons.	Per ct.	Tons.	Per ct.		Tons.
Acid	670,880	29.9	866,890	29.4	I.	196,010
Basic	1,559,412	70.1	2,080,426	70.6	I.	521,014
Totals	2,230,292	100.0	2,947,316	100.0	I.	717,024

The increase in steel made by the acid process was 29.2 per cent.; in basic steel, 33.4 per cent.; in the total output, 32.2 per cent.

The total production of open-hearth direct steel castings in 1899, included above, amounted to 169,729 gross tons, of which 39,689 tons were made by the basic process and 130,040 tons were made by the acid process. In 1898 the production amounted to 120,587 tons, of which 28,460 tons were made by the basic process and 92,127 tons by the acid process. The total production of open-hearth steel ingots and castings has more than doubled since 1896, when the United States made 1,298,700 tons.

The production by States in 1899 was as follows, in gross tons: New England, 57,124; New York and New Jersey, 61,461; Pennsylvania, 2,393,811; Ohio, 117,458; Illinois, 246,183; other States, 71,279. The open-hearth steel made in 1899 was produced by 77 works, in fourteen States, namely: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Alabama, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota and Missouri.

The total production of steel in the United States for two years past has been as follows, in long tons:

	1898.		1899.		Changes.	
	Tons.	Per ct.	Tons.	Per ct.		Tons.
Bessemer	6,609,017	74.0	7,586,354	71.1	I.	977,337
Open-hearth	2,230,292	25.0	2,947,316	27.7	I.	717,024
Crucible and miscellaneous	93,548	1.0	128,500	1.2	I.	34,952
Totals	8,932,857	100.0	10,662,170	100.0	I.	1,729,313

The returns for crucible steel are not yet full, but the total will vary but little from that given above. The increase in the total steel production last year over 1898 was 19.4 per cent., and the output was by far the largest on record in this or any country.

THE PANUCO COPPER MINE DEAL.

We are continually recording the promotion of companies in London to operate mines which prove very soon after flotation to be of comparatively little value. The latest example of this is the Panuco Copper Company, Limited, which was formed in the spring of 1899, just eleven months ago, to take over the mines of that name which are situated in the State of Coahuila, Mexico. This company was floated by Matheson & Company of London, who control the Rio Tinto and who three years ago introduced the Mountain Copper Mines of Shasta County, California, to the British public. At the time of flotation the mines were valued at £375,000, of which £208,000 was paid in cash, and now the properties are deemed to be of practically no value at all. Considering the eminence of the issuing house and of the mining experts employed, this promotion is by no means a hole-and-corner affair, and we should hesitate to attach any suspicion of dishonesty to any of the parties concerned. But it certainly behooves the directors and shareholders to inquire very fully into the whole business, both for their own sakes and for the good name of the mining industry generally. London is full enough of untrustworthy promoters to make both the shareholders and mine owners tremble in their shoes as they walk its streets, and if we are to lose confidence in Matheson & Company who, though not always infallible in their judgment, have as a rule done well for their following, it will be a bad thing for those who wish to bring legitimate mining propositions to the moneyed classes in England.

The Panuco Copper Company, Limited, was floated in May, 1899. The capital was £500,000, of which £166,666 in shares, and £208,334 in cash went to the vendor, and £125,000 was available for working capital and developments. The whole of the money was subscribed, the vendor received his price, and later on the shares received their official quotation on the Stock Exchange. The vendor was Mr. S. W. Carlton, a member of the then existing firm of Sanders, Fielding & Carlton, who, with their New York firm, Sanders, Fielding & Vivian-Bond, were a well-known power in the metal market. The same firms introduced the Mountain Copper Mines to Matheson & Company and the individual members of the now dissolved firms have intimate relations with the Mathesons and have largely directed the operations of the Mountain and the Panuco companies all along. We do not know who the original owners of the properties were nor how much Mr. Carlton gave them for the properties, but no doubt we shall find all this out when the investigation takes place. The experts whose reports were quoted in the original prospectus were Mr. C. H. Palmer, late of the Butte & Boston and of the Merced Gold Mining Companies of unsavory repute, and Mr. Thomas Doun, who was an old servant of the Tharsis Company. These two gentlemen reported that the mines were old ones and had been worked for many years. Owing to lack of water supply concentration had been impossible, but that with the extra capital now subscribed and with a light railway to connect with the International at Monclova all these difficulties could be removed. They reported that during 1898 the ore extracted and sold to the Great Mexican Central Smelter at Aguascalientes, amounted to 5,290 tons, averaging 13 per cent. copper and containing $3 of precious metals per ton. They also reported that the amount of ore in sight was 280,000 tons averaging 6 per cent. net copper and $1 per ton gold value. They calculated that the whole of the expenses of mining, concentrating, smelting and transport would not be more than £16 per ton of copper, so that the profit realizable on the ore in sight, if copper were only £45 per ton, would be £457,000. With copper at its present high level they left readers to judge how enormous the profits would be. At the time the proposition looked a reasonable one. The issuing house and experts were relied on, and the future was rosy for the shareholders.

However, when the engineer, Mr. Schneider, who was to design the concentrating plant, went out there in summer he found that the facts had been exaggerated. He could not find any 6 per cent. average ore for which to design an expensive concentrator. The directors therefore decided to have a further examination made and deputed this duty to Mr. H. H. Knox of New York. His report has just been circulated among shareholders and it is certainly calculated to stagger them. The ore in sight is given at 234,000 tons averaging 2 per cent. copper, 59,928 tons averaging 3.48 copper, and 15,996 tons averaging 4.84 copper. This is contained between the 135-foot and 250-foot levels, and over it there are some 200,000 tons of material which cannot be valued as it is all broken ground and cavings-in of old workings; besides which it would have to be removed as overburden before the ore between the 135 and 250-foot levels could be worked. Mr. Knox also reports that he has done 600 feet of exploring work below the 250-foot level, but with

little result. In fact the latest cores from the diamond drill give no results at all. He estimates that even at the present price of copper, it would not pay to treat the ore in the manner suggested in the prospectus unless the average contents were over 5½ per cent. copper. His alternative proposition would be to build a railway to either the International or National Railway and choose a suitable site for a concentrator and smelter. By careful management and with the present high price of copper he calculates that a modest profit could be made if the output was at the rate of 200 tons per day. This would keep going for four years, but as there is little prospect of further payable ore being found the capital expended could not be returned nor any useful employment found for it. His figures exactly are: Further capital expenditure on removal of overburden, railway, concentrator and smelter, £109,000; cost of production (at 200 tons per day), including the mining, concentrating, smelting and transport of the whole ore in sight spread over four years, £257,000; total net proceeds of the metal sold at 15½ cents per pound copper in New York, £392,900. After repaying the cost of the smelter, concentrator and railway this would only leave a profit of £26,900, so that there would be practically nothing to divide among the £375,000 capital represented in purchase consideration nor would there be anything left as assets, except the plant and railway which would be of no particular value if there is no ore to treat.

It is thus clear that Messrs. Palmer & Doun's and Mr. Knox's estimates and opinions are hopelessly in antagonism. What the directors and shareholders intend to do we do not know, but it is obvious that a very full inquiry will have to be made. To uphold the ancient honor of the issuing house we should hope that the directors will annul the contract and return the money to the subscribers.

NEW PUBLICATIONS.

"History of the Manufacture of Armor-Plate for the United States Navy." Compiled by the American Iron & Steel Association. Philadelphia; The American Iron & Steel Association. Pages, 40; illustrated.

This monograph gives a brief history of the origin and progress of the manufacture of armor-plate in this country, with figures of cost and other information bearing on the controversy between the Government, as represented by Congress, and the manufacturers, over the price of the plate furnished to the navy. The book contains much interesting matter, including the descriptions of manufacture and tests of plate. It is profusely illustrated with half-tone engravings, showing armor-plate tested, and also the plants of the Bethlehem and the Carnegie Steel companies.

"Queensland. Annual Report of the Under Secretary of Mines, 1898." P. F. Sellheim, Under Secretary. Brisbane, Queensland; Government Printer. Pages, 144; with tables.

The very complete reports which most of the Australian colonies issue with regard to mines deserve recognition, not only for their completeness, but for the fair degree of promptness with which they appear. The Queensland reports have always been remarkable for their excellence, and much of this is due to the careful and intelligent work of Mr. Sellheim during his period in office. The report contains the statements of the Secretary, the general returns of production of metals and minerals, and other statistics, and also the reports of the goldfield wardens, the inspectors of mines, and the Government analysts. Queensland is chiefly known as a gold producer, but its mines yield also silver, copper, tin, lead and several of the minor minerals, as well as coal.

"A Century of Copper. Part I. Statistics." By Nicol Brown and Charles Corbett Turnbull. London, England; Effingham Wilson. Pages, 30. Price (in New York), 90c.

This little book is intended to give in condensed form a view of the progress of the copper trade during the past 100 years. It calls attention especially to the changes in the course of supply and demand during the last 10 or 15 years, which have resulted from the exhaustion of a number of ore-bodies from which a large supply was formerly derived, and from the opening of new districts. The figures given show prices in the London market from 1801 up to the end of 1898, and also give the production of the principal copper mining countries for the same period. The statistics are given by periods of 10 years. The book is rather a convenient manual for quick reference, and the figures are well arranged; but they are not always exact, nor are they drawn from the best sources of information. They probably come near enough, however, for general statements, and to give some idea of the general course of the trade.

"Memoir of Haywood Augustus Harvey." By His Sons. New York; Published for the Authors. Pages, 98; illustrated.

This handsomely printed volume is a memorial to Mr. Harvey, who is best known to the general public through his inventions in connection with the hardening and preparation of armor plate. This, however, was not his first nor really most important contribution to mechanical science and industry, as is shown by the list of patents issued to him in the course of his life. A large number of these include inventions made in connection with the manufacture of screws, a business in which he was engaged for many years, and in which he made a large number of improvements, which are still in general use. They also include a number of minor devices, such as railroad spikes, chairs and rail joints, and a method of manufacturing steel rails. The latter part of his life, however, was devoted to the manufacture of steel. At first tool steel and file steel were the principal products of the works established by Mr. Harvey, and the armor plate was a later development. The success attained by Harveyized steel plates is now so well known as to need no further comment.

"Pacific Coast Electric Transmission Association. Third Annual Convention." San Francisco, California; Published for the Association. Pages, 116; illustrated.

Electric transmission is an important subject on the Pacific Coast, where fuel is costly, and efforts are being made to utilize all available water powers, thus far with a great deal of success. The association is a strong one, and includes a number of engineers having valuable experience in electric-power generation and transmission. The papers included in the "Proceedings" are generally direct and practical, as is shown by their titles. They include "Tests and Calculations for a 40-Mile Aluminum-Wire Transmission Line," by Dr. F. A. C. Perrine; "Hints on Long-Distance Transmission," by R. W. Van Norden; "Electric Lighting vs. Gas," by John Martin; "Regulation of Alternating-Current Generators," by C. L. Cory; "Electrically-Driven Centrifugal Pumps," by Lewis A. Hicks; "Determination of a Fair Return for Current Supply," by C. W. Hutton. All these papers contain hints of value, and the discussions also included many interesting records of experience and observation.

"Supplement to the Directory of the Iron and Steel Works of the United States." Compiled by the American Iron and Steel Association, James M. Swank, General Manager. Philadelphia; American Iron and Steel Association. Pages, 56. Price, $2.

This supplement covers a period of many changes, and is intended to give a complete list of the consolidations of iron and steel companies which have taken place in the United States since January 1st, 1898, when the last edition of the standard "Directory" of the Association was published. The list is confined to the consolidations which embrace the ownerships of blast furnaces, rolling mills, steel works, tin plate works and auxiliary industries. The "Supplement" contains an authorized description of the organization of each of the consolidations mentioned in its pages, giving its capitalization, list of officers, general office address, and address in most instances of the district offices, and list of properties owned or operated by it, with the names of previous owners of iron and steel works. The name and the character of every plant are fully stated. For detailed information concerning the plants mentioned, and their products, reference is given to the page or pages in the "Directory" in which they are fully described. Iron ore mines, coal mines, coke ovens, railroads and lake vessels owned by the consolidated companies are also given in sufficient detail. The "Supplement" is printed and bound in uniform style with the "Directory." To add to its value as a convenient reference it has been interleaved with fine writing paper, affording facilities for such memoranda as the owner of the volume may at any time desire to make.

"Tabellen zur Bestimmung der Mineralen, Mittels Aeusserer Kennziechen." By Dr. Albin Weisbach. Leipzig, Germany: Arthur Felix. Pages, 102. Price (in New York), $1.

The author, who is professor of mineralogy at the Freiberg Mining School, has prepared a fifth edition of his well-known tables for determining minerals, the first edition having appeared as far back as 1866. The present edition will doubtless get the same warm reception that met its predecessors. The scheme of determination adopted by Dr. Weisbach rests almost wholly upon physical tests, examination before the blow pipe being confirmatory in most cases, while tests with acids and reagents are seldom used. This scheme is in striking contrast to that employed in some other tables, notably the excellent set published in Dr. F. M. Endlich's "Qualitative Blow Pipe Analysis." Dr. Weisbach divides minerals into three groups, (1) those having metallic lustre; (2) those having semi-metallic and other lustres and a colored streak; (3) those having non-metallic and other lustres but a colorless streak. Groups 1 and 2 are divided into sub-groups according to the color of the streak and in these sub-groups the minerals are arranged according to their hardness, the softest coming first. The sub-groups in Group 3 are arranged according to hardness. Such a scheme of division necessitates a set of minerals arranged according to Mohr's scale omitting 9 and 10, for each student, but with this the mineral can be approximately determined very quickly, in some cases almost at a glance, as lustre, hardness, streak, fracture and toughness are qualities soon ascertained. As a knowledge of crystallography and the use of the contact goniometer is required often for final determination, the system is perhaps less suited for prospectors' use than one relying largely on the blow pipe, since prospectors are most interested in ores where a rough reduction must be made usually to determine the value of the find. For persons well grounded in crystallography and capable of determining the hardness of a mineral with exactness, the tables leave little to be desired.

BOOKS RECEIVED.

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

"Lehrbuch der Bergbaukunde." Fifth Edition, Enlarged. By G. Koehler. Leipzig, Germany; Wilhelm Engelmann. Pages, 824; illustrated. Price (in New York), paper, $5.75; bound, $6.50.

"The Gas Engine Hand-book; a Manual of Useful Information for the Designer and Engineer." By E. W. Roberts. Cincinnati, Ohio; the Gas Engine Publishing Company. Pages, 220; illustrated. Price, $1.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials will only be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Trade With Bolivia.

Sir: I have read with a great deal of interest the notices that have been appearing in the "Engineering and Mining Journal" from time to time in regard to the necessity of American manufacturers cultivating the South American markets and I suggest that this could be best effected as regards Bolivia by establishing a large warehouse at Antofagasta, where American manufacturers might send their materials and where the latter might be deposited until they could realize upon them. There is a good market in the country for all kinds of mining machinery. The mining industry in Bolivia is scarcely at all developed as yet and the capabilities of the country in this direction are still unknown. Deposits of silver, copper, tin and borax as well as gold are known to occur in paying quantities, but so far they have scarcely been opened. All that is needed to put them on a paying basis is foreign capital. There is also a demand for a supply house which could furnish mining machinery directly to the miner. At present it is necessary to import such articles directly from North America or Europe, which results in long delays and is often unsatisfactory in other ways. I believe that if a house were established here to represent the foreign manufacturer it would be a remunerative investment as it would meet with practically no opposition. Among those here who would be willing to assist in the work of bringing this about are Mr. Green, United States Consul at Antofagasta, F. S. Shorey, a Californian who has lived in Bolivia for the past 35 years, and also Walter Richardson of the Huanchaca Company. The development of such a business needs only to be outlined in a general way. It is certain that under its influence engineers would be attracted to these fields and would aid in opening up our resources, which would result in a great demand for mining machinery of all kinds. After American capital had secured a foothold in Bolivia the markets would remain in its hands for a long time to come.

I should like to have you make use of the foregoing suggestions in any way you see fit and am ready to give you any further information you desire.

Josef Jackowski.

San Cristobal de Lipez, Bolivia, Feb. 15, 1900.

Boring the Simplon Tunnel.

Sir: In the "American Monthly Review of Reviews" for March there is a brief article on the Simplon Tunnel, commenting on a description of the driving, by Mr. Axel Larsen in the January "Cassier's" in which some statements are made that to me appear somewhat singular. For instance, if with the duplicate tunnel system described, it is necessary to have air shafts to the surface, what possible benefit can be derived from the secondary tunnel?

Is it not singular, too, that the explosion of a single kilogram of powder should cause "pain in the ears" at a distance of 1,000 yards from the explosion? The size of this tunnel is not stated, nor the size of the face broken by 10 6-ft. holes and a little over 22 lbs. of gelatine powder, but it would certainly be interesting to know just what kind and strength of gelatine powder is used to produce such effects, also to know the character of rock which can be successfully broken by a round of 10 holes and so small an amount of powder. In our work here we find it necessary to drill from 16 to 24 6-ft. holes to break a face 8 by 8 ft., very seldom using less than 20 holes, and an average of 130 lbs. of 40 per cent. gelatine powder, frequently then finding it necessary to shoot the 10 center holes the second time and occasionally the third time; we find that from the explosion of 60 to 80 lbs. of this powder, there is but a very slight concussion of air perceptible and no sound of the explosion at a distance of 1,000 yards, while the 60 to 80 lbs. is exploded by electric battery, the men often being but 150 yards from the breast in a small station cut in the side, and suffering no 'pain in the ears" or inconveience.

Perhaps, however, the most interesting portion of the article is that entitled "A Gigantic Squirt," and I think very many of your readers besides myself would like to have further information in regard to the driving of the Simplon Tunnel, as to the success or failure of this water cannot if an attempt is made to use it and an opinion from so competent an authority as the "Engineering and Mining Journal" as to its practicability.

Wm. P. Daniels.

Frances, Colo., April 7, 1900.

[We hope to have shortly some comment on the appliances for tunnel work to which our correspondent refers.—Editor E. and M. J.]

MINERAL IMPORTS AND EXPORTS OF SPAIN.—The imports of fuel into Spain for the two months ending February 28th, included 271,905 tons of coal and 35,000 tons of coke. Imports of iron and steel included 822 tons pig iron, 687 tons wrought iron, 8,172 tons steel and 641 tons tin-plates. Exports of minerals are reported by the "Revista Minera" as below, in metric tons:

	1899.	1900.	Changes.
Iron ore	1,258,750	1,318,015	I. 59,265
Copper ore	142,796	162,199	I. 19,403
Zinc ore	13,690	13,467	D. 223
Lead ore	1,643	511	D. 1,132
Salt	30,156	26,843	D. 3,313

Exports of metals included 7,009 tons pig iron (6,589 tons, 1899); 4,345 tons copper (4,864 tons, 1899); 25,457 tons lead, against 29,404 tons last year.

A NOVEL ASSOCIATION OF GOLD.*

By Henry F. Collins.

At the Santa Fe Mine, Chiapas, Mexico, the chief valuable ore is an argentiferous and auriferous bornite, which, when absolutely pure and crystallized in a crystalline gangue of the mineral wollastonite, contains, as shown by careful analysis, copper 62.1 per cent., iron 11.8 and silver 0.2 (60 oz. per ton), together with a very uniform amount of about 10 oz. gold per ton. In the upper zones of the deposit minute grains and scales of free gold are frequently met with in and about the crystals and patches of bornite, and such particles of gold are invariably clean and readily amalgable, but visible free gold becomes exceedingly rare in the deeper ores.

A quantity of the finely powdered sample of pure bornite, submitted to analysis, was ground with distilled mercury in a Wedgwood mortar for some time; and after carefully washing and redistilling the mercury, the residue left on treatment with nitric acid showed only a minute quantity of gold. On this account, and in view of the above mentioned, that the proportion of gold present in isolated crystals of bornite from the deeper workings is pretty constant at about 1 oz. per ton, we are probably warranted in considering it as chemically combined, presumably as sulphide, since careful tests have failed to show any trace of selenium or tellurium and only a minute trace of bismuth.

When, however, the bornite is largely intercrystallized with garnet and chalcopyrite, and particularly when associated with small quantities of galena, enargite and other minerals, the concentrates from such mixed ores are noticeably richer in gold, averaging 1 cwt. for each per cent. of copper.

Near the end of 1897, occasional small nodules or grains of a brilliant, steel-grey, brittle mineral were noticed to occur in massive bornite from some of the upper workings, but it was not until the spring of 1899 that leisure could be found for a detailed examination.

A few grammes of the mineral were carefully picked out with forceps and lens, finely pulverized, and passed through a 120-mesh sieve, on which several particles of free gold were left, equivalent in amount to over 200 oz. per ton. The fine powder was submitted to analysis, with the following results: Insoluble residue, 0.43 (quartz); iron, 3.32; copper, 5.32; nickel, 17.15; cobalt, 29.64; sulphur, 44.31; gold, 0.53 = 173 oz. per ton; silver, 0.13 = 42 oz. per ton. Careful search was made for arsenic, antimony, bismuth and tellurium, with negative results.

The mineral is therefore a sulphide of cobalt and nickel, in which part of the latter metal is replaced by copper and iron. It corresponds with that variety of linnaeite called by Dana siegenite, though containing more copper than any of the analyses quoted.

As regards the mode of occurrence of the gold, the following experiment was made: 0.933 gramme of the carefully picked pure mineral was ground in a Wedgwood mortar with about double its weight of clean quartz sand until quite impalpable, except one or two minute metallic wires. About a tablespoonful of a 3 per cent. solution of cyanide of potassium, and half a teaspoonful of mercury were added, and the grinding was continued for one hour. The mercury was then carefully panned together, cleaned and retorted; the resulting sponge was mixed with silver, and parted; while the residual mineral was mixed with lead, and scorified, the button being parted as usual. The results were as follows: Free gold was taken up by mercury 0.0084 gramme = 294 oz. per ton; unamalgamated and left in residue, gold 0.0017 gramme = 59 oz. per ton; silver, 0.0009 gramme = 31 oz. per ton.

While not claiming that these results are by any means conclusive as to the presence of combined, as distinguished from finely disseminated, metallic gold in the mineral, the author ventures to submit that the balance of probability seems to be rather in favor of this hypothesis.

THE NAVIGATION OF THE AMOOR RIVER.—In order to improve the condition of the Amoor River, in Siberia, the Russian Ministry of Ways of Communications has resolved to begin dredging operations in the estuary of the river during the coming spring. Six lighters, a dredging machine, and the "Khabarovsk," the largest steamer at present plying on the river, will be employed in dredging a channel 120 ft. in width and 8 ft. in depth. Owing to the bar at the mouth of the river, goods have to be disembarked, as a rule, and taken overland to Alexandrovsk. The Amoor is ice bound for half the year, and is subject to great inundations during the summer months.

COAL IN GERMAN EAST AFRICA.—With regard to the coal deposits on the Muega or Kandete, to the northwest of Lake Nyassa, Bergassessor Dantz, as quoted by the London "Colliery Guardian," reports that the establishment of an important industrial center at or near Lake Nyassa is an indispensable preliminary to the working of the coal on any large scale and in a systematic manner. Given the formation of a Central African railway, or should the discovery of gold lead up to a profitable mining industry, then the winning of coal, and probably also of the magnetic iron ore of Mount Livingstone, would be undertaken in earnest. The deposits on the Muega could be opened up by a comparatively simple system of drivages, which would enable 350,000 tons to be mined in 7 years (50,000 tons per annum) without any shaft being needed. All that is necessary is to drive a heading about 8 to 10 ft. wide and 6 to 7 ft. high, for a distance of about 2,600 ft. (about 800 ft. in carboniferous rock and the remainder in friable sandstone) from a point in the valley southward, about 50 ft. below the deposit, and to push a main gallery along the lower main seam for about 1,650 ft. on either side of the heading. The work could be done under European supervision, by natives who, with the exception of the Wakonde, are very easily taught, the best being the Wanyamwesi, or people from the southern district of Nyassa.

* Paper read before the Institute of Mining and Metallurgy, London, February, 1900.

BRITISH COLUMBIA.—XXIX.
VANCOUVER ISLAND.—ALBERNI DISTRICT.

Special Report of William M. Brewer, Traveling Correspondent.

This district the writer has already briefly described in earlier articles in the "Journal." During a recent visit, through the courtesy of Mr. Hayes, managing director, he had the privilege of examining the underground workings on the property of the Nahmint Mining Company. This is the most thoroughly developed mining proposition on Vancouver Island, having been opened up a depth of 350 ft. The property of this company is situated near Nahmint Bay, on the Alberni Canal; it was purchased from the original locators early in 1898. The outcrop was very heavy iron capping, with impregnations of high-grade chalcopyrite. This outcrop occurred on the mountain side, about 1,750 ft. above sea level, and indicated the occurrence of a contact vein between gabbro (Ferrier's classification) and diorite. The outcrop was so heavy that although very little work had been done at the time the property was purchased, there was apparently sufficient ore in sight to return the purchase price paid. Apparently the strike of this body was north and south, but after a tunnel had been driven for some little distance, it

OUTCROP AT DISCOVERY POST, NAHMINT MINE.

ENTRANCE OF TUNNEL, LAKE SHORE CLAIM.
(Showing outcrop of iron capping and hornblende as an arch, with limestone and oxidized material beneath.)

was demonstrated that the true line of strike was nearly east and west, and that the outcroppings, instead of overlaying one continuous ore body, really overlaid two parallel bodies, each having its dip about 80° toward the south. Further development proved that considerable oxidation occurred as deep as the 250-ft. level. On this level the southernmost of these ore bodies shows a thickness of 28 ft. by cross cutting.

During the fall of 1898 and winter of 1899, sample shipments were made aggregating about 250 tons to the Tacoma Smelter from both of these ore bodies, the ore being taken from different points as the development progressed. The smelter returns from these shipments were sufficiently good to warrant thorough exploitation of the proposition, and since then work has been conducted with a view of showing up ore in sight, in order to determine whether it would be advisable to erect an aerial tramway to transport the ore from the mine workings to the beach, 5,000 ft. distant.

The property has been opened chiefly by cross-cutting, because the topography would not permit of drifting, consequently the development has been more expensive than would otherwise have been the case. The underground workings aggregate about 2,200 ft. Of this about 200 is sinking, and the remainder cross-cutting and drifting. One shaft has been sunk 140 ft. in depth; the first 100 ft. was in ore, but the shaft being vertical, the ore body dipped away from it. Apparently this same body was picked up on the 250-ft. level, but as the connection has not been made by upraising, there may be some question. Two distinct ore shoots occur on the 250-ft. level, the first one being 16 ft. thick, and the second 28 ft. On the 350-ft. level a third ore shoot has been cross-cut 30 ft. thick, the ore in which is of a much lower grade though than either of the cross-cuts on the 250-ft. level. It is proposed by the management to sink on the widest ore body on the 250-ft. level, in order to determine its continuity with depth, because on the 350-ft. level this body has not been cross-cut.

Drifting on the wide ore body on the 250-ft. level has determined that that body is continuous for about 60 ft., and in cross-cutting from the end of the west drift another ore body was picked up, which, so far, has not been connected with any of the outcrops. It may be determined that this is a continuation of the wide body, but has been thrown several feet to the north by faulting. Although no drift has been run on this last mentioned body, yet in a continuation of the main drift, driven through barren material, ore was encountered at a point which would

OUTCROP OF IRON CAPPING AND CHALCOPYRITE, NAHMINT MINE.

indicate continuity of the faulted ore body along its line of strike. Owing to the numerous irregularities, and the many difficulties which have had to be overcome in developing the ore bodies, a proper ventilation of the workings until an air compressor is installed is very difficult, and this reason would be amply sufficient to account for the policy of the management in not having drifted along the faulted ore body.

The claim of the management to 40,000 tons of ore in sight without taking into consideration the low grade ore body cross-cut on the 350 ft. level appears on a casual examination to be quite reasonable, but of course until the continuity of the ore bodies already cross cut has been proven by upraises connecting the levels, it is almost impossible to correctly estimate the tonnage of ore in sight.

The geological formation of the section of country in which the Nahmint Mining Company's properties are located is quite complicated. A traverse from southwest to northeast shows the following series: Gabbro, crystalline limestone, gabbro, wedge of crystalline limestone apparently not more than 75 ft. thick, diorite dyke. The wedge of limestone only appears on the surface, and apparently is cut off by the gabbro and diorite dykes. This presents a very peculiar and interesting feature in the geology. The trend to this formation is northwesterly. The ore bodies occur in the crystalline limestone and in the gabbro; that in the limestone does not appear to have been exposed in any of the tunnels, but a shaft some 60 ft. deep has been sunk on it. When prospecting this ore body by an open cut on the surface, a cave in the limestone was discovered. Whether the occurrence of this cave has any connection with the deposition of the ore, has not been fully determined by the workings. The ore bodies developed in the tunnelling occur between the diorite and gabbro, with the latter as a foot wall. This gabbro is feldspathic and has a decided porphyritic structure.

During the progress of the development work on this company's property many difficulties have been encountered because of the geological

complications, and the faulting which has occurred, consequently a larger amount of capital has been required to develop the property up to its present condition, than would have been necessary had it not have been for these complications. The fact is that during the past two years the Alberni District may be said to have been kept alive through the persistent efforts of the Nahmint Mining Company to show ore in sight sufficient to prove the value of their property. The results have been so encouraging despite the difficulties against which the management have had to contend, that much more confidence is felt to-day in the district, so far as the copper prospects are concerned, than was the case a year ago.

In the neighborhood of the Nahmint Mining Company's property and westerly therefrom for a distance of some seven miles in an air line, a mineral zone occurs which promises to be one of the most important, if not the most important on Vancouver Island. In this zone are located several groups of mineral claims on which the outcroppings are very pronounced. One of these groups, known as the Hanson, was purchased by New York parties during the autumn of 1899, and it is expected that extensive development work will be carried on during the coming season. Other groups in the same zone have been prospected to a greater or less extent, but none of this work has been sufficient to determine the occurrence of mines, in all that term implies.

Water transportation has materially aided prospectors in prospecting this particular zone, because the Alberni Canal could be followed a few miles south of Hayes' Landing, which is the headquarters of the Nahmint Mining Company's property, to the entrance of Uchucklesit Harbor, thence a northerly course could be pursued into the Snug Basin, which lies directly west from Hayes' Landing and into Anderson Lake, which empties into Uchucklesit Harbor, northwest from Snug Basin. Consequently, this zone has been prospected from the Alberni Canal proper, from Uchucklesit Harbor, from Snug Basin and from Anderson Lake.

On the properties near the shores of Anderson Lake, especially on the Lake Shore group of mineral claims, systematic prospecting is in progress. About 250 ft. of work has been performed on one of the claims of this group. During the progress of that work some very interesting geological features have been exposed.

There are four distinct lines of outcropping on this claim extending from close to the lake shore in a northeasterly direction, and two of which can be traced for several hundred feet. The southernmost of these outcroppings occurs on a contact between limestone and diorite, the limestone being perfectly crystalline; the next occurrence of outcrop in the series occurs in the diorite and between well defined walls, the ore body apparently filling a fissure in the dyke which was made during the cooling of the eruptive rock; the third outcrop apparently occurs on a contact between the diorite and an ingeous rock, very similar to the gabbro found on the Nahmint Mining Company's property; the fourth outcrop appears to occur in the gabbro itself. These different lines of outcrop are nearly parallel to each other, and all dip toward the northwest, and nearly at the same angle, that being almost vertical. The distance from the foot-wall of the first one mentioned, to the foot-wall of the last is about 200 ft.

On the two northernmost outcrops the peculiarity is that while apparently they are ordinary iron capping, yet when broken into this capping evidently becomes from hornblende as is demonstrated at the mouth of the tunnel shown in the illustration. A close examination of this shows a perfect arch about 2 ft. in thickness, beneath which and on the left hand side of the mouth of the tunnel are masses of limestone and oxidized material which carries some copper values. This tunnel was driven along the line of contact between the diorite dyke and gabbro, which apparently formed the hanging wall of an ore body, or of ledge matter associated with an ore body. After driving 74 ft., a cross-cut was made toward the northwest. This was driven 18 ft. before any ore was encountered, but at that point a well defined foot wall dipping in the same direction as the foot walls of the other ore bodies on the claim, was exposed, and further cross cutting determined that a ledge of ore bearing material 13 ft. in thickness occurred. This material consisted of chalco and iron pyrites with quartz, hornblende and garnet for the gangue. Some of the hornblende was fibrous, while other portions were well developed actinolite crystals. The chalcopyrite and iron pyrites occur as impregnations in this gangue, and although the entire body at the point where it was cross-cut could not be considered pay ore, yet for about 5 ft. through the center an average sample yielded sufficient values to show that by hand sorting a large proportion was shipping ore.

While the occurrence of hornblende as gangue matter with copper ores, is not uncommon, because the writer has observed the same in Ducktown, Tennessee, in Alabama, and on Texada Island on this coast, yet to find such occurring as the outcrop which had oxidized to resemble a regulation iron capping, is, in the writer's experience unusual. But unusual occurrences of outcroppings prevail on Vancouver Island, in fact the occurrence of the regular gossan, which is so pronounced in other copper mining districts, is very rare on this island. Many of the heaviest outcroppings consist of high grade magnetic iron ore, others consist of the iron capping so common in the Rossland District, and further investigation will probably result in demonstrating that the hornblende capping of the Lake shore occurs in other sections on the West Coast of Vancouver Island.

THE BERTHELET SEPARATOR.—This is a device which depends for its utility on the fact that a screen set at a high angle, say 45°, will deliver a much finer product than the size of the meshes would indicate. Accordingly the peculiarity of the Berthelet separator, which is made by Fraser & Chalmers, consists in the use of a very coarse screen in proportion to the size required. A 5-mesh screen of No. 16 wire delivers a uniform product of 8-mesh size, and a 16-mesh screen of No. 18 wire delivers a product of 30-mesh size. This separator can be adapted to existing dry-crushing plants, increasing their capacity and greatly decreasing their slimes, and can be applied to stamps, rolls, or other crushing devices.

THE GOLD-BEARING CONGLOMERATES OF BOKHARA.

In a lecture recently delivered before the Royal Geographical Society in London, Mr. W. Rickmers said that the conglomerates of Eastern Bokhara cover an area of 800 square miles, disposed in a long strip between the rivers Vaksh and Panj, with a strike from northeast to southwest. They show distinct stratification, and Dr. von Krafft ascribes them to the Tertiary period. The stones composing them are chiefly crystalline. The greatest thickness of the formation may be said to be at least 4,000 ft. The rounded forms of the soft conglomerate are easily distinguished from the jagged and fantastic outlines of the hard zone. The highest peaks, typical of each category, are respectively Hazrat-Ishan (13,000 ft.) and Kutch-Nanor (10,500 ft.). The scenery is wild to the last degree. An intense solitude pervades the valleys, where Nature is so sparing that scarcely a creature is to be seen. Serrated ridges and gaunt pinnacles stand out black against the blue sky. In this district the party spent several months. Trees are scarce, but in the more secluded valleys apologies for woods manage to exist. The pine is represented by the thuya, which thrives on scanty soil. The wretched population was mainly dependent for its livelihood on the gold washing industry. The precious metal had been obtained from this region for centuries. A very simple apparatus was employed for treating the gravel. All gold in the shape of dust was lost, some of the rougher particles only being secured. Five men working together treated about one ton of gravel per day. All these gold workers were in the hands of sweaters who advanced them the necessaries of life, and kept them continually in their clutches. The consequence was that they did as little work as they could, and never obtained even comparative prosperity. The yearly gold output of East Bokhara was variously estimated from £20,000 to £30,000, a mere trifle considering the potentialities of the alluvial deposits. The quantities extracted by the natives in the course of centuries were as nothing compared to what Europeans might produce in a few years. So far the proportion of gold in the conglomerate itself had not been established, the fluviatile deposits resulting from its disintegration offering greater advantages for mining purposes. The gold occurs exclusively in tablet form, grains and nuggets being nowhere found. Investigations into the distribution of the metal showed that the richness of the sands increased with the depth, and that the gravel terraces on the banks were richer, and contained coarser gold than the actual river beds. The climate was singularly regular for a mountain region. From the beginning of July to the end of October, not a single drop of rain fell, but in November mists came rolling down the slopes and snow began to fall. Until March the valleys are buried in snow and almost inaccessible. Then comes a period of continual rain which lasts till May, when the sun begins to battle effectually against the clouds.

In addition to the above summary of his lecture, Mr. Rickmers has furnished us with a report on one claim, which may be taken as typical of the region. This claim, known as Safet-Davia, is 600 km. from the Trans-Caspian Railroad, and transportation is by horses and camels, making the cost high. Food are other necessities are, however, cheap; plenty of labor is to be had, while work can be carried on through a large part of the year. There is abundant water. The surface gravels are poor, but those deeper are rich, and the horizontal distribution of the gold is very nearly uniform. The estimate of the contents is 2.5 to 3 grammes per metric ton. The strata above the rich gravels contain gold enough to pay for their removal. The water can easily be drained off by canals. It is estimated that a total average excavation to a depth of 10 m. will be required, of which 2 m. will include the rich gravels. The cost of excavating can hardly exceed 30c. per cubic meter.

The Government charges a royalty of 5 per cent. All gold must be turned over to the authorities who are obliged to pay for 60 per cent. of the gold on receipt; the balance being payable when the bullion has been assayed and its value in pure gold ascertained. The Safet-Davia grant is on the river of the same name, which is a tributary of the Yakh-Su. It is in the province of Baljuan in the Khanate of Bokhara, which is under the complete control of the Russian authorities. The claim is 2,000 m. above sea level.

The native method of working the alluvial deposits is as follows: An incline having a section of 0.5 by 1 m. is formed of sand, and on this strips of felt are spread. At the upper end is placed a grating on which the gravel is dumped. Water is poured over it with a ladle, the sand and small particles being washed down over the felt, which catches the coarse gold. Naturally all the fine gold is lost. Usually a native Sart —as the people are called—will work from 800 to 1,000 kg. of gravel a day. To drain off the underground water the natives work up stream, leaving behind them a canal or tail-race in which they protect the banks from washing out and caving by lining them with large flat stones. In this they dump the tailings from the new work. Some of the subterranean canals are several kilometers long.

PIG IRON PRODUCTION IN GERMANY.—The production of the German blast furnaces in February was 620,707 metric tons, against 658,512 tons in January, and 625,158 tons in February, 1899. For the two months ending February 28th the output was: Foundry iron, 233,990 tons; forge iron, 261,192 tons; Bessemer pig, 71,869 tons; Thomas (basic) pig, 712,168 tons; total, 1,279,219 tons. In 1899 the total was 1,297,033 tons; showing a decrease of 17,814 tons, or 1.4 per cent., this year. The reduction was due chiefly to short supplies of coke.

DEMAND FOR COAL AND IRON IN BRAZIL.—United States Minister Bryan writes from Petropolis, February 1st, 1900, in regard to the demand for coal in Brazil. The president of the San Francisco Railroad, in the State of Bahia, Dr. Argolla, is inclined to make an experiment with 5,000 tons of bituminous coal, to be followed by further yearly orders if the trial prove satisfactory. Dr. Argolla is a graduate of the Troy Polytechnic School and is desirous of promoting United States interests in Brazil. He thinks that structural iron for railroad and steel rails, if once introduced, would find an exclusive market. He therefore solicits catalogues and price lists of iron manufacturers.

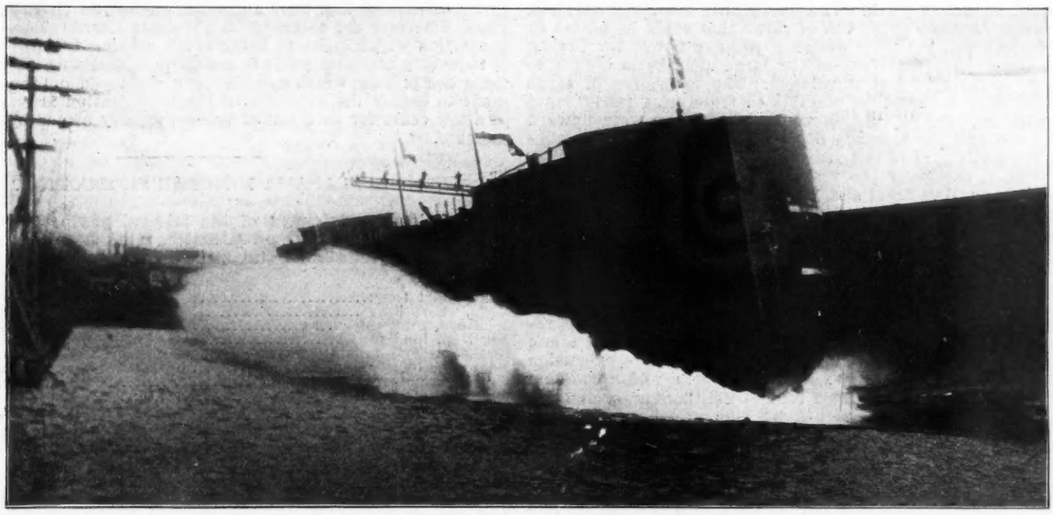
THE NEW ERA IN LAKE SHIPPING.

Written for the Engineering and Mining Journal by Waldon Fawcett.

The advent during the early part of the 1900 season of navigation of the 500-ft. vessel is certain to prove a revolutionary influence in transportation interests on the Great Lakes. In nothing more than in Lake shipping is development a term synomonous with rapid evolution. For instance, take the case of the great Poe lock—the largest canal lock in the world—in the Soo River, connecting Lakes Huron and Superior. When this lock, 800 ft. in length by 100 ft. in breadth, was planned it was designed to accommodate four of the largest vessels on the Lakes at one time—two in length and two in breadth. It seems never to have occurred to Gen. Poe and the prominent vesselmen who conferred with him relative to the project, that the lock would not be sufficiently commodious to accommodate the number of vessels mentioned, for years to come. Yet before this great engineering work, costing millions of dollars, had been completed there engaged in the iron ore trade from Lake Superior ports a number of vessels of such dimensions that not more than two of them could lock through at the same time, and even this is impossible with the largest size vessels which will be employed in the transportation of ore cargoes this summer.

The exigencies attendant upon modern industrial growth have made the new type of Lake vessel, with its carrying capacity of 8,000 or 9,000 tons, a positive necessity. A decade ago the majority of vesselmen believed that there would never be seen in service on fresh water, vessels exceeding 300 ft. in length. Some of the more conservative vesselmen are inclined to doubt the wisdom of building 500 ft. boats, but they manifested the same skepticism upon the introduction of the 400 ft. ore carrying craft, and not only the 400 ft. steamer but the 475 ft. freight carrier as well have long since been demonstrated a success in every respect. The size of Lake craft in the future will be dependent solely upon the depth of the channels which they are called upon to navigate. If, through the medium of a dam above Niagara Falls, or by other means, there is provided throughout the entire chain of lakes a channel exceeding 20 ft. in depth, the 600 ft. vessel is no more an impossibility on fresh water than is the 1,000 ft. transatlantic liner.

As has been explained, many influences combined in the issuance of the imperative call for the large size Lake vessel of the present day. One of the most important was the entrance of the great iron and steel producing interests into the field of Lake commerce and the concentration under one management of all the various operations of mining the ore, transporting it by rail and water to the furnaces, and there evolving the finished product. Unquestionably John D. Rockefeller was the pioneer in this new era of shipping on the inland seas. From the very outset his representatives, acting of course under his instructions, sought not only for the construction of vessels that would have the greatest possible strength, but would also embody a capability for carrying every ton of ore which could be moved by an engine of given power.



LANDING A LAKE FREIGHT VESSEL AT CLEVELAND, OHIO.

The culmination of the policy of securing maximum strength in the vessels came with the construction of the steamer "Samuel F. B. Morse" and the barges "John Fritz" and "John S. Roebling," which were, with their sister vessels, the largest craft in service on the Great Lakes last season. Long before these carriers were completed the wiseacres of Lake shipping circles set up the claim that they were entirely too heavy for the requirements of the Lake trade; that they were, in fact, so loaded down with material in order to gain great strength that there would be a marked loss in their capacity as compared with other vessels of about the same dimensions. These misgivings were disproven almost as soon as the vessels went into commission, for the barges speedily secured and held for many months the record for the movement of the largest cargoes ever handled on the Great Lakes.

SPAR DECK AND HATCHES STEAMER "ANGELINE." FROM BRIDGE.

Each of the vessels mentioned, as well as the other lately constructed craft in the Rockefeller fleet, contains fully 8,000 tons of material—that is, hull material, irrespective of machinery, boilers or equipment of any kind. This is fully one-fourth more material than had been used in most vessels of their size up to the time of their construction. One thing which actuated the Rockefeller management in its adoption of the

policy for imparting to its vessels all possible strength was the desire to be in a position which would enable them to undertake, if desired, their own insurance.

The barges of the class just described are each capable of carrying approximately 8,300 gross tons of iron ore, while the capacity of the steamers is somewhat less. This means that if the cargo of iron ore brought down the Lakes by one of these boats were loaded into cars of 12 tons each, nearly 700 cars would be required for the purpose, and these would form full 17 trains of 40 cars each.

The huge Rockefeller steamers, such as the "Houghton," which blocked the channel in the Soo River last year, and the "Samuel F. B. Morse," cannot be said to be outrivaled by the new 500 ft. steamers recently launched and which will go into service during the summer. The two types of vessel represent distinct classes, because designed for radically different classes of work. The Rockefeller steamers were not built with a view to carrying every ton of cargo that could be placed in hulls of their dimensions, but were designed to have power for towing one, and under some conditions two, of the large steel barges, such as the "Fritz" and "Roebling," just mentioned. The projectors of these craft thus figured that it would be possible to move at a fairly rapid rate of speed with one engine cargoes which would aggregate upward of 20,000 tons of ore, and the accuracy of these calculations was demonstrated during the latter part of last season. On the other hand, Mr. A. B. Wolvin, who is in charge of the vessel interests of the corporation affiliated with the American Steel and Wire Company, does not believe in the advantages of the towing system, consequently the 500-ft. steamers building to his order are planned with reference to maximum capacity.

The characteristics of these respective types of vessels which will, during 1900, contend for supremacy in the ore carrying trade on the Lakes, may perhaps be best brought out by brief descriptions. The largest Rockefeller steamers—there are several identical in every respect—are each 476 ft. in length over all, 456 ft. keel, 50 ft. beam and 29 ft. depth. They are fitted with engines of the quadruple expansion type with cylinders 26½, 37, 54½ and 89 in. in diameter and a common stroke of 42 in. Steam is supplied from four Scotch boilers, each 13 ft. in diameter and 11½ ft. in length, with a working pressure of 200 lbs. per square inch. The total displacement of a vessel of this class is 10,500 tons, and of this 4,125 tons is represented by the weight of machinery, boilers and other parts. In actual service these vessels, fitted with a towing wheel, have maintained for a time speeds of 14½ miles per hour when returning without cargo to Lake Superior ports, and when bringing down ore cargoes they have made 13½ miles per hour throughout the entire trip. It is maintained, too, that with a wheel especially adapted for speedy running they could with ease attain a speed of 17 miles per hour.

The new 500 ft. vessels embody many points new to Lake vessel practice. Over all, as has been stated, they are each approximately 500 ft. in length. Their beam molded is 52 ft. and their depth 30 ft. Each has 13 water-tight compartments and a capacity for 3,500 tons of water ballast. Wood has been dispensed with wherever possible in the construction of the vessels; and the masts, deck houses, etc., are all of steel. The cargo holds are divided into six compartments by water-tight bulkheads in which are steel doors. The vessel is provided with 15 cargo hatches, each 30 by 8 ft. in the clear and spaced 24 ft. centers. This enables unloading from several hatches simultaneously either by means of the automatic unloaders such as will be in service at the Carnegie docks at Conneaut, or by the employment of the hoisting and conveying machinery, which has heretofore been in universal use at all ore unloading docks.

Power for the propulsion of these monster craft will be furnished by quadruple expansion engines with cylinders 16½, 25½, 38½ and 60 in. in diameter and 40 in. stroke of piston. The propeller driven by these engines will be 14 ft. in diameter and 15½ ft. pitch. Steam will be generated in boilers of the Babcock & Wilcox type, working at a pressure of 250 lbs. per square inch. The equipment of the vessels in the matter of steam steering gear, electric light plant, etc., is thoroughly modern in every respect. Inasmuch as fuel docks are located at frequent intervals in the connecting rivers through which vessels must pass in going from one lake to another, the coal bunker capacity of 300 tons is amply sufficient to meet all requirements.

There are four of these 500-ft. vessels, exactly alike, building with a view to service next season. John D. Rockefeller has building one steamer of a length of 461 ft.—somewhat shorter than the "Morse" and "Houghton" previously described—and one of a length of 490 ft., or considerably more than the vessels mentioned. The half a dozen steamers building to the order of the Carnegie Steel Co. are each 474 ft. in length, or just 2 ft. shorter than the large Rockefeller boats. In beam they are identical and in other dimensions they follow very closely the vessels of the "Morse" class. In addition to the large carriers here enumerated there are also building for individual vessel owners several steamers ranging from 430 to 440 ft. in length over all, and the Minnesota Steamship Company has on the stocks at Chicago a couple of tow barges each of which is 450 ft. in length by 50 ft. beam. It will thus be seen that the large ship on the lakes has passed the stage where it was the experimental venture of one owner and has now reached the point of general adoption.

The contract price of the new 500-ft. steamers above referred to is understood to be $350,000 each. Such a vessel will make a trip from one of the ore unloading ports on Lake Erie to a loading port on Lake Superior and return in about 10 days, and will, on an average, make 20 such trips in a season. Basing our estimate on the season freight carrying rates which have been established for 1900, it may be accounted that the vessel will receive round trip earnings at the rate of $1.75 per ton. This is allowing $1.25 per ton for the ore brought down the lakes and 50c. per ton for the coal carried from lower to upper lake ports. A vessel capable of carrying 7,000 tons of cargo would thus have receipts of approximately $12,250 per trip. From this there must be deducted in the case of the ore a charge for trimming and unloading which amounts to from 16 to 18c. per ton. For grain there is a similar charge amounting to more than $4 per 1,000 bushels, but coal of all kinds is handled without charge to vessel.

The expenditure for insurance in the case of the largest steamers will probably amount to $10,500 for the season, although of late years many of the large ore-carrying fleets have been operated without insurance. Fuel bills will range anywhere from $500 to $1,000 per trip, according to the size of the vessel and the length of her journey. In the case of the large tow barges the saving in fuel bills is counterbalanced to some extent by the expenditure necessary for tug service. The captains of the large Rockefeller vessels, who are the best paid men on the lakes, receive in a majority of cases $1,800 per year, and mates $1,200. The other officers and members of the crew are paid in proportion. Several of the large companies each year award prizes to the officers of the boats which make the most economical showing in the matter of fuel bills and other incidental charges. All the large vessel interests are members of the Lake Carriers' Association, an organization which seeks to bring about reforms where legislative action is necessary and also deals to a certain extent with the labor organizations comprising which are the men employed on the boats. Assessment to defray the expenses of the organization is made on the basis of a few cents for each ton of vessel property owned by each individual member.

ALABAMA MINERAL PRODUCTION.

The following statement of the mineral production of Alabama for 1899, is made by Dr. Eugene A. Smith, State Geologist; comparison being made with the similar statement for the preceding year:

	1898.	1899.	Changes.	Per ct.
Coal, short tons	6,509,223	7,484,763	I. 975,540	15.0
Coke, short tons	1,390,254	1,798,612	I. 408,358	29.4
Iron ore, long tons	2,202,158	2,627,000	I. 424,842	19.3
Pig iron, long tons	1,033676	1,083,905	I. 50,229	4.8
Limestone and dolomite, flux, long tons	499,859	635,514	I. 35,655	7.3
Beauxite, long tons	13,848	14,144	I. 296	2.1
Graphite, short tons	.....	60	I. 60	...
Building stone, cubic feet	.....	63,614	60	...
Lime, barrels	127,588	225,000	I. 97,412	76.1

The coal and coke figures given are furnished by the State mine inspector; the pig-iron returns are the figures of the American Iron and Steel Association. The other figures are based upon the reports made by producers to the State Geologist, who has now been collecting statistics and compiling these returns for several years, with excellent results.

Graphite is a new addition to the mineral products of Alabama, having been mined for the first time last year. The figures for building stone were not collected in 1898. It will be noticed that the increase in iron ore was much greater than that in pig iron. If we assume that all the iron ore mined was used during the year, the average would be 2.45 tons of ore to 1 ton of pig iron in 1899, against 2.13 tons in 1898. It is probable, however, that some additional mining of iron ore was due to the starting up of additional furnaces about the close of 1899; the ore supplies for these had to be provided, though the output of the furnaces will not appear in the returns until this year.

MINING PRIVILEGES IN JAPAN.—United States Minister Buck writes from Tokyo, under date of March 3d, 1900, that at the session of the Japanese Diet just closed there was a change in the mining regulation, by which the privileges of mining were extended to foreigners organized as juridical persons under Japanese law. This, adds the minister, may be regarded as a sign of a liberal attitude toward foreigners.

SULPHURIC ACID WORKS IN RUSSIA.—A recent Belgian report says that there are 50 works in Russia where sulphuric acid is made. The importation of sulphuric acid was 36,000 poods (590 metric tons) in 1898, as against 10,000 poods in 1897. At St. Petersburg, and in the western departments, sulphuric acid is made from pyrites imported from Scandinavia. Iron pyrites is subject to an import duty of 1 copek per pood. Iron pyrites containing over 2 per cent. of copper pay a duty of 2.75 copeks per pood for every unit over 2 per cent.

In 1898 the imports of pyrites amounted to 2,509,000 poods, all being of the class containing less than 2 per cent. copper. Pyrites deposits are found in the neighborhood of Perm, in Tonla, in Jaroslav and Kazan. Sulphur is obtained in Daghestan and in the Transcaspian territory. In Poland some acid is made as a by-product from zinc ores.

AMERICANS IN KOREA.—United States Consul General H. N. Allen, at Seoul, writes: "Korea now employs no foreign military officers as advisers or instructors in its army, and is not likely to do so, owing to an agreement made with Russia when a large staff of Russian officers were allowed to leave. By this agreement, Korea announced her ability and intention to dispense with further assistance of that kind. The many requests from young men who have recently left the service of the United States, asking for positions in connection with the Korean army, are futile. There is no demand for their services in Korea. There is also no demand for foreign advisers to the Korean Government. Although two Americans who held such positions have recently died, their places have been filled, and there is no further demand for assistance of that kind. The newspaper report that one of these advisers had been receiving a salary of $100,000 gold per annum is entirely misleading; such positions pay from $150 to $250 per month. There is no demand for employees on the railroads in Korea. Japanese control and operate the steam railroad, and Koreans and Americans are employed on the electric railroads. I believe the positions are all filled.

"Employment with the mines would have to be secured before coming to Korea. The agent of the mines in America is H. A. Noble, representative of the Oriental Consolidated Mining Company, San Francisco. Prospectors cannot operate in Korea, and there is no employment with the mines other than on wages. I am told the mining company has no lack of applicants."

LOSSES IN THE DETERMINATION OF GOLD AND SILVER IN COPPER BULLION, THEIR CAUSES, AND A METHOD FOR OVERCOMING THEM.

Written for the Engineering and Mining Journal by W. Randolph Van Liew.

While in charge of the copper analyses of a plant whose output aggregated several hundred thousand pounds of pig copper per day, the writer's attention was called to the varying results that could be obtained, by comparative tests, on following the several methods for the determination of gold and silver in copper bullion that are advocated by our well-known text books; as also, to the discrepancies in the results obtained by those who contributed to the effort of Dr. A. R. Ledoux of New York City, who, endeavoring to obtain representative methods of copper analysis from the prominent metallurgical and chemical industries of the United States, records a detailed description of them and their results in Volume XXV of the "Transactions" of the American Institute of Mining Engineers. The result of this led to an elaborate series of experiments extending over a period of several months; investigating the causes of gold and silver losses, the influence of the gases produced in dissolving copper by nitric acid as causing a solution of the gold, and the final development of a method by which both experiments and practical results showed a cutting down of the loss of silver to something under 2 per cent., while the loss of gold was lowered to from zero to 0.4 or 0.5 per cent. A record of some of this work, and a description of the method developed, may prove of value to those interested in the gold and silver contents of copper bullion.

Reference to this symposium of Dr. Ledoux's will show that the samples to be analyzed were, in all cases, as nearly identically the same as was possible, by every care, to make them, and that there were two main methods followed, the scorification and the combined wet and scorification methods.

By referring specifically to the analyses of the copper borings it will be seen that, in the case of the silver determination on the copper borings, 9 chemists reported by the scorification method, with and without corrections. The averaged results varied from 164.05 oz. to 154.40 oz., and averaged 159.36 oz. per ton; the extreme variation was 9.65 oz. per ton, or 6.06 per cent. of the average.

Fifteen chemists reported 16 results by the combined wet and scorification methods, with and without corrections, the averaged results varying from 161.40 oz. to 148.50 oz. per ton; the extreme variation was 12.9 oz. per ton, or 8.24 per cent. of the average.

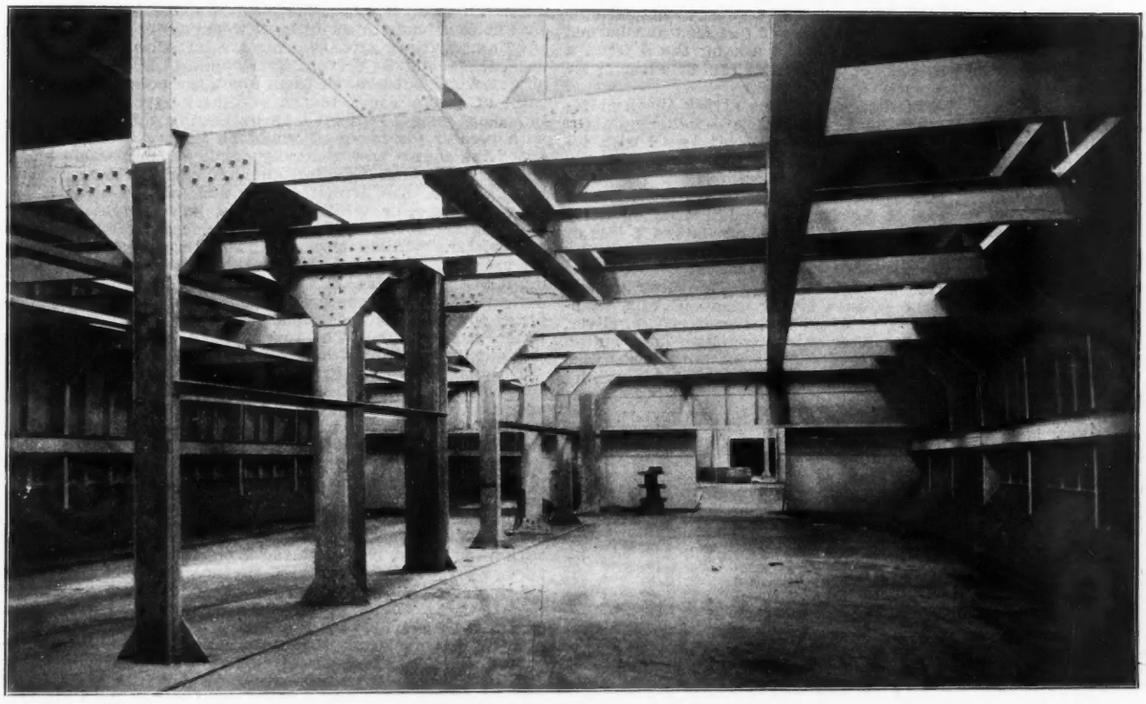
Summing up, we have 25 determinations by 19 chemists working by two main methods, ranging from 164.35 oz. to 148.50 oz., and averaging 156.3 oz. per ton; the extreme variation was 12.9 oz. per ton, or 8.25 per cent. of the average.

Five chemists report corrected results on the scorification method. Before correction the results vary from 147 oz. to 154.60 oz., with an average of 151.95 oz.; after correction they vary from 155.75 to 160.55 oz., with an average of 158.96 oz.; or, uncorrected, there would be an average loss in silver of 4.43 per cent., not considering loss by volatilization, the corrections being made for loss by absorption in cupels and loss in scorifier slags.

By the combined wet and scorification methods 4 chemists report corrections. Before correction, their results varied from 156.00 to 156.70 oz., with an average of 156.26 oz.; after corrections their results varied from 159.00 oz. to 161.35 oz. per ton, with an average of 160.30 oz. per ton; which, uncorrected, would give an average loss of 2.52 per cent., which embraces merely the loss by cupel absorption and from the scorifier slag, not considering the loss there is in the reduction of the Ag Cl, which, under the most favorable conditions would have increased the 2.52 per cent. to slightly over 3.0 per cent.

On the gold in the copper borings, 20 chemists, working by two main methods, each method variously modified, and the combined wet and crucible method by one chemist, reported 26 results varying from 0.501 oz. to 0.205 oz., and averaging 0.307 oz. per ton. The extreme variation was 0.296 oz. per ton, or 96.4 per cent. of the averaged determination. Ten chemists report by the scorification method, their results varying from 0.30 to 0.42 oz., with an average of 0.362 oz. per ton. Sixteen chemists report by the combined wet and scorification method, their results varying from 0.205 to 0.501 oz., the average result being 0.283 oz. per ton. The difference between the average results of the two methods is 0.079 oz. per ton, or a loss of 21.8 per cent., by the combined wet and scorification method, assuming the average of the scorification method, 0.362 oz., to represent 100 per cent.

Summing up then, it will be seen that, for those using the scorification method on the silver, there would have been, without corrections, a loss of over 4.43 per cent. in Ag, while in a large plant, where many thousands of pounds of copper were tested each day, the labor involved in retesting the cupels and slags would make the method almost prohibitory. In the combined wet and scorification method there was a silver loss of at least 3.0 per cent., while the average gold loss by this method, as compared to the scorification method, was 21.8 per cent.



HOLD OF LAKE ORE CARRIER.

The combined wet and scorification method, being the most practical where a large tonnage of copper is to be tested each day, is the method most generally used. As originally conducted in the laboratory, where the following experiments, which led to a change of method, were carried out, the process was essentially as follows:

The samples, weighed out in triplicate of 1 A T each, were placed in a hood, 200 c.c. of cold H_2O and 100 c.c. of HNO_3 (sp. gr. 1.42) were added. After a short period of action the beakers were placed on a steam plate, and by the time the temperature had reached its maximum (80° C.) the copper was mostly dissolved. At the end of 1 hour complete solution had resulted, and at the end of 2½ hours the beakers were removed, cooled, and 2-3 c.c. of normal salt solution, exceeding that amount necessary to precipitate all the Ag. present, were added, and the next morning the precipitate of Ag Cl was filtered into a double No. 0 15-cm. Munktell's Swedish filter paper; the wet papers were then placed in 2½-in. scorifiers containing, approximately, 6 gms. of test lead in their bottoms, and burned to complete ash in a muffle, with a furnace as yet very cold. The carbon burnt off, they were removed, when more test lead, litharge and borax were added, and the scorifiers being replaced, they were scorified at a low heat for approximately 20 minutes, or until the lead buttons weighed some 4 grammes. These resulting buttons were then cupelled at a temperature giving feather litharge of such quantity as to nearly surround the silver-gold buttons. The time of operation was 24 hours. This, in outline, is the method recognized as standard both by the scientific press and by practical usage; it may, of course, be modified with the individuality of the operator.

Experiments first conducted were those relative to silver losses and the conditions which influenced such losses. The nature of the cupel influences very largely the loss of silver during cupellation; when made of only moderately coarse bone ash and of such solidity that they would barely break when dropped from a height of 2½ ft., the writer

has known them to occasion a loss in Ag of 1.6 per cent. when tested with proof silver. At the time of these experiments the cupels were of extra fine bone ash and of such hardness that a fall of 3 ft. would barely break them; on several tests with proof silver, run under working conditions, the loss by volatilization and cupellation varied from 0.9 to 1.1 per cent., with an average of 0.98 per cent. loss, while the loss by scorification alone varied from 0 to 0.2 per cent.

To determine what influence the manner of previous treatment and burning of the filter paper had, the following tests were made: 100 mgs. of c.p. silver were weighed out and 1 A. T. of copper, whose purity had been previously established, was added. The whole was then treated as usual, and, the next morning, filtered through the double-filter papers.

In the first set of 6 experiments the Ag Cl was left on the sides of the filter paper as it adhered in filtering; the papers, when drained, were added to 2½-in. scorifiers containing 3-4 gms. of test lead, dried in a comparatively cold furnace, finally ignited, and burned with the furnace at a dull red heat until the papers were to a complete ash; then, 3 or 4 gms. more test lead and some litharge and borax added, scorified till the slag could be easily poured, then the resulting lead buttons of 4-5 gms. weight cupelled to feather litharge. The total loss of silver in these 6 instances varied from 2.5 to 4 per cent., with an average loss of 3.2 per cent.

The second set of 6 tests, made under all conditions the same as the first, excepting that the adhering Ag Cl was sprinkled with test lead, showed a loss of silver varying from 2.3 to 3.5 per cent., or an average loss of 3 per cent. of silver.

The third set of 6 experiments, performed under the same conditions as the first 6, excepting that the Ag Cl was washed to the extreme point of the filter paper, covered with 3-4 gms. of test lead and burned in the dull red furnace to a complete ash, showed, on the 6 tests, a variation of from 2.1 to 3.0 per cent., or an average loss of silver of 2.7 per cent.

The fourth method, and the method adopted as giving the best results, was to wash every particle of Ag Cl to the extreme point of the double filter paper, cover the cone-shaped mass of Ag Cl with 4-5 gms. of test lead, burn the filter papers in a cold furnace only until the end of the yellow flame, when the scorifiers are removed and the burning of the remaining carbon takes place outside of the furnace, and at such a temperature that no loss of Ag. by the reduction of Ag Cl to metallic Ag takes place. The 6 tests by this method showed a loss of from 1.2 to 2.2 per cent., or an average loss of silver of 1.7 per cent.

The accompanying table will convey an idea of the loss of silver and gold, using this last, the fourth, method of burning the filter papers. In all cases was the purity of the cathode copper used carefully established. The c. p. gold was weighed, wrapped in a cornet of c. p. silver, the two just fused by means of a blow pipe, the silver-gold button weighed, and the weight of the silver established; the button was then parted, 1 A T of copper added, and the process conducted as under ordinary conditions.

	G. P. Silver.			Ozs. per ton.		C. P. Gold.		
No.	Taken.	Found.	Loss.	Loss %.	Taken.	Found.	Loss.	Loss %.
1	100.00	98.35	1.65	1.65	0.250	0.230	0.020	8.00
2	100.00	98.03	1.97	1.97	0.590	0.540	0.050	7.70
3	100.00	97.80	2.20	2.20	0.900	0.830	0.070	8.20
4	100.00	98.10	1.90	1.90	0.400	0.380	0.020	5.00
5	100.00	97.90	2.10	2.10	0.540	0.500	0.040	7.31
6	100.00	97.80	2.20	2.20	0.500	0.483	0.017	3.40
7	100.00	98.80	1.20	1.20	0.820	0.760	0.060	7.03
8	100.00	98.70	1.30	1.30	1.000	0.940	0.060	6.00
9	150.00	147.00	3.00	2.00	1.200	1.100	0.100	8.33
10	150.00	146.70	3.30	2.20	1.380	1.280	0.100	7.24
11	200.00	196.00	4.00	2.00	2.000	1.880	0.120	6.00
12	200.00	196.50	3.50	1.75	1.540	1.432	0.108	6.36
13	200.00	196.30	3.70	1.85	1.000	0.908	0.092	9.20

In this table it will be noticed that, while the silver loss was kept down to a variation of from 1.2 to 2.2 per cent., with an average loss of something under 2 per cent. of silver, the gold loss, on the other hand, varies from 3.4 to 9.2 per cent., and to determine just what occasioned this loss of gold, and, if possible, a method of overcoming it, the following experiments were conducted relative both to that influence exercised by an excess of Na Cl solution and that occasioned by the presence of the gases produced when Cu is dissolved in HNO_3.

To determine the effect of an excess of Na Cl solution in the presence of dilute HNO_3, on the solution of gold, 40 c.c. of HNO_3 (sp. gr. 1.42) and 10 c.c. of normal Na Cl solution were made up to a bulk of 300 c.c., gold was added, and the solution allowed to stand 14 hours, the gold in the two instances weighing respectively 0.470 mgs. and 3.420 mgs.; at the expiration of the 14 hours the respective weights were found to be 0.470 mgs. and 3.420 mgs., thus showing no loss of gold.

Again, a warm solution of Cu $(NO_3)_2$, made by dissolving 1 A T of c.p. copper in just enough HNO_3 to cause solution, was added to a 300 c.c. Erlenmyer flask containing metallic gold and 10 c.c. of normal Na Cl solution, the amount of free HNO_3 present was 40 c.c.; at the expiration of 10 hours the two tests, in one instance on 0.285 mgs., in the other on 4.614 mgs., of gold, showed in neither case any loss of gold. As high an excess as 40 c.c. of normal Na Cl solution, with 50 c.c. of HNO_3 (sp. gr. 1.42), in a total solution of 400 c.c., also showed no loss of gold, and it was only when the solutions of HNO_3 approached a sp. gr. of 1.4 that an excess of normal Na Cl solution seemed to exercise any influence as far as a solution of the gold was concerned.

(To be Concluded.)

FINISHED IRON AND STEEL IN GERMANY.—An official statement, just issued, gives the production of steel in finished or marketable form in Germany as below, in metric tons:

	1898.	1899.	Changes.
Steel ingots sold	441,601	456,815	I. 15,214
Steel blooms and billets sold	986,572	1,042,597	I. 56,025
Finished steel, all forms	4,320,609	4,791,022	I. 470,413
Total steel	5,748,782	6,290,434	I. 541,652

The total wrought or puddled iron in bars, plates and other forms reported last year was 1,103,740 metric tons; in 1898 it was 1,056,672 tons, showing an increase last year of 47,068 tons.

HOISTING ENGINES FOR THE DOLCOATH MINE, CORNWALL.*

The installation of a deep mining enterprise is a costly undertaking, and can only prove remunerative when, in the subsequent exploitation, useful loads are raised at high velocities; but in all cases the useful load is only a small proportion of the total mass that has to be set in motion, brought to a high velocity, and again brought to a standstill during every complete wind through a shaft. This is evident when it is remembered that the motive power developed by the engines is expended in overcoming the frictional resistance of the winding apparatus, and in communicating velocity to all the moving parts, as well as in raising the useful load of minerals. The work is, moreover, emphatically intermittent in character, and, therefore, altogether its effective and economical execution entails the consideration of many special points. As an example, to accommodate the great lengths in the case of cylindrical rope either drums of big radius or drums of great length must be used, for it is absolutely inadmissible to allow the rope used to overlap; the drum of great length cannot be used with a fixed engine, because the rope at either end gets too far from the plane in which the head-gear pulley runs, and this angling of the rope is not only prohibitively injurious to the rope itself, but also it is a source of loss and danger. It has hence become the common practice to employ drums of large radius, which are consequently also of considerable weight, necessitating the employment of powerful engines to overcome not only the weight, but also the highly-levered load dependent tangentially from the extremity of the great radius; hence large cylinder engines, with only moderately long stroke, are brought into requisition; with the result that when at work the periphery speed is high and the piston speed comparatively low, the ratio being, in many cases, 6 to 1, a factor that neither tends to economy of working nor to safety as regards overwinding. Various arrangements are introduced to equalize the load on the engine and to prevent overwinding, or to mitigate the effect of an overwind, but none of them touch the point just raised, namely, the ratio of piston speed to the periphery speed. This, however, is an important point, inasmuch as by raising this ratio, a smaller engine with greater piston speed would do the work of the larger and more expensive engine now generally employed, and would effect economical changes all around in both engine and engine house. This matter, naturally enough, has attracted attention, as the systems introduced by Craven, Koepe, or Whiting indicate, but undoubtedly the most daring and original is that now being introduced at Dolcoath Mine by its inventor, Mr. William Morgans. To overcome the pernicious effect of the great radius, Mr. Morgans uses a drum of small diameter, so rendering it possible to employ a smaller engine; and to overcome the angling difficulty he causes the drum to travel at right angles to the direction of the rope at a distance equal to the diameter of the rope at each revolution of the drum. The rope is thus kept constantly in or about a straight line with its head-gear pulley.

The manner in which this is effected will best be gathered by reference to Figs. 1 and 2, from which it will be seen that the engines, along with the frame and the drum, are mounted on a carriage consisting of girders which carry bearings for the wheels and support the cross girders. These girders in turn have fixed to them smaller girders, and not timber supports, as shown in the figures, to which are bolted the bed plates of the pair of engines, and they also support the drum. At each end of the drum shaft are the worms—Fig. 1—which gear with the worm wheels; the latter are secured on shafts supported and free to rotate in the brackets, and they are, moreover, provided at each end with pinions that gear with the inverted racks which are bolted to cantilevers fixed in the walls of the engine house, as shown in Fig. 2. By this arrangement the revolution of the drum causes the whole carriage bearing, engine, drum and accessories to travel from side to side on the rails provided for the wheels to run on; and by adjustment the amount of travel can be exactly arranged. This, too, permits of the use of a cylindrical drum of moderate diameter without fear of overlapping or angling. At Dolcoath, for instance, to wind from a depth of 3,000 ft. the drum will be 21 ft. long and 10 ft. in diameter, while the engine cylinders will be 24 in. in diameter, with a stroke of 60 in., and the eccentrics will work on a long crank. With all these favorable features, the engines will be capable of doing the allotted work on a comparatively small steam consumption, and, besides, the ratio of piston speed to periphery speed will be 5 ft. to 15 ft., a remarkable contrast to that given above, which, moreover, permits of much greater piston speed being employed; the inventor talks of 1,000 ft. a minute. The arrangement adapts itself well to the application of the steam brake; it can be fixed at one end of the engine, and in traversing, the engine itself can be made to strike the valve spindle and put on the steam brake, and as there is a margin of 31 ft. for one revolution, it should effectually prevent overwinding. As a precaution against accidents it will be observed that the worm and worm wheels are in duplicate, and that there are four pinions, so as to ensure traversing even if one, two, or even three pinions get out of order, and if all were to get out of order the arrangement would simply become an ordinary winding engine with long drums.

It will thus be seen that Mr. Morgans' traversing winding engine is an ordinary double-cylinder winding engine, bolted on a steel frame so as to be self-contained and independent of masonry foundations; it is built to work at 140 lbs., although during sinking it will work simple and at 100 lbs.; subsequently a low-pressure cylinder will be put in place of one of the cylinders, and the engine will work compound. The ropes to be used will not exceed 5½ in. in circumference, or 28 to 29 lbs. per fathom in weight. The cages and loaded tubs are estimated to weigh 6¾ tons, of which the useful load will be 3 tons, and allowing 2 minutes for each wind from a depth of 3,000 ft., and half a minute for changing tubs, the ore raised per hour will be 72 tons, sufficient to keep a large mill going. A speed of 3,000 ft. in two minutes is, however, by no means regarded as the limit. It is expected that the engine will do the work with the consumption of about 20 lbs. of steam per indicated horse power per hour; the traversing of the total mass of 150 tons

* Abstract of paper in the London "Engineer," March 16th, 1900.

17 ft. is estimated to require 5 H. P. Various other details and dimensions may be gathered from Figs. 1 and 2.

There remains one point about this engine to notice; that is the steam pipe arrangements, and these are set forth in Fig. 3. They are elbow-jointed pipes, and have three spigot-and-socket joints. The first, A, is fixed at the end of the fixed steam pipe from the boilers, the second, B, is placed at mid length, and the third, C, traverses with the engine. In each case the stopping box and gland revolving on the spigot is shown, and also the tracing and framework for supporting the pipes.

For comparison it may be well to give dimensions of a large winding

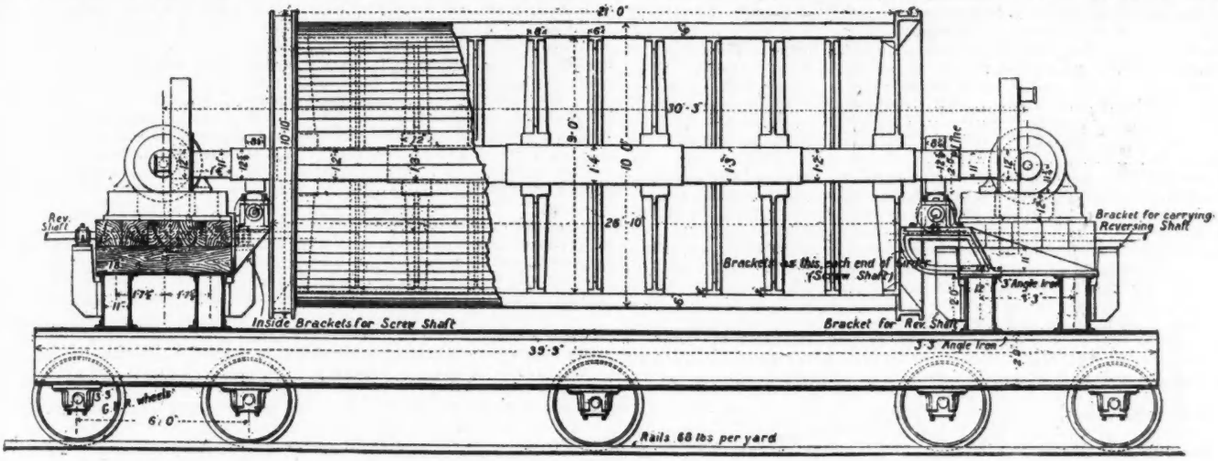


FIG. 1.

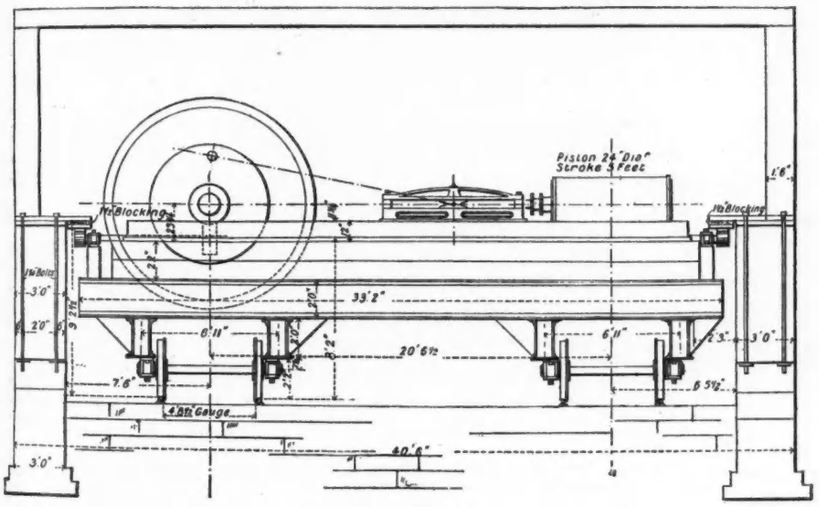


FIG. 2.

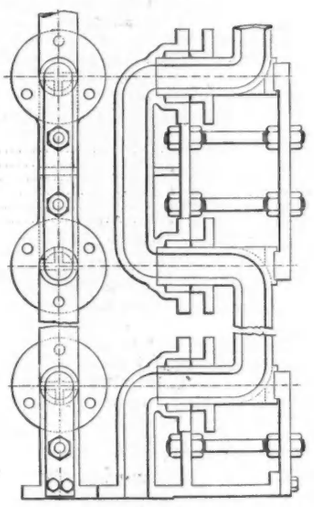


FIG. 3.

HOISTING ENGINE FOR DOLCOATH MINE, CORNWALL.

engine recently built for the Tamarack Mining Company in Michigan. The leading published dimensions are: Four steam cylinders, each 34 by 60 in.; main bearings, 24 by 15 in.; crank pins, 12 by 15 in.; cross-head pins, 6½ by 12½ in.; diameter of drum, 25 ft.; length of drum, 24½ ft.; capacity of drum, 6,000 ft. 1½ in. rope; total weight, 531¼ tons, a quarter of it being weight of the drum and shaft. The work to be done is to hoist the load from a depth of 6,000 ft. at a speed of 4,000 per monute, the load being made up as follows: 6,000 ft. 1½-in. rope, 21,800 lbs.; cage, 4,200 lbs.; two cars, 4,000 lbs.; rock, 12,000 lbs.; total, 42,000 lbs., or 18¾ tons. The drum is cylindrical at the center, but conical at the ends, and with the cage at the surface the rope connected to it extends beyond the conical end over the cylindrical part of the drum; hence, in restarting, one rope unwinds from the cylindrical portion and the other winds on the smaller end of the cone, with the result that the actual balancing effect does not come into play until some way in the wind. And it may be noted that the ratio of the piston speed to the rope speed is only 1 to 7.8 for the cylindrical part of the drum.

Mr. Morgans claims that with his traversing engine the work to be performed by this four-cylinder engine could be done with similar steam pressure and ratio of expansion, and at the same rate, by an engine of far less weight, with two cylinders of 36 by 72 in., and a drum 16 ft. in diameter, traversing 15 ft. each wind. Under these circumstances the ratio of the piston speed to the rope speed would be as high as 1 to 4.1. Should, however, the cylinders be increased in length for a 60-in. stroke, and their diameters increased commensurately to 40 in., the ratio of the piston speed to the rope speed would not be so favorable, but, nevertheless, would still stand at 1 to 5.

COAL PRODUCTION IN POLAND.—The production of the Dombrowa Basin in Poland for 1899 was 242,488,012 poods (3,971,955 metric tons) of coal. This is a decrease of 7,179,748 poods, or 2.9 per cent., as compared with 1898.

ABSTRACTS OF OFFICIAL REPORTS.

The Rio Tinto Company, Limited, Spain.

As might be expected, the report of this company for 1899 shows a very large increase in the profit made. This is entirely due to the advance in the price of copper, as the production of copper and sale of pyrites have been much the same as in the past few years. The profit on the sale of produce was no less than £1,877,403, and the total net income, including balance brought forward from 1898, was £1,924,544. Out of this amount £72,000 goes as administration expenses in London and Spain, and £66,580 for income and other taxes; £110,000 has been added to the reserve fund and £72,000 written off for depreciation of plant, etc. Interest on the 4 per cent. debentures amounted to £136,656, and £60,760 was applied in redeeming some of these debentures. Out of the remaining balance £78,540 is being paid as dividend on the 5 per cent. preference shares and £1,339,270 as dividend at the rate of 80 per cent. on the ordinary shares. The company has never made a practice of giving any details of the revenue and expenditure, so it is impossible to estimate the cost of mining, smelting, refining, marketing, nor are we told the prices at which the copper and pyrites, respectively, were sold.

The quantity of pyrites produced is reported as follows, in long tons:

Pyrites mined:	1898.	1899.	Changes.
For shipment	644,518	644,271	D. 247
For local treatment	820,862	1,005,573	I. 184,711
Total	1,465,380	1,649,844	I. 184,464
Average copper contents	2.85%	2.72%	D. 0.13%
Pyrites consumed	618,110	636,323	I. 18,213
Copper produced at mines	20,426	20,230	D. 196

The copper produced during the year by treatment at the mines was 20,230 tons, and the copper in pyrites shipped amounted to 14,587 tons; a total of 34,817 tons. The following quantities were brought to market: Refined copper, 16,893 tons; copper in sulphate, 1,067 tons; copper in pyrites, 14,139 tons; total, 32,099 tons.

The stocks at the company's works at Cwmavon, consisting of refined copper, copper in process, precipitate and matt, were in all 5,362 tons. The estimated contents of the reserve heaps are now 118,651 tons fine. The refined copper produced at Cwmavon has been in quality well up to the company's standard. The quantity is 17,652 tons.

On the North Lode the overburden removed during the year amounted to 818,000 cubic meters, the entire cost of which was charged to revenue, and the continuance of a monthly charge on pyrites extracted

has brought the old balance of the account down to £43,253. From the South Load opencast, 304,662 cubic meters of overburden have been removed, the entire cost of which, and of houses which were interfering with extension, was charged to revenue.

New Idria Quicksilver Mining Company, California.

This company owns a quicksilver property in Napa County. The capital stock is $500,000. The report is for the year ending December 31st, 1899. The receipts from quicksilver sold were $197,454; interest, $938; total, $198,393. The expenses were $97,257, this sum including charges of $2,827 for depreciation and $13,760 for construction and repairs. The net earnings were $101,136, from which dividends amounting to $90,000 were paid, leaving a surplus of $11,136. The amount brought forward from 1898 was $55,124, making the total surplus $66,290. The mining statement is as follows:

	1898.	1899.	Changes.
Tons ore smelted	18,627	20,629	I. 2,002
Quicksilver produced, flasks	5,000	4,780	D. 220
Quicksilver produced, pounds	382,500	365,670	D. 16,830
Per cent. of metal produced	1.10	0.89	D. 0.21
Drifts run, feet	841	2,771	I. 1,930

The receipts last year were $9.62 per ton of ore smelted, the expenses $4.72, and the profit $4.90. The report says: "The results of last year's work have been very profitable. The reduction works have been improved and the ore is being handled very economically with the best results. We have continued to do a large amount of development work, which has given good results, and shows up a good deal of ore in reserve. The work of developing the San Carlos claims at the north end of the property has been actively prosecuted, and we have a good showing of opening up a good mine at this end of the property, from results already obtained. Everything is in good shape and the outlook is extremely favorable. Quicksilver is in good demand at advanced prices, and a very light stock."

Napa Consolidated Quicksilver Mining Company, California.

This company owns 1,560 acres land and 340 acres mining claims, with reduction works at Oat Hill. The capital stock is $700,000. The report is for the year ending December 31st, 1899. The receipts from quicksilver sold were $236,604; interest, $614; total, $237,218. The total expenses—including $4,378 for construction and repairs, $1,356 for depreciation and $20,769 for development work—were $146,101, leaving the net earnings $91,117. Dividends amounting to $90,000 were paid, leaving a balance of $1,117. Adding $72,923, brought forward from previous year, left a total surplus of $74,040.

The mining statement for the year is as follows:

	1898.	1899.	Changes.
Tons ore smelted	32,480	36,021	I. 3,541
Quicksilver produced, flasks	6,850	5,850	I. 1,000
Quicksilver produced, pounds	524,025	447,525	D. 76,500
Per cent. of metal obtained	0.81	0.62	D. 76,500
Drifts and tunnels run, feet	5,326	8,233	I. 2,907
Winzes sunk, feet	385	533	I. 148

The receipts last year were $6.59 per ton of ore smelted, the expenses $4.00, and the profit $2.53.

The report says: "The results of operations during 1899 have been very satisfactory, and the outlook for 1900 promises well. The stock of quicksilver on hand is extremely light, and prices are good and firm with a strong demand. The new hoisting plant is working very satisfactorily, and reduces cost of operation. A large extent of new territory has been opened up which promises good results, and, as heretofore, we have spent a large amount in prospecting and developing. Everything in and around the property is in excellent condi[illegible]."

Osceola Consolidated Mining Company, Michigan.

This copper company was formed by consolidation of three properties, the Osceola, the Kearsarge and the Tamarack Junior. The capital stock is $2,500,000 in shares of $25 par value. The report is for the year ending December 31st, 1899.

The gross receipts from sales of copper, interest, etc., were $1,791,471. The total working costs were $1,256,639, leaving a balance of $534,832. Dividends paid were $6 per share, or $558,450, showing an exess of payments of $23,618. Balance of construction account was $122; balance from previous year, $570,364; total, $570,486. Deducting excess of payments left a balance of $546,868 at the close of the year.

The construction account was as follows: Balance from previous year, $84,969; treasury stock sold, $32,788; total, $117,757. Payments were for new stamp mill, $98,530; new shafts at South Kearsarge, $19,105; total, $117,635, leaving a balance of $122.

The statement of assets shows: Cash and accounts receivable at Boston and copper sold but not paid for, $532,618; cash and accounts receivable at mine, $8,565; supplies on hand at mine, $145,307; wood and timber lands, $48,738; Hancock & Calumet Railroad Company stock, $75,000; Lake Superior Smelting Company stock, $60,000; total, $870,228. The liabilities were accounts payable amounting to $323,360, leaving the balance of assets, December 31st, $546,868 as above. Of the cash, $115,974 was on deposit in the Globe National Bank, Boston, when it failed; 50 per cent. of this amount has been advanced to the company by the Nation Shawmut Bank, where part of the funds are kept.

The directors' report says: "During the year the following was spent for construction, and charged directly to operation expenses: At Osceola Branch, $26,527; at Tamarack Junior Branch, $2,093; sinking No. 3 shaft and sundry construction at Kearsarge Branch, $43,975; total, $72,595. There is remaining in the treasury 6,600 shares of stock, which are not included in the statement of assets.

"We regret to have to show a small deficit instead of a surplus after payment of $6 per share dividends. This would certainly not have happened if we had been able to get the new stamp machinery by May 1st, the time it was promised and contracted for; but the mill was not completed and working until November 6th, over six months later than we had counted on; consequently, we could not stamp the amount of rock which the mines could have produced, and which we expected they would. The mill is now running to the entire satisfaction of our superintendent, and we count on a reduced cost of operations during 1900, the loss in tailings from this mill being much less than we have ever before succeeded in obtaining.

"The South Kearsarge is an entirely new mine, which promises to be a very valuable addition to the company's mines. The advance in wages and material of all kinds during the past year has increased the cost of production over 1c. a pound. There is a large amount of construction work to be done the coming years on the branches of the Osceola, but the construction on the Osceola Mine proper is about completed."

The superintendent's report says that the rock mined for the year, from all branches, was 674,691 tons; rock stamped, 546,326 tons; mineral obtained, 14,767,430 lbs. The cost of stamping per ton of rock, was 26.3c. Opening work for the year in the several branches is as follows: Osceola Branch No. 6 shaft sunk, 184 ft.; Kearsarge, No. 2 shaft, 109 ft.; Kearsarge, No. 3 shaft, 806 ft.; South Kearsarge Branch No. 1 shaft sunk 45 ft.; No. 2 shaft, 42 ft.; total shaft sinking, 1,186 ft. The drifting done was: Osceola, 5,476 ft.; Tamarack Junior, 1,131 ft.; Kearsarge, 3,180 ft.; total, 9,787 ft. Additional drifting and sinking for pillars at Osceola was 2,081 ft. Work at the Osceola and the Kearsarge was pushed actively, with a view to future results. The Tamarack Junior is not in an encouraging position. The new stamp mill, after many delays, started to stamp November 6th. The new 40,000,000 gallon pump went into commission with the starting of the new mill, and, notwithstanding it is the second largest pump in America, not a minute's delay in its operation has occurred since it was first set in motion. The two small electric-light plants formerly used for lighting the mills, having become out-of-date and insufficient, a new and larger plant has been provided. The use of barrels for the transportation of all the mineral from the mills to the smelting works had become so expensive that it was decided to abandon the barrelling system altogether. To this end 50 new 4-ton steel mineral cars were purchased, adapted so as to run on top the ordinary railroad flat car provided with tracks to suit their gauge. The small cars are filled in the mill and then run on the tracks of the flat car and securely blocked. Provision is made at the smelting works end for dumping into bins, and the cars can be quickly returned.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

EXTENT OF RIGHT BY LOCATION ON PUBLIC LANDS.—A mineral discovery made on free public land, and a claim located thereon, vest in the locator, all the public land within its limits, and every vein whose apex is found within such public land, within the surface lines of the claim extended downward vertically, whether the surface thus secured is all or only a part of the tract within which are the boundary lines of the claim.—Buck vs. Crown Point Mining Company (97 Federal Reporter, 462); United States Circuit Court of Appeals for Colorado.

DESCRIPTION OF LOCATIONS UNDER LAWS OF MONTANA.—Under the law of Montana (Political Code, section 3,612) providing that the declaratory statement containing a description of a mining claim filed with the county clerk must contain the description and location of each corner, with the markings on same, a statement describing a claim by metes and bounds, and giving no description of the corners or the markings of same, is invalid.

Where a receiver's certificate or receipt, under which a party is seeking to establish an adverse claim to a mining location, is shown to have been cancelled, evidence of another's adverse location and publication of notice are admissible in evidence.—Murray vs. Polglase (59 Pacific Reporter, 153); Supreme Court of Montana.

FILING ADVERSE CLAIM AND INTERVENING IN SUIT.—The laws of the United States (Revised Statutes section 2,326, and Act of Congress, March 31, 1881, amendatory of same), allow 60 days from the filing of an application for a patent for a mining claim for the filing of adverse claims, and require suits to establish such adverse claims to be brought within 30 days afterward. The law of Montana (Code Civil Proceedings, 1895, section 1,322) provide that it is sufficient to confer jurisdiction upon the court, in an action to establish an adverse claim for a patent to a mining location, if it appears from the pleadings that the application for the patent had been made, and the adverse claim filed and allowed in the proper land office. The court held that, one who has not filed his adverse claim under the statute cannot intervene in an action to determine adverse claims to a location, though he claims an interest in the premises adverse to both the other claimants. An entryman of a mining claim, who makes final entry of same, showing he is entitled to a patent, is not relieved of the necessity of doing the annual representation work where such receipt was obtained by fraud.—Murray vs. Polglase (59 Pacific Reporter, 440); Supreme Court of Montana.

POWER OF MINING DISTRICTS TO MAKE REGULATIONS.—The law of the United States (Revised Statutes, section 2,324), as amended by Act January 22d, 1880, (21 Statutes 61), providing that the miners of a district may make regulations, not in conflict with the laws of the United States, governing the locating, manner of recording and amount of work necessary to hold possession of a mining claim, subject to the requirement that not less than $100 worth of labor shall be performed or improvements made during each year until a patent has issued, and further providing by the amendment that "the period within which the work required to be done annually on all unpatented mineral claims shall commence on the first day of January succeeding the date of location of such claim," merely fixes the minimum amount of expenditure exacted by the United States, and the maximum limit of time within which it may be made, leaving to the States and mining districts to prescribe such further regulations or requirements within such limits as they may deem advisable; and a mining district has power to make a regulation requiring a prescribed amount of work to be done within 90 days after a location is made, and making the claim subject to relo-

cation in default of such work, notwithstanding the 90 days may expire before the 1st day of January succeeding the date of location.—Northmore vs. Simmons (97 Federal Reporter, 386); United States Circuit Court of Appeals for California.

CONCENTRATING LAKE SUPERIOR ORE.*

By L. M. Hardenburgh.

The intention of this paper is to outline the process used in the Pewabic iron ore concentrating works. The material treated consists of fragmental iron ore carried in a sandstone. The distribution of the ore through the sandstone is fairly uniform. The fragments of ore vary in size from that of a pea up to pieces weighing a couple of hundred pounds. Occasional pockets are found which contain several tons of clean ore. The bedding of the ore in the sandstone gives the material something of the appearance of a conglomerate. There is no close contact or cementing of the ore to the containing sandstone, so that when the material is crushed the ore breaks free from the rock. On this account no middle product, that is pieces of rock with more or less ore still attached, are found. The ore being much harder and less favorable than that containing sandstone, the amount of fine ore resulting from mining, and the process of crushing, is relatively small. In the course of mining, a considerable portion of the sandstone is crushed to fine sand.

As about 20 per cent. of the ore is obtained by hand picking, it is necessary to first remove the fine material before any attempt is made to remove the clean ore. This is done by dumping the ore as it comes from the mine on a grizzly with 1½-in. openings, which allows the fine material to pass through, retaining all pieces sufficiently large to be sorted. The material which passes over the grizzly is drawn on the picking table where the clean ore is picked out and carried by means of a chute to a pocket near the railroad at the lower end of the mill. At the same time any barren rock is also removed. The picking table is made from rectangular sheets of metal 12 in. wide and 48 in. long with the ends turned up, and these are carried on a sprocket chain. The whole forms a shallow traveling pan 13 ft. long.

The material is carried by this to a 14 by 20 Blake crusher. From the crusher the material passes over a ¾-in. grizzly and into a pair of 14 by 24 belted rolls. In order to keep the percentage of fine ore as low as possible, the rolls are set to crush ¾ in. From the rolls the material goes to a three compartment revolving screen, 10 ft. long, which gives four sizes of material, as the over size is not carried back and re-crushed. The openings in the perforated plate forming the screen are 3/16 by ⅞ and 1¼ in. in diameter. There are two other revolving screens used. The material passing over this screen goes through the rolls; that which goes through is joined by that coming from the ¾-in. grizzly under the crusher, and the whole is carried to a two compartment screen with 3/16 and ⅞-in. holes.

The material through the 3/16-in. screen is carried to the jigs by the water used in the screening and distributed by hydraulic separators. Whatever passes the separators is not further treated. It consists almost entirely of fine sand and contains very little ore. The other sizes are carried to the jigs by water and distributed by deflecting plates. There are 18 jigs used in dressing the ore. The jigs used are made of wood and have the eccentric motion for the plunger; they are the ordinary Hartz jig. Nine jigs have three compartments, with jigs 24 by 34 in., the other nine have two compartments with 20 by 32 in. screens. The three compartment jigs are used for the three larger sizes of pigs, the two compartment being used for the material through the 3/16 in. screen.

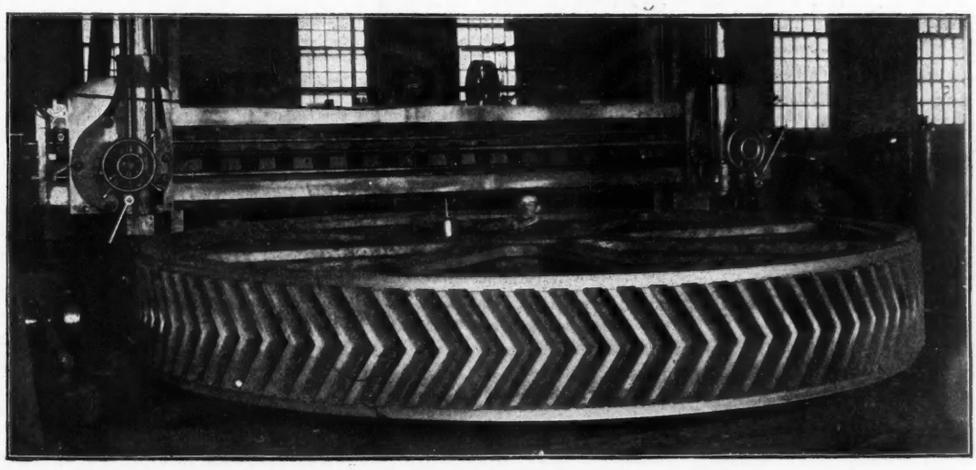
The ore and rock separates very quickly and completely. The rock has a per cent. gravity of approximately 2.6, the ore 5.00. The ore is removed from the jigs by the automatic side discharges. These discharges are made by cutting an opening 8 in. wide in the side of the jig down to the screen frame. This opening is provided with an adjustable plate which serves to regulate the depth of bed on the jig. Another plate is fastened on the inside of the jig and extends down into the bed and serves to hold back the rock. In discharging the ore works under this and over the jig plate. The ore as it discharges falls into a pocket of about 300 lbs. capacity fastened to the side of the jig and extending above the water level. When the pocket is full, the discharge opening is closed, and a wedge-shaped door at the bottom is opened allowing the ore to run in a launder. Sufficient water follows the ore to carry it to the car at the bottom of the mill. The hutch rock from the jigs dressing the three larger sizes of material is mostly clean ore mixed with a little rock and considerable fine sand. This is carried by launders to two finishing jigs. The hutch rock from the smaller sizes is mostly sand but carries a little ore. This being very closely sized, the most of this ore is removed by passing the material over by hydraulic operation.

Four sizes of ore are produced, the bulk being between ⅞ and ½-in. in size. The smallest sized obtained from the jigs is that over a 20-mesh screen. Much of the ore from these jigs would pass through the screens were it not for the bed of ore. The hutch, as has been stated, contains mostly sand. No attempt is made to treat the slime ore.

The only serious difficulty encountered has been the conveying of the material from the screens to the jigs. Owing to the nature of the material to be conveyed the wear on the conveying machinery was excessive; the fine sand would rapidly cut out all bearing parts. Any attempt at lubrication only intensified the difficulty. This was overcome by conveying all the material by water with a slope of 2½ in. to the foot; a very small amount of water would convey the largest sizes of material. The amount of water used is about 800 gal. per minute. A considerable portion of the water used on the jigs at the upper end of the mill is used again for the same purpose lower down. The capacity of the mill is 280 to 300 tons of crude material per day, depending on the quality. Three men and eight boys per shift are required for the operation of the mill. The power is furnished by a 12 by 24-in. 65 H. P. Corliss engine.

In giving this description of the mill, I have not thought it best to go into cost of dressing, or percentage of ore recovered from crude material, for the reason that the crude ore has been obtained almost entirely from opening work necessary for the future working of the deposit, and the material thus obtained has not been sufficiently uniform to make a fair estimate of the saving capacity of the mill. The drifts and tunnels in the mining work were all driven in the leaner ground and it is only this leaner ore which had been treated up to the time the mill was closed down on account of inability to secure even a moderately full supply of mine labor.

*Paper read at the meeting of the Lake Superior Mining Institute, February, 1900.



A LARGE GEAR WHEEL.

A LARGE GEAR WHEEL.

The accompanying illustration is a photograph of one of the largest gear wheels ever made. It has been made by the Columbus Machine Company, Columbus, Ohio, and is for use in a large plate mill of the Chester Rolling Mill Company, near East Liverpool, Ohio. The wheel has a pitch diameter of 17 ft. 6 in., and an over-all diameter of about 18 ft. The teeth, as will be seen from the photograph, are of the V shape or helical type, 30 in. face to the wheel, 2½ in. shrouding on each side. The wheel is bored for a shaft 23 in. in diameter and was cast in one piece and afterward split for transportation and erection. The weight of the casting is about 80,000 lbs., and it required nearly two weeks for cooling the mould.

The pinion which was made to operate with this gear wheel had a face of 30 in., diameter of 7 ft., bored for a shaft 19 in. in diameter, and the weight was about 24,000 lbs.

These gears are to be driven by a tandem compound condensing Corliss engine of 1,500 H. P., built by the C. & G. Cooper Company, of Mount Vernon, Ohio.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

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

111.—H. M. P.—Antimony.—The piece of tin-white metal with well-marked cleavage is antimony. This metal is of wide occurrence, the commercial ore being chiefly the sulphide stibnite. So far as we know,

the native metal is not mined to any extent, unless in connection with others. Native antimony may be associated with silver or gold ores, but it does not necessarily indicate the presence of gold or silver in a vein. Your best way of working will probably be to concentrate your ore and ship to a smelter. The market is not very large, though it is steadily increasing. Two concerns, the Chapman Smelting Company of San Francisco, and Mathison & Company of New York City, control the output in this country.

112.—H. F.—Garnet.—The dark-green schist you send contains crystals of garnet. They are partly replaced by chlorite and are, consequently, not well defined. They are probably the variety of garnet known as almandite, an iron-lime silicate. They have the same hardness as quartz, 7. Corundum is much harder, 9, and has a more adamantine luster.

113.—P. L. E.—Dike Rock.—The light-colored rock you send shows that its original crystals have been crushed and dissolved by circulating waters. It is, consequently, hard to classify. It may originally have been a diorite.

114.—V. H.—No. 1 is coarse sandstone, showing stains of copper carbonate, malachite. No. 2 is a much altered amygdaloid, an ancient lava. The greenish mineral is not a copper ore, but epidote, an iron silicate. No. 3 is probably a sedimentary rock; it might be classified as a greywacke. No. 4 is an impure limestone, a limy shale; it shows no mineral values.

116.—The Largest Crystal.—At Acworth and Grafton, N. H., crystals of beryl, the glueinum-aluminum silicate, of large size have been found. One crystal from Grafton weighed 2,900 lbs., another from the same locality was 45 by 24 in. and weighed by calculation about 2½ tons. In Utah crystals of gypsum, sulphate of lime, over 4 ft. long have been found. What is probably, however, the largest crystal yet recorded was mentioned in a paper by E. O. Hovey on the Harney Peak District, S. Dak., read before the New York Academy of Science. This was a crystal of spodumene, lithinum-aluminum silicate, which, by actual measurement was 30 ft. in length. It was found in a pegmatitic matrix containing mica, quartz, and scattered crystals of tin ore, cassiterite, at the Etta Mine, near Custer, one of the properties of the ill-famed Harney Peak Tin Mining Company. This mine is now worked for spodumene and is yielding the mineral, used as a source of lithium carbonate, in considerable quantities. The clean mineral is stated to be worth $30 per ton on the cars at Custer.

QUESTIONS AND ANSWERS.

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

Mining by Room-and-Pillar.—Is there anything new in the room-and-pillar system of coal mining?—Danny.

Answer.—The room-and-pillar system of mining is very old. It dates back to the early days of coal mining in England. It is used not only with coal, but with many other minerals which are won in underground workings.

Hydraulic Elevators.—Can you inform me whether there are any hydraulic elevators working which handle gravel successfully in placer mining?—W. A. D.

Answer.—Hydraulic elevators are used very successfully in California and other Western States. Where there is plenty of water and sufficient head they are found not only practical but very useful in placer mining.

Dredging in Wooded Country.—Can you give any opinion as to whether a dredge could be used successfully on a placer where there are a great number of fallen trees, both in the creek itself and on the adjoining flats?—W. A. D.

Answer.—The fallen trees would be a very serious obstacle to the work of a dredge. It would be necessary to remove them before a dredge could work successfully. The cost would depend upon local conditions, wages required, size of timber and other conditions.

Uranium and Vanadium Ore.—I have ore that carries quite a large percentage of uranium, also other ore that has both uranium and vanadium. Can you give me any information as to the uses of both metals or oxides of same and where I could find a market for it? Is there a market for either or both in quantities? I have heard that the French ordnance manufacturers use a certain percentage of uranium in the manufacture of large guns.—T. H. A.

Answer.—The use of these metals in making steel for armor is experimental entirely. It has been carried on at Creusot in France and at Essen in Germany. The results have not been published, and it is not likely that they will be. As to uses, market, etc., consult the "Engineering and Mining Journal," February 24th, 1900, page 234.

Mining Engineer.—What entitles a person to add "Mining Engineer" to his name? What qualifications are needed to become a member of the American Institute of Mining Engineers?—W. M.

Answer.—While there is no absolute rule in the matter, it is generally assumed that a person should be a graduate of a mining school before writing "M. E." after his name. There is no law on this point; it is governed by custom entirely. We regret to say that leave to call themselves mining engineers is often taken by persons who are far from having the proper qualifications for the profession. You can obtain all the necessary directions for application for membership in the American Institute of Mining Engineers by writing to the Secretary, Dr. R. W. Raymond, at No. 99 John Street, New York.

Copper Carbonates.—Would a copper stratum in Spain—similar to that described in a recent number of the "Engineering and Mining Journal," as existing near New York—in your opinion pay to work at present price of copper?

This stratum exists about 50 meters below the surface of a plateau which dips about 10° from horizontal, it is visible on both sides and varies from a few inches to several feet, averaging from 4 to 5 per cent. copper when pinched and 1 to 2 per cent. when wide. Formation: First, a hard limestone about 10 m.; after this red and brown sandstone and shale (soft) for 40 m.; then a white sandstone containing green and blue carbonates of ore. The plateau extends about 6 leagues in length and 1 in width, close to river on one side, one end 3 miles from railway station, the other about 10. Labor cheap; miners, 3 to 4 fr.; laborers, 2 to 3 fr., per day. Never yet worked except slightly by the Romans; apparently unknown except to writer.—Trefoil.

Answer.—The copper deposit near New York, to which reference was made in the "Engineering and Mining Journal," was considered as possibly a paying proposition because the copper-bearing stratum was of fairly even thickness, could be mined at a low cost and the ore could be treated by a cheap leaching process, owing to its freedom from any substances likely to interfere with the treatment. In the case you state there seems to be much variation in the copper-bearing stratum, which would make a great difference in cost of mining. Any association of limestone with the ore would make necessary the adoption of a different and more expensive method of saving the copper.

Some of the conditions you mention are very favorable; but we could not give any definite opinion on the deposit or the practicability of working it at a profit, without a full examination. We should advise you to have an expert examination made before doing anything.

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 April 3d, 1900.

646,422. OIL-WELL TOOL. Charles R. Fisk, Cecil, Pa. A tool for removing sucker-rod straps from oil wells, consisting of hollow tubular sockets having extended therethrough an upper and lower series of pins, a spring-actuated pawl mounted upon one of the lower pins adapted to engage with the rivets of the sucker rod, and a series of spring-actuated pawls adapted to engage with the rivet holes of the sucker rod.

646,442. ALLOY OF ALUMINUM AND MAGNESIUM. Ludwig Mach, Jena, Germany. An alloy having 100 parts of aluminum, 2 to 30 parts of magnesium, and 0.5 to 40 parts of antimony.

646,448. APPARATUS FOR INJECTING STEAM INTO CUPOLAS. George L. Morton, London, England, assignor to the Doherty Iron Castings Process, Limited, same place. The combination with a cupola and tuyeres in said cupola, of annular steam pipes fitted around the interior of said tuyeres; said pipes having perforations therein.

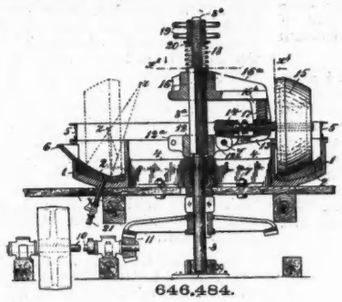
646,455. LIFT AND FORCE PUMP. Emil Noppel, Philadelphia, Pa. A pumping device and a cup provided with means for holding the same in contact with the surface to which it is applied, said means being actuated by both the force and suction of the pumping device.

646,459. PORTABLE VESSEL OR BOTTLE FOR HOLDING AND SHIPPING LIQUID AIR OR OTHER LIQUID GASES. James F. Place, Glen Ridge, N. J. The combination of a liquid-holding bottle having a vacuum or partial vacuum insulating space, enclosed by an air-tight case, immediately surrounding said bottle; a series of refrigerating downward air passages, and a series of refrigerating upward air passages surrounding said air-tight case; and an outside case or wall of wood fiber, or other material of low-heat conductivity.

646,475. CHARGING AND DRAWING APPARATUS FOR HEATING FURNACES. Jared Swanger, Chester, Pa. A carrying bar suspended

from said track, said bar having a substantially-vertical member, an upper arm extending away from the furnace and connected with said track and a lower oppositely-extending for entering the furnace, the arm carrying a peel.

646,484. GRINDER FOR CRUSHED ORES, ETC. John F. Wiswell and Frank B. Smith, New York, N. Y., assignors of seven-sixteenths to Robert H. Laird, same place. The combination with a circular trough or bed, an upright, a rotating shaft concentric therewith, a hinged bearing block carried by said shaft and movable up and down on the



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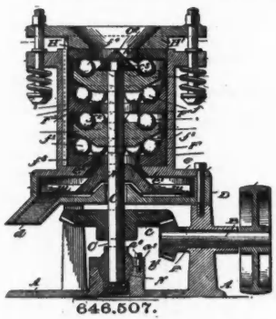
shaft as well as about its hinge, a spring bearing on the outer end of said block to depress it, a radial shaft mounted in said block and free to slide endwise therein, limiting collars on said shaft, and a grinding roll secured on said shaft, the face of said roll having two convex conical faces of unequal width, and the trough having a bottom with a contour which matches the face of the roll.

646,507. PULVERIZING MILL. Thomas J. Sturtevant, Newton, Mass. A pulverizing mill containing a plurality of alternating, superposed, rotating and non-rotating races, each of which is provided with a circular series of pulverizing balls, said races, excepting the low-



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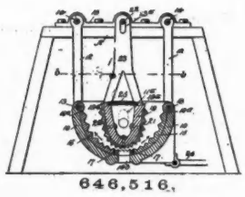


646,516.

ermost, being constructed and arranged to have limited vertical movements, and each of said races supporting the weight of the balls and races above it, combined with a non-rotating pressure plate or disk bearing upon the uppermost of said series of balls.

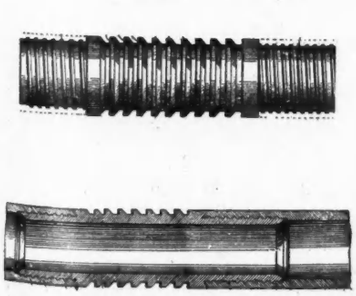
646,516. ROCK CRUSHER. John R. Brown, Harrison Hot Springs, Canada. An oscillating mortar or bed in combination with a crusher pivotally connected with the body of the mortar to oscillate therewith, and means for imparting a rocking motion to the crusher upon its pivotal bearings in reverse directions as the mortar is oscillated.

646,528. PROCESS OF HARDENING STEEL. Carl G. Meissner and Robert Bennewitz, Madgeburg, Germany. The process consists in cooling the heated metal in a bath composed of about 3 parts of water and 1 part of a mixture consisting of zinc-white, charcoal-dust, leather liquor and petroleum.

646,532. DRILL GOLD DREDGE. Stefano Babare, Tacoma, Wash. The combination with a suitable float of a standard mounted thereon, a vertically-adjustable rotating cylinder moving in the standard, a horizontal shaft secured to said cylinder, cables for supporting the shaft, whereby the cylinder may be raised or lowered as required, and means for imparting a rotary movement to the cylinder for stirring up the bottom of the bodies of water operated in.

646,559. PROCESS OF MAKING FERTILIZERS FROM REFUSE LIQUIDS. Ludwig Rissmuller, New York, N. Y. The process of extracting nitrogenous substances from nitrogenous refuse liquids, which consists in mixing with such refuse liquids, sulphite residue of the cellulose industry, thereby precipitating the nitrogenous substances and then filtering the resulting product.

646,597. SHOULDERED COUPLING FOR SHAFTS, ETC. Mary A. Bullock, Chicago, Ill., executrix of Milan C. Bullock, deceased, assignor to said Mary A. Bullock. A tubular coupling sleeve for tubular drill



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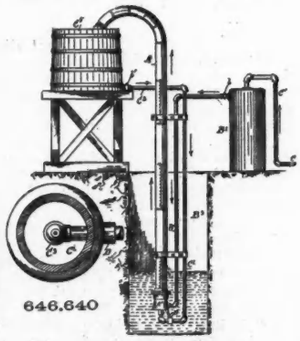


646,640

rods which is reduced in thickness at its ends to engage the adjacent ends of the drill-rod sections, and is provided in its central thicker part with a plurality of recesses forming downwardly-facing shoulders.

646,619. ELECTRIC METAL-WORKING APPARATUS. Charles L. Coffin, Detroit, Mich. The combination of a base, a clamp carriage, ways across the front of the machine in which said carriage is adjustable, blocks adjustable longitudinally on said carriage to and from each other, a stationary jaw and a movable jaw supported on each block, and an actuating device for the movable jaw on the base.

646,639. DISTILLING PETROLEUM. Jesse A. Dubbs, Pittsburg, Pa. The method consists in producing an initial vaporization of the oil by heating the same, then forcing air through the oil in such regulated quantities that the volume of air thus introduced will not at any time be greater than four times the volume of vapor given off by the oil, and maintaining the oil at a vaporizing temperature during the introduction of air.

646,640. AIR LIFT PUMP. George H. Evans, Oroville, Cal., assignor of one-half to the Risdon Iron and Locomotive Works, San Francisco, Cal. The combination with a discharge or column pipe having an inlet opening in its base, and a series of air-jet openings above the inlet opening, means for forcing air through the jet openings, a tank above the pump and into which the pipe discharges, and a hydraulic water-supply pipe leading from the tank to the base of the column pipe having an upturned nozzle on its lower end arranged in line with the interior of the column pipe.

646,650. ARTIFICIAL FUEL. Helen M. Van Etten, Moravia, N. Y. A composition comprising coal-dust, slack, an alkali-makers' waste, and alum.

646,674. EXCAVATING MACHINE. Hans J. Bentson, Chicago, Ill. The combination with a shaft carrying parallel sprocket wheels, of a frame swinging on an axis coincident with the axis of rotation of said shaft, a shaft journaled on the free end of said frame, sprocket wheels carried by said shaft, parallel sprocket chains turned over said sprocket wheels on both said shafts, scraper plates carried by said chains, and an apron depending loosely from said frame of said machine and adapted to rest at its lower end upon the ground immediately in advance of the ditch, said apron being adapted to prevent the earth carried upwardly by said plates from leaving same at their point of exit from the ditch.

646,687. PUNCH-BAR DEVICE FOR GAS PRODUCERS. John W. Gayner, Salem, N. J. A gas producer having an opening in its top wall, a bar adapted to work through said opening, said bar having a head on its lower end, a collar rising from said wall around said opening, a collar with an opening therein rising from said wall around the first-named collar, and a cup supported on said last-mentioned collar and having a socket in its base.

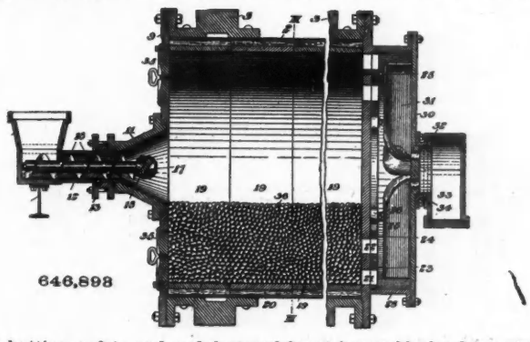
646,740. SAND BLAST FOR SURFACING METAL, GLASS, ETC. William H. King, Newark, N. J. An improved sand blast, comprising a box having a hopper-shaped bottom having, at the low center thereof an out passage for sand, a pipe arranged at an incline, an air injector connecting with the turned or inclined part of said pipe, and a rubber hose attached to said pipe, said hose extending upward and entering the box above the hopper-shaped bottom and at its free end being adapted to be turned to direct the sand against any portion of the article to be ornamented.

646,769. HYDRAULIC DREDGE. Sylvester C. Swartz, Rangely, Colo. A hydraulic dredge comprising a gate or cross-head loosely held in a stream and adapted to be moved in an upright position with the current by the force of the current against it; dredging devices carried by the gate or cross-head and means for sustaining the gate in its upright position as it moves forward.

646,808. METHOD OF EXTRACTING GOLD AND SILVER FROM THEIR ORES. Thomas Cruse, Helena, Mont. The process consists in reducing the ore to a pulp, adding cyanide of potassium, and heating the mass, adding bluestone while the mass is still hot, then decomposing the precipitated compounds and recovering the precious metals.

646,820. APPARATUS FOR CHARGING RETORTS. William Foulis, Glasgow, Scotland. The combination with a guide, a rod carrying a charge-pushing or withdrawing device, longitudinally movable on the guide and motor mechanism.

646,893. GRINDING CYLINDER. Louis C. Bonnot, Canton, Ohio. A rotary grinding cylinder having secured within it a series of metal rings



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abutting end to end and fastened by strips or blocks driven in between the rings and the cylinder.

646,899. STEAM VACUUM PUMP. Joseph W. Eberman, Baltimore, Md., assignor of three-fourths to Wilbur F. Steele, New York, N. Y. The combination of a chamber having suitable inlets and outlets for steam and water, and provided at one end with a boss; a valve which controls the steam that enters said chamber; a valve-shifter comprising two members side by side, and both having one end immovably attached to the said boss—one of said members being tubular and one end thereof in communication with said chamber through the boss, and the other in communication with the opposite end of the chamber, both members having one end free to move independently of the chamber, and said free ends united together.

Reissue, No. 11,816. APPARATUS FOR BURNING COAL-DUST. Georg Hilliger, Berlin, Germany, assignor to Richard Schwartzkopff, same place. Original No. 558,875, dated April 21st, 1896. A feeding apparatus comprising a hopper, a brush casing with a delivery opening, a shaking device above the brush casing, with means for actuating the same, and a rotary brush in said casing adapted to act on the material released by said shaking device.

GREAT BRITAIN.

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

Week Ending March 10th, 1900.

3,357 of 1899. SAFETY LAMP HOLDER. D. James and A. Pearson, Newport, Monmouth. An improved spike for suspending miners' safety lamps.

4,073 of 1899. CRUSHER. R. A. Hadfield and A. G. M. Jack, Sheffield. Improvement in gyrating crushers.

23,094 of 1899. CONVEYOR. A. Oberegger, Fohnsdorf, Austria. Tram wells with spiral conveyors fixed to the shaft.

24,679 of 1899. COAL SCREEN. H. Heenan, Manchester. In shaker screens for collieries, methods of reducing shock to the apparatus though without impairing its efficiency.

PERSONAL.

Mr. A. W. Walburn, president of the Walburn Swenson Company, Chicago, has retired from active business.

Mr. Thomas Williams of San Jose is the new superintendent of the Mountaineer Mine, Nevada County, Cal.

Mr. R. C. Surbridge, president of the Fortuna-La Republica Mining Company, has been in California from Boston.

Mr. Alexander Hill, consulting engineer of the Ray Copper Mines, is visiting the company's property at Riverside, Ariz.

Mr. C. P. Wheeler of Pickands, Brown & Company, Chicago, recently returned from an extended tour through Europe.

Mr. A. J. Walsh is going to the island of Java to report on a mining property for the Risdon Iron Works of San Francisco.

Mr. Fred Hellman, mining engineer, of San Francisco, late of Johannesburg, South Africa, has returned home, accompanied by his wife.

Mr. Geo. W. Maynard, of New York, has been making a visit to mines in Nevada, and has gone to British Columbia to look at some properties.

Capt. A Mitchell, general manager of the May Consolidated Gold Mining Company of Johannesberg, South Africa, is on a visit to Houghton, Mich.

Mr. R. M. Jesup, assistant superintendent of the Gold Coin Mines Company, operating in Gilpin County, Col., has been promoted to superintendent.

Mr. Frederick A. Canfield was recently elected president of the Morris County Machine and Iron Company, vice the late George Richards.

Mr. George Quigley, of Los Angeles, Cal., once assistant superintendent of the Calumet & Hecla Mine, is to act as mine manager for the Ray Copper Mines at Riverside, Ariz.

Mr. Leonard Leigh, for 3 years past mechanical engineer of the French-Rand Gold Mining Company, Johannesburg, South Africa, is now on a visit to his home at Lake Linden, Mich.

Mr. R. M. Haseltine, State Inspector of Mines of Ohio, goes out of office on May 30th. Gov. Bushnell has appointed Mr. E. G. Biddiford, of Athens County, Mr. Haseltine's successor.

Mr. W. R. Palmer, for 28 years connected with the Bessemer department of the Cleveland Rolling Mill Company's plant, has resigned, to go to Indianapolis as superintendent of the Central Steel Company.

Mr. J. N. Maher, formerly superintendent for the Benjamin Atha & Illingsworth Company, of Newark, N. J., has been appointed superintendent of the Scullin-Gallagher Iron and Steel Company at St. Louis, Mo.

Mr. Theodore L. Lammers has resigned his position as general manager of the Columbia Gold Mining Company, and has opened an office as consulting mining engineer and metallurgist in Baker City, Ore.

Mr. F. J. Cairns, who has been connected with the Bridgeport, Conn., Copper Company, has succeeded Mr. Theo. K. Wilkinson as superintendent of the Anaconda Company's electrolytic refinery at Anaconda, Mont.

Mr. C. J. Garvin has resigned as superintendent of Guggenheim's smelter at Sierra Moyada, Coahuila, Mexico, and is at present examining mines in Mexico for Montana people. He expects to go to Colorado soon.

Mr. S. Henry Payne, president of the Payne Engineering Company of New York City, is to make an extended tour in the Far East, for about a year. Mr. Payne expects to visit China, Japan, Corea, the Philippine Islands and other countries.

Mr. J. T. Orr, who has been in charge of a 400-ton cyanide plant at Triunfo, Mexico, has accepted a position with Corrigan, McKinney & Company, of Cleveland, O., and will have charge of a cyanide plant to be erected at the Ropes Mine, Ishpeming, Mich.

Mr. Forbes Rickard, of Central City, has accepted a proposition from the Venture Corporation of London, England, to head a party and make an examination of the auriferous gravels along the eastern coast of Siberia. Mr. Rickard expects to leave about May 1st.

Mr. W. J. Clark, manager of the foreign department of the General Electric Company, though only returned from Europe after a visit of some 12 months' duration, has sailed for England again by the "Kaiser Wilhelm der Grosse." He will be absent about 2 months.

Mr. W. M. Stover, mining engineer, of the California & Alaska Gold Dredging Company, sailed from San Francisco, April 14th, for Nome City. He will prepare for the installment of a Donahoo caisson dredger, which will go up on a later vessel. With him is Lieut. G. W. Bennett and a party of 22 persons.

Mr. A. E. C. Kerr, of Ballarat, Victoria, a representative engineer in the interest of the Australian Government, has been in Denver, Colo., looking up improved machinery, the ventilation of deep mines and modern treatment of low-grade ores. Mr. Kerr goes to Northern Michigan, thence to Pennsylvania.

Mr. Joseph Lythgoe, superintendent and general manager of the Rhode Island Locomotive Works, Providence, R. I., owned and controlled by the International Power Company, will shortly retire. He has been with the works since its establishment. Mr. John Howarth, assistant superintendent, who severed his connection with that concern on March 31st, had been connected with the works for 30 years. Mr. John R. McKay, head of the erecting room, succeeds Mr. Howarth as assistant superintendent.

OBITUARY.

J. J. Newman, brother of W. G. Newman, president of the Union Copper Mining Company, was killed by an explosion of dynamite at his office at the Dutch Creek Mine near Salisbury, N. C., on April 16th. Deceased was about 50 years old and a native of Virginia.

James W. Loveridge, a well-known figure in the New York coal trade, died of paralysis on April 13th. He had been connected with several coal companies and after the death of his brother, Henry Loveridge, he became vice-president of the Maryland Coal Company. Mr. Loveridge was born in New York City and was in his 63d year. He was a kindly gentleman and had many friends. He left a widow, three sons and a daughter.

Charles E. Smith, former president of the Philadelphia & Reading Railroad Company, died of paralysis, in Philadelphia, April 15th. He was born of a Quaker family in Philadelphia, in 1820. At the age of 18 he took service with an engineering company engaged in the location of a railroad from Blossburg, Pa., to Corning, N. Y., and on the completion of the road he was made its superintendent, which supervision was afterward extended over the Blossburg coal mines. In 1844 he came to Philadelphia and began business for himself, and in 1846 built the Fairmount Rolling Mill. He sold out to his partners and took the management of the Rensselaer Iron Works, Troy, N. Y., which were the first in that State, it is said, to manufacture railroad iron. He became the chief organizer, in 1849-50, of the American Iron Association, which in 1864 changed its name to the American Iron and Steel Association. In 1861 Mr. Smith was elected president of the Reading Railroad Company. The company was then relatively in worse condition than at any time since. When he resigned in 1869 its condition was, both physically and financially, in excellent shape. He reduced its debt 50%, increased its business 100%, and paid 10% dividends on the stock.

After leaving the presidency of the Reading, Mr. Smith was interested in various important enterprises. As a member of the Academy of Natural Sciences, to which he was elected in 1851, he for many years held office in the Board of Council. He was also a member of the Finance Committee, and was a very active member of the Publication Committee. In this latter capacity, for many years, ending with his death he read the proof of every scientific paper accepted for publication. His greatest interest was in the Botanical Section of the Academy, and much of his leisure was devoted to that interesting study.

Mr. Smith was never married. His nearest living relatives are his nephews.

SOCIETIES AND TECHNICAL SCHOOLS.

University of California.—The Regents of the University on April 12th discussed the preliminary plans submitted by Architect Barnard for the new University site. Those present were President Benj. Ide Wheeler, Mrs. Phebe Hearst, Albert Pissis, J. B. Reinstein, B. R. Maybeck, Prof. William Carey Jones and Superintendent John McLaren, of Golden Gate Park. Regent Reinstein expressed the opinion that several sittings would be necessary before the Regents would feel justified in making any definite move.

Harvard University.—The University has agreed to give instruction during this summer to a considerable number of teachers in the schools of Cuba. Although this instruction is to be given in Cambridge during the session of the Summer School, the work is not to be done in that school, but under separate direction and by instructors especially chosen for that task. A few of these Cuban teachers, who have a sufficient knowledge of English, may be entered in the regular summer classes; but the number thus qualified is likely to be very small. Memorial Hall will be opened for the use of the greater part of the Cuban teachers. Cambridge regularly lodges over 3,000 students, and these accommodations are to be supplemented by many additional rooms offered by the citizens of Cambridge for use this summer.

Society of Chemical Industry.—The annual general meeting will be held in London on July 18th, 19th and 20th. The general meeting will be held at the Royal Institution. The government Laboratories at Clement's Inn will be visited. On July 19th there will be visits to the Lindé Refrigeration Company's Works at Shadwell; the Municipal Dust Destructor and Electric Lighting Station, Shoreditch; the tannery of Messrs. Bevington & Sons, Bermondsey; the Herold Institute Tanning and Leather Exhibits; one or two breweries, and the Royal Mints. In the evening there will be a reception by the Lord Mayor at the Mansion House. On July 20th there will be an excursion to Oxford City and University, with luncheon and tea at the Town Hall.

Franklin Institute, Mining and Metallurgical Section.—At the meeting on April 11th, Mr. Robert Job of the Philadelphia & Reading Railway read a poper on "An Investigation of Causes of Hot Boxes in Railway Service, and Methods for Their Prevention." Results were given of an investigation of bearing metals to determine sources of excessive friction, and also to find out by experiment the foundry practice by which such defects were produced, as well as the methods and manipulation necessary to ensure the most efficient results, in order to establish in the foundries of the Philadelphia & Reading Railway a thoroughly serviceable standard practice. To gain information, a large number of bearings which had run hot and had been removed from cars of other roads while passing over the Philadelphia & Reading Railway, were examined physically, analytically, and microscopically, and the defects observed were shown upon a number of lantern slides. The principal defects were, 1st, segregation of the metals; 2d, crystalline structure, and 3d, oxidation products and occluded gas in the metals. The causes of each defect were given in detail, and also the methods by which each might be avoided, giving also the standard practice which has been worked out by means of this investigation, and is in successful operation. Results of practical service tests of different metals were also shown, and a comparison between the physical tests and the practical efficiency found in service.

Engineers' Club of Philadelphia.—At the meeting on April 7th 71 members and visitors were present.

The special committee, consisting of Messrs. John C. Trautwine, Jr., Edwin F. Smith and William Hunter, presented an obituary of Richard Boyse Osborne, which was read by the secretary.

Mr. Harrison Souder read a paper on "The Drainage and Protection of the Philadelphia Lowlands," which was illustrated by photographic views and drawings projected by the electric lantern. Several thousand acres of land within the limits of the city of Philadelphia lie below the level of the tides in the Delaware and Schuylkill Rivers, and are cultivated under the protection of miles of surrounding dikes, and drained by numerous canals and ditches. The dikes are usually from 6 to 10 ft. wide at the top, with slopes from one on one to one on two, and are carried about 3 ft. above high-tide level. The methods of building the dikes and protecting them from floods and burrowing animals were described in detail. The storm and ground water is carried off by a system of sluices and ditches discharging into canals, and by means of a pumping station capable of lifting 39,000 gal. per minute against a head of 11 ft.

Mr. L. Y. Schermerhorn followed with a written communication upon this subject, and an oral discussion was participated in by Messrs. John Birkinbine and Harrison Souder.

On March 10th, at a conversational meeting, 20 members were present. Illustrations of modern paper-making machinery, and also specimens of different forms of paper pulp and manufactured papers were shown. Mr. Schermerhorn called attention to some details of the ship subsidy bill now pending in Congress, which subject was discussed at some length.

INDUSTRIAL NOTES.

At a meeting of the board of directors of the American Cement Company at Philadelphia on April 16th, John H. Catherwood was elected a director.

The Foster Engineering Company of Newark, N. J., manufacturer of steam pressure regulators, is about to build a large factory in Newark that will give employment to 200 hands.

The British steamer "Samoa" is to take a cargo of 8,700 tons of steel rails from Baltimore to Vladivostok, Siberia. This will be the largest

single cargo of rails ever taken from an American port.

The Lunkenheimer Company, of Cincinnati,O., has received an order from the Russian Government to supply 900 special bronze valves of sizes between ¾ in. and 3 in. The valves are for industrial plants operated by the Government.

The Demerara Electric Company, of Georgetown, B. G., has placed with the Westinghouse Electric and Manufacturing Company an order for electrical equipment and that for rails with the Pennsylvania Steel Company. The road is 12 miles long.

The Ferracute Machine Company of Bridgeton, N. J., manufacturer of presses, dies and sheet metal machinery, has 3 exhibits at the Paris Exposition, one in the American machinery department, one in the United States Government Exhibit, and one in the Machinery Annex.

Grading is completed for the plant of the Iron and Steel Aluminum Coating Company, organized at Connellsville, Pa., with a capital of $500,000. The officers are: President, George J. Humbert; secretary, Thomas Walkup; treasurer, W. H. Girchoft. The two latter men are from South Chicago, where they had a plant making galvanized tin roofing and like products.

The Bethlehem Steel Company of South Bethlehem, Pa., reports a continued increase in the number of railroads which are experimenting with locomotive forgings made of nickel-steel, or are using it. This steel is used for axles, piston rods and crank pins. Over 10 prominent roads are users, as well as the Baldwin, Richmond, Rome and Schenectady Locomotive Works, all of which have placed orders.

Messrs. Foot, Burt & Company, of New York City, will shortly ship some 24 various-sized drill presses, principally for Sanderson & Company, of Copenhagen, Denmark; Glaenzer Freres & Rheinboldt, of Paris, France, and Churchill & Sons, of London, Eng. The same firm are sending to the London & North Manchester Railroad of England 4 very large spindle drills for railroad shop work.

At the annual meeting of the Joseph Dixon Crucible Company in Jersey City, these directors were elected: Edward F. C. Young, John A. Walker, Daniel T. Hoag, Richard Butler, William Murray, Alexander T. McGill and Joseph D. Bedle. The directors elected these officers: Edward F. C. Young, president; John A. Walker, vice-president and treasurer; George E. Long, secretary, and Joseph D. Bedle counsel.

At the Joliet, Ill., rod mills of the Federal Steel Company in March, No. 1 mill turned out 8,540 gross tons; No. 2 mill, 9,175 gross tons. These are Garrett mills. The output of these 2 mills added to the 3,880 tons produced by the No. 3 mill, built by the Morgan Construction Company, makes a total for the month of 21,595 gross tons, the largest month's production ever made. The largest single turn in No. 5 rods was 474,000 lbs. and in No. 3 rods, 519,000 lbs.

The Berlin Iron Bridge Company, of East Berlin, Conn., has started work on its new plant at Pittsburg, Pa., on 50 acres of land between the Pennsylvania Railroad and the Ohio River. It is the intention that this plant will be in complete operation by July 1st. The office building will be 60 ft. square and 4 stories high, of fireproof construction. The template shop will be 60 ft. wide and 300 ft. long, 2 stories high. The main shop will be constructed entirely of steel and glass, and wil be equipped with machinery of the heaviest and most modern design; the orders have been placed with the Hilles & Jones Company, of Wilmington, Del., the Cleveland Punch and Shear Works Company, of Cleveland, O., the Niles Tool Works Company, of Hamilton, O., and the Brown Hoisting and Conveying Company, of Cleveland, O. The elaborate hydraulic plant will be furnished by Wm. H. Wood, of Media, Pa. The floor surface of the main shop is to be controlled by 23 traveling cranes, of various sizes and designs of the heaviest capacity, all furnished by the Chisholm & Moore Manufacturing Company, of Cleveland, O. The fuel will be natural gas, the engines being furnished by the National Meter Company, of New York, N. Y. The machinery will be operated by electricity, the generators and motors being furnished by the General Electric and Westinghouse people. The Berlin Company intends that this plant shall be the most perfect and complete of its kind in the world, and the company is now taking contracts to be built at this plant for delivery after July 1st. The capacity will be from 3,000 to 4,000 tons per month. The New York office will be removed on May 1st to the St. Paul Building. Mr. Seymour Robinson will remain in charge.

TRADE CATALOGUES.

Monier constructions of steel or wrought iron and mortar are described in a 40-page pamphlet sent out by E. Lee Hendrickson of the Central Technical Bureau, Chicago, who is sole representative for the United States of the system. The catalogue shows how the system is applied to various kinds of engineering work, to bridges, buildings, tanks, grain elevators and sewers.

The Edson Manufacturing Company of Boston, Mass., manufacturer of diaphragm pumps, issues an illustrated folder calling attention to the merits of its prospecting and mining outfit. This outfit comprises a diaphragm pump with connectors, hoses, etc. It is stated to be very portable and to have great merits for working placers, etc.

The Loomis-Pettibone Company of New York City publish an 8-page pamphlet describing the Loomis gas generators which are built in 2 patterns for water and for producer gas. The increasing use of gas as a motive power in internal combustion engines is referred to, but gas may also be used for heating and cooking in the household, for forging, for tempering, heating, welding, annealing and brazing.

The Jeffrey Manufacturing Company of Columbus, O., issues an attractive 88-page catalogue entitled "Coal Washing Equipments." The catalogue describes the Robinson coal washer now in use at many plants in the central and western States, showing its construction and method of operation. Other devices illustrated in the catalogue are retarding conveyors, revolving screens, steam dumps, coal and coke crushers and electric mining machines.

Catalogue No. 7, issued by Fraser & Chalmers of Chicago and London, is an illustrated booklet of 4 pages entitled "Perforated Sheet Metal." The perforated sheets shown are for a great variety of purposes — placer guzzles, screens for stamp batteries, separators for coal ore or phosphate rock, for screens for jigs, pans, agitators and, in fact, for all purposes for which such plates are used. Revolving screens for a variety of purposes are also shown, and the catalogue contains some useful tables.

MACHINERY AND SUPPLIES WANTED.

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

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

Oil Exports.—In March the United States exported 8,634,311 gals. crude oil; 1,628,552 gals. naphthas; 57,768,535 gals. illuminating; 5,662,403 gals. lubricating and paraffin; 1,383,312 gals. residuum; total, 75,077,113 gals., against 85,273,703 gals. in March, 1899. For the first quarter of 1900 the exports amounted to 214,707,195 gals., against 199,418,759 gals. in 1899.

ALASKA.

Cape Nome.

The United States Senate has again amended the Alaskan Civil Code bill as follows: "That, subject only to such general limitations as may be necessary to exempt navigation from artificial obstructions, all land and shoal water below mean high tide on the shores, bays, and inlets of Bering Sea, within the jurisdiction of the United States, shall be subject to exploration for gold and other precious metals by citizens of the United States or persons who have legally declared their intentions to become such, under such reasonable rules and regulations as the miners in organized mining districts may have heretofore made or may hereafter make governing temporary possession thereof for exploration and mining purposes until otherwise provided by law.

"Provided, further, That the rules and regulations established by the miners shall not be in conflict with the mining laws of the United States, and all permits heretofore granted authorizing any person or persons, corporation or company, to excavate or mine under any of said waters are hereby revoked and declared null and void, and the reservation of a roadway 60 ft. wide under the tenth section of the act of May 14, 1898, entitled 'An act extending the homestead laws and providing for right of way of railroads in Alaska, and for other purposes,' shall not apply to mineral lands or town sites."

ARIZONA.

Graham County.

Arizona Copper Company.—This company informs us that its production of copper for the month of March last was 664 tons of 2,000 lbs. each. The smelting works were closed down during a portion of the month owing to the coke supply being temporarily cut off by accident to a railway bridge.

Detroit Copper Company.—The big mill at Morenci, which has been under construction for a year, is finished. Power is supplied by gas engines. The capacity is 500 tons daily.

CALIFORNIA.

Calaveras County.

(From Our Special Correspondent.)

Ford Mining Company.—At a meeting of the stockholders the following officers and directors were elected: F. J. Solinsky, president; Carl Jaeger, secretary; John Raggio, treasurer, and G. G. Fraser and C. L. Fusier. Work at the mine was temporarily suspended a few days owing to the breakage of the drum. Development work on a large scale is contemplated.

Gwin Mine Developing Company.—At the annual meeting of the stockholders of this company the following officers and directors were elected: F. F. Thomas, president; C. S. Benedict, vice-president; E. C. Voorhees, C. M. Belshaw and D. W. Hyland. The property is located 4 miles southwest from Mokelumne Hill.

Royal Consolidated.—Preparations are being made to add 120 stamps to the milling plant on this property, at Hobson, about 2½ miles northwest from Copperopolis. This will make a total of 160 stamps. A large force of men is at work in the mine and mill.

El Dorado County.

(From Our Special Correspondent.)

Grand Victory.—This mine on Squaw Creek has started up, but only a few men are employed, pumping out the water. A large force will soon be put on under the superintendency of Geo. Clark.

Kern County.

(From Our Special Correspondent.)

Frank Heald, who has been prospecting all winter on his coal property at Garlock, has encountered at a depth of 110 ft. a third seam of coal 4 ft. thick, which he claims to be superior to those already found.

Yellow Aster.—The management of this mine at Randsburg is making great efforts to increase the water supply. The dividend declared for March was $20,000.

Mariposa County.

(From Our Special Correspondent.)

Ferguson.—This mine, 23 miles northeast from Mariposa, idle for the past 25 years, is to be reopened under the management of Joe Jesephs, who has cleaned out the 1,000-ft. tunnel. The hoist and air compressor were found in good condition.

Ready Cash.—Development work is progressing rapidly on this property, between the north fork of the Merced River and Hall's Gulch, about 10 miles west from Hite Coce Mine. Two shafts have been sunk 62 and 100 ft. respectively, and the vein has been crosscut. Assays show high grade ore. A tunnel started from the river will give 2,000 ft. of backs.

Nevada County.

(From Our Special Correspondent.)

Kate Hayes Mining Company.—The injunction suit brought by the County of Yuba to restrain this company from discharging or dumping into Sweetland Creek, the Yuba River or any of its branches or tributaries, any tailings or refuse matter, has been decided by Judge E. A. Davis, of the Superior Court, against the defendants and the mine is restrained perpetually.

W. Y. O. D.—The new 80-H. P. electric motor has been installed and is now running the pumps. Three other electric pumps are running in the district, one each at the Bullion, Brunswick and Hill's mines.

Santa Barbara County.

(From Our Special Correspondent.)

A new asphalt refining plant has been installed at Brockdale by the Refined Asphalt Syndicate of California. The crude material will be obtained from the property of Gen. F. B. Bunting.

Shasta County.

(From Our Special Correspondent.)

Balaklala.—It is reported that this property has ben bonded by the Mountain Copper Company. Until April 5th the bond was held by W. A. Temple for W. C. Boak and associates, of Halifax, N. S., who failed to secure an extension. The property comprises 22 copper claims in the Flat Creek district.

Minnesota.—Thirty men are at work taking out about 25 tons of ore per day. Dan McCarthy, who owns this mine, 1 mile below the Iron Mountain Railway bridge, has been enabled to develop several fine properties by selling low-grade fluxing quartz at $2 per ton to the Mountain Copper Company.

Siskiyou County.

(From Our Special Correspondent.)

Several parties of prospectors are examining the ledges of West Beaver for cinnabar. The only deposits worked in this county were found

a few miles below Oak Bar, and near the headwaters of the West Fork of Beaver Creek, the latter having several hundred feet of tunneling and other works, and being equipped with a 10-ton furnace.

Dewey.—Development work still continues on this property, 6 miles from Gazelle. The management claims to have an 80-ft. ledge of high grade ore. The wagon road to the mine from Gazelle will be completed by May 1st, when shipments of ore will be made to the Keswick smelter.

Jillson & Roberts—About 75 men are now employed at this quartz mine, near Hornbrook. The mill is running day and night on good ore. The property has paid large dividends during the past two years. Other quartz mines in this district are paying good profits.

Ock.—A bed rock tunnel has just been completed at a considerable expense on this hydraulic property on the Klamath River; extending from Happy Camp 3½ miles down stream. This puts the claims in good condition for work this summer. Water is obtained from Indian Creek by ditches.

Sonoma County.

(From Our Special Correspondent.)

On the ranch of F. Albertz, of Moulton Hill, an old shaft 50 ft. deep contains a ledge of high grade copper ore. Machinery will be put in and the deposit thoroughly prospected.

Tuolumne County.

(From Our Special Correspondent.)

Draper.—Work is to be resumed on this property, near Soulsbyville. New pumping machinery has been contracted for and the new superintendent is on the ground.

Pampa Hill.—Work has been resumed at this mine, 4 miles northwest from Rawhide, near French Flat. The new owners will continue the shaft, now down 170 ft., as soon as the hoist is completed. Crosscuts are being run and new buildings erected. Geo. Wainwright is superintendent.

Sunnyside.—The crosscut tunnel at this mine, 1 mile south from Marlow Diggings, has cut the vein at a depth of 160 ft. The width is not determined, but assays show the ore to be high grade.

COLORADO.

Boulder County.

Giles.—This mine at Ward will make regular shipments this summer from a large body of concentrating ore on the Little Giant. A steam plant will be installed, and the mill has been equipped with new concentrating machinery and will run on custom ore besides its own.

Nelson.—This mine has opened 3 ft. of ore in a crosscut run from the 400-ft. level. Nine inches is solid smelting ore and the rest mill dirt of a good grade.

Newmarket.—This mine at Ward is making regular shipments of ore taken out by leasers from the two lower levels.

Superior Mining Company.—This company, operating the Chief Big Finger and other claims at Ward, reports a strike of rich ore at 30 ft.

Clear Creek County.

(From Our Special Correspondent.)

Consolidated Stanley Mining Company.—The Montreal syndicate is now in charge under the name of Thomas J. Chisholm of Montreal as trustee, but with C. A. Gehrmann as acting manager and James Bowden as superintendent. A new 100-ton concentrating mill must be built within the next 3 months. The report shows an immense tonnage of ore in sight, opened by about 6 miles of levels and connections.

Engle Mining Company.—In drifting on the P. T. vein at Idaho Springs, a small streak of gouge running about $1,000 in gold to the ton has been cut. Alongside of it is 4 in. of 5-oz. gold ore and next to it several feet of very low grade mill ore which may possibly clear $1 per ton. The Crosby-Ehrich Company of Colorado Springs is in control, some of the claims being under bond, others owned outright.

Sun & Moon Mining and Milling Company.—Orders have been received for an air compressor at this mine at Idaho Springs. The annual meeting is held May 7th. Recently drifting at 530 ft. has opened high grade mineral on the east side of the Minott shaft.

Gilpin County.

(From Our Special Correspondent.)

Heavy Snows.—There have been good-sized daily snowfalls for 2 weeks, the last over 3 ft. on the level. Ore hauling has been seriously hampered. The storms will seriously interfere with the production of the county for April.

Mining Deeds and Transfers.—S. Chambers to H. E. Coru, the Carcassone lode; A. M. Willard to H. M. Steele, the Guard group of 5 claims; T. De Coar to R. Phillips, the Carrie Belle lode; W. Teller to J. H. Nichols, the Pocahontas lode; L. A. Dickerson and M. J. Gilchrist, the Gettysburg, Independence, Independence No. 2 and Charleston lodes and Gold Nugget placer, to H. M. Steele.

Ada.—Philadelphia parties are interested in this group of 4 claims, just over the line in Clear Creek County. A large shaft is building and machinery will be installed, and development prosecuted. L. L. Moe, of Central City, is manager.

Concrete.—A Norwalk 4-drill compressor has been installed. Shipments are increasing. S. V. Newell, Central City, is manager.

East Boston Gold Mining and Milling Company.—This company will work the East Boston, at Central City. A new shaft house, 20 by 44 ft., will be erected and a 22 H. P. gasoline hoist installed. The shaft is 325 ft. deep. W. H. Stimpson, Central City, is manager.

Gold Coin Mines Company.—The deep shaft on the California is being unwatered, and the water is down nearly to 1,800 ft., the shaft being 2,230 ft. deep, and the management expects to reach the bottom by July 1st. A winze is being sunk from 1,400 level to 1,600 level in Hidden Treasure property, which is in ore, and a nice body of pay ore has been opened up between the 1,100 and 1,200 ft. The working force is to be increased, and the production will soon be heavier. A. L. Collins, Central City, is manager.

Good Luck.—Boston parties are putting up a shaft house, and will install a 12-H. P. gasoline engine of Fairbanks & Morse make. J. W. Holman, Central City, is manager.

Lutz.—Sioux City, Ia., owners are going to start this property at an early date.

Notaway Gold and Copper Mining Company.—An order has been placed for a 45-H. P. gasoline hoist, and regular shipments are promised. A. J. Vivian, Central City, is manager.

Old Town.—New machinery is being installed and a new shaft house erected. Chicago parties are interested. G. H. Kimball, Jr., of Idaho Springs, is manager.

Ontario-Colorado Gold Mining Company.—An order has been placed for a 100-H. P. engine with the Denver Engineering Works, of Denver. The shaft is being sunk and a splendid body of ore is being opened. H. C. Eastman, Central City, is manager.

Pocahontas.—Local parties have secured a lease and bond and are erecting a 24 by 48 shaft building and installing a 50 H. P. hoist and 80 H. P. boiler. The shaft is 190 ft. deep and will be sunk 200 ft. deeper. J. H. Nicholls, Central City, is manager.

Running Lode.—The Gower Mines Syndicate will sink 100 ft. below the present depth of 400 ft. Good grade smelting ore is taken out, the lead ore carrying over 40% lead. J. E. Waters, Black Hawk, is manager.

Lake County—Leadville.

(From Our Special Correspondent.)

Ore Tonnage.—Owing to daily snowfalls shipments fell off to about 2,000 tons per day last week, and will be somewhat lighter this week. This is the first time this year that the weather has interfered.

Electric Power.—The building of a power plant at Red Cliff, 30 miles west of Leadville, to furnish power to the mines and smelters here is the main topic of conversation. I am assured that the plant will be built and will be ready late in the fall. The water will be obtained from the Eagle River and its tributaries, and 5,000-H. P. will be generated. The proposition is of great importance, as it will greatly reduce the price of motive power, which is such an important item, owing to heavy pumping, and will permit of operating low grade ore bodies.

Cady Mining Company.—Large iron ore bodies are being opened through the O. K. and Four Per Cent. claims and about 75 tons per day are shipped to the smelters.

California Gulch Mining Company.—The new shaft is already down 150 ft. Contact will be reached within 400 ft.

Gordon Mine.—This Twin Lakes property, which has been in litigation so many years, has been sold to a Denver company, the sum involved being $118,000. Daniel Murphy is at the head of the company.

Great Hope.—This property, near Evansville, on the gold belt, has been leased to J. W. Cummins, of Denver, on condition that work begin at once and a new 500-ft. shaft be sunk.

Nubian Mining Company.—This company has just erected new shaft houses, etc., and put in machinery preparatory to sinking a new shaft on the P. O. S. claim. Daily shipments are coming from the lead ore shoot opened in the Midland shaft.

Resurrection Gold Mining Company.—Nothing has been heard recently about the sale of this big gold proposition. The output is about 300 tons of ore per day. The company has been acquiring some new territory, giving it one of the largest acreages in the camp.

Revenue Mining Company.—Satisfactory progress is made on the Revenue shaft on West Rock Hill, now down about 575 ft.

Tarshish Mining Company.—This company has its shaft on the reserve territory of the Seneca Mining Company, down 400 ft. They expect at 600 ft. to strike the sulphide contact.

Valley.—The new lessees, headed by John McAllister, have sunk the shaft 50 ft. and are prepared to prospect thoroughly. Occasional shipments have been made.

Summit County.

Gold Pan.—G. E. West, of Chicago, is one of the principal stockholders in this company, owning placer ground along the Blue River, above Breckenridge. C. E. Westerman, of Breckenridge, has been prospecting the ground with a Keystone driller all winter. Flumes and pipe lines are to be built.

GEORGIA.

Bartow County.

Citico Furnace Company.—This company has bought several thousand acres of iron lands, paying for them $12,000.

IDAHO.

Boise County.

Mountain Queen.—At this claim at Idaho City, worked under bond by W. Kincaid and others, a tunnel found the ledge 60 ft. wide at 400 ft. depth, but low grade. A cross cut from the lower tunnel has opened a pay streak 16 in. wide, which is reported to show values of 751 oz. silver and 1½ oz. gold to the ton.

Shoshone County.

Bunker Hill & Sullivan.—The Company's mines are stated to be turning out regularly 1,000 tons of crude ore daily and over 400 men are on the pay roll.

Golden Chest Mining Company.—This New York Company has its stamp mill above Wallace, running again. About 30 tons of ore are handled daily. A gold brick weighing nearly 100 oz. was recently cleaned up as the result of a 10 days' run, according to reports received at the New York office.

Hilarity Mining Company.—This company has a group of 5 claims on which a 330-ft. drift has been run. A mill having a capacity of 80 tons in 24 hours and equipped with crusher, rolls, 4 compartment jigs and Wilfley tables is to be erected. The claims are on Pene Creek east of Kingston. The officers of the company are: F. J. Johnson, president; C. V. Genoway, vice-president; H. M. Davenport, secretary and treasurer.

Monitor.—The old owners of this mine recently deeded it to the Monitor Consolidated Mining Company, a Spokane corporation, which has been organized by C. D. Rand. The Monitor is in the gold copper belt and lies just over the summit on the Idaho side, about 8 miles south from Saltese, Mont. A shaft is down 100 ft. Mr. Rand secured an option and incorporated a company nearly a year ago, but nothing was heard from it till now.

West Bell Mining Company.—The tunnel is going ahead about 75 ft. per month. It is now in 1,385 ft., and is expected to cut the Bell vein at 900 ft. depth in 150 ft. more. The property is on Canyon Creek above Wardner.

INDIANA.

The difficulties between the machine coal miners, their helpers, shooters and loaders, have been further accentuated by the closing of nearly all the remaining bituminous mines in the State, and throwing nearly 5,000 men out of employment. Although the machine miners and their helpers were represented in the recent fixing of the new scale, they say that it gives advantages to the shooters and loaders over them, and that the latter are getting more pay for less work than the machine men and their helpers.

MICHIGAN.

Copper—Houghton County.

(From Our Special Correspondent.)

Atlantic Mining Company.—The piers for the new steel bridge across Salmon Trout River at its mouth, which is to connect the Atlantic and Baltic mills are completed. The steel work is by the Wisconsin Bridge and Steel Works.

Centennial Mining Company.—This company is erecting many new dwellings for its employes.

Franklin Mining Company.—One hundred miners at the Junior Mine struck April 7th for a raise of 10%. This was refused and the miners remained out 2 days. They were receiving $54 a month, before the strike, and the management increased their pay to $56. About 175 men are affected.

Tamarack Mining Company.—The company machinist has constructed a new rock drill which will be used in preference to those now employed.

Tri-mountain.—No. 2 shaft continues to show as rich as where the sand shaft first cut the amygdaloid belt.

Copper—Keweenaw County.

(From Our Special Correspondent.)

Phoenix Consolidated.—The showing at the St. Clair shaft continues good and quite a bit of mass copper is encountered.

Tamarack-Osceola.—James W. Shields, recently instructor in the machine shop at the Michigan College of Mines at Houghton, has been appointed assistant superintendent.

Copper—Ontonagon County.

(From Our Special Correspondent.)

Belt.—It is thought that Dan M. Dickinson, of Detroit, and a number of other Detroit men, will become interested in this property and plans are on foot to form a stock company. For 6 months Mr. Dickinson and some other gentlemen who hold options on this property have kept the water out and made a thorough examination of the lower levees. The mine has been idle about 15 years.

Milton.—This property, comprising nearly 900 acres of mineral land west of the Ontonagon River, was bought recently by Byron N. White of Spokane, Wash. The land is near Norwich and on the same range as the Victoria. The Milton Copper Company was organized in 1864 by New York and New Jersey people, but little mining was done.

Iron—Marquette Range.

The opening of navigation finds the stock piles at most Ishpeming mines of good size, but smaller than a year ago. Heavy mining last season exhausted much of the ore in sight, and development work does not show much additional good ground. About 150 men less are employed. The Cleveland-Cliffs and Lake Superior iron companies, however, have probably exceeded last year's output.

Barasa.—At this new mine near Negaunee about 5,000 tons of ore are in stock. The expected output this season is 25,000 tons.

Negaunee.—At this mine at Negaunee the new shaft is down over 95 ft.

Salisbury.—The Cleveland-Cliffs Company is draining a swamp southwest of this mine at Ishpeming. The water from this swamp has caused considerable bother in the mine workings.

Iron—Menominee Range.

Oregon.—This mine at Norway has its new No. 4 Worthington pump running. Preparations are made for shipping to Escanaba, instead of sending the ore to stock.

MINNESOTA.

(From Our Special Correspondent.)

Genoa, Fayal, Sparta, Elba, Commodore, Penobscot, Adams and Roberts mines have begun shipments to dock.

A mining lease of lands in section 15, T. 58, R. 18 has been filed from the Wheeler-Marble Iron Company to C. E. Peaslee. If the lessee decides within 6 months that he will buy the land, he is to pay $25,000 for each of any of the four 40-acre tracts, and if he decides to pay royalty he is to pay a cash bonus of $5,000 on each 40 and mine from the entire tract not less than 50,000 tons a year at 20c. a ton.

The McEwen property near Virginia has been explored unsuccessfully, there not being to exceed 150,000 tons of ore in the 60-acre tract. The Hedderly tract, joining it, has also been abandoned.

Cole & McDonald, diamond drill contractors, have some 26 drills at work, other contractors have as many more, and the demand is so great that it cannot be filled. Many crews are sinking prospect pits with sand pipes and churn drills. The recent advances in the price of black diamonds makes drill work much more expensive than 3 months ago.

Labor is reported more plentiful than a year ago, but when the men demand it they receive $2.25 a day for common labor. It is not supposed this will be the scale generally for the summer.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Clark Iron Company.—This company has a shaft down 90 ft., with 2 drifts in ore, and a small stockpile. A shaft house is about completed, and heavy machinery is on the way. At present 75 men are employed. This mine, which was a pine forest last fall, is the property of the American Steel and Wire Company and will ship over 100,000 tons this year.

Drake, Stratton & Company have on hand the removal of about 2,000,000 cu. yd. of earth and other material from over ore, at the Fayal, Biwabik and Auburn mines. They are employing about 900 men, with locomotives, dump cars, etc., for serving 9 steam shovels. For day labor they are paying $2, but think men more plenty than a year ago.

Adams Iron Company.—This company has its 5 shafts ready, and has more than 220,000 tons in stock, perhaps a fourth of the season's shipments. At the boiler house of No. 2 shaft a Crowe stoker made in Duluth is said to be most efficient. This stoker is being installed on the 4 500-ft. ships of the American Steel and Wire Company. A steel shaft house will be built at No. 4 this season. No. 1 now has steel headworks.

Elba Iron Company.—This company has installed 2 Prescott pumps with an aggregate capacity for 4,000 gal. a minute and 100,000 tons will be shipped this year. There are 16,000 tons in stock.

Fayal Iron Company.—Some 5,000 yd. of dirt are being taken off the stripping pits and nearly 10,000 tons a day will be the shipments next month. Two 90-ton shovels, to handle 5,000 tons of ore daily, arrived this week. About 450 men are employed, in addition to 500 by Drake, Stratton & Company in stripping. Water for the town of Eveleth will be obtained from this mine.

Oliver Iron Mining Company.—This company will not work the Mountain Iron as heavily as last year, when it shipped 1,138,000 tons, but will make its Mesabi tonnage in part from the Oliver. A block of low-grade ore has been moved off to stock for shipment, and the mine is in good condition.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Shipments to dock are under way from the Minnesota, Chandler and Pioneer mines.

Chandler Iron Company.—This company has 275,000 tons in stock mined since December 6th, an average per day of about 2,700 tons. This rate will continue during the summer. It is employing 11 diamond drills of its own, the 2 Minnesota ranges exploring properties it has under lease.

Minnesota Iron Company.—This company has leased the property of the North Star Iron Land Company in section 25, and will work there. The company once spent $40,000 exploring this same land.

By a decision of the United States Supreme Court, Thos. W. Hyde, who has claimed 40 acres of the Section 30 land, 15 years as a settler, has been ruled out. Hyde was once offered $75,000 cash to relinquish, but refused. Over this 40 acres $250,000 have been spent in lawsuits. The Bishop Iron Company, a subordinate concern of the Minnesota Iron Company, won against Hyde, and after the settlement of two or three more suits that must run the limit of the State courts, final title will be granted. The Bishop Company has control of the property as now patented, partly in fee and partly by lease on a 25c. per ton basis.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The ore market showed a strong upward tendency toward the last of the week and a large amount of fancy grade zinc ore sold at $33 per ton. H. Gross at Wentworth sold 250 tons at this price and a car from the Sphynx mines at Neck City brought the same, while the balance of the Neck City ore sold at $32.50. Outside of these sales, the price for top grade ranged from $31.50 up. Lead sold all the week at $27 per 1,000 lbs.

During the corresponding week last year, top grade zinc ore sold at $51.50 per ton and lead at $24.50 per 1,000 lbs. The sales were greater than last week by 1,304,980 lbs. of zinc and 45,980 lbs. of lead and the value was greater by $106,757. For the first 15 weeks last year, the lead sales were less than this year by 2,800,230 lbs., the zinc sales greater by 9,695,500 lbs., and the value was greater by $456,347. As compared with the preceding week, the sales were less by 2,117,610 lbs. of zinc and 308,640 lbs. of lead and the value less by $27,381. Following is the turnin by camps for the week ending April 14th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,100,110	437,050	$43,202
Galena-Empire	2,215,140	227,590	36,685
Carterville	1,825,860	145,240	30,795
Webb City	648,560	50,170	10,435
Oronogo	1,023,390	1,000	13,928
Aurora	945,000	32,740	11 561
Neck City	243,110	.....	3,890
Central City	81,560	.....	1,142
South Jackson	203,560	13,500	3,215
Cave Springs	119,240	5,720	1,823
Belleville	232,220	7,950	4,030
Stotts City	235,960		3,552
Duenweg	165,460	21,830	2,592
Dade County	60,540	...	485
Carthage	89,790	2,480	1,503
Granby	225,000	17,000	3,300
Carl Junction	40,490	.....	607
District total	10,454,170	962,260	$174,743
Total 15 weeks	140,937,400	16,426 080	$2,617,177

Mining Land Sales.—The largest sale this year is that of the fee of the South Side Mining Company at Galena to an English syndicate for $500,000. The company will be incorporated in England with a capital of £200,000, and among the improvements contemplated is sinking a shaft 500 ft. level and building a 500-ton mill. The property was sold through C. C. Moore of Galena, one of the owners. The deal was made for the purchasers by Henry Seely of London and Theodore Stegner of Kansas City. In 10 years this property has produced ore which sold for $2,026,217. The Rothenbarger 140 acre tract, 1 mile north of Joplin at Midway, is sold by the Rusch-Paschal Company to Iowa parties for $70,000. Davey & Blair have sold their Champagne mine and lease on 2 lots on the North Carterville ground at Carterville to Phil E. Hannum of Carthage for $6,000. Charles A. Blair of Carthage has sold a ½ interest in his lease of the H. M. Baker land near Oronogo to Geo. H. Worthington of Cleveland, O., for $12,250. The lease covers 27 acres of the finest land in the Oronogo District.

Two men from Denver, Colo., have worked up a big excitement at Galena by claiming to have found gold in large quantities on a 160-acre tract lately purchased by them, and also on 1,000 acres, which they have quietly leased, about 2 miles south of Galena. The "find" is doubted.

MONTANA.

Carbon County.

Clark's Fork Coal Company.—Henry Burrell is now manager of this company's property, vice James A. Johnson.

Cascade County.

Slow Belt Mining Company.—This Neihart company, with $25,000 capital in $1 shares, has been organized on the Silver Belt, a patented claim at the head of Rock Creek near Neihart. The ledge is stated to be 6 to 8 ft. wide, with good silver values. D. L. S. Baker and J. McAssey are interested.

Granite County.

Copper Cliff.—Sam Ritchey is one of the owners of this claim at Garnet. A shaft is down 70 ft. and a tunnel cuts the ledge at a depth of 200 ft. The vein is largely copper sulphide, showing good values and carrying some gold. The ledge is wide.

Madison County.

Havana.—This mine in the Cherry Creek District near New Havana is owned by Walter Cooper of Bozeman. Thomas H. Mitchell is superintendent. The mine had been idle for years when Mr. Cooper began work some months ago. The nearest railroad point is Norris.

Meagher County.

(From Our Special Correspondent.)

Broadwater.—This Neihart property is in charge of Chas. Gibson as superintendent. The mine is parceled out in blocks to tributers, and about 75 miners are at work, most of whom are making more than day wages, while some are doing exceedingly well.

Florence.—This Neihart company has declared a 5c. dividend, amounting to $22,000.

Silver Belt Mining Company.—This Neihart company has been organized to work the Silver Belt Mine; capitalized at $25,000 in $1 shares.

Park County.

Independence Mining Company.—This concern, organized at Livingston some time ago has transferred to the Livingston Mining and Milling Company a number of claim and water rights in the Boulder District. The company is composed of Cincinnati, O., men.

McGinnis Gold Mining Company.—This Livingston company has been incorporated by Paul H. Gotzlan, George W. Freeman, Silas Gottschammer, Christ J. Miss, and Levi S. Thomas of St. Paul and Charles Burt of Minneapolis, Minn. The capital stock is placed at $1,000,000, with shares of a par value of $1 each. The company has a patent on the McGinnis gold lode and has secured several other claims near Cooke City.

Silver Bow County.

Colorado Mining and Smelting Company.—This company controls the Gagnon group of mines in Butte, and the smelter in Williamsburg, a suburb of Butte, says the Anaconda "Standard." The smelter is really a concentrating plant. The ore is crushed and jigged, and the concentrates are calcined and reduced to matte. No refined copper is produced, in this respect resembling the Butte Reduction Works. The crushed ore trammels from the rolls and goes to 24 three-step jigs. The finest stuff from the jigs goes to 24 Frue vanners. In the tailings mill are 3 Huntington mills and 2 sets of rolls. The tailings, after regrinding, are passed over Wilfley tables again. The concentrates are calcined in 9 circular Pearce furnaces, 5 large and 4 smaller, with an aggregate capacity of 250 tons in 24 hours. There are 4 large matte furnaces. Between the furnaces and the tailings mill is the ore house. Power for the tailings mill is furnished by a Griffith & Wedge 100-H. P. engine for the concentrater, and the smelter by 2 Fraser & Chalmers 250-H. P. engines.

NEW JERSEY.

Warren County.

Kishpaugh Mine.—This iron mine, which is now operated by Pilling & Crane, is temporarily disabled by the burning of the boiler house and shaft house last week. The buildings were destroyed and the hoisting engines badly damaged. The fire was caused by the overturning of a lamp in the engine room.

NEW MEXICO.

Colfax County.

(From Our Special Correspondent.)

Garst.—McCloskey & Baker are working 4 men at this property, in the Cimarroncito District. They have a vertical shaft down 90 ft. and have cut the foromation in a drift 120 ft. long. The vein is a contact between porphyry and lime, and carries good values in gold and copper. Ex-Governor Hadley owns 1-3 interest in the mine.

Golden Era Company.—A good body of ore is being opened up in the Twin, which belongs to this company. An average assay from 4 ft. of the vein gives $16.45. W. P. and A. T. McIntyre are managers.

Montezuma Company.—More men are being added from time to time, and they will soon begin to work the Blue Bandana shaft, which has been idle for some time. This shaft is 425 ft. deep.

Ohio Company.—The tunnel has cut a vein of gold and copper, said to be high grade.

Paragon.—Six men are at work and have 600 sacks of very rich ore ready for shipment.

Donna Ana County.

Torpedo.—This mine, at Organ, shipped 19 cars of ore in March, which is stated to have averaged about 15% of copper. The new shaft is 70 ft. deep, and the new engine is in place. Chicago men are interested.

OREGON.

Baker County.

Golconda.—This mine in the Cracker Creek District, owned by J. T. and J. G. English of Danville, Ill., has been incorporated at $1,000,000. The officers of the company are: President, J. G. English; vice-president and manager, John T. English; secretary, V. A. Schilling; treasurer, J. Frank Watson; assistant secretary, J. A. Arment; directors, J. F. Watson, J. G. and J. T. English, Vin Cook, Edward Cannon, W. L. Boise and V. A. Schilling. The company's offices are in the Chamber of Commerce building, Portland. New machinery will be added to the plant at the mine, making 40 stamps, and giving a sinking capacity of 2,000 ft.

Grant County.

South Cougar.—This company has bought 5 claims 2½ miles from Granite, near the Cougar. The officers of the new company are all Baker City people. The claims are capitalized at $1,000,000, in $1 shares.

Josephine County.

Harris.—This company has started its dredge near Waldo, on the Illinois River.

PENNSYLVANIA.

Anthracite Coal.

Rumors of a general strike among the miners in the Wyoming Valley continue. The men are working on short time and there is more or less unrest among the men. The labor agitators maintain their efforts to get a large enough following to make trouble.

Bituminous Coal.

Cochran Brothers have almost completed their new block of ovens at Spring Grove in the Connellsville region, and will fire them this month. This plant was operated years ago, but abandoned. The new company has offices at Dawson.

An electric trolley system for charging coke ovens at the Paul plant of W. J. Rainey, near Vanderbilt, is now in use. The ovens are so located that the larries can be run up and down the tops, the first attempt of this kind in the Connellsville region. At the Mt. Braddock plant an endless rope system is employed with success by Rainey.

The 1,500 striking coal miners of the Berwind White Company at Horatio and Anita agreed to return to work April 17th. All but a few who engaged in the Horatio riot were taken back. This closes the labor troubles in the central bituminous field.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Black Hills Porcelain Clay and Marble Company.—B. R. Noble, president, of Yale, Mich., has started 15 men on the development of the marble and kaolin claims northeast of Custer. Amos Morley, of Berea, will be superintendent. The company has a tract of ground 1¾ miles long and ¾ mile wide. A 20-ton derrick and other machinery is purchased, and all work will be done by steam as soon as possible. The marble ledge is to be worked from two sides and the kaolin clay ledge is to be stripped for some distance. The Burlington Railway Company promises to put in a spur as soon as the ground has been sufficiently opened.

Chicago Mica Company.—This company has bonded 10 or more mica claims.

Copper Reef.—The mine is opened by a 200-ft. tunnel and a 100-ft. shaft. It is 2 miles southeast of Custer.

North Star.—A steam hoist is being put in and the main shaft is to be sunk 200 ft.

Lawrence County.

(From Our Special Correspondent.)

Dacy.—It is reported that a 5-ft. body of ore has been encountered in the bottom of this shaft, at Ragged Top. The property is bonded by the American Mining Company and a tunnel is being run from the Spearfish Creek level.

Homestake Company.—The boiler house at the Highland hoist is being enlarged and 2 additional boilers are to be installed. The foundation is about ready for the new 1,000-ton cyanide plant, and the plant is to be completed by July 1st.

Swamat Mining Company.—This company, composed of Boston men, has bought the Esmerelda Mine and mill and breaking ore has begun. The plant is to be enlarged by a Huntington mill. A cyanide annex has been added. The ore averages about $4 per ton gold.

UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending April 14th there were sent forward from the several smelteries 19 cars, or 784,083 lbs. lead-silver bullion; 4 cars, or 191,420 lbs., copper bullion. In the same week there were shipped from the several camps to smelteries outside of the State 117 cars, or 4,475,380 lbs., lead-silver ore.

Consignments of Cyanide Products.—Receipts of the products from cyaniding mills for the first half of April, at the Salt Lake branch of the Consolidated Kansas City Smelting and Refining Company, amounted to 3,070 lbs., an increase of 900 lbs. over the receipts for the first half of March. At $25 per lb. the 3,070 lbs. would afford $76,750.

Strike at Germania Smelter.—Several days since all the men at the Germania plant of the American Smelting and Refining Company, on an hour's notice, stopped work. There were 4 lead stacks in blast at the time, and the men quietly walked out. Utah is an 8-hour State, the wage for ordinary laborers varying from $1.40 to $1.90. The demand for the men, so it is said, was for a uniform increase of 35c. a day. The strike terminated April 13th, some 200 men leaving this section. At present there are 2 stacks in blast and 300 men are at work, while the full compliment is 550. Another stack will probably be put in commission the coming week. There are also 4 copper furnaces in blast. At the Mingo everything moves as usual; there being 2 large stacks in blast and 250 men employed.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week ending April 14th the smelter products shipped from 3 railroad points of the district were 97 cars of ore and 5 cars of concentrates, as follows: Centennial-Eureka, 27 cars; Mammoth, 13 cars ore, 3 cars concentrates; Swansea, 11 cars; South Swansea, 6 cars; Godiva, 6 cars; Grand Central, 6 cars; May Day, 6 cars; Bullion-Beck, 5 cars ore, 2 cars concentrates; Gemini, 5 cars; Uncle Sam, 5 cars; Ajax, 3 cars; Tesora, 2 cars; Buckeye, 1 car; Lower Mammoth, 1 car.

Rabbit's Foot.—Some of the cleanest copper ore ever mined in Tintic is going into these bins, bright arsenical copper pyrites, much of it going above 40% copper. This ore comes from the winze on 350-level, which is down 100 ft. and shows a seam over 2 ft. wide. Superintendent McGhan is confident that he has the making of a mine. Water causes annoyance.

Piute County.

(From Our Special Correspondent.)

Golden Star.—On April 14th Walter G. Filer secured for P. L. Kimberley a block of $125,000 shares of the 300,000 shares, for, it is said, 50c. per share. The Golden Star ground joins the Annie Laurie. The Blue Bird of the Golden Star has thus far been the largest shipper of high grade gold rock in Gold Mountain, but no attempt has been made to handle the milling mineral.

Salt Lake County.

(From Our Special Correspondent.)

Jordan Narrows Electric Power Plant.—This electric power plant is temporarily out of commission, as the Utah lake commissioners have shut off the water supply and the towns of Bingham and Mercur are without electric lights and several mines are short of much-needed power.

United States.—For 3 weeks Messrs. W. B. and J. H. Devereux, assisted by W. H. Thomas, have been sampling and measuring the ore bodies and probably will not complete this task before May. In Old Telegraph territory, ore has been opened giving higher copper and gold values than the old reserves.

Summit County.

(From Our Special Correspondent.)

Park City Shipments.—In the week of April 14th the total smelter products sent forward from the camp was 2,575,030 lbs., made up as follows: Silver King, crude, 1,078,910 lbs.; Daly-West, crude, 707,870 lbs.; concentrates, 378,680 lbs.; Anchor, concentrates, 410,370 lbs.

Tooele County.

(From Our Special Correspondent.)

Daisy.—It is said that the mine will start up May 1st.

Sacramento.—The management has decided to install roasters soon. The mill is making more than current expenses.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

Belcher.—The winze is down 135 ft. and a crosscut has started for the main ledge.

Black Hall.—From the No. 1 north drift, 100 ft. from the main tunnel, another drift has been carried 15 ft. on ore 5 ft. in width, which runs from $25 to $40 per ton in gold and silver. About 260 ft. northwest is a drift on ore 6 ft. in width that carries milling values. Another drift running northwest is opening quartz, supposed to be the rich cross ledge opened at the surface last fall. The general appearance of things is improving, and it will be shipping ore to the Republic Reduction Company as soon as that mill starts.

Flagstaff.—The vein has been cross-cut at 100 ft. for 70 ft., without reaching the hanging-wall.

Insurgent.—A cross-cut has started from the bottom of the winze, 30 ft. below the Lone Pine Tunnel. Water gives much trouble.

Lone Pine—Surprise.—The west drift on the No. 4 Lone Pine vein shows a 3-ft. face of high-grade ore. A tunnel is in 220 ft. and may encounter one of the veins opened on in the upper workings any day.

Stray Horse.—A diamond drill is in use, the only one in the camp.

Tom Thumb.—The new vertical shaft is down over 150 ft. The 150-ft. level drift (old workings), is in 176 ft. on the pay shoot, with good values reported. The February assays averaged $28.60 per ton. The March assays are not yet reported.

Zala M.—A raise is going up from the 300-ft. level to connect with the 150-ft. level workings, 30 ft. south of the winze. Samples from this upraise run as high as $320 per ton, and the entire vein filling will average from $80 to $100 per ton. A drift is being run south on the 300-ft. level. The ore has changed from a chloride to a sulphide, with values from $25 up.

WEST VIRGINIA.

(From Our Special Correspondent.)

Empire Coal and Coke Company.—This Company has just been organized in Connellsville, Pa., to develop 1,000 acres of coal land and surface in Harrison, Tyler and Raleigh counties, and is preparing to open up new mines near Tier Connell, and to erect a block of 100 bee-hive coke ovens. On the tract already are 50 ovens. Among the stockholders are Rockwell Marietta, Linford F. Ruth, A. W. Soisson, Clair Stillwagon of Connellsville, where the offices will be located. Frank B. Hambry, formerly superintendent at the Leisenring plant of the H. C. Frick Coke Company, and later superintendent of the Cheat Haven Coal Company at Point Marion, is general manager.

Coal business along Kanawha River is rather dull at present, though coke is in strong demand.

Fayette County.

(From Our Special Correspondent.)

Mr. H. A. Robson, of Cotton Hill, one of the owners of the land at the head of Boomer Branch, tributary to Kanawha River, is having a survey of the property made and some openings in the coal. W. P. Rend & Company, of Chicago, Ill., have this property leased, and it is again reported that they will soon begin operations.

FOREIGN MINING NEWS.

AUSTRALASIA.

Western Australia.

Exports of gold from the Colony in March were 126,049 oz. crude. For the three months ending March 31st the exports were 387,718 oz. crude, against 316,753 oz., last year; an increase of 70,965 oz., or 22.4%. By values given, the exports this year were equivalent to 346,890 oz. fine, or $7,170,206.

(From Our Special Correspondent.)

Boulder Main Reef.—The sulphide plant continues to work well. During February 1,700 tons of sulphide tailings were treated, and a 90% extraction made by sliming the sands and filter

Ivanhoe.—This mine maintains a monthly output of over 10,000 oz. from oxidized ores, and increasing reserves all the time. This mine last year made a profit of £342,000. The cost of treatment and mining was 25% less than the previous year. The developments last year were over 2 miles.

New Zealand.

(From Our Special Correspondent.)

The erection of another 100 head of stamps at the Waihi Company's Waikino battery is nearly completed. Much work remains on the gold saving plant, and it will be some time before the stamps are crushing. A 500 H. P. steam engine is being erected to make the battery independent of water power.

The pumping machinery of the Waihi Grand Junction Company will be at work soon. The 500-ft. shaft should therefore be unwatered and enlarged in a few months. The question as to whether auriferous lodes exist in the anderite rocks below the rhyolitic lavas and tufas of the Waihi plains will be answered by this company. If payable reefs are found, Waihi has a great future.

At the Thames the mines show a small increase in production. The Thames-Hauraki Company is pumping from over 650 ft., and partly draining the adjoining mines. The long-standing dispute between this company and the Thames Drainage Board seems likely to be settled, for a year at any rate, as the company will probably take over the Board's pump and drain the whole field for 1 year for £5,800 ($24,000).

CANADA.

British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Rossland Ore Shipments.—For the period beginning January 1st until April 11th there were shipped from Rossland mines 35,000 tons of ore.

British America Corporation.—The new shaft at the Nickel Plate is down 500 ft. and sinking is going on to the 600-ft., where a station will be cut.

Dundee.—The negotiations in progress for the sale of this Nelson property to an English syndiate are not yet completed.

Iron Mask.—According to the statement of Samuel Hall, superintendent, shipments will not be resumed until more progress is made with development. Winze No. 2 is below the 450-ft. level, and shaft No. 2 is down 205 ft. After crosscutting through a dyke on the west drift, ore believed to belong to the main vein has been cut. The management has shipped no ore since February 1st.

Le Roi.—Since the adjustment of the differences between the mines management and the miners, the working force has been materially increased. Six machines are now at work, 3 of which are at the 900 ft. level. The management having decided to develop the Black Bear lead, a force of men has been set to work on the outcrop of the main vein.

Trail Smelter Returns for 1899.—According to official figures, the Canadian Pacific Railway smelter at Trail produced 52,218 oz. of gold, 101,410 oz. of silver and 2,578,717 lbs. of copper.

Nova Scotia—Halifax County.

(From Our Special Correspondent.)

Dufferin.—This mine in Salmon River District, which has been running in exceedingly lean ore the past year, is now reported to have struck a large ledge yielding $7 to $8 per ton.

Gaffey-Jennings.—This mine in Cariboo District returns for January and February 750 tons of ore, 157 oz. of gold, entirely from development work. This is now probably the best developed gold mine in the Province, having at least 50,000 tons of ore blocked out.

Harrigan Cone District.—Alexander Crooks mill returns for March 170 oz. of gold from 207 tons of rock milled.

Moose River District.—A McGregor returns for February 500 tons 22 oz. surface material. The Touquoy returns 138 tons 78 oz. gold.

Royal Oak.—This mine at Goldenville has struck a 2-ft. vein of very good ore at 400 ft. This company, with limited capital, has persistently pushed along quickly. It has ordered a stamp mill to be erected.

Ontario—Sawbill District.

(From Our Special Correspondent.)

An important exploration is beginning in the Sawbill District, east of Seine River, by the Clearwater Company, composed of Saginaw, Mich., men, who will put diamond drills at work under charge of H. H. Tyler, of Negaunee.

Location A L 282 is to be incorporated and a mill will be put in. The Gold Winner Company expects to install a small mill to test the rock. The Cartwright locations, close to the Hammond Reef, will be developed this spring. The new Ontario & Rainy River Railway is now built to Lake Shebandowan, in this region, and trains are running to Lake Superior.

Patton.—This claim on the Roy vein, at Island Falls, has been bought by the Agassiz Company of Duluth, and will be developed at once.

MEXICO.

Lower California.

Esperanza Mining Company.—This company is preparing to erect a 40-stamp mill at its mine on Cedros Island.

COAL TRADE REVIEW.

New York. April 20.

Anthracite.

Nothing has happened during the week to disturb the general quiet of the hard coal trade. The various mining and transportation companies realize fully that coal cannot be sold now by concessions in prices. They are restricting the output and prices are pretty firm. There are reports of unrest among the miners and a few small strikes are on. The large companies, though expecting a good demand for coal later in the season, do not feel that present conditions warrant advances in wages or a complete re-arrangement of the mining scale. In the West trade is dull. There are good supplies on docks at the head of the Lakes and Chicago territory does not lack coal. Lake navigation is not likely to open before the 25th. Its opening will allow considerable coal to go forward, but there will be no such rush to get anthracite west as last spring. Lake freight rates are hardly settled yet.

In the East there is little of interest to note except the extreme scarcity of steam sizes. The demand for these has been strong all winter. The curtailment of output decreased the supply and the advance in price of Clearfield coal is increasing the demand. Consequently steam sizes are likely to be very hard to get for some time.

The promoters of the Kingston & Delaware Valley Railroad are having a rather hard time of it and it is safe to say that work on the new road will not begin for some time. It is also likely, in spite of the shortage of soft coal in Europe, that the efforts of the Anthracite Operators' Association will not result in any large shipments to Germany or Russia.

Prices at New York are unchanged and we quote for free burning white ash f. o. b. New York: Broken, $3@$3.20; egg, $3.20@$3.50; nut, $3.65@$3.75; stove, $3.65@$3.75.

Notes of the Week.

Shipments of coal over the Norfolk & Western Railroad for the first quarter of the year were: January, 548,823; February, 447,810; March, 497,805; total, 1,494,438 tons. Shipments of coke were: January, 135,979; February, 126,565; March, 157,556; total, 420,100 tons.

Bituminous.

Interest in the seaboard soft coal trade centres about the strike in the George's Creek District for the reason that it is representative of certain tendencies and conditions. The position of the operators is simply that they will allow the strike to last until the men tire of it, believing that the miners' demands are unwarranted.

There is a scarcity of coal and prices of Clearfield are advancing. Just why this should be is not very clear, since the output of the George's Creek mines is not a large factor in the seaboard supply and the operators in the Clearfield District are now well supplied with cars. There is very little coal in the hands of speculators at present. The operators have it, and they are distributing it without making efforts to boost prices. Stocks on hand throughout the various consuming territories are reported small, especially at points beyond Cape Cod, and that territory will advace prices over the others. All contracts made, so far as we have learned, are covered by a contract clause which permits the abrogation of a contract for the time that a strike is on.

In the far East there is a large demand. Along Long Island Sound consumers are taking any kind of coal they can get. New York Harbor trade has dropped off and is pretty easy, except for some bunker contracts. All rail trade is fair.

Car supply is fairly good. The railways with the suspension of George's Creek shipments are seizing more coal in transit. Transportation from mines to tide is slow. In the coastwise vessel market vessels are scare as well as coal. Shippers have difficulty in getting vessels just the right size for the orders they are filling. Current ocean freight rates are, from Philadelphia; Providence, New Bedford and the Sound, 65c.; Boston, 75c.

Clearfield coal, as noted, is higher and is now quoted $2.90@$3 f. o. b. New York Harbor ports.

Birmingham, Ala. April 16.

(From Our Special Correspondent.)

The demand for coal is still very active, with no indications of abatement. The production is extremely large, and, as far as can be learned, there is to be no relaxation during the summer, provided there should be no labor troubles or other unforeseen difficulties.

During the week 3 new coal companies filed papers of incorporation at Birmingham—Delma Mining Company, with capital $6,000; Union Coal and Coke Company, capital, $100,000; the Cahaba Valley Coal Company, capital $32,000. The Union Company has purchased 12,000 acres of land near Watts, in the upper part of Jefferson County. Already one mine has been opened, and others will be started. The company proposes to build some new coke ovens, and will mine coal and make coke on quite a large scale. The other 2 companies will mine coal.

Officials of the Walker County companies say that their production is pretty well covered for some months yet. A few weeks ago the operators anticipated no labor troubles whatever, but the activity of the market has stirred up some feeling, and it may be a difficult matter when the time comes around for signing a new contract. The railroads promise to keep up the supply of empty cars, which, it must be admitted, they have been doing well.

Chicago. April 17.

(From Our Special Correspondent.)

Anthracite Coal.—Business is confined mostly to car-load lots, usually for quick delivery. Prices remain firm and no tendency appears for cutting. Navigation will shortly open and it is expected a heavy tonnage will arrive.

Bituminous coal is not in much demand, though sales of large lots have been made. One of the results is the cutting of prices, the large sales mentioned above having been made on a basis below supposed market quotations. But cutting is yet confined to large contracts.

Cleveland, O. April 19.

(From Our Special Correspondent.)

The several million tons of coal for the transportation of which by water contracts have already been made is a mere drop in the bucket as compared with the total movement of coal which will be made on the great lakes this season. In the case of the coal for shipment to a number of the principal ports the freight situation continues a virtual deadlock, shippers and vesselmen being totally unable to agree on rates. Very naturally the shipper who has paid only 60c. per ton for transporting coal to Sheboygan or Manitowoc will offer strenuous opposition to paying 70 or 75c. for carrying fuel to Milwaukee, but if the vesselmen maintain anything like as firm a stand as at present, it would seem likely that he will have to come to it in the end. Many of the first trips to Milwaukee will be made on "wild" charters and some of the vessels are loading subject to whatever rate may ultimately be established. From the chartering which has thus far been done it would seem probable that 65c. will be the "wild" rate which will ultimately be established for the movement at the opening. It is impossible to predict, as yet, whether or not the movement of coal will be fairly free owing to the uncertainty regarding the car supply.

Pittsburg. April 18.

(From Our Special Correspondent.)

Coal.—The mines in this district, both on the river and rail, resumed operations this morning, pending action on the points in dispute by a special committee appointed at the convention which closed last evening. National President John Mitchell, of the United Mine Workers, was named as a member of the committee and is due in Pittsburg to-morrow. It would be difficult to predict the probable result of the coming conference. The miners do not seem to be willing to make any concessions, and if endorsed by their national president are ready to come out on strike again to enforce their demands. The main dispute now unsettled is the pay for drivers and outside day labor. The two coal combinations have had considerable difficulty in supplying the demand this week. It was necessary to use all the coal loaded in the harbor and destined for the Southern market to avoid a famine. Some of the mills suffered to a certain extent by the limited supply furnished. The Pittsburg Coal Company, the railroad combination, is getting ready to ship coal to the Northwest by way of the lakes, and expect a better trade in this market than in any previous year.

Connellsville Coke.—Both production and shipments were increased last week. The car supply was easier and several of the valley furnaces that were short of coke were able to stock up. One or two, however, are in hard lines for coke. There has been no change in prices, furnace coke being quoted at $4@$4.25 and foundry at $4.25@$4.50. The demand continues heavy and it is not an easy matter to place small orders. All the available ovens are in operation, and work on the new ones being built is being rushed as rapidly as possible. Of the 20,140 ovens in the region, 19,648 are active and 492 are idle. The production for the week was 217,862 tons. The shipments aggregated 12,186 cars distributed as follows: To Pittsburg and river tipples, 3,241 cars; to points west of Pittsburg, 6,621 cars; to points east of Connellsville, 2,324 cars. This is an increase of 296 cars over the previous week.

SLATE TRADE REVIEW.

New York. April 20.

Business is looking up better, in all lines, excepting for export. Prices are practically unchanged, though we understand some shading on certain sizes of roofing slate is manifest.

The shipments of slate from Slatington and Walnutport, Pa., for the 12 days ending April 12th are compiled by us as below, comparison being made with the same time in March.

	Mar. 1-12.	Apr. 1-12.	Changes.
Roofing, sqs.....	3,820	7,766	I. 3,946
School slates, cases..	401	276	D. 125
Blackboards, crates.....	368	159	D. 209

Much of the increased shipments of roofing slate were made to the Middle West.

The exports of slate through the port of New York in the quarter ending March 31st are compiled by us as below, comparison being made with the same period in 1899:

	1899			1900		
	Roofing. Sqs.	Value.	Mfrs. Valve.	Roofing. Sqs.	Value	Mfrs. Value
January	8,955	$42 555	$5,669	8,700	$41,715	$3,223
February..	14,850	68,163	8,634	6,250	32,260	3,477
March	18,700	87,140	9,396	3,250	16,258	5,750
Totals.....	42,505	$197,858	$23,699	18,300	$90,233	$12,450

It will be seen, therefore, that the shipments of roofing slate this year are less than 1899 by 24,205 squares in quantity and $107,625 in value, and of manufactured slate the value shows a decrease of $11,249.

The slate exported as noted above was distributed as follows, the figures in parenthesis being for the quarter last year: United Kingdom, $75,041 ($166,591 in 1899); Australasia, $16,728 ($14,534); Denmark, $1,743 ($3,504); Belgium, $825 ($5,425); Norway, $1,309 ($463); Germany, $2,000, ($22,800); France, $20 (nil); Holland, $125 ($1,175); Africa, $462 ($1,158); South America, $2,621 ($275); India, $300 ($3,675); Central America, West Indies, Mexico and Hawaii, $1,364 ($1,562); Canada, $55 ($135). No shipments were made to Sweden, though last year we sent $260 worth there.

Freights continue firm at 15s. to London and corresponding rates to other ports.

IRON MARKET REVIEW.

New York, April 20, 1900.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Apr. 21, 1899.		Apr. 20, 1900.		From Jan., '99.	From Jan., '00.
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
An' racite & Coke.	188	242,050	260	283,350	3,697,277	5,210,976
Charcoal.	17	4,925	29	7,025	80,458	134,500
Totals..	205	246,975	289	290,375	3,777,735	5,345,476

The chief topic of discussion in the iron market this week has been operations carried out, with some success, by the Chicago gang controlling the American Steel and Wire Company. The sudden announcement of the closing down of a number of this company's plants on account of over-production and absence of new orders caused alarm in Wall Street, and a heavy fall in the iron and steel stocks. This was coupled with rumors of a general break in iron and steel prices, which commanded some belief, until it was realized that the whole affair was an operation intended to benefit a few insiders. There are signs that the operators see they have carried matters a little too far, and that the closed plants will speedily be reopened.

In the trade the whole affair is severely condemned. Nothing better, perhaps, was to be expected from the crowd which carried it through; but the effect is to discredit all the iron and steel stocks to some extent. The general opinion approves the characterization made by the New York "Times": "The talent at work is of the petty larceny order; but the strut and the stakes are up to the dignity of bank burglary."

So far as the trade itself is concerned, the affair has had little effect. It is now apparent that the prices of iron and steel will be maintained at nearly the present level well through the third quarter of the year. There has been a slight fall from the highest quotations, but very little business was done at those figures—probably very little was expected. Current prices are still high—higher, indeed, than many people ever expected to see again.

Inquiries for export are urgent again, and it looks as if a good deal of business could be done. This pressure serves to steady the market still further.

The contract for the iron and steel for the Rapid Transit Tunnel in New York goes to the Carnegie Steel Company. The quantities required will sum up between 75,000 and 80,000 tons. Prices are not made public.

Birmingham, Ala. April 16.

(From Our Special Correspondent.)

More inquiries for pig iron are being received than for some time. Furnacemen interviewed a day or two since say that, while the expected activity has not started yet, there are the broadest indications that it will start in the very near future. The furnaces have enough orders on hand to take them through July. Mr. J. W. McQueen, secretary-treasurer of the Sloss-Sheffield Steel and Iron Company, stated that no concessions were being made by the larger concerns.

The Sloss-Sheffield Steel and Iron Company will shortly put in blast the Hattie Ensley furnace at Sheffield. This will be the second furnace of the 3 bought by the company about Florence and Sheffield, while work will start on the Lady Ensley furnace a little later on. The company will then have all 7 of its furnaces either in blast or ready to go into blast.

The supply of coke and iron ore is becoming more plentiful as good weather prevails. Finished iron is active and the rolling mills are working hard.

The shipments of pig iron from the Southern distributing points, which include Birmingham, Anniston, Sheffield, Ala.; Nashville and Chattanooga, Tenn., and Middlesboro, Ky., amounted during March to 130,144 tons; cast iron pipe, 5,506 tons. From the Birmingham district alone there were shipped 87,324 tons of pig iron, 1,982 tons of cast iron pipe. The statement shows an increase compared with last year.

The quotations that are given now are as follows: No. 1 foundry, $18.50; No. 2, $17.50; No. 3, $16.50; No. 4, $16@$16.50; gray forge, $16; No. 1 soft, $18.50; No. 2, $17.50.

Buffalo. April 18.

(Special Report of Rogers, Brown & Co.)

The well-advertised weakness in listed iron and steel stocks has had its effect on foundry iron buying in this district during the past week. Consumers both large and small are now holding off from buying, looking for a decided weakness in prices, but at the same time keeping their weather eye open for the quick turn in the other direction some predict. In the absence of much actual business it is rather difficult to quote a price basis that could be called a fair average. In some cases the prices mentioned below have been cut, and again higher figures have been reported. We quote on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $23.50; No. 2, $23; Ohio strong softener No. 1, $24; No. 2, $23.50; Jackson County silvery, 8%, $30; Southern soft No. 1, $23.50; No. 2, $22.50; Lake Superior charcoal, $26; coke malleable, $24.

Chicago. April 17.

(From Our Special Correspondent.)

Pig Iron.—Business in pig iron continues in small lots mainly, and buyers are as a rule asking for quick delivery. The foundry stocks are getting low and iron must be had. Southern iron continues in limited demand at prices somewhat below actual market quotations: Lake Superior charcoal, $25.50@$26; local coke foundry No. 1, I24.50@$25; No. 2, $23.50@$24; No. 3, $22.50 @$23; local Scotch, No. 1, $25@$25.50; Ohio strong softeners, No. 1, $24.50@$25.50; Southern silvery, according to silicon, $25.50@$27; Southern coke, No. 1, $24.50@$25; No. 2, $23.50@$24; No. 3, $22.50 $20.85@$21.30; Southern coke, No. 1 soft, $22.85@ $23.35; No. 2 soft, $21.85@$22.85; Alabama car wheel, $25@$26; malleable Bessemer, $25@$26.

Cleveland, O. April 19.

(From Our Special Correspondent.)

Iron Ore.—Probably by the time this reaches our readers the first ore laden vessels will have left the port of Escanaba for the unloading ports on the south shore of Lake Erie. The opening of the season at the Lake Superior ports will of course be somewhat later, but reports from that territory indicate that the ice is breaking up fast and that the first boats will in all probability get through very early in May. The transportation market is very quiet. Season chartering is of course over, and the wild rate has not yet been fixed. Some figuring has been done on boats for first trips from Escanaba, but no tariff has been definitely fixed. It is safe to predict, however, that it will be no lower than the season contract price. Practically no sales of ore are reported and none need be expected until the Bessemer pig iron market opens.

Pig Iron.—The market in Bessemer is as quiet as at any time in the several weeks past. This is attributed to the general lull, owing to an uncertainty as to future developments, combined with the fact that all the principal consumers are covered up to or beyond the first half of the year. In the foundry grades the outlook is a little more hopeful, but even here the market can by no means be said to be active. We quote: Bessemer, $24 in the Valley; No. 1 foundry, $23; No. 2, $22.50; gray forge, $21.50; Lake Superior charcoal, $25.50.

Scrap.—The dullness which has characterized the market for several weeks past shows no signs of abatement. Transactions are few, and the lines of activity are also limited in number. We quote: Steel melting stock, $21.75; No. 1 cast, $16.50; No. 1 wrought, $19.50; iron rails, $24.50; car wheels, $23.50; turnings, $13.50; borings, $12.

Philadelphia. April 19.

(From Our Special Correspondent.)

Pig Iron.—Brokers and manufacturers have much more to say about the suspension of work in 12 mills of the American Steel & Wire Company than anything else. Markets are excited and predictions are freely indulged in of one sort or another. Thus it is very clear that the jobbers do not know very much about the iron trade. As far as pig iron is concerned, the business of the past three or four days shows that there is very little change indeed. Quotations are as follows: No. 1 foundry, $23@$24; No. 2, $21.50@$22.50; gray forge, $19@$20; Bessemer, $22@$22.50; basic, $22; low phosphorus, $27@$28; charcoal iron, $27@$28.50.

Billets.—Buyers stick to the opinion that prices are bound to decline to $34. At present $35 is asked.

Merchant Bar.—The bar iron market is in a little worse shape than last year and large buyers are holding off expecting a drop. In fact, one or two good-sized lots of refined iron have been made at 1.90c. Sales of ordinary iron have been made at 1.85c.; refined, 2@2.10c.; test iron, 2.20c.; steel bars, 2.45@2.50c. There is a better demand for sheet iron. No. 10 is sold on a basis of 2.70c. and No. 28, 2.40c.

Pipes and Tubes.—There is a good deal of pipe line work going on.

Merchant Steel.—Prices are rather weak than strong, and buyers are disposed to hold off.

Plate Iron.—The demand for plate has fallen off—prices have dropped one-tenth. Steel plates ¼ in. thick are sold as low as 2c. and as high as 2.10c. Shell plates are 2.10@2.20c.; flange, 2.40 @2.50c.

Structural Material.—Builders have made inquiries for small lots which are quoted 2.40@ 2.60c. The mills have enough work on hand to make their managers satisfied and indifferent.

Steel Rails.—Inquiries for steel rails are backward this week, but prices are firm at $35. It is not likely that there will be much business in steel rails for the present.

Old Rails.—Old rails have dropped in price. Some business has been done at $24; old steel is $23.

Scrap.—There is a heavy inquiry during the past two or three days for scrap iron in small lots. Choice railroad scrap, $23@$25; No. 1 yard, $19@$20; heavy steel scrap, $22@$23; old car wheels, $22@$23.50; iron axles, $26@$28; steel axles, $27@$29.

Pittsburg. April 18.

(From Our Special Correspondent.)

The disquieting reports from the East and West of a slump in iron and steel prices had the effect of causing a temporary uneasiness. It was soon developed that the basis for these reports was on reductions that have been made in the prices of bars and plates. The suspension of operations at 12 plants of the American Steel and Wire Company, three of which are in the Pittsburg District, lent some authenticity to the reported decline of prices. Manufacturers here are not alarmed over the reports. Some say that rumors of this kind will have the effect of disturbing the market to a certain extent and although there may be a drop in prices, the reduction will not be serious. There does not seem to be room for much of a decline with the price of Bessemer pig iron firmly fixed at $24, Valley, for several months ahead. The cut just made in the price of bars, it is explained, was due to the fact that late last year, when the demand was unprecedented, prices reached an abnormal figure. As the demand fell off it was found necessary to restore former rates. Eastern makers are held responsible for the necessity of the present cut. About six months ago the Bar Mill Association fixed the price of steel bars at 2.25c. Within the past few months Eastern steel bars have been selling at 2.15c. delivered in Pittsburg, and some large orders were placed at that figure. At a meeting of the Association this week the price of steel bars was cut to 2c.; prices of iron bars have gone down in proportion. The steel plate market has been disturbed for some time and tank plate has been quoted at from 2 to 2.20c. The price has just been fixed at 1.90c. The Bessemer pig iron market is quiet this week and only a few sales of small lots were made. Finished material is a trifle weaker, but all the mills are busy and from present indications they will remain in that condition for some time. The steel billet market remains quiet, there being but few inquiries during the week and no sales of any consequence. There has been a slight drop in prices. The sheet market is in a much improved condition this week. The new combination has not yet made any announcement of new prices and quotations are only given when an inquiry is received. Although no definite information has been made public on the subject, it is believed that the large plant of the W. Dewees Wood Company at McKeesport will soon be in the American Steel Sheet Company. There is a good demand for pipes and tubes. The National Tube Company has started the McKeesport plant, which was closed for two weeks on account of a lack of fuel, due to the coal miners' strike. The Republic Iron Works, closed for the same cause, will be put in operation to-morrow.

Pig Iron.—The market is quiet and no sales of any consequence were made during the week. The price of Bessemer is firm at $24, Valley furnaces and $24.90, Pittsburg. The product for the first half has been sold up and some sales have been made into the third quarter. There is no change in the foundry iron market.

Steel.—The only feature is the cut in prices of bars and plates called "readjustments" by the manufacturers. Steel bars that sold at 2.25c. have been reduced to 2c., a drop of $5 a ton. The price of tank plates has been fixed at 1.90c. This is a cut of from $2 to $6 a ton from previous quotations. The steel billet market is quiet and the price is a trifle lower, billets being quoted this week at $33.50.

Sheets.—The market shows a big improvement, but prices are not likely to advance to as high a point as was expected when the combination was formed. The only quotations given are 3.10c. for No. 27 gauge and 3.20c. for No. 28.

Ferro-manganese.—There is no change in prices, and domestic 80% is still quoted at $125, but no large lots have been sold or this price would probably have been shaded.

New York. April 20.

The action of the American Steel and Wire Company, though felt to be purely for stock jobbing, unsettled the local market a bit, though the consumptive demand for all products is so heavy that the net result is only to accentuate the weakness in certain lines—for instance, plates. Export orders are lighter than they have been. We note shipments to Argentina of $32,000 worth of manufactured iron, and continued shipments of machine tools to France and Germany.

Pig Iron.—Inquiries continue to come in and sales into the third quarter of the year are reported. The market is pretty firm. We quote for delivery in July, Northern brands, tidewater delivery: No. 1 X foundry, $23.50@$24; No. 2, $22@$23; No. 2 plain, $20.75@$21.25; Southern brands, New York delivery: No. 1 foundry, $22.50@$23; No. 2 foundry, $21.50@$22; No. 1 soft, $22.50@$23; No. 2 soft, $21.50@$22; No. 3 foundry, $21.25@$21.50.

Bar Iron.—The price continues 2@2.10c. for large lots of common on dock. Refined is 2.20c.

Plates.—The event of the week has been the award of the great rapid transit tunnel contract to the Carnegie Company. It is doubtful if any other concern would have taken the whole order. Other concerns may get some of the order. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 2@2.10c.; tank, 3/16-in, 2.15c.; shell, 2.20c.; flange, 2.30c.; marine, 2.40c.; firebox, 2.50c.; universals, 2.15c.

Steel Rails and Rail Fastenings.—There is continued inquiry from abroad, the total aggregating fully 12,000 tons. We quote for standard sections $35 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, $36, with the usual advance for small orders. We quote angle bars, 2.30c.; fish plates, 2.30c.; spikes, 2.70c.

Structural Material.—Orders for good-sized lots are placed and the market is in good shape. We quote in large lots at tidewater: Beams, 2.45c.; channels, 2.45c.; angles, 2.40c.; tees, 2.40c.

METAL MARKET.

NEW YORK, April 20.

Gold and Silver.

Gold and Silver Exports and Imports

At all United States ports in March and year.

Metal.	March.		Year.	
	1899.	1900.	1899.	1900.
GOLD.				
Exports	$1,109 845	$1,064,350	$3,433 258	$8,159.298
Imports	3,187,575	1,921,036	14,728,825	5,808,536
Excess	I. $2,077,730	I. $ 856,686	I. $11,295,567	E. $2,350,762
SILVER.				
Exports	5.057 653	5 452,422	14,757,533	15,006,265
Imports	3,125,859	3,149,146	7,681,738	8,065,576
Excess	E. $1,931,794	E. $2,303,276	E. $7,075,795	E. $6,940,689

This statement includes the exports and imports 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 April 19th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Period.	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports	
We'k	$6,130	$26,811	$276.303	$78,311	E. $177,311
1900..	2,985,134	1,201,623	11,777.973	1,313,578	E. 12,247,906
1899..	1,572,767	5,277,406	8,816,923	957,475	E. 4,154,809
1898..	1,416,334	50,058,402	11,377,524	1,474,088	I. 35,738,622
1897..	1,064,841	12,719,688	12,719,688	646,688	E. 2,005,189

Imports and exports of gold included only a few small parcels from and to various ports. The silver exported went chiefly to London; that imported was from the West Indies and South America.

The United States Assay Office in New York reports the total receipts of silver at 123,000 oz. for the week. Total since January 1st, 1,690,000 oz.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	$ .47¾	$ 49
Peruvian soles and Chilean pesos	.44	.46
Victoria sovereigns	4.86	4.88
Twenty francs	3.86	3.90
Twenty marks	4.75	4.88
Spanish 25 pesetas	4.78	4.82

Average Prices of Silver per oz. Troy.

Month.	1900.		1899.		1898.	
	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.
January	27.30	59.30	27.42	59.36	26.29	56.77
February	27.49	59.76	27.44	59.42	25.89	56.07
March	27.59	59.81	27.48	59.64	25.47	54.90
April			27.65	60.10	25.95	56.02
May			28.15	61.23	26.31	56.98
June			27 77	60.43	27.09	58.61
July			27.71	60 26	27.32	59.06
August			27.62	60.00	27 48	59.54
September			27.15	58.89	28.05	60.68
October			26.70	57.98	27.90	60.42
November			27 02	58.67	27.93	60.60
December			27.21	58.99	27.45	59.42
Year			27.44	59 58	2.76	58.26

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

Average Prices of Metals per lb., New York.

Month.	COPPER.		TIN.		LEAD.		SPELTER	
	1900.	1899.	1900.	1899.	1900.	1899.	1900.	1899.
Jan	15 58	14.26	27.07	22.48	4.68	4.18	4 65	5.34
Feb	15.78	17.02	30.58	24.20	4.675	4.49	4.64	6.28
March	16,29	16.35	32.90	23.82	4.675	4.37	4.60	6.31
April		17.13		24.98		4.31		6.67
May		17.20		25.76		4.44		6.88
June		16.89		25.85		4.43		5.98
July		17.10		29.63		4.52		5.82
August		17.42		31.53		4.57		5.65
Sept		17.34		32 74		4.58		5.50
October		16.94		31.99		4.575		5.32
Nov		16.49		28.51		4.575		4.64
Dec		15.85		25.88		4.64		4.66
Year		16.67		25.12		4.47		5.75

Commencing with March 17th, the prices given in the table for copper are the averages for electrolytic copper; this is the case for both 1899 and 1900. The average price for Lake copper for the year 1899 was 17.61c. For January, 1900, the average price of Lake copper was 16.33c.; for February, 16.08c.; for March, 16.55c.

Financial Notes of the Week.

General business continues unchanged and widely prosperous. The speculative markets have been disturbed by a raid from the Chicago operators who control the American Steel and Wire Company, which forced down the values of nearly all the industrial stocks. This has not affected general conditions to any extent.

The statement of the New York banks—including the 63 banks represented in the Clearing House—for the week ending April 14th, gives the following totals, comparison being made with the corresponding weeks in 1899 and 1898:

	1898.	1899.	1900.
Loans and discounts	$580,085,400	$768,354,200	$761,672,400
Deposits	663,519,300	888,478,300	834,328,500
Circulation	13,939,100	13,948 300	21,029,800
Reserve:			
Specie	147,531,400	188 134,900	157,243,500
Legal tenders	55.694,500	53 45o,200	62,288,900
Total reserve	$203,225,900	$241,591,100	$219,532,400
Legal requirements	165,879,825	222,119,575	208,582,125
Balance, surplus	$37,346,075	$19.471,525	$10,950,27

Changes for the week, this year, were increases of $6,106,200 in loans and discounts, $11,832,900 in deposits, $455,300 in circulation, $5,487,300 in specie, $516,400 in legal tenders and $3,045,475 in surplus reserve.

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

Banks.	1899. Gold.	1899. Silver.	1900. Gold.	1900. Silver.
N.Y. Ass'd	$188,134,900	.....	$157,242 500	.....
England	152,502,000	.....	160,921,505	.....
France	362,411,850	$240,429,845	388,063,330	$226,252,305
Germany	142,980,000	73,655,000	123,450,000	63,670,000
Spain	58,250,000	59,410,000	68,445,000	77,920,000
Aus.-Hun	149.635.000	52,275,000	188.170.000	48.575,000
Neth'l'ds	17,940,000	34 505,000	24,360.000	29,670,000
Belgium	15,430,000	7,715,000	14 900,000	7.450,000
Italy	77,085,000	9 +00,000	77 130,000	8 005,000
Russia	487,025,000	23,335,000	412.255,000	33,945,000

The returns of the Associated Banks of New York are of date April 14th, and the others are of date of April 12th, 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 silver market opens after the Easter Hol-

Imports and Exports of Metals.

Port.	Week, Apr. 18.		Year 1900.	
	Expts.	Impts.	Expts.	Impts.
***New York.**				
Aluminum.....long tons	.. ....	.....	17	2:
Antimony ore... " "	.....	**145	.....	986
" regulus.. " "	.....	**105	.....	297
Chrome ore..... " "	.....	.....	.....	151
Copper, fine..... " "	1,541	125	32,719	7,118
" matte.. " "	.....	.....	493	...
" ore..... " "	.....	.....	.....	640
" ash..... " "	.....	**18	.....	41
Ferro-Chrome.. " "	.....	.....	.....	10
Ferro-mangan'se " "	.....	.....	.....	140
Iron ore..... " "	.....	.....	.....	7,874
" pig, bar, rod " "	626	**110	1,991	1,458
" pipe..... " "	80	.....	4,0 1	124
" plates, sheets " "	196	.....	480	43
" pyrites..... " "	.....	.....	.....	2,700
Lead..... " "	1,250	1,500	26,533	17,781
" ore.. ..... " "	.....	3,000	.....	7,300
" dross..... " "	.....	.....	.....	24
Manganese, ore. " "	.....	**53	.....	1,284
Metals, old, scrap " "	22	**554	1.146	3,068
Composition... " "	19	.....	906	.....
Nails..... " "	636	.....	9 379	.....
Nickel .. " "	50	.....	630	55
" ore, matte " "	.....	.....	.....	2,821
§Railr'd material " "	.....	**129	435	1,367
Rails, old..... " "	.....	.....	206	518
Spiegeleisen..... " "	.....	**370	.....	700
Steel bars, plates " "	682	**263	2,807	6,714
" rails..... " "	1,010	.....	13,676	18
" wire..... " "	236	.....	4,529	.....
" not speci'd. " "	638	**46	2,817	1,023
Tin .. .. " "	.....	1,375	.....	8,441
" dross or ashes " "	.....	.....	3	...
" and black plates " "	.....	‖675	.....	10,428
Zinc..... " "	.....	.....	.....	51
" dross..... " "	52	.....	291	50
" ashes, skim " "	19	**10	448	20
" ore..... " "	.....	.....	3,540	.....
†Baltimore.				
Chrome ore.....long tons	....	.....	.....	2,930
Copper, fine..... " "	1,214	.....	16,222	1,703
" matte..... " "	.....	.....	.....	...
Ferro-manganese " "	.....	.....	.....	155
Iron pig, bar, etc. " "	292	1,761	1,040	11,529
" ore..... " "	.....	3,247	.....	175,372
" pyrites..... " "	.....	.....	.....	11.893
Manganese ore.. " "	.....	3,500	.....	71,897
Metals, old & Rails " "	.....	.....	384	.....
Nails..... " "	50	.....	1,151	...
Pipe, iron & steel " "	.....	.....	1,709	...
Spiegeleisen..... " "	....	447	.....	556
Steel, bars, pl'es.. " "	19	.....	676	419
" wire ..... " "	163	.....	611	53
" rails..... " "	.....	.....	35,521	.....
Tin..... " "	.....	.....	.....	67
" and blackplates " "	.....	43	.....	1,164
***Philadelphia.**				
Antimony ....long tons	.....	.....	.....	5
Copper, fine..... " "	479	.....	1,216	...
" ore..... " "	.....	.....	.....	6,872
Iron, pig..... " "	.....	‖103	.....	103
" ore..... " "	.....	‖6,400	.....	9.104
" pyrites..... " "	.....	.....	.....	87,465
Manganese ore.. " "	.....	‖3,400	.....	27,734
Spiegeleisen..... " "	.....	.....	.....	3,500
Tin..... " "	.....	50	.....	143
" and black plates " "	.....	‖163	.....	1,530
Zinc dust..... " "	.....	.....	.....	5
" ore..... " "	.....	.....	1,500	.....

Total United States.§§

Articles.	Feb., 1900.		Year, 1900.	
	Expts.	Impts.	Expts.	Impts.
Antimony.... long tons	.....	411	.....	497
" ore.... " "	.....	6	.....	348
Copper fine . " "	14,815	2,911	27 704	7,224
" ore & matte " "	705	1,148	1,080	3,270
Iron, pig & bar.. " "	9,559	9,071	19,554	15,948
" ore..... " "	.....	91,306	.....	181,021
Iron & steel plates " "	2,215	2,226	4,203	3,397
Iron & steel rails " "	18.315	.....	34,521	287
" " wire " "	5,314	122	11,606	259
Lead, pigs, bars & old ..... " "	9	1	39	12
Lead in ore, etc. " "	10,133	8,598	14,860	12,586
Manganese ore and oxide.	.....	20,106	.....	55,362
Nickel "&matte " "	167	.....	298	.....
Nails, cut..... " "	517	.....	1,352	.....
" wire ..... " "	4,279	.....	8,474	.....
Quicksilver..... " "	79	.....	107	.....
Steel, billets, rods, etc..... " "	2,370	2,458	6,461	7,050
Tin..... " "	20	1,854	20	4,825
" &black plates " "	5	3,741	21	10.130
Zinc ..... " "	1,267	19	2,363	243
" ore ..... " "	2,008	.....	4,267	...

*New York Metal Exchange returns. †By our Special Correspondent. §Not specified. **Week ending April 7th. §§ Monthly returns, Treasury Depar ment. ‖ Week April 13th.

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. per lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb. Quicksilver, 7c per lb. Spelter or zinc, 1½c. per lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

idays at unchanged quotations and continues dull but steady, with a fair demand for forward delivery at spot prices.

The statement of the United States Treasury on Wednesday, April 18th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

	April 11.	April 18.	Changes.
Gold	$93,504,428	$86,164,271	D $7,340,157
Silver	8,672 976	8,425,569	D 247.407
Legal tenders	9,179,968	8,862,793	D 317,175
Treas notes, etc.	698,399	679,349	D 19,050
Totals	$112,055,771	$104,131,982	D $7,923,789

Treasury deposits with national banks amounted to $116,942,819, an increase of $5,587,048 during the week.

Shipments of silver from London to the East for the year up to April 5th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes
India	£1,211 500	£1,396,362	I. £184,862
China	348,230	127,295	D. 220,935
The Straits	24,907	46,150	I. 21,243
Totals	£1,584,637	£1,569,807	D. £ 14,830

Arrivals for the week, this year, were £163,000 in bar silver from New York, £10,000 from Chile and £3,000 from the West Indies; total, £176,000. Shipments were £42,000 in bar silver to Bombay, £18,702 to Penang and £1,674 to Shanghai; total, £62,376.

Indian Exchange is lower and offers for Council bills in London have been as low as 15.90d. per rupee. The India Council, however, refused to sell any bills below 16d. A statement just published shows that for the Indian fiscal year which ended March 31st, 1900, the total sales of Council bills were 283,892,943 rupees, at an average price of 16.07d. For the preceding year, 1898-99, the total was 281,053,071 rupees, at an average of 15.98d. per rupee.

Shipments of specie from San Francisco in March included $257,378 gold and $1,098,102 silver; besides $200 in 5c. nickel coins to Honolulu. For the three months ending March 31st the shipments were:

	Gold.	Silver.	Totals
Hongkong	$22,736	$1,954,590	$1,977,326
Shanghai	.....	381 861	381 861
Samoa	1,180	.....	1,180
Central America	8,875	6 450	15,325
Tahiti	.....	4,000	4,000
Total foreign	$32,791	$2,346,901	$2,379,692
Honolulu	275,000	52,800	327,800
New York	1,987,458	234,170	2,221,628
Total	$2 295,249	$2,633,871	$4,929,120
Totals, 1899	8,369,973	1,571,791	9,941,764

The silver shipments this year included $648,937 in Mexican dollars in March and $1,389,333 in the three months; which compares with 270,767 and $314,180 last year.

Receipts of specie from Mexico at San Francisco, chiefly by rail, for the quarter ending March 31st, were as follows:

	1899.	1900.
Silver dollars	$55,520	$1,149,732
Silver bullion	255,841	381,554
Gold bullion	223,411	104,822
Total	$534,872	$1,636,108

The receipts of dollars for the quarter present quite a contrast, such extremes rarely occurring. A year ago there was no demand for these dollars here in the early months, while this year the demand has been unusually heavy.

Exports of merchandise from the United States in March were the largest on record, the total value being $134,313,348; more by $29,753,659 than in March, 1899. For the nine months of the fiscal year from July 1st to March 31st the statement is as follows:

	1899.	1900.
Exports	$947,992,955	$1,053,832,675
Imports	500,022,579	641,635,560
Excess, exports	$447,970,376	$412,196,715
Add excess of exports, silver		16,819,532
Total		$429,016,247
Deduct excess of imports, gold		7,840,018
Net apparent balance		$421,176,229

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

Other Metals.

Daily Prices of Metals in New York.

April.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London. Pence.	Copper. Lake. cts. ₱ lb.	Copper. Electrolytic ₱ lb.	Copper. London. £ ₱ ton	Tin. cts ₱ lb.	Lead cts. ₱ lb.	Spelter. N. Y. cts. ₱ lb.	Spelter. St. L. cts. ₱ lb.
14	.....	59½	27⅝	16.92½	16.80	.....	31¾	4.67½	4.75	4.60
16	.....	59½	....	16.92½	16.80	.....	31¼	4.67½	4.75	4.60
17	4.87⅛	59⅜	27⅛	16.92½	16.80	78¾	31¼	4.67½	4.75	4.60
18	4.87⅛	59½	27⅜	16.92½	16.80	78¾	31¼	4.67½	4.75	4.60
19	4.87½	59½	27⅜	16.92½	16 80	78¼	31¼	4.67½	4.75	4.60
20	4.87¼	59¼	27⅜	16.92½	16.80	77⅝	31¼	4.67½	4.75	4.60

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

In our issue for March 24th last, in the table of "Daily Prices of Metals in New York," the price of electrolytic copper for March 20th was given, in a few copies, at 16⅝c. This was a typographical error, which was discovered and corrected when only a part of the edition had been printed. In most copies of the "Journal," therefore, it was given correctly at 16⅜c. The price on March 19th and on March 21st was also 16⅜c., as an examination of the table will show. Our attention has been called to the error, and this correction is therefore made for the benefit of those who may have received one of the few copies in which it occurred.

Copper.—The market is strong. Consumption both here and abroad continues excellent and our manufacturers report that orders are coming in at a very satisfactory rate. From Europe we learn that manufacturers there are very poorly supplied and large orders can be expected. We quote: Lake, 16.90@16.95c.; electrolytic in cakes, wirebars and ingots, 16.75@16.85c.; in cathodes at 16½@16⅝c.; casting copper, 16⅝c.

The London market, which closed last Thursday at £79 for spot, £77 10s. for three months, opened on Tuesday at £78 15s. for spot, £77 5s. for three months. On Thursday it eased off to £78 2s. 6d. for spot, £76 5s. for three months, and it closes at £77 12s. 6d. for spot, £1 5s. lower for three months.

Cables from London report an increase in the visible supplies of 2,000 tons. Refined and manufactured sorts we quote: English tough, £80 10s.@£81 10s.; best selected, £81 10s.@£82; strong sheets, £88 10s.@.89; India sheets, £85 10s.; yellow metal, 7¼@7⅝d.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the producing companies, was as follows, for March and the three months ending March 31st, stated in long tons (2,240 lbs.) of fine copper:

	March. 1899.	March. 1900.	3 months. 1899.	3 months. 1900.
U. S., Reporting mines	19,918	19,883	54,591	54,993
U.S., outside sources	2,000	3,400	5,850	10,200
Total, U. S.	21,918	23,283	60,441	65,193
Foreign, reporting mines	8,077	7,544	21,328	20,653
Totals	29,995	30,827	81,769	85,846
Exports, U. S.	14,414	20,148	32,409	46,882

The United States production for March was greater by 2,386 tons than in February. For the three months there was an increase in United States production of 4,752 tons, or 7.9%, as compared with 1899. Foreign production shows a decrease of 675 tons, or 3.1%. The exports from the United States in March were very large; for the three months they show an increase of 16,473 tons, or 50.8% over last year.

Messrs. Jackson Brothers report the total exports of copper from Chile and Bolivia for the year ending December 31st as below; the total export is given in the first column, and the equivalent in fine copper in the second:

	Total Quintals.	Fine Copper. Quintals.
Bar copper	400,955	400,955
Regulus or matte	72,006	32,949
Copper ore	646,028	118,193
Total	....	552,097

This compares with a total of 554,538 quintals in 1898. The exports (given in fine copper) were divided as follows: Great Britain, 410,520 quintals; France, 92,257; Germany, 19,997; United States, 7,368; Peru, 396; destination not known except generally as Europe, 21,542 quintals.

Tin.—The market this week has been rather quiet. Somewhat larger arrivals have for the moment relieved the scarcity of spot tin. We quote spot at 31¼c., May at 31c.

The London market, which closed last Thursday at £139 5s. for spot, £138 2s. 6d. for three months, opened on Tuesday at £139 10s. for spot, £138 10s. for three months. On Wednesday it was £140 for spot, £138 15s. for three months; on Thursday, £139 10s. for spot, £138 12s. 6d. for three months. It closes at £139 7s. 6d. for spot and £138 10s. for three months.

Lead.—The market has been active and numerous transactions are reported. Prices are unchanged at 4.65@4.70c. New York, 4.55@4.57½c. St. Louis.

The London market is again higher and our cables advise a large business doing. The closing quotations are cabled as £17 for Spanish lead, £17 2s. 6d. for English lead.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: There is no change in pig lead. Chemical and Missouri brands are selling in a retail way at 4.57½c., and argentiferous at 4.65c.

Spelter.—The market is strong and active. Consumers generally appear to be poorly supplied and the stocks of metal much depleted by the heavy exports which are being made. At the close we quote the market as 4.60c. St. Louis, 4.75c. New York.

The foreign market is also higher, the closing quotations being cabled as £22 11s. 3d. for good ordinaries, £22 17s. 6d. for specials.

Antimony.—There is no change in this article. The prices remain at 10½@11c. for Cookson's; 9¾@9⅞c. for Hallett's; 9½@9⅝c. for U. S. Star.

Nickel.—The price of this article is now 45@50c. according to size of order. This is an increase of 5c. over recent quotations.

Platinum.—Consumption has increased and prices are higher. For ingot platinum in large quantities $18.20 per Troy oz. is quoted in New York.

Chemical ware (crucibles and dishes), best hammered metal, from store in large quantities, is worth 70½c. per gram.

Quicksilver.—Quotations remain unchanged at $51 per flask for large lots, New York. For small orders the prices are $52.50@$54. The London price continues at £9 12s. 6d. with the same figure named for second hands.

San Francisco quotations are $51.50@$52 per flask for local deliveries, and $46.50@$47 for export.

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

Aluminum.	Per lb.		Per lb
No. 1, 99% ingots	33@37c.	Ferro Titanium (20%)	$1.00
No. 2, 90% ingots	31@34c.	Ferro-Tungsten (37%)	40c.
Rolled sheets	42c. up	Magnesium	$2.75@$3
Alum.-bronze	20@23c.	Manganese (over 99%)	$1.05
Nickel-alum	33@39c.	Mangan'e Cop. (20% Mn)	32c.
Bismuth	$1.70	Mangan'e Cop. (30% Mn)	38c.
Chromium (over 99%)	1.10	Molybdenum (Best)	$1.45
Copper, red oxide	60c.	Phosphorus	40@50c.
Ferro-Molyb'um (50%)	$1.05	Tungsten (Best)	$1.00
Ferro-Titanium (10%)	90c.		

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

LATE NEWS.

A dispatch from Berlin, April 18th, says that the "Deutsche Colonial Zeitung" publishes a statement from Dr. Passarge, the well-known German colonial, to the effect that the De Beers Mining Company recently secured a controlling interest in the properties of the Southwest Africa Company, on whose soil, near Gibeon, Great Namaqua Land, diamond blue clay beds have been found.

Numerous reports are current about the American Steel and Wire Company. Among other things, it is said that the control of the company has actually passed from the hands of the Chicago party during the recent flurry; that John W. Gates will be called on to resign and that H. C. Frick will be asked to take the management of the company. The truth of these reports cannot be ascertained; but it appears very probable that a large interest has changed hands. A meeting of the directors is being held to-day, at which some developments may be expected.

Montrose County, Colorado.

(From Our Special Correspondent.)

The Rare Metals Mining and Manufacturing Company of Denver will at once commence the erection of a plant for the treatment of uranium ores at Cashen, 75 miles from Placerville, on the Rio Grande Southern Railroad. The company has secured over 60 claims and will ship the product to France. The tests of the ore, sent abroad for some time past at large expense, have proven satisfactory and active development will commence at once. Mr. Poulot, the manager, has for several years been in the West to look up uranium ores and has at last succeeded in finding these deposits.

By Telegraph.

(From Our Special Correspondent.)

Leadville, Colo., April 19th.—The Leadville Home Mining Company has fulfilled its promises and pays up the original capital May 1st. Notice was given to-day that a dividend of 100% on the capital stock of the company—$1 per share, or $50,000—has been declared, payable to stockholders of record May 1st, 1900. The transfer books of the company will be closed April 27th, 1900, and remain closed until May 2d, 1900.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 500.)

New York. April 20.

Heavy Chemicals.—Only a few contracts for future delivery are noted, and the market generally continues quiet. Foreign alkali sold at 85c. late shipments this year, while spot brought 90c. Domestic alkali sold over next five at 85c. f. o. b. works, and caustic soda at $1.85 f. o. b. works. Bicarb. soda made some sales for export at quotations. Bleaching powder is easy, as arrivals are more frequent and heavier. Chlorate of potash is also easy.

We quote, per 100 lbs., as below:

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali, 58%.	80@85	95@1.00	85@90
" 48%.	85@90	1.00@1.05	1.02½@1.05
Caustic Soda, high test	$1.85@$1.90	$2.37½@2.50	$2.50@2.60
powd., 60%	.....	3.00@3.25	.....
70@74%.	.....	3.25@3.50	.....
98%.	.....	3.50@4.00	3.75@4.00
Sal Soda	70@80.	.....	67½@72½
" conc.	1.45@1.75	.....	1.60@1.65
Bicarb. Soda..	1.25@1.37½	.....	1.75@2.00
" " extra	3.25@3.50	.....	.....
Bleach Pdr., Eng. prime..	.....	.....	1.90@2.00
other br'nds.	.....	.....	1.70@1.85
Chl. Pot cryst	.....	9.50@9.75	10.00@10.25
" powd.	.....	9.75@10.00	10.25@10.50

Acids.—All acids show good contract deliveries, and oxalic is softer in price, owing to competition. Blue vitriol meets with a good export demand, notwithstanding the efforts of foreigners to employ other substances as substitutes.

Most substitutes suggested are either more expensive or inefficient. The most satisfactory, however, are copper sulphate mixed with lime or a mixture of equal parts of sublimed and ground sulphur, but even these agriculturists are not much inclined to use, though some find them cheaper than copper sulphate.

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

Acetic, No.8 in lbs.	$1.62½	Nitric, 36°	$3.87½
Blue Vitriol,	5.12½@5.25	Nitric, 38°	4.12½
Aqua Fortis, 36°	3 62½	Nitric, 40°	4.37
Aqua Fortis, 38°	3 87½	Nitric, 42°	4.75d.
Aqua Fortis, 40°	4.12½	Oxalic	5.85@6.00
Aqua Fortis, 42°	4.50	Sulphuric, 66°	1.20
Muriatic, 18°.	1.20	Sulphuric,60°	1.05
Muriatic, 20°.	1.35	" bulk 50° ton	14.00
Muriatic, 22°.	1.50	Sulphurous, 100% SO_2anhydrous.	8.00@10.00

Brimstone.—Arrivals are heavy, amounting at this port for the week to 4,275 tons. Hence prices are weak. Best unmixed seconds are quoted on spot at $21@$21.50 per ton, and shipments at $20.50@$20.75, while best thirds are worth about $2 less per ton.

Pyrites.—We note charters from Huelva, Spain, as follows: 1,294 tons to Pensacola, Fla., at 12s.; 1,331 tons to New York, Philadelphia or Baltimore at 10s. 9d.; and 1,704 tons to the north of Hatteras at 10s. 10½d.

Demand for pyrites is pretty good, while prices are practically unchanged. We quote: Mineral City, Va., lump ore, $4.50 per long ton (basis 42%), and fines, $4.20. Charlemont, Mass., lump, $5.50, and fines, $5. Pilley's Island, lump, nominally, $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 Pilley's Island, N. F., 50%.

Fertilizing Chemicals.—A moderate demand exists for the leading ammoniates. The sales of fertilizer tags in Alabama in the quarter ending March 31st amount to 1,443,110, as against 941,700 tags last year, showing an increase in value of over $25,000.

Sulphate of ammonia, foreign gas liquor, for shipment is quoted $2.97½@$3, and for spot at $3.05 per 100 lbs., while the domestic is worth $2.92½@$2.95 f. o. b. Boston. High-grade Western blood is limited in supply, and holds at $2.25 per unit, f. o. b. Chicago. A large sale of tankage by a prominent Chicago packing house is reported covering their entire production from May to November at about $2.20 and 10 New York delivery for 9 and 20. Calcutta bone meal is quoted for shipment at $25.50@$23.50 per ton. Other quotations are: Concentrated tankage, $1.95@$1.97½ per unit, f. o. b. Chicago; domestic steam ground bone, $20@$21.50 per ton; regular bone black, $20@$21, and dissolved, $15@$16.

Nitrate of Soda.—The steamer "Charles Racine," with 19,800 bags, lying at Hampton Roads, has been ordered to New York. The market continues firm, and spot sales are reported up to $2.30 by jobbers, while importers continue to quote $2.15 per 100 lbs. for spot, $1.90 for May arrivals, and $1.75 for future shipments.

The statistical position of nitrate of soda in Europe is shown below by the Permanent Nitrate Committee, in long tons, for the quarter ending March 31st, 1900, comparison being made with the corresponding period in 1899.

Europe	1899.	1900.	Changes.
Exports to	259,488	242,026	Dec. 17,462
Imports	381,170	335,140	Dec. 46,030
Deliveries	443,740	470,470	Inc. 26,730
Loadings for, April 1st	78,286	33,383	Dec. 44,903
Vis supply, April 1st	516,280	513 900	Dec. 2,380

As compared with last year the exports to Europe in March, 1900, show a decrease of 6,894 tons, and the imports 56,430 tons, while the deliveries show an increase of 5,060 tons. It is of interest to note that the visible supply in Europe, including the quantity in store and afloat on April 1st, 1900, shows a falling off of 134,150 tons as compared with March 1st.

Messrs. Jackson Brothers of Valparaiso, Chile, under date of March 10th, advise us that the nitrate of soda market is firm. No actual advance in price has taken place owing to the general rise in freight rates for all shipments. The demand has ruled principally for August-November deliveries of 95%, but sellers are indisposed to entertain offers of 5s. 3d@5s. 4d. ($1.26@$1.28) alongside terms, so that business has almost been confined to the nearer deliveries of April to July, differences of 1d. per qtl. being made for each month. In the refined quality only one transaction is reported of monthly parcels, April-July, at 5s. 3½d. alongside. February exports were 2,502,000 qtls., making a total of 4,518,000 qtls. for the two months of this year, as against 4,428,000 qtls. in 1899. Sales for the fortnight ending March 9th aggregate 728,000 qtls. We quote 95% March, 4s. 11½d.; April, 5s.; May, 5s. ½d.; June, 5s. 1d.; July, 5s. 2d.; August, 5s. 3½d.; September-November, 5s. 4d.; all ordinary terms, nominal. The 96% is offered at 5s. 4d. alongside for March-May delivery. The price of 4s. 11½d. with all round freight of 32s. 6d. stands in 7s. 1¾d. ($1.71) per cwt., net cost and freight without purchasing commission.

Phosphates.—In Florida production continues on the usual scale, while in South Carolina and Tennessee it is growing. Export business is rather quiet just now, and it is reported that the Tennessee people are disposed to shade their prices for summer shipments. Charters noted are 1,850 tons from Fernandina to a European port at 20s., April sailing; 1,250 tons and 1,594 tons from Punta Gorda to Baltimore at $2.25, and 965 tons from Tampa to Philadelphia at $2.75.

The exports of Florida phosphates (pebble and rock) from Port Tampa in March amounted to 9,800 tons, making 30,388 tons for the first quarter this year, against 41,332 tons last year, showing a decrease of 9,944 tons. Fernandina shipped in March 12,245 tons, making 34,359 tons for the quarter, against 51,433 tons last year, recording a falling off of 17,074 tons. There were no shipments from Brunswick in March or February, and only 1,719 tons were sent forward in January, while the shipments in the quarter ending March 31st last year aggregated 17,603 tons. No shipments were reported in March from Punta Gorda.

Concerning export prices of high-grade Tennessee rock we understand from a prominent exporting firm, that their lowest prices for over six months average over $6.50 per ton from Gulf ports, $7@$8 from Atlantic ports and $4@$4.50 f. o. b. mines, Mt. Pleasant.

Ocean freight rates from Florida ports are about as follows: To Baltic ports, $5.04@$5.16 per ton; Continental, $4.76@$4.88, and Mediterranean ports, $4.89@$5.01, while from Savannah, Ga., to the United Kingdom, $4.25@$4.50 is asked. We quote as follows:

Phosphates.	Per Ton F. o. b.	C. i. f. Un'd Kingdom or No Sea Ports.	
		Unit.	Long ton.
*Fla. hard rock (77@80%)	$8.00@8.50	8¼@8¾d.	$12.87@13.06
*Fla. land pebble (68@73%)	4 35	7d	9.80
*Fla. Peace River 58@63%)	3.00@3 50	6¾@7d	8.10 @ 8.40
†Tenn. rock (78@80%)	3.25@3.75	7@7½d.	10.06@11 25
†Tenn rock (70@75%	2.25@3 00	.....	.....
‡So. Car. rock, undried.	3 75@4.00	.....	.....
‡So. Car. rock, dried	4.50@4.75	.....	.....
‡So. Car. rock, ground	6.00	.....	.....
Algerian, rock (63@70%	.....	7d	9.30
Algerian, rock (58@63%)	.....	6¾d	8.18

*Fernandina. †Mt. Pleasant. ‡Fetteressa.

Concentrated phosphates, 13@15% average P_2O_5, 62½c. per unit ($9 per ton). Tennessee acid phosphates, high grade, $12 per short ton, and low grade, $10 f. o. b. Nashville.

Liverpool. April 11.

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

For the ordinary lines of heavy chemicals, the market continues firm, and although fresh business is not active, shipments against contracts continue on a large scale. The exports of alkali and bleach for the month ending March 31st are as follows: Total exports to all quarters, including United States, cwts., alkali, 374,788; bleaching powder, 148,291. Exports to United States alone, cwts., alkali, 95,664; bleaching powder, 121,839. These shipments are the heaviest of the last three months, while, as compared with the corresponding month of 1899, the increase is very considerable.

Soda ash is firm at the usual varying quotations, according to destination. We quote spot range for tierces, about as follows: Leblanc ash, 48%, £4 15s.@£5; 58%, £5@£5 5s. per ton net cash. Ammonia ash, 48%, £4 5s.@£4 10s.; 58%, £4 10s. @£4 15s. per ton net cash; bags, 5s. per ton under price for tierces. Soda crystals are quietly steady at £3 2s. 6d. per ton, less 5% for barrels, or 7s. less for bags, with special terms for a few favored markets. Caustic soda is strong on account of scarcity, and we quote range as follows: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.; 76%, £11@£11 5s. per ton net cash.

Bleaching powder is meeting with only a moderate demand outside of running contracts, and hardwood is quoted at £7@£7 5s. per ton net cash.

Chlorate of potash is dull at 4¼@4½d. per lb. net cash.

Bicarb. soda is selling to a moderate extent at varying prices, according to destination, ranging from £5 5s. to £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is inactive, and lower at about £11 15s.@£11 17s. 6d. per ton, less 2½% for good gray 24@25% in double bags f. o. b. here.

Nitrate of soda is rather easier at £8 17s. 6d. @£9 2s. 6d. per ton, less 2½% for double bags f. o. b. here, as to quality and quantity.

MINING STOCKS.

Complete quotations will be found on pages 487 and 488 of mining stocks listed and dealt in at:

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

New York. April 20.

Further weakening in prices of the copper shares disturbed the market, but on the whole the actual transactions reported were not as large as had been anticipated. Amalgamated went down to $92, and later recovered to $93⅛ bid, while Anaconda, after selling ex-dividend at $50½, fell to $49½, and on Wednesday recovered to $49¾ on sales. Union of North Carolina sold at $4.75@$5, and British Columbia at $11@ $11.75. Arizona Lead sold at $14⅜. Arizona Copper Smelting brought $10.50.

American Smelting and Refining shares sold at $39@$36½ for the common, and $90⅛@$88¼ for the preferred.

In the Colorado section some speculation in the Cripple Creek shares has been heard, and various rumors are current about the Elkton-Tornado-Raven consolidation into the Elkton Consolidated Gold Mining Company with a capital stock of $3,000,000, divided into $1 shares. According to report, the Raven and Tornado will go out of existence. The stockholders of the Raven Company are to receive 625,000 shares of the new Elkton stock; the Tornado, 500,000 shares, and the old Elkton, 1,125,000 shares, in addition to a dividend of 250,000 shares, making 1,375,000 shares. The total distribution of new Elkton stock will therefore be 2,500,000 shares, leaving 500,000 of the total capitalization in the treasury. Expected litigation between the three companies is given as the cause of this consolidation. The annual meeting of the Elkton is to be held in July, when all arrangements are to be completed for the consolidation. Elkton (old stock) sold in New York at $1.25. Of the other Cripple Creek stocks Isabella brought $1.20@ $1.25; Jack Pot, 61c.; Pharmacist Consolidated, 13½@14c.; Alamo, 16½c., and Creede & Cripple Creek, 13½c.; Work, which sold at 33c., held its annual meeting in Colorado Springs recently and announced a credit balance, represented by cash and securities, of $12,981, after liquidating a debt of $1,744 during the year. Mollie Gibson sold up 1c. at 25c.; Adams Consolidated at 20c.; Argentum-Juniata, 21c.; Little Chief, 21c.; and Dunkin at 10c., which is the first sale in New York for some time. Reports that High Five stock floated by the Prentice Investment Company is quoted in New York at 75c. indicate that this is an exchange quotation. The fact is, this price has been made by the company itself and is given in circulars it is sending out. We understand efforts have been made by the promotors to trade some High Five stock for Western real estate.

In the Utah section Ontario brought $8.50 and Horn Silver $1.20.

Of the California shares more has been done in Quicksilver common at $2@$1.75. Standard Consolidated holds at $3.50, and Brunswick sold at 30@32c.

Alice of Montana changed hands at 66@67c., and Father de Smet of South Dakota at 10c.

Auction sales include 120 common shares Mahoning Coal Railroad Company at $175, and 22 shares preferred at $115.

Boston. April 18.

(From Our Special Correspondent.)

The flurry in the industrials in New York had its effect here and for the time rather diverted

attention from mining stocks. It was less of a break, however, in one way than in New York, and our Boston holders were not so badly scared as your New Yorkers seem to have been. State Street is credulous enough at times, but it is not as bad as Wall Street, I think, and the Chicago yarns found fewer believers. That the iron market, which was at the height of prosperity one week, should go to pieces the next was too much.

In the coppers, Boston & Montana has been the sensation of the week. After the announcement of the $10 dividend—though that had been generally expected—there was a sharp fall and the stock sold on Tuesday down to $305, losing $13 on the day's transactions. To-day there was an equally sharp recovery and the shares gained $16, closing at $321.

The other coppers were comparatively quiet, and a little more interest has been shown, chiefly in the Lake companies. The blind pool stocks have been rather neglected, which is not an occasion for grief, perhaps. Calumet & Hecla sold to-day at $747; Tamarack at $190, and Quincy at $139. In the speculative list Butte & Boston closed at $78; Isle Royale at $27; Arcadian at $23; Rhode Island at $5.

Outside the coppers but little has been done. There were some sales of Cochiti at $11½. United States Mining is not quoted. United States Oil was neglected, but a little was done in Central Oil at $18.

The market is still a traders' market, and the outsiders come in to a very limited extent only. The "spring boom" has faded away—if it ever existed.

Denver, Colo. April 14.

(From an Occasional Correspondent.)

Efforts are being made to keep the Mining Exchange from passing into oblivion. Thus, when the old directors resigned recently a new board was elected, constituting R. E. Goodell, president; E. P. Brown, vice-president; James H. Crandell, L. M. Davidson, R. A. Metcalf, H. A. McIntyre, R. A. Reynolds, James A. Swarthout, and Herbert S. Shaw. On April 17th the remaining officers will be elected and committees appointed for the ensuing year.

Salt Lake City. April 14.

(From Our Special Correspondent.)

Another general slump has occurred in Utah mining shares, from which there is a partial recovery, though matters are far from wearing a healthy tone. The strike or walkout at the Germania plant of the American Smelting and Refining Company is claimed by the brokers to be the chief cause for this latest overturning and the speedy strengthening of the shares of the large shippers, when it became evident there was to be no serious obstacle to the marketing of ores, gives color to this view. Notwithstanding all this, the most serious blow to the local market for some months is another paring down of Mercur's quarterly dividend to 12½c., or $25,000, payable April 20th—half what was promised and confidently counted on. Manager George Dern makes a candid statement, which forcefully shows the truth of my summing up of the 1899 report, in the "Engineering and Mining Journal." As I then stated, the dividend for the last quarter of 1899 was not earned prior to January 1st, 1900, and that all the betterments for the prior year were not paid for. In brief, not a single forecast of the Mercur management made in the past 18 months has been fulfilled; every criticism in these columns to the contrary not only has been proven well-grounded, but the sequel shows some did not state the whole disagreeable truth. As I have ever said, the fault lies in the management, not in the property. Now that President John Dern is in Europe, his son, Manager George Dern, is making a more creditable record and his evident determination to acquaint shareowners with the truth and the whole truth is hope-inspiring. At present there is no debt and current earnings indicate that the July quarterly dividend will be $50,000, with a surplus in the treasury. Wednesday, after the directors' meeting, the shares broke badly, $4 being the best bid. It closes the week $4 bid, $4.90 asked. There is nothing new relative to the Mercur-De La Mar consolidation and probably will not be for a fortnight. Yesterday Manager Cohen forwarded to Captain De La Mar at Paris the reports on ore measurements, values, etc., and he will not have another conference with President Dern until after these come to hand.

Total sales made during the week is reported at 101,287 shares, which sold for $47,690.83.

Bullion-Beck holds near $3. Centennial-Eureka sagged a few points, but closes strong. The 100,000 treasury shares, which have occasioned some uneasiness, will be practically retired at the forthcoming annual meeting, their control being turned over to the stockholders. Daly-West softened under $18 on the opening of the week, attributable to the smelter situation. It materially strengthened yesterday and closes the week $18.85 bid, $19.20 asked. The regular $37,500 dividend was paid to-day. Dexter is soft. The trust deed loan for $25,000 is due on Monday and no provision is made to take care of it. Hence it is possible that foreclosure proceedings may be instituted.

San Francisco. April 14.

(From Our Special Correspondent.)

There has been rather a quiet market this week and business has been light. Prices, however, were fairly maintained in spite of the dullness.

In the Comstocks the north end stocks were firm, Consolidated California & Virginia selling at $1.70; Ophir, 78c.; Sierra Nevada, 53c.; Gould & Curry, 29c. In the middle group Hale & Norcross brought 35c.; Potosi, 15c.; Chollar, 14c.; Savage, 11c. In the Gold Hill stocks Caledonia held its recent advance, selling at $1.20@$1.25. Yellow Jacket was 34c.; Crown Point, 21c. Outside the Comstocks there was some trading in Standard Consolidated at $3.10.

Business on the Producers' Oil Exchange was active. Some sales noted are: Buckhorn, $3.50@$3.75; Home, $3.55@$3.70; Yukon, $1.25; Barker Ranch, $1.15; Anaconda, 45@50c.

According to the sworn monthly statements, the following mining companies report having had cash on hand at the beginning of this month, with all the March expenses paid, unless otherwise stated: Alta, $790, with $500 due the bank; Andes, $3,096; Alpha Consolidated, $760; Belcher, $3,708; Best & Belcher, $962, with mine expenses for March mostly paid and an assessment being collected; Bullion, $1,784; Caledonia, $12,454, with March expenses at the mine unpaid; Consolidated California & Virginia, $7,420 in cash and a shipment of concentrates, market value unknown on the way and an assessment being collected; the liabilities of this company are $21,000 due on notes at the bank and $3,700 due on the March expenses at the mine; Crown Point, $4,826, with March expenses at the mine unpaid and an assessment being collected; Consolidated Imperial, $2,506; Challenge Consolidated, $2,508; Consolidated New York, $1,038; Confidence, $129, with March expenses at the mine unpaid and an assessment being collected; Exchequer $1,344; Gould & Curry, $5,518, with $4,000 due the bank and March expenses at the mine unpaid and an assessment being collected; Julia Consolidated, $192; Justice, $342; Ophir, $4,441, Overman, $4,386, with March expenses at the mine unpaid; Segregated Belcher, $374; Savage, $1,602, with an assessment being collected; Sierra Nevada, $8,668; Silver Hill, $2,137; Scorpion, $18; Standard Consolidated, $144,130 in coin and invested in United States bonds, with the March cleanup of bullion to be received and the mining expenses for that month unpaid; Syndicate, $1,-$623; Union Consolidated, $2,683; Utah Consolidated, $1,347.

The following mining companies report having had an indebtedness on the first of this month: Chollar, $3,517; Hale & Norcross, $1,615; Mexican, $2,288; Potosi, $4,699. All these companies are collecting assessments.

London. April 5.

(From Our Special Correspondent.)

I referred recently to the flotation of several new companies, in West Africa and elsewhere. These are not all of the new concerns now being brought forward.

Two new companies introduced to the public are to operate mines in Spain, one being a copper and the other a lead proposition. The first named is the United Spanish Copper Mines, Limited, with a capital of £100,000. It has been formed to acquire six properties in the Cerro de las Minas in the Province of Cuenca, Spain. The prospectus is of the usual sort, quoting ore containing from 8½ to 24% copper and silver contents from 10 to 37 oz. The intention is to hand-pick the ore and ship it to England for treatment. The directors and mining engineers are not people of any public standing, so no particular value attaches to their opinions.

The other new Spanish company is the Spanish Mining Properties, Limited, and it has been formed by John Taylor & Sons to extend their connections with the lead mining industry in Spain. For many years the firm has managed the Linares Lead Company and no doubt the present price of lead has encouraged them to look for additional properties. The directors of the new company are practically identical with those of the Linares Company, so that the prospects of the new venture are sufficiently bright. To start with, they intend to acquire certain properties in the Carolina District in the Province of Jaen. These properties have been worked before by local owners, but want of capital and the low price of lead prevented success. It is estimated that with capital and modern management a good profit can be made from their working. I may mention here that the high price of copper and lead has been used very largely lately by promoters both in Spain and in England for the purpose of resuscitating old failures in Spain. Some very absurd propositions are coming over to London, and no one of mining experience will touch them. They are taken up by people here for an old song in the hope that they may be able to float them off on a gullible public. There are dozens of propositions near Rio Tinto passing round at the present time, and none of them are worth anything. It is rather a relief, therefore, to come across an enterprise of undoubted honesty, such as John Taylor & Sons' lead proposition.

Paris. April 8.

(From Our Special Correspondent.)

The mining stock market continues generally quiet. The copper stocks and the metallurgical shares are still high, but without notable fluctuations.

There has been but little change in the South African gold stocks. Everyone now expects a long war, and fluctuations depend less upon the momentary changes in the conflict.

The movement of gold and silver in France for the two months ending February 28th is reported by the Ministry of Commerce as below:

	Imports, Francs.	Exports Francs.	Excess, Francs.
Gold:			
1900	56,136,933	12,860 073	Imp. 43,276,060
1899	60,431,911	16,103,254	Imp. 44,327,687
Silver:			
1900	22,567,945	22,570,270	Exp. 2,334
1899	20,660,220	25,152,141	Exp. 4,491,911

Imports of copper and nickel coins, taken at their face or coinage value, were 9,900 fr., against 15,300 fr. last year. Exports were 20,700 fr., against 64,800 fr. in 1899. Azote.

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Alamo	Utah	May 21.	Salt Lake City, Utah
Alaska	Utah	May 4.	Salt Lake City, Utah.
Anaconda	Mont.	May 19.	Anaconda, Mont.
Anchoria Leland	Colo	May 15.	Colo. Springs, Colo.
Boston & Colo. Sm	Colo	May 10.	Argo, Colo.
Crown Point	Nev	June 7.	San Francisco, Cal.
Church	Cal.	May 7.	San Francisco, Cal.
Goleta	Cal.	May 19	San Francisco, Cal.
Homestake.	Utah	May 7.	Salt Lake City, Utah.
Iron Silver	Colo	May 1	30 Broad St., N. Y.
Justice	Nev.	May 7.	San Francisco, Cal.
Nugget	Colo	May 5.	Colo. prings, Colo.
Penn. Coal	Penn.	May 16.	Dunmore, Pa.
Playa de Oro.	Ecuado'	May 1.	Versailles, Ky.
Tamarack..	Mich	May 3.	Boston, Mass.
Tasmania Cop'er	Colo	Apr. 30.	Cheyenne, Wyo.
Velardena M. & S	Colo	May 7.	Denver, Colo.
Wyandot	Mich.	May 14.	Boston, Mass.

DIVIDENDS.

NAME OF COMPANY.	Latest Dividend. Date	Per share.	Total.	Total to date.
†Ala. Con. C. & I., pf.	May 1	$1.75	$43,750	$87,500
†Amalgam'ted Copper	Apr. 30	2.00	1,500,000	4,500,000
Anaconda Copper	Apr. 30	2.00	2,400,000	14,550,000
Boston & Montana	May 29	10.00	1,500,000	17,200,000
*Buffalo Hump	May 1	.10	25,000	100,000
*Bullion Beck, Utah	Apr. 16	.10	10,000	2,478,400
*Commonwealth Zn.	May 1	.05	5,000	40,000
*Con. Gold Mines, Colo	Apr. 25	.01	10,000	40,000
Florence, Mont.	Apr. 16	.05	22,000	252,000
*Gold Coin, Colo	Apr. 25	.02	20,000	440,000
*Golden Cycle, Colo.	Apr. 18	.01	10,000	298,500
*Grand Cañon, Ariz.	Apr. 16	.01	2,400	9,600
*Grass Valley Expl	Apr. 20	.25	7,500	60,000
*Holy Terror, S. Dak.	Apr. 10	.01	5,000	187,000
Eorne. Colo	May 1	1.00	50,000	50,000
*Homestake, S. Dak.	Apr. 26	.50	105,000	8,563,750
Idaho, Idaho	Apr. 15	.01	8,188	8,188
*Independence, Colo.	May 1	.01	12,500	50,000
Mary McKinney, Colo	Apr. 11	.06	60,000	120,300
†Mercur, Utah	Apr 22	.42½	25,000	1,441,000
*United Verde, Ariz	Apr. 16	.50	150,000	1,462,500
†Vindicator, Colo	Apr. 25	.05	53,250	411,000

* Monthly. † Quarterly.

ASSESSMENTS.

NAME OF COMPANY.	Location.	No	Delinq.	Sale.	Amt.
Acorn	Utah	2	Apr. 21	May 12	.03½
Alaska	Utah	..	Apr. 25	May 14	.02
Badger	Ore.	1	Apr. 2	May 2	.10
Bald Mtn. Ext	Cal.	..	Apr. 23	.....	.03
Best & Belcher	Nev.	70	May 11	May 31	.15
Bunker Hill	Utah	4	Apr. 27	May 15	.00½
Chollar	Nev.	51	Apr. 25	May 16	.15
Con. Cal. and Va.	Nev.	15	Apr. 10	May 1	.20
Confidence	Nev.	34	Apr. 18	May 9	.20
Dewey Gravel	Cal.	...	Apr. 24	.....	10.00
Eureka Con. Drift	Cal.	...	May 8	...	.00½
Eureka Swansea Ext.	Utah	1	Apr. 16	May 15	.00½
Kutonia	Utah	1	May 4	May 24	.01
Excelsior Drift	Cal.	...	Apr. 30	.....	.03
Four Aces	Utah	4	Apr. 26	May 16	.02
Goleta Con	Cal.	1	Apr. 30	May 28	.06
Gould & Curry	Nev.	89	Apr. 10	May 2	.15
Grape Vine Canyon	Cal.	2	May 8	May 29	.07
Hale & Norcross	Nev.	4	Apr. 9	Apr. 30	.10
Hilda Gravel	Cal.	...	May 7	.....	.01
Independent	N'me	1	May 3	May 21	.10
Lower Mammoth	Utah	...	Apr. 10	.....	.05
Lucky Bill	Utah	...	Apr. 30	May 21	.02
Marina Marsicano	Cal.	23	May 7	May 28	.62
Mariposa Com'l	Cal.	16	May 10	June 5	10.00
Maxfield	Utah	7	Apr. 30	May 28	.09
Mayflower	Utah	...	May 1	May 20	.00½
Meteor	Utah	...	Apr. 14	May 17	.00½
Mexican	Nev.	62	Apr. 11	May 2	.15
National Con	Cal.	11	May 1	.....	.05
North Rapidan	Nev.	..	Apr. 24	.....	.04
Osceola Con.	Cal.	9	Apr. 28	May 21	.01
Pacific	Utah	2	Apr. 9	Apr. 24	.00½
Peabody	Cal.	...	Apr. 26	.....	.10
Potosi	Nev.	55	Apr. 18	May 9	.15
Sailor Con	Cal.	3	Apr. 14	May 5	.01
Savage	Nev.	100	May 8	May 28	.10
Silver Park	Utah	2	May 7	May 26	.02
Skagit Cumb'la'd Coal	Was.	7	Apr. 17	May 15	.01½
Snow Flake	Utah	...	Mar. 1	Mar. 31	.05
South Paloma	Cal.	2	Apr. 23	May 14	.006
Sunbeam Con.	Utah	25	Apr. 17	May 4	.10
Tetro	Utah	12	Apr. 28	May 19	.01
Union Con.	Nev.	59	Apr. 10	Apr. 30	.15
Yellow Jacket	Nev.	3	Apr. 10	May 15	.15

STOCK QUOTATIONS.

NEW YORK.

Name of Company	Location.	Par val.	Apr. 13. H.	Apr. 13. L.	Apr. 14. H.	Apr. 14. L.	Apr. 16. H.	Apr. 16. L.	Apr. 17. H.	Apr. 17. L.	Apr. 18. H.	Apr. 18. L.	Apr. 19. H.	Apr. 19. L.	Sales
Alamo	Colo.	1							.16⅛		.16⅛		.15		3,000
Alice, g. s.	Mont.	25					.67		66						400
Amalgamated C	"	100					93 13	93.00	94 00	93.00	92.75	92.25	93.50	93.00	400
*Anaconda, c.	"	25					50 50	50.00	49 75		49.50	49.25	49.75		1,240
Anaconda Gold	Colo.	5					.35		35		.35		35		
Argentum-Jun.	"	2					.21		.21				.22	.19	
Ariz Cop.	Ariz.								10.50						20
Ariz. Lead		25					15.50	15.00	14 50	14 00	14 50	14.00	14.50	14.00	
Breece	Colo.	10													
Brit.Col.Copper	B. C.	1					12.00	11.75	11.50	10 50	11 50	10.50			200
Brunswick	Cal.	8					.28		.3.	.30	.30		.35	.31	2,100
Chollar	Nev.	50					.12				14		10		
Chrysolite	Colo.	100					.06			.06	.06		.06		
Comstock T.	Nev.	2½					.04								4,000
Con. Cal. & Va.	"	10					1.65		1.80		1.80		1 60		600
Crescent	Colo.	1													
Cr. & Cr. Creek	"	1							.13⅛						500
Cripple Cr. Con.	"	3													
Crown Point	Nev.	25													
Deadw'd Terra.	S.Dak	1					.60		.60		.65		.60		
Elkton	Colo	100									1.25				400
Father de Smet.	S.Dak.	1					.10		.07		07		.08		200
Garfield Con.	Colo.	1													
Golden Age.	"	1					.04		.04						3,500
Golden Fleece	"	100					.33		.32		.32		32		
Homestake	S. Dak	25					50.00		50.00		50.00		50 00		
Horn Silver	Utah	20					1.15		1.20		1.10		1.25	1.20	200
Iron Silver	Colo.	1					.66				67		.70	.69	
Isabella	"	1					1.20		1.25		1.20				400
Jack Pot	"	10									61				200
King & Pemb.	Ont.	1													
Lady Helen	Colo.	1					79 00	78 00	79 00	78 00	79.00	78 00			
Little Chief	"	1					.21		.19		.17		.25	.19	300
Mexican	Nev.	3					.35		.32		30		.32		
Mollie Gibson	Colo	5					.25								200
Mt. Rosa	Colo.	1													
Ontario	Utah.	100					8.50		8.00		8 00		8 00		100
Ophir	Colo	1					.75		.72		.72		.72		
Pharmacist	"	1					.13⅛		.14						2,500
Phoenix	Ariz.	1					.10		.10		.10		.12	.10	
Plymouth	Colo.	1					12		.12		.12		.12		
Portland	"	1					2 30		2 30		2 30		2.35		
Potosi	Nev.	3					.30		33		.38		.26		100
Quicksilver	Cal.	100					2.00	1.75	1 75		1.75		1.50		550
do. pref.	"	100					7.50		7.00		7.5		7.00		
Savage	Nev.	2					.10		.12		.14		.09		
Sierra Nevada	"	3					.50		.50		.55		.48		200
Small Hopes	Colo	20					1.05		1.05		1.05		1.15	1.05	
Specimen	Colo.	1													
Standard Con.	Cal	10					3 50		3.50		3 50		3.75	3.45	200
Tenn Copper	Tenn	10					17.00	15.00	17 00	15.50	17.00	15.00	17 00	14.75	
Union Con.	Nev	2½					.28		.28		.30		.28		
Utah	Utah.	10													
Work	Colo	1									.33				200
Yellow Jacket	Nev	3					.30		.19		.30		.28		

COAL AND INDUSTRIAL STOCKS.

Name of Company	Location.	Par val.	Apr. 13. H.	Apr. 13. L.	Apr. 14. H.	Apr. 14. L.	Apr. 16. H.	Apr. 16. L.	Apr. 17. H.	Apr. 17. L.	Apr. 18. H.	Apr. 18. L.	Apr. 19. H.	Apr. 19. L.	Sales
Am. Sm. & Ref.		$100					39	38⅛	38	37¼	37⅝	36½	38		10,380
" " " " pf		100					90⅛	88⅝	90	88⅝	81⅛	77⅝	89⅞		4,921
Am.S.& W Con		100					51	42⅛	46	41⅛	45	40	4.⅜		390,88
" " pf'r n		100					85	8.⅜	81⅛	77⅛	81⅛	77⅝	80		102,75
Am. Tin Plate		100					30⅛	29⅛	29⅝	29⅛	29⅛	28	30		6,975
" " " pf		100					*80	79⅛	80		79⅞	79⅛	79⅛		2,340
Col. Fuel & I.	Colo.	100					47⅞	45⅛	44¼	43¼	45	42⅜	44		20,975
Col. & H.C.& I.	"	100					19⅜	18⅛			18¾	18			1,400
Federal Steel		100					47⅛	40⅛	44	41⅜	43⅛	39⅛	44		207,01
" " pf		100					72⅜	69	70⅛	69⅛	69⅜	68	71		26,895
Fleming'n C.&C	W.Va.	100					26	24	26	24	26	24			
Int'l Pump							22	20	24	20	21⅛	20⅛			100
National Lead.	N. Y	100					24¼	23⅜			39⅜	37⅛			750
" " pf		100					105				90	89	105		387
National Salt		100					50	49	49	48	49	49			
" " pf		100					79	77	79	77	79	77			900
Nat'l Tube		100					53⅛	52	50⅛	50	51	49⅛	49¾		13,010
Press. St. Car	Pa	100					51	50	50		49⅞	49			2,660
" " " pf.	"	100					83		81⅛		82¼				745
Republic I. & S.		100					20	18	18⅞	18⅛	18⅛	17	19⅛		13,165
" " pf		100					62¾	61	61⅛		61	58⅛	62⅛		6,905
Sloss-Shef.		100					30	28	30	28	30	28			
* " " pf.	Ala.	100					69	68	67⅛		61	58⅛			
Stan.Oil of N.J.	"	100					548	545	546	543	546	543			100
Tenn.C.,I.&R.R.	"	100					93	84	87⅛	85	77	81	87		48,620
" " " pf	"	100													
U.S.Cast I.P&F		100					6⅛	5⅛	6⅛	5⅛	6⅛	5½			
" " " pf		100					46	45	46	45⅛	46	45			
Va.Coal & C	W.Va.	100					22	19	22	19	22	19			

* Ex-dividend. Total sales, 883,043.

BOSTON. MASS.†

Name of Company.	Par val.	No. of shares.	Apr. 12. H.	Apr. 12. L.	Apr. 13 H.	Apr. 13 L.	Apr. 14. H.	Apr. 14. L.	Apr. 16. H.	Apr. 16. L.	Apr. 17. H.	Apr. 17. L.	Apr. 18. H.	Apr. 18. L.	Sales
Adven'u'e.Cons	$25	100,000							5.50	5.25	5.00				170
Aetna, Cons. g	5	100.000	3.00								3.00				250
Allouez	25	80,000							2.50	2.00	2 13	2.00			472
Amal. Cop.	100	750,000	94.00	93.50					94.00	93.50	94 00	92.25	94 00	92.50	842
Am. Z. L. & S.	25	60,000									15.50	15.00	15.50	15.00	165
Arcadian, c.	25	150,000	24.75	24.00					24 75	23.50	24 00	20 00	23.00	20 50	1,968
Arnold, c.	25	60,000	8.00	7.50							7.50	6.75	7 00	6.25	1,400
Ashbed	25	400,000	.75						1.00	.65	.50				400
Atlantic, c.	25	40,000	27 0								26.00				35
Baltic, c.	25	100,000	23.50	23.00					28.00	21.50	22 00	20.00	21 00	20.25	3,160
Bingham, c. g.	10	190,000							11.50		12 00	11.00	11.00		370
Bonanza, Dev.g	10	300,000							1 25	1.13	1.25		1.25	1.13	700
Boston									8 00						200
Boston & C. C.	2	200,000											.12½		60
Bos.&Mon.Tr.R	25	150,000	318	317					320	317	317	305	321½	305	1,117
British Col.	5	200,000	12.00												100
Butte & Bost., c	10	200,000	81.00	78.00					80.00	79.00	78.50	73.00	78 00	73 00	2,432
Cal. & Hecla, c.	25	100,000	750						747½		745		747		35
Catalpa	10	300,000									.25				800
Centennial, c.	10	300,000	23 00	22.00					23.75		21.38	21.00	21.50	20.50	2,447
Cent'l-Eureka	25	90,000							26 50		26 00	25.75	25.75	25.50	375
Central Oil	25	100,000							18.00	17.50	8.00		18 00		80
Cochiti, g.	25	60,050	11.58						12.00	11.75	12 00	11.00	11.50	11.00	1,020
Cont.Zn.Mg&Sm	10	157,000													
Copper Range	10	110,000											23.00	22.00	110
Crescent, s.	10	100,000													
Dominion Coal	25	100,000							46.00	45.00	45.00	44 00			1,585
do. pref.	100	150,000											116		4
Elm River	100	20,000	5 75	5.5							5.0		4.75	4.5	530
Federal Steel	12	100,000	48 25	47 0					45 75	40.50	42 25	40 00	43.75	42 38	15,580
do. pref.	100	464,843	72.5						71 50	70.00	69.00	68 75	70 00	69.75	891
Franklin, c.	100	532,610							16 25	5 50	16.00	15.50			825
Gold Coin	25	100,000													
Humboldt	25	40,000													
I. Royal Con. c.	25	100,000							29 00	27.00	27.00	26 00	28.00	27 00	890
Mass. Con.	25	100,000	8.50						8 38		8.38				60
Mayflower	25	100,000	3 75	3.50							3 50	3.25			200
Melones	10	167,577							2.50						100
Merced, g	15	100,000									6.50		5 63	5.50	50
Michigan	25	100,000											17.00	16.00	260
Mohawk, c.	25	100,000	17.50	17.25					17.50		17.00	16.50			180
Montana C. & C	5	100,000							8.25	8.00	8.00				600
N.A.Gold Dre'g	10	100,000							8.50						100
Old Colony, c.	25	100,000	4 75	4.50											300
Old Dominion,c	25	150,000	22.50	22 00					23.50	22 38	21.00	19.00	20.25	19.50	2,721
Osceola, c.	25	93,000	70 00	69.75					70 00		70 00	68 50	69.00	67.50	465
Parrot, s c.	10	229,850	47.50	47.00					48 00	45.50	45 88	44.00	46.00	44.50	2,124
Quincy, c.	25	100,000	137	135½					137½		135		139	136	325
Rhode Island	25	100,000							5.50	5.25	5.25	5.00	5.00		200
Santa Fe, g. c.	10	250,000							6.25	6.00			6.00		390
San. Ysabel, g.	5	130,000	1.00						1.00						460
Tamarack, c.	25	60,000							193		193		1 95		36
Tecumseh	25	80,000							4.75	4.50	4.00		4.00		520
Tri Mountain	25	100,000	9.50	9.25							9.50	9 00	9.00	8 75	500
Union C. L.	25	80,000													
United States									11.00		10.00				100
U. S. Oil	25	100,000	20.50	20.25					21.00	20.00	20 00	18 75	20 00	18.50	963
Utah Cons,g. c	5	300,000	33.00								31.0	30.00	32.25	31.00	1,720
Victoria	25	100,000							3.50	3.00	3 00				620
Washington	25	40,000							1.25				1 00		425
White Knob	100	50,000	25.00	23 00					25 00						850
Winona, c.	25	100,000	4 50												100
Wolverine, c.	25	60,000	41.00						41.00		41.00	40 25			175
Wyandotte	25	100,000									2 00		2 00		175

† Official quotations Boston Stock Exchange. Total sales, 52,422.

SALT LAKE CITY, UTAH. Apr. 14.

Stocks.	Shares	Par val.	Bid.	Asked.	Stocks.	Shares.	Par val.	Bid.	Asked
Ajax	300,000	$10	$0.49	$0.55	Horn Silver	400,000	$25	$1 25	$1 65
Alice	400,000	25	35	.75	Joe Bowers	700,000	1	.03⅝	.05⅝
Buckeye	500,000	1	.03¼	.04	Joe Bowers Ext.	450,000	¼		
Bullion-Beck & Ch.	100,000	10	2.75	3 50	Little Pittsburg	400,000	5		.01¾
Centennial Eurka.	200,000	25	24.50	26.75	Lower Mammoth	150,000	1	.56⅛	.56¾
Chloride Point.	500,000	1	.05½	.11⅛	Mammoth	400,000	5	2 21⅛	2.22
Daisy	500,000	3	.00⅝	.00⅛	May Day	400,000	¼	1 10	1.10⅜
Dalton	500,000	5		.01⅛	Mercur	200,000	25	4.00	4.90
Dalton & Lark	2,500,000	1	.03⅛		Northern Light	400,000	5	05	.05⅝
Daly	150,000	20	1.25	1.60	Ontario	150,000	100	8.00	9.10
Daly West	150,000	20	18 85	19 20	Richmond-An.	500,000	1	.12	.20
Dexter	200,000	5	1 00⅛	1.05	Sacramento	1,000,000	5	17⅛	.20
Eagle	250,000	1	.00⅛	.04	Silver King	150,000	20	49 50	
Eagle & Blue Bell.	250,000	1	.89	.90	Star Consolidat'd	500,000	1	.08	.15
Four Aces	250,000	1	.03	.04	Sunbeam	250,000	1		.01¾
Galena	100,000	10	.15	.25	Sunshine	250,000	10	.14	.20
Geyser-Marion	300,000	5	.04¼	.09	Swansea	100,000	5	3.67½	3.76
Golden Eagle	400,000	1	.02	.02⅛	South Swansea	150,000	1	1.21½	1 28
Grand Central	250,000	1	5 70	6.25	Utah	100,000	1	.50	.75
Homestake	400,000	1	.05	.09	Valeo	200,000	10	.66⅛	.75

TORONTO, ONT.

Name of Company.	Par val.	Apr. 2. B.	Apr. 2. A.	Apr. 3. B.	Apr. 3. A.	Apr. 4. B.	Apr. 4. A.	Apr. 5. B.	Apr. 5. A.	Apr. 6. B.	Apr. 6. A.	Apr. 7. B.	Apr. 7. A	Sales
Ontario:														
Alice A.	$1			.03½	.06	.03½	.06	.03½	.06	.03½	.06			
Bullion	1			.50		.50		.50		.50				
Golden Star	1			.16	.16½	.15½	.16½	.15½	.16¼	.15¼	.16½			13,500
Ham Reef	1			.13	.14	.12½	.13¼	.12¼	.13¼	12½	.13½			8,000
Olive	1			.25	.35	.25	34	.25	.34	.24	.34			1,000
British Col.:														
Athabaska	1			.27½	32	.27	30	24	.30	.25	.30			2,500
Big Three	1			.07½	08¾	.07½	.08¾	.07½	.08¾	.07½	.09			
Cariboo M'K	1			.68	.80	.69	.75	.69	80	.70	.80			
Crow's N. C	25			34 50	38 00	35.00	37.50	34.50	40.00	35.00	40.00			
Dardanelles	1			.02	04	.02	04	.02	.04	.02	.04			1,000
Deer Trail	1			08¾	.10½	.08	.08¾	.08¾	.10½	09½	.10¾			5,350
Fairview	1			04	.05	04	.06	.03¾	.05	.03¾	.05			500
Jim Blaine.	1			.17		17		16	.17	.16				
Knob Hill	1			.60		.58½	.63	.65	.75	.75	.80			
Lone Pine S	1			14	.18	14	18	14	.17½	14	17			10,000
Minnehaha.	1			.03½	.04	.01½	.04	02½	.03½	02¾	.04½			
Mont Cristo	1			03	.04	.03	04½	.03	.04½	03	04½			500
Mont &Lon.	0.24			.28½	.30	30	.32	.30	32	.30	33			
Noble Five.	1			.05	08	.05	.08	.05	.08	.05	.08			
North Star.	1			1.20	1 25	1.30	1 25	1.20	1.25	1.23	1 25			1,000
Princess M.	1			.05	.07	.05½	.07	.05½	07	.05½	.07			13,750
Rambler				.27½	30	.26¾	.29	.26	29	.25	.30			5,000
Rathmullen	1			.03¾	.04½	.03¾	.04½	03¾	.04¾	.03½	.04½			6,500
Republic	1			1 04	1.07	1 04	1.07	1.04	1.08	1.03½	1 07			1,000
Van Anda	1			.02¾	.04½	.03	.04	.03	.04	.02½	.03¾			5,000
Virtue	1			1.03	1 10	1 09½	1.22	1 17	1.22	1.08	1 20			4,000
War Eagle.	1			1.38	1.45	1.38	1.48½	1.45	1 53	1.45	1.62½			
Waterloo.	0.10			.04	.07	04	05	.04	.05	.04	.07			
White Bear.	1			01¾	02½	.01¾	.02¼	.01¾	.02½	01¾	.02½			500
Winnipeg.	1			.13	.17	.13	.16	.13	.16	12	.14			
Develop Co.														
B C.G.Field.	1			.03	.04	03	.04	.03	.04	03	.04			5,500
Can. G. F. S.	0 1			.07	08	.07	08	.07	.08	07	.08			
Gold Hills	1			.04	.04½	03¾	.04¾	.03½	.04½	.03½	04½			5,000

PHILADELPHIA, PA.*

Name of Company.	L'cation.	Par Val.	Apr. 12. H.	Apr. 12. L.	Apr. 13. H.	Apr. 13. L.	Apr. 14. H.	Apr. 14. L.	Apr. 16. H.	Apr. 16. L.	Apr. 17. H.	Apr. 17. L.	Apr. 18. H.	Apr. 18. L.	Sales
Am. Alkali			2.50								2.50		2 50	2.25	360
" " pf.															
Bethlehem Irn	Pa.		58.00												22
§Bethlehem S'l	"	$50							17 88	17.75	17.75		18 00	17.88	480
Cambria Iron.	"	50							44.25		44 25		44 50		146
Cambria Steel	"	50	20.50						21 00	20 50	20.50	20.00	21.13	20.63	9,180
Susq. I. & S.	"	10							3.88	3.63	3 75		3.75		1,41
United Gas I.	"	50	119						118⅛	118	118	117⅞	118⅛	117⅞	835

Total shares sold, 1 ,453. * Reported by Townsend, Whelen & Co., 309 Walnut St , Philadelphia

SAN FRANCISCO, CAL.

Name of Company.	Location.	Par value.	Apr. 12	Apr. 13.	Apr. 14.	Apr. 16.	Apr. 17.	Apr 18.
Belcher	Nev.	$3 00	.31	.31	.32	.30	.29	.24
Best & Belcher	"	3 00	.27	.28	.30	.29	.26	.25
Caledonia	"	3.00	1 15	1 25	1.40	1 65	1.50	1.50
Challenge Con.	"	3.00	.22	.22	.2.	.24	.22	.22
Chollar	"	3.00	.14	.14	.14	.15	.13	.12
Confidence	"	3.00	.70	.73	.94	.96	.93	.95
Con. California & Virginia	"	2.50	1 70	1.70	1.75	1 75	1.70	1.70
Crown Point	"	3.00	.20	.20	.21	.20	.20	.19
Gould & Curry	"	3.00	.28	.28	29	.29	.28	.26
Hale & Norcross	"	3.00	.35	.36	.39	.41	.35	.34
Justice	"	2.00	.05	.06	.05	.06	.05	.05
Mexican	"	3.00	.36	.36	.37	.38	.35	.34
Occidental Con.	"	3.00	.12	.16	.15	.14	14	.15
Ophir	"	3.00	.79	.78	.80	.77	.77	.75
Potosi	"	3.00	.15	.15	30	31	.29	.29
Savage	"	2.50	.11	.12	.13	15	.12	.11
Sierra Nevada	"	3.00	52	.53	54	.54	.55	.52
Standard Con.	Cal.	10.00	3.25	3 10	3.10	3.20	3 40	3.05
Union Con.	Nev.	2.50	33	32		.33	.32	.31
Utah Con.	"	1.00	.12	11	.12	12	.21	.11
Yellow Jacket	"	3.00	.34	.24	.34	.35	.32	.32

CALIFORNIA OIL STOCKS.*

Name of Company.	No. of shares.	Par Val.	Mar. 19. H.	Mar. 19. L	Mar. 20. H.	Mar. 20. L	Mar. 21. H.	Mar. 21. L.	Mar 22. H.	Mar 22. L.	Mar 23. H	Mar 23. L	Mar. 24 H.	Mar. 24 L.	Sales
Anaconda	100,000	$5.00			.50	.45	.55		.55		.55				1,150
Blue Goose	5,000	100	20.00	16.00	20 00	17 00	20.00	17.50	20.00	17.75	20 00	18 50			20
Burlington	100,000	1.00													
Caribou	100,000	1 00	.75	.65	.70	.60	.75	.65	.80	.70	.80	.70			1,140
Cholame Valy	2,000	100	5.00	3.00	5.00	3 00	5.00	3.00	7.0	3.0	5.00	3 00			
Home	100,000	1 00	3 70	3.65	3 7	3.60	3.70	3.65	3.70	3 60	3 65	3.60			1,285
National	100,000	5.00	6 25		6 25		6 25		6 25		6.25				
Petroleum	100,000	1.00	.40	.30	.40		.40	.30	.50	.50	.50				50
San Luis	100,000	10 00													
Shamrock	100,000	5 00	1.25		1.25	1.00	1 00		.90	.80	.80	.70			150
Yukon	100,000	2 50			1.50	1.35	1.30	1.10	1 25	1.15	1 25	1.20			550

* California and Producers Oil Exchanges. Total sales, 4,345 shares.

SPOKANE, WASH.*

Name of Company.	Par val.	Week, Apr 14 B.	Week, Apr 14 A.	Sales.	Name of Company.	Par val.	Week, Apr. 14. B.	Week, Apr. 14. A.	Sales.
Butte & Boston		.02	.03¾	2,000	Morning Glory	0.10	.02⅞	.03⅜	
Conjecture					Morrison		.02⅜	.03⅜	
Crystal		03½	.07		Mountain Lion		.70	.97½	
Deer Trail No. 2	$1	.08⅜	11		Princess Maude	0.10	.03⅜	.04⅛	2,500
Evening Star	1	.07	.09½		Quilp	1	.26½		
Gold Ledge		.04⅛	.05¾		Rambler Cariboo	0.25	.28	.28⅛	2,500
Golden Harvest	1	.01⅛	.02¾		Reservation		.10⅛	.10⅛	3,000
Insurgent	0.10	.01⅛	.02¾		Sullivan		.09¼	.11	
Jim Blaine	1	.10	.17		Tom Thumb	1	.14⅜	.17⅛	
Lone Pine-Surp. Con.	1	.14⅛	.16	9,000					

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.‡

Name of Company.	Par val	Apr. 7. B.	Apr. 7. A.	Apr. 9. B.	Apr. 9. A.	Apr. 10. B.	Apr. 10. A.	Apr. 11. B.	Apr. 11. A.	Apr. 12. B.	Apr. 12. A.	Apr. 13. B.	Apr. 13. A.	Sales.
Acacia	$1	.25	.25½	.28½	.28⅛	.27¾	.28	.26	.26⅜	.26⅛	.26¼	.27¼	.27⅜	42,000
Alamo	1	.15¾	.16⅜	.15½	.16⅛	.15	.16	.15	.15⅜	......	.15⅝	......	.16	23,700
Am. Con	1	.05⅝	.06	.05⅝	.06	.05⅝	.06	.05⅝	.06	.05⅝	.06	.05¾	.06	2,500
Anaconda	1	.36	.40	.37	.38	.35½	.37	.36½	.40	.36	......	.35½	.38½	2,100
Anchor	1	.03⅛	.03½	.03⅜	.03⅛	.03⅜	.03⅛	.03⅜	.03⅛	......	.03⅛	......	.03⅛	1,000
AnchoriaL	1	.70	......	.75	......	.75	......	.80	......	......	......	......	......	......
Antelope	1	.02¼	.03	.02¾	.03	.02¾	.03	.02⅝	.03	.02⅝	.02¾	.02⅝	.03	3,000
Aola	1	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝	.05⅝	.05⅝	18,000
Arcadian	1	.04⅞	......	.04⅞	.06	.04½	......	......	.07	.05	.06⅛	.05	.06⅛	......
Arg'ntum J	1	......	.21⅛	.21	.21¼	......	.21⅛	......	......	.20¼	.21	.20	......	2,500
Banner	1	.04¼	.04½	.04¼	.04⅝	.04¼	.04⅝	......	.05	.04⅝	.04¾	.04¼	.04¾	2,000
Battle Mt.C.	1	.28	.29	.31¼	.31½	.30½	.31½	.29	.30	.29½	.29⅝	.29½	.29¾	4,000
Ben Hur	1	.07	.07¼	.06¾	.07¼	.06½	.07	......	.07	.06	.07	.06⅝	.07	100
Black Bell	1	......	.12½	......	.13	......	.12½	......	.13	......	.13	......	.12	......
Blue Bell	1	.12	.13	.12½	.13	.12¾	.13	.12	.12¾	.12½	.12¾	.12	.12¾	3,337
Bob Lee	1	.04¼	.04¾	.05⅝	.05¾	.05⅝	.05¾	.05	.05⅝	.05⅝	.06	.06⅝	.06¾	24,500
Buckhorn	1	.06	.06½	.06½	.06½	.06	.06½	.06⅛	.06⅝	.06¼	.06¾	.06⅛	.06⅝	......
Cadillac	1	.01¾	.02	.01¾	.02	.01¾	.02	.01⅞	.02	.01¾	.02	.01⅞	.02	5,000
Central C'n	1	.06	.06¾	.06½	.06⅝	.06½	.06¼	.06	.06½	......	......	.06½	.06½	2,000
Champion	1	.07⅝	.08	.07½	.08	.07½	.08	.07½	.08	.07½	......	.07½	.08	1,000
Chicolo	1	.03	.03½	.03¼	.03⅝	.03⅛	.03¼	.03	.03⅛	.03	.03⅛	.03⅛	.03¼	27,000
C.K.&N	1	.02⅜	.02½	.02⅜	.02½	.02⅜	.02½	.02¼	.02½	.02¼	.02⅝	.02¼	.02⅝	5,000
C.C.Col'bia	1	.07⅛	.07⅝	.08⅜	.08⅝	.07⅝	.08	.07⅝	.08⅛	.08	.08¼	.07⅞	.08	13 000
C.C G.Ext.	1	......	.10	.09½	.09⅛	.09	.09½	.08¾	.09½	.08	.09¾	......	.09¼	2,000
C.C. & Man.	1	.11	.11⅛	.12	.12¼	.11½	.11⅝	.11½	.11⅜	.11⅜	.11½	.11⅝	.11¾	9,000
Copper Mt.	1	.04	.04¼	.04⅝	.05	.04⅝	.04⅝	.04½	.04⅝	.04½	.04⅝	.04⅝	.04¾	6,000
Creede&CC	1	.14½	.14⅝	.14½	.14¾	.14½	.14⅞	.14½	.14⅝	.14½	.15	.14½	.15	3,000
C. C. Con.	1	.13⅝	.14	.14	.14½	.14	.14¼	.14	.14¼	.13⅝	.14	.13⅝	.14	8,000
Dante	1	.14¼	......	.15½	.15⅝	.14	.14½	.14½	.14½	.14½	.14⅝	.14½	.14¾	42,000
Des Moines	1	.06	.06½	.06¼	.06½	.06¼	.06⅝	.06¼	.06⅝	.06¼	.06½	.06½	.06⅝	8,000
Eclipse	1	.07¾	.08¼	.08	.08⅝	.08	.08⅝	.08	.08⅝	.08	.08⅝	.08	.08⅛	......
ElktonCon	1	1.12½	1.14½	1.15¼	1.16	1.14⅝	......	1.25⅛	1.26	1.27½	1.28	1.26⅛	1.27	80,250
El Paso G.	1	.39	.40	.39½	.40	.39	.41	.39	.40	.39½	.40	.39	.40	2,000
Enterprise.	1	.20¼	.20¼	.20⅝	.22	.20½	.22½	.20⅝	.20¾	.20	.21½	.20½	.20½	2,030
F.Rawlings	1	.40	.40⅞	.39	.40	.39	.41	.40	.40⅝	.40½	.40⅝	.39¾	.40	11,000
Favorite	1	.06	.06⅛	.06	.06½	.06	.06⅛	.06	.06⅛	.06	.06⅛	.06	.06¼	3 ,000
Findley	1	.16¾	.17	.18¾	.19	.17¾	.17⅝	.16⅝	.16¾	.16⅝	.16¾	.16½	......	69,500
Garf. Con.	1	.20¼	.20⅝	.20¼	.20⅝	.20	......	.20⅝	.20⅝	......	.20¼	......	.20	13,500
Golden Fl	1	.32	.45	.32	......	.32	......	.32	......	.25¾	.31	.32	.45	......
Gold Hill	1	.02¾	.03	.02¾	.02⅞	.02¾	.03	.02⅝	.03	.02⅝	.02¾	.02⅝	.02¾	2,000
Gold.Sov'n.	1	.10⅝	.10½	.10⅝	.11	.10	.10½	.09⅞	.10½	.10½	.10¼	.10⅝	.10½	29,000
Hayden	1	.01⅞	.02⅛	.02	.02½	.01¾	.02⅛	.01¾	.02⅛	.01¾	.02	.01¾	.02	4,000
Ida May	1	.26½	.28	.26	.28	.25½	.27½	.25¾	.27	.25⅝	.26¾	......	......	3,000
Indep'ndce	1	.66	.68	.71½	.73	.70½	.71	.70½	.71½	.72	.73	.72⅝	.73	6,500
Ing. Con.	½	.21⅞	.28	.22½	.22½	.21½	.22½	.22⅝	.22⅝	.23⅝	.24	.23⅝	.23¾	59,000
Isabella	1	1.12½	1.13	1.14	1.15	1.12¼	1.14	1.12½	......	1.13	1.13½	1.14¾	1.15½	10,800
Jack Pot	1	.59½	.60	.59½	.59⅞	.59⅝	.60	.59½	.60	.59½	.60½	.60	......	5,600
Josephine	1	.02	......	.02¼	.02¼	.02	.02¼	.02⅛	.02¼	.02	.02½	.02⅛	.02¼	11,000
Key West	1	......	.04¾	.04½	.04¾	.04	.04⅝	......	.04½	.04½	.04½	.04	.04½	6,000
Lexington	1	.17¼	.17⅝	.17	.17¼	.16½	.16¾	.15¾	.16	.15⅛	.15¼	.15¼	.15¾	81,000
Magnet R	1	......	.03¼	.03¾	.03¾	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾	1,000
Margaret	1	.03	.03½	......	.03¼	.03	.03¼	.03	.03¼	.03	.03½	.03½	.03⅝	8,000
Margery	1	.04⅝	.04¾	.04⅞	.05	.04¾	.05	.04¾	.05	.04⅞	.05	.04⅞	.04	4,000
Matoa	1	.25¼	.26¼	.25½	......	.25	.30	.25	......	.25	......	.25¼	.26½	1,100
Midway	1	.06½	.06¾	.06½	.06¾	.06¼	.06¾	.06⅝	.06¾	.06½	.06¾	.06⅝	.06¾	4,000
M. J. T.	1	......	......	.03¾	.04	......	.04	.04½	.03½	.03¾	......	.03¾	.04¼	1,500
Mobile	1	.03¼	.03½	.03¼	.03½	.03¼	.03½	.03¼	.03½	.03⅜	.03½	.03¼	.03⅝	......
Moll.Dwyer	1	.03	.03½	.03½	.03⅝	.03⅝	.03⅝	.03½	.03⅝	.03¾	.03⅝	.03¼	.03⅝	15,000
Mollie Gib.	1	......	......	......	.25	.24½	.25½	......	.25½	.23	......	......	.26	5,000
Monarch	1	.07¼	.07⅜	.07	.07½	.07	.07½	.07	.07¼	.07¼	.07½	.07½	.07⅜	81,000
Montreal.	1	......	.07	......	......	.05¾	.06	......	......	.05⅝	.05¾	......	......	1,000
Moon-A'c'r	1	.64	.69	.64	.69	.64	.67½	.65	.69	.68½	......	.66	......	1,500
Morning S.	1	......	.04	.03¾	.04	......	......	.03¾	.04	.03¾	.04	.03¾	.04¼	......
Mtn.Beauty	1	.09⅝	.09¾	.09½	.09½	.09	.09¼	.08¾	.09	.09	.09¼	.09½	.09⅝	28,000
Mt. Rosa	1	.67½	.80	.73	.80	.73½	.83	.78½	.80	.78½	.80	.75	.80	5,000
National	1	.08½	.08½	.08¾	.08⅝	.08¼	.08⅝	.08	.08½	.08½	.08¾	.08⅝	.08¼	18,500
Nellie V.	1	.10½	.11	.10½	.11	.10½	.11	.18	.10½	.10½	.11	.11	.11⅝	8,000
New Haven	1	.08½	.08⅝	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08½	.09	.08⅝	.08½	34 000
OliveB'nch.	1	.06⅞	.07½	.07	.07¼	.07	.07½	.07	.07½	.06¾	.07¼	.06⅞	......	8,000
Oriole	1	.04½	.04½	.04¾	.05½	.04⅝	.05⅛	.04⅞	.05	.04¾	.05	......	.05	5, 00
Orphan	1	.21	.22	.21	.22	.21½	.22	.20	......	.20½	.21½	.20⅝	.22	3,000
Pelican	1	.02	.02½	.01⅞	.02	.02½	.03	.02½	.03	.02½	.03	.02⅝	.03	2,000
Pharmacist	1	.12⅜	.12⅝	.12⅝	.12⅝	.12¼	.12½	.12¼	.12½	.12½	.12½	.12⅝	.13	8,000
Pilgrim	1	.12½	.13½	.12	.13	.13½	.13	.12¾	.13	.13¾	.12½	.12¾	.13¼	......
Pinnacle	1	.18¾	.19¼	.19½	.20	.19	.20	.20	.20½	.17	.19¾	.19	.20	4,500
Portland	1	2.38	2.40	2.34	2.33½	2.35⅝	2.36	2.35	2.39	2.36	2.36½	2.36	2.40	3,600
Prince Alb.	1	.04½	.04⅝	.04⅝	.04⅞	.04½	.14¾	.04½	.04¾	.04½	.04⅞	.04½	.04⅝	3,000
Princess	1	.05¼	.05½	.05	.06	.05¼	.06	.05¼	.06	.05⅝	.06	.05¾	.06	16,000
Progress	1	......	......	......	.08½	.07	.08½	......	.08¾	......	.09	.07	.08	1,000
Pythias	1	.05⅝	.05¾	.05¾	.05¾	.05½	.05⅝	.05½	.06	.05¼	.06	.05¼	.06	11,000
Raven	1	.67½	.68	.69⅜	.70	.69	.68½	.67	.68	.67	.68	.67¼	.68	12,100
Republic	1	.05¼	.06	.06¼	.06¾	.06	.06¼	.06½	......	.06	.06¼	.07⅛	.06¼	5,000
Rob't Burns	1	......	......	.04¾	.05½	.05	.05½	.05	.05⅛	.04¾	.05	.04¾	.05	1,000
Rose Maud.	1	.10⅝	......	.10¾	.11	.10¾	.11	.10½	.10¾	.10½	.10¾	.10⅝	.11½	10,100
Rose Nicol.	1	.12½	......	.12⅝	.13	.12	.12⅝	.12½	.12⅝	......	.12¾	......	.12⅝	3,000
Sliver Gold.	1	.01¼	.01⅝	.01¼	.01¾	.01¼	.01⅜	.01¼	.01⅝	.01¼	.01⅝	.01¼	.01⅝	......
Specimen	1	.10	......	.10⅝	.10⅝	.10⅝	.10⅝	.11¼	.11⅝	.10¾	.10	.09⅛	.10¾	63,000
Tornado	1	.48	.49	.48½	.49	.48½	......	.47⅝	.48	.47½	.49	.48⅛	.49½	28,500
Touraine	1	.07¼	.07½	.07¼	.07⅜	.07⅛	.07⅝	.07⅛	.07¼	.07⅝	.07½	.07⅝	.07⅝	5,000
Trachyte	1	......	.06¾	.06⅝	.07	.06¾	......	.06¾	.08	.06¾	.06¾	.06¾	.07⅛	......
Uncle Sam	1	......	.05¼	.04⅝	.05¼	.05	......	.05	.05¼	.05	.05¼	.05	.05¼	......
Union	1	.45	.49½	......	.49⅛	.40	.48	.42	.47	.42¼	.46	.40	.49¾	500
Vindicator	1	1.50	1.56	......	1.58	1.54	1.58	1.50	1.53	......	1.58	1.54	......	......
Work	1	.32¼	.32⅜	.32¼	.32⅜	.31⅝	......	.31	.31½	.31	.31⅝	.31	.31⅛	18,000
Zenobia	1	.15	.15¼	.15¼	.17	.15	.17	......	.17	......	.17	......	......	......

‡Colorado Springs Mining Stock Exchange. Total sales, 1,082,787 shares.

MONTREAL, CANADA.*

Name of Company.	Par Val	Week, Apr. 17. H.	L.	Sales.	Name of Company.	Par Val	Week, Apr. 17. H.	L.	Sales.
Big Three	$1	.08	.06	......	Monte Christo	$1	.04½	.03½	......
California	1	.12	10	......	Montreal G. F.	1	.08	.05½	3,500
Can. Gold Fields	0.10	.07⅜	06	......	Montreal-London	0.24	.31	.30	......
Decca	1	.09	.08½	......	Okanogon	1	.02½	......	2 000
Deer Trail Con.	1	.10½	.08	20,000	Payne	1	1.23	1 20	1,000
Giant	1	......	......	......	Rambler-Cariboo	1	28	.20	......
Golden Star	1	.13	.09½	......	Republic Con	1	1 12	1.04	......
Gold Hills Dev	1	.04½	.03	......	Slocan-Sovereign	1	.30	.25	1,150
Knob Hill	1	.75	65	......	Virtue	1	1.18	1.16	2,450
Majestic	1	......	......	......					

*Montreal Stock Exchange. Total sales, 30,100 shares.

MEXICO. Apr. 7.

Name of Company.	No. of shares.	Last div'd.	Prices. Op'g.	Cl'g.	Name of Company.	No. of shares.	Last div'd	Prices. Op'g.	Cl'g.
Durango:					Hidalgo:				
Barradon y Cab	2,400	......	$40	$40	Real del Monte	2,554	10.00	506	500
Candelaria de Pan.	1,200	......	20	20	San Francisco Hc	6,000	3.00	195	170
Capuzaya Guan	2,400	......	30	15	Soledad	960	5.00	330	280
Restauradora	10,000	......	20	10	Sorpresa	960	7.50	260	300
Guanajuato:					Union Hacienda.	2,000	5.00	320	300
Angustias	2,400	5.00	230	220	Mexico:				
Cinco Senores y An	2,000	15.00	350	355	Coronas	500	......	75	75
Guadalupe Hacie'a	10,000	2.00	220	200	Esperanza y An.	3,000	10.00	1,560	1,500
Trinidad, aviadora.	2,000	......	10	5	Michoacan:				
do. aviada	400	......	15	10	Luz de Borda ava	4,000	......	22	18
Zona Minera de Poz	2,400	......	15	6	S. Luis Potosi:				
Hidalgo:					Concep. y An.	2,400	......	205	210
Amistad y Concord.	9,600	1.47	23	22	Zacatecas:				
Arevalo	720	......	200	200	Asturiana y An.	2,500	10.00	175	170
Bartolome de Med.	2,000	2.00	65	70	Cabezon	2,400	......	15	15
Carmen	1,100	7.75	200	250	C'delar. de Pinos.	2,500	......	240	230
Luz Ca Maravillas.	800	......	120	100	Palma de Somb.	2,400	......	40	60
Pabellon	800	27.89	20	30	......	......	......	......	......

DENVER, COLO.‡

Name of Company.	Par val.	Apr. 7. B.	Apr. 7. A.	Apr. 9. B.	Apr. 9. A.	Apr. 10. B.	Apr. 10. A.	Apr. 11. B.	Apr. 11. A.	Apr. 12. B.	Apr. 12. A.	Apr. 13 B.	Apr. 13 A.	Sales.
Acacia	1	.25	......	.28	.28⅛	.28	.28½	.27	......	.26⅞	.27¼	.26⅛	.27	1,000
Aola	1	......	......	......	......	......	.05½	......	......	......	......	......	......	1,000
Arg. J.	2	......	......	.20	......	......	......	......	.21	.20⅛	......	.20	.32	......
Bankers	1	......	......	......	......	.20	.21	.20½	......	.20½	.21	.20⅛	......	......
C. C. Imp.	1	.002	.004	......	......	.003	.004½	.002	......	.002½	.003¼	.002½	......	11,000
Cr. & Cr. C.	1	......	......	......	......	......	......	......	......	......	......	.14⅝	......	......
Favorite	1	......	......	......	......	.06	.06¼	.05⅝	......	......	......	......	......	......
Finance	1	......	......	......	......	.001½	......	.001½	......	......	......	......	......	23,000
Geo. Wash	1	.003	......	......	......	......	......	......	......	.003½	......	.003¼	.005	5,000
Indepen'ce	1	......	......	......	......	.71⅛	......	......	......	.71⅝	.73	.73⅛	......	1,000
Ing. Con.	1	......	......	.22½	......	......	......	......	......	.23¼	......	.23⅛	.24½	1,000
Ironclad	1	......	......	.04⅞	......	.04⅞	.06	.04¾	......	.04⅛	......	.04⅝	.05	......
Isabella	1	1.11⅝	1.12½	1.13	1.15⅝	1.13	1.15	1.12	1.13⅛	1.13	......	1.13	......	......
Lexington	1	......	......	......	......	......	......	.16	......	.15	.15½	.15	.15⅝	2,000
LittleCorpl	1	.01	.01½	......	......	.01	.01½	......	......	.01	.01⅛	.01	.01¼	1,000
Mt Beauty	1	.09⅛	......	......	......	.09	.09¼	.08¾	.09	.08⅞	.09¼	.09⅛	.09⅝	2,000
New Haven	1	......	......	......	......	.08⅝	.08⅞	.08¾	.08⅞	......	......	.08⅞	......	2,000
New Zeal'd	1	.41	......	.41	.50	.41	......	......	......	.41½	......	.41	.49	200
Puritan	1	.01⅝	.01⅝	.01⅝	.01⅝	.01¼	.01½	.01⅜	.01⅝	.01⅜	.01⅝	.01¼	.01⅜	......
Specimen	1	......	......	......	......	.10½	.11	.10⅞	.11⅛	.11⅝	.11¼	.10⅝	.10⅝	1,000
Union	1	......	......	......	......	.40	.50	.46½	......	......	......	.44	.49	2,000
Vindicator	1	......	......	......	......	......	......	1.54	......	1.55	1.59	1.54	1.60	......
Wire Gold	1	......	......	......	......	.01	.01¼	.01	......	.01	.01⅜	.01⅛	.01¼	......
Work	1	......	......	......	......	.32	.32⅛	.31	......	.31⅝	......	.30	.31⅝	......

‡Official Quotations Denver Stock Exchange. Total sales, 10,000 shares.

PARIS. Mar. 29.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Op'ning	Closing.
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs.	27,000,000	2,000	75.00	1,950.00	1,998 00
" " Firminy	"	" "	3,000,000	500	125.00	3,800.00	3,790.00
" " Fives-Lille	"	" "	12,000,000	500	35.00	562 0	560 00
" " Huta-Bank	Russia	Iron & steel	......	500	......	5,0 0.00	4,950.00
" " la Marine	France	Steel mfrs.	20,000,000	500	50.00	1,897.00	1,885 00
Anzin	"	Coal	......	......	220.00	7,050.00	6,990.00
Boleo	Lower Cal.	Copper	......	500	1.07	3,060.00	3,110.00
Briansk	Russia	Coal & Iron	......	500	......	1,307.50	1,332.50
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	36.75	36.25
Courrieres	France	Coal	600,000	300	70.00	3,150.00	3,100.00
Dombrowa	Russia	Coal	......	500	12.50	1,138.00	1,115.00
Donetz	"	Steel	......	......	......	1,200.00	1,200.00
Dynamite Centrale	France	Explosives	......	500	20.00	451.00	4.7.00
Escombrera-Bleyberg	Spain	Lead	......	500	35.00	1,330 00	1,320.00
Fraser River	Brit. Col'mb	Gold	250,000	25	......	9.25	8.00
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	130.00	142 00
Laurium	Greece	Zinc & lead.	16,300,000	500	30.00	615 00	605.00
Malfidano	Italy	Zinc	12,500,000	500	50.00	1,370.00	1,352.00
Metaux, Cie. Fran. de	France	Metal d'lers.	25,000,000	500	30.00	532.00	522 50
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	40.00	1,220.00	1,220.00
Napthe Baku	Russia	Petroleum	......	......	......	822.50	818.00
Napthe, Le	"	"	......	......	......	1,300.00	1,300.00
Napthe Nobel	"	"	......	......	......	675.00	698.75
" " parts	"	"	......	......	......	13,967.00	13,975.00
Nickel	N.Caled'nia	Nickel	10,000,000	250	10.00	570.00	525.00
Penarroya	Spain	Coal, etc.	......	500	65.00	2,885.00	2,795 00
Rebecca	Colo'do, U.S.	Gold	5,000,000	25	......	5.00	5 00
Salines de l'Est	France	Salt	......	500	6.50	225.00	220.00
Salines du Midi	France	" etc.	......	500	25.00	1,085.00	1,095.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	36.00	837.00	830.00

LONDON. Apr. 6.

Name of Company.	Country.	§Authorised capital.	Par value. £ s. d.	Last dividend. Amt. s.d.	Date.	Quotations. Buyers £ s. d.	Sellers £ s. d
Alaska Goldfields	Alaska	£300,000	1 0 0	2 1	Mar., 1899	18 9	1 1 3
Alaska-Mexican, g	"	200,000	1 0 0	0 4.8	Feb., 1900	12 6	17 6
Alaska-Treadwell, g	"	1,000,000	5 0 0	1 6	" "	4 15 0	5 0 0
Anaconda, c., s	Montana	6,000,000	5 0 0	8 2	Apr., 1900	10 12 6	10 17 6
Chiapas, g., s., c	Mexico	252,500	1 0 0	......		5 0	7 0
De Lamar, g., s	Idaho	400,000	1 0 0	6	May, 1899	2 6	5 0
Elkhorn Priority (New), s	Colorado	87,500	1 0 0	2 0	June, 1898	1 3	3 9
Golden Gate, g	California	80,000	1 0 0	......	......	1 0	2 0
Grand Central, g., s	Mexico	300,000	1 0 0	2 0	Jan., 1900	18 9	1 1 3
Hall Mines, c., s	British Col.	300,000	1 0 0	1 0	May, 1899	1 0	2 0
Le Roi, g	" "	1,000,000	5 0 0	5 0	Nov., 1899	5 15 0	6 0 0
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 1900	15 0	1 0 0
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	4 0	5 0
Newfoundland, c	Newfoundland	250,000	1 0 0	......	......	5 0	10 0
Palmarejo & Mexican, g., s	Mexico	700,000	1 0 0	......	......	1 6	2 6
Stratton's Independence	Colorado	1,100,000	1 0 0	2 0	Mar., 1900	2 16 3	2 18 9
Copiapo, c	Chile	200,000	2 0 0	4 0	Dec., 1899	4 2 6	4 7 6
Frontino & Bolivia, g	Colombia	140,000	1 0 0	1 6	Oct., 1899	1 16 3	1 18 9
St. John del Rey, g	Brazil	600,000	1 0 0	1 0	Dec., 1899	1 7 6	1 10 0
UtahCon., g (Highl'ndBoy)	Utah	300,000	1 0 0	rts.	Mar., 1898	7 2 6	7 7 6
Velvet, g	BritishCol'mbia	100,000	1 0 0	......	......	1 0 0	1 2 6
Ymir, g	"	200,000	1 0 0	1 0	Nov., 1899	1 6 3	1 8 9
British Am. Corp	"	1,500,000	1 0 0	2 0	Mar., 1900	15 0	16 0
Linares, l	Spain	45,000	3 0 0	15 0	Mar., 1900	9 0 0	10 0 0
Mason & Barry, c., sul	Portugal	420,000	2 0 0	10 0	Apr., 1900	4 17 6	5 2 6
§Rio Tinto, c	Spain	1,625,000	5 0 0	1 15	Nov., 1899	59 5 0	59 10 0
" " pref	"	1,625,000	5 0 0	2 6	" 1899	6 2 6	6 5 0
§Tharsis, c	"	1,250,000	2 0 0	15 0	Apr., 1900	10 5 0	10 10 0
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	5 2 6	5 7 6
Broken Hill Prop., s	N.S.Wales	384,000	8 0	1 0	Apr., 1900	2 8 0	2 9 0
Great Boulder Prop.	W. Australia	175,000	2 0	6	Apr., 1900	1 13 0	1 14 0
Hannan's Brownhill, g	"	140,000	1 0 0	5 0	Feb., 1900	10 10 0	10 15 0
§Ivanhoe Gold Corp	"	1,000,000	5 0 0	5 0	Jan., 1900	13 17 6	14 2 6
Kalgurlie, g	"	120,000	1 0 0	rts.	Oct., 1899	7 10 0	7 15 0
Lake View Consols, g	"	250,000	1 0 0	10 0	Feb., 1900	13 12 6	13 17 6
Mt. Lyell M. & R., l., c	Tasmania	900,000	3 0 0	5 0	Mar., 1900	10 0 0	10 5 0
Mt. Morgan, g	Queensland	1,000,000	1 0 0	7	Apr., 1900	5 0 0	5 5 0
Waihi, g	New Zealand	330,000	1 0 0	2 6	Apr., 1900	9 15 0	10 0 0
Champion Reef, g	Colar Fields	220,000	10 0	4 0	May, 1900	6 0 0	6 2 6
Mysore Gold, g	"	250,000	10 0	5 6	Mar., 1900	6 1 3	6 3 9
Nundydroog, g	"	242,000	1 0 0	2 6	Mar., 1900	3 8 9	3 11 3
§Ooregum, g	"	145,000	1 0 0	1 6	Dec., 1899	3 17 6	4 0 0
" pref. g	"	120,000	1 0 0	1 6	" 1899	4 18 9	5 1 3
British S. Af., chartered	So. Africa	5,000,000	1 0 0	rts.	May, 1899	3 8 9	3 11 3
Cape Copper, c	"	600,000	1 0 0	6 6	Jan., 1900	6 7 6	8 12 6
" " pref	"	150,000	2 0 0	6 6	" 1900	5 12 6	5 17 6
City & Suburban (New), g	Transvaal	1,360,000	4 0 0	8 0	Aug., 1899	4 10 0	4 15 0
Con. Deep Level, g	"	200,000	1 0 0	x all.	June, 1898	1 2 6	1 7 6
Crown Reef, g	"	120,000	1 0 0	18 0	Nov., 1899	12 5 0	12 15 0
De Beers Con., d	Cape Colony	3,950,000	5 0 0	£1	June, 1899	28 12 6	28 17 6
Ferreira, g	Transvaal	90,000	1 0 0	30 0	Aug., 1899	18 10 0	19 10 0
Geldenhuis Deep, g	"	350,000	1 0 0	8 0	Aug., 1899	8 15 0	9 5 0
Geldenhuis Est., g	"	200,000	1 0 0	10 0	Aug., 1899	5 13 9	5 16 3
Henry Nourse, g	"	125,000	1 0 0	10 0	Aug., 1899	6 17 6	7 2 6
§Jagersfontein, d	Orange Fr. St.	1,000,000	5 0 0	9 0	June, 1899	16 0 0	16 10 0
Johannesburg Con. Invst.	So. Africa	2,750,000	1 0 0	2 0	Nov., 1899	1 8 9	1 11 3
Jubilee, g	Transvaal	50,000	1 0 0	5 0	Aug., 1899	5 0 0	5 10 0
Langlaagte Estate, g	"	470,000	1 0 0	3 0	Sept., 1899	2 15 0	3 0 0
May Con., g	"	290,000	1 0 0	6 0	Aug., 1899	3 15 0	4 0 0
Meyer & Charlton, g	"	100,000	1 0 0	8 0	July, 1899	4 10 0	4 15 0
Namaqua, c	Cape Colony	200,000	2 0 0	4 0	Dec., 1899	4 16 3	4 18 9
Primrose (New), g	Transvaal	300,000	1 0 0	6 0	Aug., 1899	3 10 0	3 12 6
Rand Mines, g	So. Africa	490,000	1 0 0	5 0	Aug., 1899	36 0 0	36 5 0
Robinson, g	Transvaal	2,750,000	5 0 0	8 0	Aug., 1899	8 2 6	8 7 6
Sheba, g	"	1,100,000	1 0 0	0 7	July, 1898	18 9	1 1 3
Sim. & Jack Prop., g	"	5,000,000	5 0 0	4 0	July, 1899	5 0 0	5 5 0
Wolhuter, g	"	860,000	4 0 0	2 0	Feb., 1899	8 12 6	8 17 6

§ Dividend pending.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Author-ized Capital Stock.	Shares Issu'd No.	Par Val	Dividends. Paid, 1900.	Total to Date.	Latest. Date.	Amt.
1	Acacia, g.	Colo.	$1,500,000	1,500,000	$1	.....	.....	.....	.....
2	Ætna Con., q.	Cal.	500,000	100,000	5	$30,000	$225,000	April. 1900	.15
3	Alabama Coal & Iron, pf	Ala.	2,500,000	25,000	100	43,750	43,750	Feb. 1900	1.75
4	Alamo, g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....
5	Alaska-Mexican, g.	Alask	1,000,000	180,000	5	18,000	447,081	Jan. 1900	.10
6	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	75,000	4,295,000	Jan. 1900	.37½
7	Alice, g. s.	Mont.	10,000,000	400,000	25	.....	1,075,000	April. 1898	.05
8	Alliance, g.	Colo.	500,000	450,000	1	.....	31,500	Dec. 1899	.07
9	Amalgamated, c.	Mont.	75,000,000	750,000	100	3,000,000	4,500,000	April. 1900	2.00
10	Amazon, g.	Colo.	600,000	600,000	1	42,000	62,000	Mar. 1900	.05
11	American Coal	Md.	1,500,000	60,000	25	75,000	802,500	Mar. 1900	1.25
12	American Gold, g. s. c. l.	Colo.	3,000,000	300,000	10	.....	446,000	Dec. 1899	.04
13	Amer. Sm. & Ref., pref.	U. S.	32,500,000	325,000	100	1,263,925	1,832,675	April. 1900	2.14
14	Am. Steel & Wire, pf.	U. S.	40,000,000	400,000	100	1,400,000	4,200,000	April. 1900	1.75
15	Am. Steel & Wire, com.	U. S.	50,000,000	500,000	100	875,000	875,000	April. 1900	1.75
16	American Zinc	Kas.	500,000	5,000	100	15,000	35,000	Mar. 1900	1.00
17	Am. Zinc, Lead & Sm.	Mo.	2,500,000	60,000	25	60,000	180,000	Jan. 9001	1.00
18	Anaconda Copper	Mont.	30,000,000	1,200,000	25	2,400,000	14,550,000	April. 1900	2.00
19	Anchoria-Leland, g.	Colo.	600,000	600,000	1	.....	198,000	April. 1899	.03
20	Anglo-Mexican, g.	Mex.	2,001,625	400,250	5	.....	1,728,993	Dec. 1898	.24
21	Apollo Con., g.	Alask	1,000,000	100,000	10	70,000	210,000	Jan. 1900	.07
22	Appie Ellen, g.	Colo.	600,000	600,000	1	.....	25,000	Aug. 1898	.01
23	April Fool	Nev.	500,000	500,000	1	.....	16,000	Oct. 1899	.01
24	Argentum-Juniata, g.	Colo.	1,300,000	650,000	2	.....	156,000	Oct. 1895	.03
25	Argonaut	Cal.	2,000,000	200,000	10	50,000	470,000	Mar. 1900	.05
26	Arizona Copper	Ariz.	3,190,550	.....	.....	421,153	1,309,572	Mar. 1900	1.32
27	Associated, g.	Colo.	1,250,000	1,250,000	1	.....	84,000	Feb. 1899	.01
28	Atlantic, c.	Mich.	1,000,000	40,000	25	80,000	860,000	Feb. 1900	2.00
29	Aurora, l.	Mich.	2,500,000	100,000	25	.....	890,000	June. 1899	.50
30	Bald Butte	Mont.	250,000	250,000	1	.....	769,648	Dec. 1899	.03
31	Bankers, g.	Colo.	1,250,000	1,250,000	1	.....	.....	.....	.....
32	Bankok Cora Belle, s.	Colo.	600,000	600,000	1	.....	106,000	July. 1896	.01
33	Battle Mtn. Con., g.	Colo.	2,500,000	2,500,000	1	.....	.....	.....	.....
34	Big Four, g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....
35	Big Seven, g.	Cal.	100,000	100,000	1	.....	6,000	April 1898	.03
36	Big Six, g. s.	Colo.	500,000	500,000	1	.....	15,000	May. 1898	.00½
37	Boston-Aurora, pref.	Mo.	800,000	32,000	25	15,840	44,880	Mar. 1900	.17
38	Boston & California	Cal.	600,000	600,000	1	.....	72,000	June. 1899	.06
39	Boston & Colo. Smelting	Colo.	750,000	15,000	50	11,250	281,250	Jan. 1900	.75
40	Boston Duenweg, z.	Mo.	1,000,000	40,000	10	12,000	44,900	Mar. 1900	.10
41	Boston Get There, z.	Mo.	250,000	22,500	10	6,750	18,000	Mar. 1900	.10
42	Boston-Little Circle, z.	Mo-K.	1,000,000	100,000	10	30,000	110,000	Mar. 1900	.10
43	Boston & Mont. Con.	Mont.	3,750,000	150,000	25	1,200,000	15,700,000	Feb. 1900	8.00
44	Boston Providence, z.	Mo.	150,000	15,000	10	2,250	9,750	Mar. 1900	.05
45	Boston, q.	Cal.	1,000,000	100,000	10	10,000	20,000	Jan. 1900	.10
46	Boston Sunflower, z.	Mo.	150,000	15,000	10	.....	4,500	Oct. 1899	.30
47	Breece, i.	Colo.	5,000,000	200,000	25	10,000	80,000	Feb. 1900	.05
48	Buffalo Hump	Idaho	1,000,000	1,000,000	1	20,000	20,000	April. 1900	.01
49	Bullion-Beck & Champ.	Utah.	1,000,000	100,000	10	30,000	2,468,400	Mar. 1900	.10
50	Bunker Hill & Sullivan	Idaho	3,000,000	300,000	10	63,000	884,090	Mar. 1900	.07
51	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	2,000,000	68,850,000	Mar. 1900	20.00
52	Cambria Steel	Pa.	16,000,000	320,000	50	160,000	1,280,000	Feb. 1900	.50
53	Cariboo-McKinney, g.	B. Col	800,000	800,000	1	.....	311,965	June. 1899	.01½
54	Centen'l-Eureka, g. s. l. c.	Utah.	5,000,000	100,000	25	17,700	2,167,700	Mar. 1900	.59
55	Central Lead, l.	Mo.	1,000,000	10,000	100	15,000	157,000	Mar. 1900	.50
56	Champion, g. s.	Cal.	340,000	34,000	10	.....	321,700	Nov. 1899	.25
57	Charleston, p. r.	S. C.	1,000,000	10,000	100	.....	200,000	June. 1899	2.00
58	Colonial, l.	Mo.	1,000,000	1,000,000	1	.....	10,000	Aug. 1899	.01
59	Colorado Smelting	Mont.	1,000,000	100,000	10	.....	1,945,000	Jan. 1899	1.00
60	Commodore	Colo.	1,200,000	1,200,000	1	.....	432,000	Jan. 1899	.04
61	Commonwealth, z., pref.	Mo.	500,000	100,000	5	15,000	35,000	Mar. 1900	.05
62	Consolidated Gold Mines	Colo.	1,000,000	1,000,000	1	20,000	30,000	Mar. 1900	.01
63	Consolidation Coal	Md.	10,250,000	102,500	100	205,000	5,921,650	Feb. 1900	2.00
64	Cons. Zinc & Lead, pf.	Mo.	400,000	400,000	1	8,000	8,000	Jan. 1900	.20
65	Continental, z.	Mo.	1,500,000	150,000	10	.....	.....	.....	.....
66	Cordell, z. l.	Mo.	300,000	60,000	5	6,000	6,000	Mar. 1900	.05
67	Cripple Creek Con.	Colo.	2,000,000	2,000,000	1	160,000	160,000	Mar. 1900	.08
68	Crœsus, g.	Cal.	1,000,000	190,000	5	11,400	60,400	Mar. 1899	.06
69	Crowned King, g. s.	Ariz.	6,000,000	600,000	10	.....	242,760	May. 1899	.02
70	Dalton & Lark, g. & s. l.	Utah.	2,500,000	2,500,000	1	.....	87,500	Mar. 1896	.00½
71	Daly	Utah.	3,000,000	150,000	20	.....	2,925,000	Mar. 1897	.25
72	Daly West	Utah.	3,000,000	150,000	20	150,000	270,000	Mar. 1900	.25
73	Damon, g.	Colo.	2,000,000	2,000,000	1	.....	.....	.....	.....
74	Deadwood-Terra, g.	S. D.	5,000,000	200,000	25	.....	1,350,000	May. 1898	.15
75	Deer Trail Con.	Wash	3,000,000	3,000,000	1	.....	55,000	Dec. 1899	.00½
76	De Lamar, g. s.	Idaho	2,000,000	400,000	5	.....	2,346,000	May. 1899	.12
77	Della S., g.	Colo.	1,000,000	1,000,000	1	.....	60,000	Jan. 1897	.01
78	Delta, l. z.	Mo.	100,000	100,000	1	2,685	6,785	Mar. 1900	.01
79	Doe Run, l.	Mo.	500,000	5,000	100	7,500	97,500	Mar. 1900	.50
80	Dutch, g.	Cal.	1,500,000	130,000	10	.....	39,000	Feb. 1898	.01
81	Eldorado, g.	Cal.	1,000,000	100,000	10	.....	10,000	July. 1899	.10
82	Elkhorn, New, s. l.	Colo.	437,500	87,500	5	.....	1,325,000	June. 1898	.48
83	Elkton Con., g.	Colo.	1,250,000	1,125,000	1	33,750	754,461	Mar. 1900	.03
84	El Paso, g. s.	Colo.	650,000	650,000	1	.....	12,393	Jan. 1898	.01
85	Empire State-Idaho	Idaho	1,000,000	98,514	10	88,662	406,700	Mar. 1900	.30
86	Enterprise, s. l.	Colo.	500,000	500,000	1	.....	900,000	Sept. 1898	.05
87	Fanny Rawlings, g. s.	Colo.	1,000,000	1,000,000	1	.....	20,000	Aug. 1899	.01
88	Federal Steel, pf.	U. S.	100000,000	532,610	100	3,195,660	4,793,520	April. 1900	3.00
89	Federal Steel, com.	U. S.	100000,000	464,843	100	1,743,161	1,743,161	Mar. 1900	2.50
90	Fern, g.	B. Col	200,000	200,000	1	.....	10,000	Jan. 1898	.05
91	Ferris-Haggarty, c. g. s.	Wyo.	1,000,000	1,000,000	1	.....	5,000	Feb. 1899	.00½
92	Findley, g.	Colo.	1,250,000	1,250,000	1	.....	.....	.....	.....
93	Florence, s.	Mont.	2,500,000	400,000	5	.....	230,000	Dec. 1899	.05
94	Frisco Con., l. s.	Idaho	2,500,000	500,000	5	.....	920,000	Nov. 1899	.25
95	Galena, s. l. g.	Utah.	1,000,000	100,000	10	.....	71,000	Sept. 1897	.05
96	Garfield Con., g.	Colo.	1,200,000	1,200,000	1	.....	34,006	May. 1899	.01
97	Geyser-Marion, g.	Utah.	1,500,000	300,000	5	.....	96,000	Sept. 1898	.02
98	Gold Coin of Victor, g.	Colo.	1,000,000	1,000,000	1	60,000	420,000	Mar. 1900	.02
99	Gold & Globe, g.	Colo.	750,000	750,000	1	.....	51,625	July. 1898	.00½
100	Gold King, g.	Colo.	1,000,000	1,000,000	1	30,000	120,000	Jan. 1900	.03
101	Gold Sovereign, g.	Colo.	3,000,000	3,000,000	1	.....	.....	.....	.....
102	Golden Cycle, g.	Colo.	1,000,000	200,000	5	30,000	288,500	Mar. 1900	.05
103	Golden Eagle, g.	Colo.	500,000	500,000	1	.....	20,000	Nov. 1899	.01
104	Golden Fleece, g. s.	Colo.	600,000	600,000	1	.....	569,480	Feb. 1897	.01
105	Golden Reward, g.	S. D.	1,000,000	100,000	10	.....	155,000	Feb. 1898	.15
106	Golden Star, g.	Ont.	1,200,000	1,200,000	1	.....	45,500	July. 1899	.00½
107	Gould, g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....
108	Grafton, g.	Colo.	1,000,000	1,000,000	1	.....	10,000	Oct. 1899	.01
109	Grand Central, g.	Utah.	250,000	250,000	1	.....	666,250	Sept. 1899	.24
110	Grand Gulch	Ariz.	250,000	240,000	1	4,800	4,800	Feb. 1900	.01
111	Grass Valley Expl.	Cal.	100,000	30,000	2	22,500	52,500	Mar. 1900	.25
112	Gwin, g.	Cal.	1,000,000	20,000	50	15,000	116,500	Mar. 1900	.25
113	Hall Mines, Ltd.	B. Col	1,500,000	250,000	5	.....	120,000	May. 1899	.24
114	Hecla Con.	Mont	1,500,000	30,000	50	.....	2,190,000	Dec. 1898	.50
115	Hidden Treasure, g.	Cal.	500,000	360,000	1	.....	3,600	July. 1899	.01
116	Holy Terror, g.	S. D.	500,000	500,000	1	.....	167,000	Dec. 1899	.01
117	Homestake, g.	S. D.	21,000,000	210,000	100	315,000	8,458,750	Mar. 1900	.50
118	Horn-Silver, g. s. c. sp. l.	Utah.	10,000,000	400,000	25	.....	5,250,000	Mar. 1899	.05
119	Ida May, g.	Colo.	500,000	500,000	1	.....	.....	.....	.....
120	Idaho, s. l.	B. Col	500,000	500,000	1	.....	292,000	Jan. 1899	.05¢
121	Independence Town & M	Colo.	1,250,000	1,250,000	1	25,000	37,500	April. 1900	.01
122	International, z.	Mo.	$1,000,000	1,000,000	$1	$15,000	$15,000	April. 1900	.01
123	Iowa, g. s. l.	Colo.	1,666,667	1,666,667	1	7,500	97,500	Jan. 1900	.00¼
124	Iron Mountain, g. s. l. i.	Mont.	5,000,000	500,000	10	.....	507,500	April. 1898	.02
125	Iron Silver, s. l.	Colo.	10,000,000	500,000	20	.....	2,500,000	April. 1899	.20
126	Isabella, g.	Colo.	2,250,000	2,250,000	1	67,500	607,500	Mar. 1900	.03
127	Jack Pot, g.	Colo.	1,250,000	1,250,000	1	.....	175,000	Dec. 1899	.06
128	Jamison	Cal.	3,900,000	390,000	10	.....	50,700	April. 1899	.10
129	Keystone, g.	Colo.	1,500,000	1,500,000	1	.....	.....	.....	.....
130	Klondike Bonanza, Ltd.	Klond	750,000	52,750	5	.....	12,000	Aug. 1899	.24
131	Lake Superior Iron	Mich.	2,100,000	84,000	25	.....	2,132,000	Feb. 1899	1.00
132	Last Chance, s. l.	B. Col	500,000	500,000	1	.....	45,000	Apr. 1899	.05
133	Last Dollar, g.	Colo.	1,500,000	1,500,000	1	30,000	60,000	Feb. 1900	.02
134	Le Roi, g.	B. Col	5,000,000	200,000	5	.....	1,305,000	Nov. 1899	1.20
135	Lexington, g.	Colo.	1,500,000	1,500,000	1	.....	.....	.....	.....
136	Lillie, g.	Colo.	1,250,000	250,000	5	33,750	335,360	Mar. 1900	.05
137	Little Tiger, g.	Cal.	500,000	500,000	1	15,000	47,500	Feb. 1900	.01½
138	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	40,000	1,650,000	Jan. 1900	.10
139	Marion Con.	Colo.	5,000,000	500,000	10	.....	300,000	May. 1899	.01
140	Mary McKinney, g.	Colo.	1,000,000	1,000,000	1	30,000	60,000	Jan. 1900	.03
141	Maryland Coal, pf.	Md.	1,835,005	18,850	100	.....	546,619	Dec. 1899	3.00
142	Matoa, g.	Colo.	1,000,000	1,000,000	1	.....	25,000	Dec. 1898	.02½
143	Mercur, g.	Utah.	5,000,000	200,000	25	50,000	1,416,000	Jan. 1900	.25
144	Minnesota Iron	Minn.	16,500,000	165,000	100	.....	4,735,000	Oct. 1898	1.50
145	Missouri Zinc Fields, pf.	Mo.	400,000	16,000	25	7,930	29,242	Mar. 1900	.16
146	Modoc, g. s.	Colo.	500,000	500,000	1	15,000	160,000	Mar. 1900	.01
147	Mollie Gibson, s. l.	Colo.	5,000,000	1,000,000	5	.....	4,080,000	Jan. 1895	.05
148	Monarch, g.	Colo.	1,000,000	1,000,000	1	120,000	120,000	April. 1900	.12
149	Montana, Ltd., g. s.	Mont.	3,300,000	657,128	5	.....	453,700	April. 1899	.12
150	Montana Ore Purchas'g.	Mont.	2,500,000	80,000	25	80,000	1,440,000	Feb. 1900	1.00
151	Montreal, g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....
152	Monument, g.	Colo.	300,000	300,000	1	.....	18,124	Nov. 1899	.01
153	Moon-Anchor Con., g.	Colo.	1,750,000	600,000	1	.....	261,000	Nov. 1898	.07½
154	Moose, g.	Colo.	600,000	600,000	1	.....	186,000	Feb. 1896	.01
155	Morning Star Drift, g.	Cal.	240,000	2,400	100	.....	847,200	Nov. 1899	10.00
156	Morse, g.	Colo.	1,250,000	1,250,000	1	.....	213,150	May. 1899	.12
157	Mountain Beauty, g.	Colo.	2,000,000	2,000,000	1	.....	.....	.....	.....
158	Mt. Rosa, g.	Colo.	1,000,000	1,000,000	1	.....	75,000	Dec. 1899	.04
159	Mt. Shasta	Cal.	100,000	20,000	5	.....	6,000	May. 1899	.30
160	Moulton	Mont.	2,000,000	400,000	5	.....	500,000	Oct. 1893	.05
161	Mountain Copper.	Cal.	6,250,000	250,000	25	.....	1,173,750	Oct. 1899	2.16
162	Napa Con., q.	Cal.	700,000	100,000	7	40,000	1,080,000	April. 1900	.20
163	National Lead, com.	U. S.	15,000,000	149,054	100	149,054	1,341,486	Mar. 1900	1.00
164	National Lead, pf.	U. S.	15,000,000	149,040	100	260,820	8,607,060	Mar. 1900	1.75
165	National Salt, pf.	U. S.	5,000,000	24,000	100	42,000	126,000	Jan. 1900	1.75
166	National Steel, pf.	U. S.	27,000,000	270,000	100	.....	1,890,000	Dec. 1899	1.75
167	New Central Coal	Md.	1,000,000	50,000	20	20,000	490,000	April. 1900	.40
168	New Idria, q.	Cal.	500,000	100,000	5	40,000	210,000	April. 1900	.20
169	New York Zinc	Mo.	700,000	28,000	25	21,000	42,000	Mar. 1900	.25
170	N. Y. & Hon Rosario, s. g.	C. A.	1,500,000	150,000	10	45,000	1,905,000	Mar. 1900	.10
171	North Star Mines of N. J.	Cal.	5,000,000	250,000	10	.....	50,000	Nov. 1899	.20
172	Nugget	Colo.	1,000,000	1,000,000	1	.....	35,000	Aug. 1898	.00½
173	Okanogan, g.	Wash	62,500	1,250,000	05	.....	3,125	Oct. 1899	.00¼
174	Ontario, s. l.	Utah.	15,000,000	150,000	100	45,000	13,617,500	Jan. 1900	.30
175	Ophir, g.	Colo.	700,000	700,000	1	.....	.....	.....	.....
176	Orphan Belle, g.	Colo.	1,000,000	1,000,000	1	.....	197,899	Dec. 1899	.09
177	Original Empire, g.	Cal.	5,000,000	50,000	100	.....	500,000	May. 1899	1.00
178	Osceola, c.	Mich.	2,500,000	93,000	25	.....	3,080,500	Dec. 1899	3.00
179	Pacific Coast Borax	Cal.	2,000,000	20,000	100	100,000	522,500	Dec. 1900	5.00
180	Parrot, c.	Mont.	2,300,000	230,000	10	345,000	3,380,898	Jan. 1900	1.50
181	Pennsylvania Coal	Pa.	5,000,000	100,000	50	.....	4,050,000	May. 1899	8.00
182	Pennsylvania Con.	Cal.	5,150,000	51,500	100	15,450	151,625	Mar. 1900	.10
183	Pennsylvania Steel, pf.	Pa.	1,500,000	15,000	100	26,250	52,500	Jan. 1900	1.75
184	Petro, g.	Utah.	1,000,000	200,000	5	.....	32,000	Oct. 1899	.02½
185	Pharmacist Con., g.	Colo.	1,500,000	1,500,000	1	.....	84,000	Jan. 1898	.01
186	Pioneer, g.	Cal.	1,000,000	100,000	10	.....	62,500	Mar. 1899	.12½
187	Pittsburg Coal, pf.	Pa.	32,000,000	308,000	100	539,000	539,000	Jan. 1900	1.75
188	Plumas Eureka, g.	Cal.	1,406,250	140,625	10	.....	2,713,169	Oct. 1899	.12
189	Portland, g.	Colo.	3,000,000	3,000,000	1	210,000	2,767,080	Mar. 1900	.02
190	Princess, g.	Colo.	1,000,000	1,000,000	1	.....	40,000	May. 1899	.01
191	Prince Albert, g.	Colo.	3,000,000	3,000,000	1	.....	.....	.....	.....
192	Queen Bess Propr., s. l.	B. Col	500,000	100,000	5	.....	25,000	July. 1899	.12½
193	Quicksilver, pref.	Cal.	4,300,000	43,000	100	.....	1,845,411	May. 1899	.50
194	Quincy, c.	Mich.	2,500,000	100,000	25	500,000	11,570,000	Feb. 1900	5.00
195	Rambler—Cariboo, s. l.	B. Col	1,000,000	1,000,000	1	.....	60,000	Dec. 1899	.01
196	Raven, g.	Colo.	1,500,000	1,000,000	1	30,000	99,500	Mar. 1900	.01
197	Reco, s. l.	B. Col	1,000,000	1,000,000	1	.....	297,500	Jan. 1898	.10
198	Republic Con., g.	Wash	3,500,000	3,500,000	1	105,000	382,500	Mar. 1900	.01
199	Republic Iron & Steel, pf	U. S.	25,000,000	212,570	100	371,997	1,215,992	April. 1900	1.75
200	Reward, g.	Cal.	1,000,000	100,000	10	.....	20,000	Aug. 1899	.20
201	Russell-Irwin, z.	Mo.	250,000	25,000	10	.....	15,000	Oct. 1899	.10
202	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	138,000	Oct. 1899	.00½
203	St. Joseph, l.	Mo.	3,000,000	300,000	10	37,500	2,934,500	Mar. 1900	.50
204	Seventy-Six, g. s.	Colo.	1,000,000	200,000	5	.....	2,950	Mar. 1898	.01
205	Santa Rosalia, g. s.	Cal.	100,000	100,000	1	.....	130,000	Oct. 1899	.05
206	Silver King, g. s. l.	Utah.	3,000,000	150,000	20	225,000	2,675,000	Mar. 1900	.50
207	Small Hopes, s.	Colo.	5,000,000	250,000	20	.....	3,325,000	Feb. 1899	.10
208	Smuggler, s. l. z.	Colo.	1,000,000	1,000,000	1	90,000	1,300,000	Mar. 1900	.03
209	South Eureka, g.	Cal.	1,500,000	300,000	5	.....	12,000	May. 1898	.04
210	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	165,000	Oct. 1899	.05
211	Specimen, g.	Colo.	1,200,000	1,200,000	1	.....	.....	.....	.....
212	Squaw Mountain, g.	Colo.	2,000,000	2,000,000	1	.....	10,000	Nov. 1899	.00½
213	Standard Con., g. s.	Cal.	2,000,000	200,000	10	20,000	3,919,226	Feb. 1900	.10
214	Standard	Idaho	500,000	500,000	1	.....	1,745,000	April. 1899	.06
215	Stratton's Independ'ce.	Colo.	5,500,000	1,000,000	5	480,000	1,440,000	Feb. 1900	.48
216	Strong, g.	Colo.	2,500,000	2,500,000	1	75,000	925,000	Mar. 1900	.01
217	Swansea, s. l.	Utah.	500,000	100,000	5	20,000	221,500	Mar. 1900	.05
218	Tamarack, c.	Mich.	1,500,000	60,000	25	.....	6,270,000	Dec. 1899	6.00
219	Temonj, g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....
220	Tomboy, g.	Colo.	1,500,000	300,000	5	.....	812,000	Dec. 1899	.24
221	Tornado, g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....
222	Union, g.	Colo.	1,250,000	1,250,000	1	.....	82,744	June. 1896	.01
223	Union Leasing	Colo.	1,000,000	1,000,000	1	.....	336,000	July. 1895	.04
224	United, z. l., pref.	Mo.	1,000,000	40,000	25	20,000	60,000	Jan. 1900	.50
225	United Verde, c.	Ariz.	3,000,000	300,000	10	450,000	1,312,500	Mar. 1900	.50
226	Utah	Utah.	1,000,000	100,000	10	.....	179,000	Jan. 1899	.02
227	Victor, g.	Colo.	1,000,000	200,000	5	.....	1,155,000	Dec. 1898	.50
228	Vindicator, Con., g.	Colo.	1,500,000	1,065,000	1	53,250	357,750	Jan. 1900	.05
229	War Eagle Con.	B. C.	2,000,000	1,750,000	1	52,500	545,250	Feb. 1900	.01½
230	West. Mine Enterprise.	Mont.	500,000	120,000	1	.....	48,680	Jan. 1898	.20
231	What Cheer, z.	Mo.	225,000	22,500	10	4,500	9,000	Feb. 1900	.20
232	Wolverine, c.	Mich.	1,500,000	60,000	25	120,000	390,000	April. 1900	2.00
233	Work, g.	Colo.	1,500,000	1,500,000	1	.....	.....	.....	.....
234	Yellow Aster, g.	Cal.	1,000,000	100,000	10	60,000	383,789	Mar. 1900	.20
235	Ymir, g.	B. Col	1,000,000	125,000	5	.....	30,000	Nov. 1899	.24
236			.....	.....	.....	.....	.....	.....	.....

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. This table is corrected up to March 24. Correspondents are requested to forward changes or additions.

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

Abrasives—	Cust. Meas.	Price.
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF	lb.	$0.10
Minute No. 1	"	.15
No. 15	"	1.00
Corundum, N. C.	"	.07@.10
Chester, Mass.	"	.04½@.05
Emery, Turkish flour	"	.03
Grains	"	.05
Naxos flour	"	.03
Grains	"	.05
Chester flour	"	.03
Grains	"	.05
Peekskill flour	"	.03¾
Grains	"	.03½
Crude, Kuluk, best	lg. ton	18.50
Levant	"	22.00
Naxos (Greek) best	"	26.00
Pumice Stone, Am. powd.	lb.	.01⅜@.02
Italian, powdered	"	.01¼
Lump, per quality	"	.04@.40
Rottenstone, ground	"	.02½@.03
Lump, per quality	"	.05@.14
Rouge, per quality	"	.12@.30
Acids—Acetic, 30% pure	100 lbs.	3.50
30% ch. pure	"	6.00
80% pure	"	7.50
Benzoic, English	oz.	.12½
German	lb.	.46
Boracic, cryst.	"	.10
Powdered	"	.10½
Carbolic, crude, 60%	gal.	.28
Cryst. 37%	lb.	.36
Liquid, 95%	gal.	.40
Carbonic, liquid	lb.	.12½
Chromic, crude	"	.20
Chem. pure	"	.50
Absol. ch. pure	"	1.75
Hydrochloric, ch. pure	"	.07
Hydrofluoric, 30%	"	.03
48%	"	.05
Best	"	.25
Nitric, chem. pure	"	.09
Sulphuric, 98%	"	.01½
Chem. pure	"	.07
Tartaric, cryst.	"	.32
Powder	"	.32½
Alcohol—Grain	gal.	2.40
Refined wood, 95@97%	"	.90@.95
Purified	"	1.20
Alum—Lump	100 lbs.	1.75
Ground	"	1.85
Chrome, com'l	"	2.75@3.00
Aluminum—Nitrate	lb.	1.50
Oxide, com'l, common	"	.06½
Best	"	.20
Pure	"	.80
Hydrated	"	.05
Sulphate, pure	"	1.50
Com'l	"	.01¼
Ammonia—Aqua, 16°	"	.03¼
18°	"	.03½
20°	"	.04
26°	"	.05¾
Ammonium—		
Bromide, pure	"	.52@.53
Carbonate lump	"	.08¼@.08¾
Powdered	"	.09¼@.09¾
Muriate, gran.	"	.06½
Lump	"	09¼
Nitrate, white, pure (99%)	"	.10½
Phosphate, com'l	"	.12
Chem. pure	"	60
Antimony—		
Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾
Best	"	.08½
Oxide, com'l white, 95%	"	.09½
Com'l white, 99%	"	.12
Com'l gray	"	.07
Sulphuret, com'l	"	.16
Arsenic—White	"	4.70@4.75
Red	"	.07¾@.08
Asphaltum—		
Ventura, Cal.	sh ton	32.00
Cuban	lb.	.01¼@.03¼
Egyptian, crude	"	.05¼@.06
Trinidad, refined	lg. ton	30.00@35.00
San Valentino	lg. ton	15.00
Seyssel (French) mastic	sh.ton	21.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾
Barium—Carbonate, Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@.02
Chloride, com'l	"	.02@.02¼
Chem. pure cryst	"	.05
Nitrate, powdered	"	.06
Oxide, com'l, hyd. cryst	"	.18
Hydrated, pure cryst.	"	.25
Pure, powd.	"	.27
Sulphate	"	.01
Barytes—Am. Cr., No. 1	sh.ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
Am. Floated	"	14.50@17.50
German, gray	"	14.50
Snow white	"	17.50
Bauxite—Ga. mines: 1st grade	lg. ton.	5.00@5.10
Second grade	"	4.00@4.50
Ala., f.o.b., 1st grade	"	5.00
Second grade	"	3.85
Bismuth—Oxide, hydr.	lb	2.25@2.30
Subnitrate	"	1.30@1.35
Bitumen, "B"	"	.03½
"A"	"	.05
"A" and "B"	"	.04½
Bone Ash	"	02¾@.03½
Borax—Cryst. and pow'd	"	.07¼@.07½
Bromine—Bulk	"	.45
Cadmium—Metallic	"	1.40
Acetate, pure white	100 lbs.	1.00
Sulphate	"	2.00@2.50

Calcium—	Cust. Meas.	Price.
Acetate, gray	100 lbs.	$1.55
" brown	"	1.10
Carbide, ton lots, f. o. b. Niagara Falls, N.Y.	sh. ton	75.00
Carbonate, ppt.	lb.	.05
Chloride, com'l	100 lbs.	.95
Best	"	1.90
Sulphite	lb.	.05
Cement—		
Portland, Am., 400 lbs.	bbl.	1.50@2.00
Belgium	"	1.95@2.20
English	"	2.45@2.55
German	"	2.30@2.70
"Rosendale," 300 lbs.	"	1.10
Sand cement, 400 lbs.	"	1.55@1.95
Slag cement, imported.	"	1.65
Ceresine—		
Orange and Yellow	lb.	.12
White	"	.14
Chalk—Lump, bulk	sh. ton	2.15
Precipitated	lb.	.05
French	"	.03
Chlorine—Liquid	"	.28
Water	"	.15
Chrome Ore—		
(50% chrome) ex-ship	lg. ton	20.00@20.50
Sand	"	35.00
Bricks, f.o.b., Pittsburg.	M	175.00
Clay, China—Am. com., ex-dock, N. Y.	lg ton	8.00
Am. best, ex-dock, N. Y.	"	9.00
English, common	"	12 00
Best grade	"	17 00
Slip Clay	sh. ton.	5.00
Coal Tar Pitch	gal.	.08
Cobalt—Carbonate	lb.	1.50
Nitrate	"	1.30
Oxide—Black	"	2.00
Gray	"	2.50
Smalt, blue ordinary	"	.20
Best	"	.30
Chem. pure	"	5.00
Copperas	100 lbs.	.72½
Copper—Carbonate	lb.	.18
Chloride	"	.25
Nitrate, crystals	"	.35
Oxide, com'l	"	.19
Cream of Tartar—Crys.	"	.22½
Granulated	"	.22½
Powdered	"	.23½
Cryolite	"	.06½
Explosives—		
Blasting powder, A. 25 lb.	keg	2.50
Blasting powder, B.	"	1.25
"Rackarock," A.	lb.	.25
"Rackarock," B	"	.18
Judson R.R. powder	"	.10
Dynamite (20% nitro-glycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine)	"	.15
(50% nitro-glycerine)	"	.17
(60% nitro-glycerine)	"	.19
(75% nitro-glycerine)	"	.22
Glycerine for nitro (32 2-10° Be.)	"	.13¼@.13½
Feldspar—Ground	sh. ton	8.00@9.00
Flint—(See Silica).		
Fluorspar—		
Am. lump, 1st grade	"	12.90
2d grade	"	12.40
Gravel & crushed, 1st g	"	11.90
2d grade	"	11.00
Ground, 1st grade	"	16.40
Foreign, lump	"	8.30@12.00
Ground	"	11.50@14.00
Fuller's Earth—Lump	100 lbs.	.75
Powdered	"	.85
Refined lump	"	1.25
Ganister Rock	lg. ton.	6.50
Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00
Infusorial Earth—Ground, American, best	"	20.00
French	"	37.50
German	"	40.00
Iodine—		
Crude	100 lbs.	2.45
Resublimed	"	2.85
Iron—		
Muriate	lb.	.05
Nitrate, com'l	"	.01
True	"	.03¾
Oxide, pure copperas col	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@.03
Kaolin—(See Clay, China).		
Kryolith—(See Cryolite.)		
Lead—		
Acetate, white	lb.	.07
Com'l, broken	"	.06½
Brown	"	.05½
Nitrate, com'l	"	.06½
" gran.	"	.8¼
Lime—Bldg., ab. 250 lbs	bbl.	.90
Finishing	"	1.00
Magnesite—		
Crude, lump (95%) Greece	lg. ton	7.00@7.50
Calcined (Greece)	sh. ton	16.50
Bricks (Greece)	M.	170.00
Bricks, Am., f.o.b., Pittsburg	M.	175.00
Magnesium—		
Carbonate, light, fine pd	lb.	.03¾
Blocks	"	.06@.09
Chloride, com'l	"	.01¾
Fused	"	.20
Nitrate	"	.60
Manganese—Crude, pow'd 73@75% binoxide	"	.01¼@.01½
Crude, pow'd 75@85% binoxide	"	.01½@.02½
85@90% binoxide	"	.02½@.03¼

Manganese—	Cust. Meas.	Price.
Crude-pow'd 90@95% binoxide	lb.	.02¾@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50%, Foreign	unit	.24@.24½
Domestic	"	.30
Marble—Flour	sh. ton	5.50@6.00
Mercury—		
Bichloride	lb.	.74
Mica—N. Y. gr'nd, coarse	"	.04@.05
Fine	"	.06@.06½
Sheets, 1½x3 in.	"	.60
8x10 in.	"	13.00
Mineral Wool—		
Slag, ordinary	100 lbs.	.90
Selected	"	1.40
Extra	"	3.00
Rock, ordinary	sh. ton	32.00
Selected	"	40.00
Extra	"	50.00
Monazite—92%	"	140.00
Nickel—Oxide, No. 1	lb.	1.00
No. 2	"	.60
Sulphate	"	.13@.13½
Oils—Black, reduced 29 gr.:		
25@30 cold test	gal.	.11@.11½
15. cold test	"	.12@.12½
Zero	"	.13@.14
Summer	"	.10½@.11
Cylinder, dark steam ref	"	.10@.15
Dark filtered	"	.13@.18
Light filtered	"	.16@.19
Extra cold test	"	.23@.28
Gasolene, 86°@90°	"	.16@.21
Naphtha, crude 68@72°	"	10.65
"Stove"	"	.13
Linseed, domestic raw	"	.62@.63
Boiled	"	.61@.65
Calcutta, raw	"	.71
Graphite, lubricating, Am. dry	lb.	.10
In oil	"	.12
Axle grease	"	.08½@.10
Wood grease	"	.05@.06
Ozokerite—Foreign	"	.09
Paints and Colors—		
Benzine, Sumatra	"	.35@.40
Marbled	"	.27
Chrome green, common	"	.05
Extra	"	.10@.12
Yellow, common	"	.10
Best	"	.25
Silica Graphite, thick	"	.12
Thinned	gal.	1.15
Lampblack, com'l	lb.	.03
Refined	"	.08
Calcined	"	.12@.20
Fine spirit	"	.20@.35
Litharge, Am. powd.	"	.06½
English flake	"	.09½
Glassmakers, Foreign	"	.06½
Metallic, brown	sh. ton	16.00@19.50
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.04¾
French, washed	"	.01¼@.02½
Orange mineral, Am.	"	.08¼@.08½
Foreign, as to make	"	.09½@.11¼
Paris green, pure, bulk	"	.12½@.13
Red lead, American	"	.06½
Foreign	"	.08¼
Shellac, "D. C."	"	.27
Native	"	.14½
Turpentine, spirits	gal.	.56½
Ultramarine, best	lb.	.25
Vermilion, Amer. lead	"	.14
Quicksilver	"	.69
Chinese	"	.85
English, imported	"	.71
White lead, Am., dry	"	.05¾
In oil	"	.06½
English	"	.06½@.08¾
Whiting, common	100 lbs.	.40
Gilders	"	.54
Zinc white, Am., ex. dry	lb.	.04¾@.05¼
American, red seal	"	.07¼@.07¾
Green seal	"	.07¾@.08
Foreign, red seal, dry	"	.06¼@.08¼
Green seal, dry	"	.06¾@.08¾
Foreign, in oil	"	.10½@.11¾
Plumbago—		
Am. lump, f. o. b. Providence, R. I.	sh. ton	8.00
Am. pulv., f. o. b. Providence, R. I.	"	30.00
German, lump	lb.	.01¼
Pulverized	"	.02
Ceylon, pulv. common	"	.04
Best	"	.06@.08
Italian, pulv.	"	.01¼
Potash—		
Caustic, ord.	"	.06@.06¼
Elect. (90%)	"	.06½
Potassium—		
Bicarbonate cryst.	"	.08¼
Powdered or gran.	"	.12
Bichromate	"	.09
Bromide	"	.46
Carbonate, 96@98%	"	.05½
Com'l	"	.03½
Chromate	"	.35
Cyanide (98@99%)	"	.28@.29
Iodide, bulk	"	2.30
Permanganate, pure cr.	"	.14
Prussiate, yellow	"	.18½@.19
Red	"	.37
Silicate	"	.06
Sulphide, com'l	"	.10
Quartz—(See Silica).		
Rosin—		
Com. strained (280 lbs.)	bbl.	1.70
Best strained	"	3.50
Medium	"	2.00
Salt—		
N.Y. com. fine	sh. ton	2.00
Salt—N. Y. agricultural	sh. ton	$1.50
Saltpeter—Crude	100 lbs.	3.55@3.62½
Refined	"	4.50
Samarskite	lb.	1.00
Silica—Best foreign	lg. ton	10.00@11.00
Ground quartz, ord.	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75
Fire bricks (Blue Welch)	M.	35.00
Silver—Chloride	oz.	.65
Nitrate	"	.40
Oxide	"	.85@1.10
Slate—Ground	sh. ton	7.50@8.75
Sodium—Acetate, com'l	lb.	.04¾
Bichromate	"	.06¾@.06½
Bromide	"	.50
Chlorate, com'l	"	.10
Hyposulphite	100 lbs.	1.70@1.80
Nitrite, 96@98%	lb.	.08
Peroxide	"	.45
Phosphate	"	.02¾
Prussiate	"	.14½
Triphosphate	"	.04
Silicate, conc. com'l	"	.05¼
Sulphate, gran., puri'd.	"	.02¼
Sulphide	"	.03¾
Sulphite	"	.02½
Tungstate, com'l	"	.35
Pure	"	.50
Strontium—Nitrate	"	.08
Sulphur—Roll	100 lbs.	1.75
Flour	"	1.85
Flowers, sublimed	"	2.05
Talc—N. C., 1st grade	sh. ton	13.75
N. Y., Fibrous	"	8.00@9.00
French	lg. ton	16.00
Italian	100 lbs.	1.50@2.00
Tin—Bichloride	lb.	.09½@.10
Crystals	"	.20¼
Muriate, 36°	"	.09
Muriate, 52°	"	.15
Oxide, white, ch. pure	"	.41
Uranium—Oxide	"	1.80@3.00
Zinc—Metallic, ch. pure	"	.09
Carbonate	"	.15
Chloride	"	.05¼
Dust	"	.07¼
Sulphate	"	.02@.02⅞

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

	Cust. Meas.	Price.
Barium—Amalgam	grm.	$1.19
Electrol	"	5 71
Beryllium—Powder	"	5.95
Crystals	"	9.04
Nitrate (N Y.)	lb.	32.00
Boron—Amorphous, pure	grm.	.19
Crystals, pure	"	1.43
Nitrate (N. Y.)	lb.	1.50
Cadmium	kg.	1.90
Calcium	grm.	4.28@5.95
Cerium—Fused	grm.	1.02
Nitrate (N. Y.)	lb.	17.00
Chromium—Fused, Elect.	kg.	5.95
Pure powder 95%	"	1.79
Chem. pure cryst	grm.	.26
Cobalt—(98@99%)	kg.	6.31@7.85
Pure	"	30.94
Didymium—Nitrate (N.Y.)	lb.	60.00
Erbium	grm.	3.09
Nitrate (N. Y.)	lb.	62.00
Germanium—Powder	grm.	33.32
Fused	"	35.70
Glucinum—Powder	"	5.95
Crystals	"	9.04
Nitrate (N. Y.)	oz.	2.50
Indium	grm.	4.05
Iridium	"	1.43
Lanthanum—Powder	"	4.28
Electrol, in globules	"	9.04
Nitrate (N. Y.)	lb.	57.00
Lithium	grm.	2.38
Nitrate (N. Y.)	oz.	.60
Magnesium—In bars	kg.	6.19
In wire	"	9.99
Powdered	"	5.71@6.90
Molybdenum—Fused	grm.	.20
Powder, 95%	kg.	2.62
Niobium	grm.	3.81
Osmium	"	.95
Palladium—Wire	"	.95
Sponge	"	.71
Potassium—In balls	kg.	17.85
Rhodium	grm.	2.62
Rubidium—Pure	"	4.76
Ruthenium—Powder	"	2.38
Rutile—Crude	kg.	.43
Selenium—Com'l powder	"	33.32
Sublimed powder	"	42.84
Sticks	"	35.70
Silicium—Com'l	"	28.56
Pure crystals	"	59.50
Sodium (N. Y.)	lb.	.75
Strontium—Electrol	grm.	6.19
Tantalum—Pure	"	3.57
Tellurium—Ch. p. sticks.	kg.	119.00
Powder	"	95.20
Thallium	"	26.18
Thorium—Metallic	grm.	7.85
Nitrate 49@50% (N. Y.)	lb.	4.75
Titanium	kg.	47.60
Uranium	"	190.40
Nitrate (N. Y.)	oz.	.25
Vanadium—Fused	grm.	1.19
Wolfram—Fused, elect.	kg.	238.00
Powder, 95@98%	"	1.67
Purest, powder	"	6.43
Yttrium	grm.	3 33
Nitrate (N. Y.)	lb.	62.00
Zirconium—Com'l	kg.	119.00
Nitrate (N. Y.)	lb.	9.00

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 April 16. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.