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CONTENTS.

The programme for the excursion of the American Institute of Mining Engineers next week is an attractive one, and will take the members who join in it through a country which will be new to most of them. It is to be hoped that the attractions will not be so great as to draw attention away from the meetings, which ought to be interesting ones. There will be a chance to see new and important developments in an old mining country. Some of this country, indeed, is older than any in the United States, since coal mining records for 115 years have been carefully preserved in Nova Scotia.

Affairs in South Africa move slowly, and there is no sign yet of the time when mining operations can be generally resumed on the Witwatersrand. The scattered commandoes which remain of the Boer army are giving the British troops a good deal of trouble, and it may take some time yet to terminate these operations. Meantime, Johannesburg is still forbidden ground to civilians, and no work can be undertaken beyond pumping and such operations as are needed to preserve the property. The managers and employees are anxious to return to work, but they will probably have some further waiting to do.

The letter of a correspondent, which we publish on another page, in relation to the Gardiner leaching process for copper ores, does not change the opinion which we expressed in relation to that process in our issue of June 23rd last. We do not doubt the facts stated by our correspondent; the success of an experiment on a small scale is quite possible, and on a larger scale also the process might secure the extraction claimed for it. The test of a process, however, is in its continued economical use under working conditions, and that has yet to come. Moreover, the experimental success referred to in the letter does not affect our opinion, as already expressed, of the Gardiner patent and its value.

The coal mining rate in Alabama has been for some years determined by a sliding scale based on the selling price of pig iron at Birmingham. For over a year past the rate has been at the maximum point possible under this scale, which is 55 cents a ton. This is the highest wage ever paid in Alabama, and the miners have prospered accordingly. This month, for the first time in 13 months, the books of the iron companies show sales which have caused a reduction in mining wages to 52½ cents a ton. This is still a high rate, but the miners look for a further cutting down in September. Considering all the conditions and the fact that they have steady work, they are much better off than their Northern brethren still.

The announcement that Mr. Edward Boyce—of Butte and the Coeur d'Alenes—is now engaged in organizing a miners' union at Jerome in Arizona, has some significance. The men employed in the United Verde have never been organized, or at least have had no connection with the unions in Montana and Idaho. Mr. Boyce's present labors may be inspired by a desire to increase the influence of his organization and to give the Arizona miners the benefit of the union. It is not impossible also that they are assisted by parties who want to discipline the chief owner of the United Verde; and to repay him for the somewhat embarrassing position in which they were recently placed by the grant of an 8-hour day to the employees of the Clark mines at Butte. The situation is an interesting one.

The armor-plate contract question, which has involved so much controversy, is still unsettled. In response to the recent call for bids for 39,950 tons of armor-plate three offers were received. The Carnegie and the Bethlehem Steel Companies each offered to furnish one-half of the quantity required, their prices being the same, $445 per ton with $45 royalty for face-hardened armor over 5 inches thick; $400 per ton with $11.20 royalty for face-hardened plates under 5 inches thick; $400 per ton for plain plates less than 5 inches. The Midvale Steel Company, a new competitor, put in a conditional bid at prices ranging from $327 to $442 per ton, according to class of armor and quantity awarded. After carefully considering the bids, the Navy Department decided to reject all of them; so that the whole question is to be fought out over again.

The Aluminum Company, Limited, of Oldbury, Birmingham, England, whose sole business for some years now has been the manufacture of metallic sodium by the Castner process, is about to hand over its business to the allied company, the Castner-Kellner Alkali Company. Since the latter company became an established success at its works at Weston Point, near Liverpool, it has been found unnecessary for the same circle of people to have two businesses and two works; while the electrical power and the raw material required for the sodium manufacture can be more economically supplied by the Castner-Kellner works. A working

agreement has also been arranged with the Cassel Gold Extracting Company, of Glasgow, Scotland, which amounts practically to a union of interests without an actual amalgamation of the two companies. Originally the Cassel Company was simply a syndicate owning the MacArthur-Forest cyanide patents, but more recently it has turned its attention to the manufacture of cyanide, and the sodium made by the Aluminum Company will be chiefly used for that purpose.

Collis P. Huntington, whose death is announced this week, was certainly a man of great ability, and to his foresight and persistence the early competition of the Central Pacific Railroad and the building up of the great system owned by the Southern Pacific Company were largely due. It is to be regretted that he chose to adopt a narrow system of management which undoubtedly retarded the development of the mining industry in a large part of California, as well as in Arizona and New Mexico. This system, to which he adhered with the stubborn persistence which was part of his nature, made him not merely the most unpopular but the most thoroughly detested man on the Pacific Coast. Eastern people, who knew Mr. Huntington as a financier of great wealth and the manager of an important railroad system, can hardly understand the bitter personal hatred with which he was regarded in the West. That he understood and could follow a different plan under the pressure of circumstances and competition was shown by his management of the Chesapeake & Ohio Railroad when he undertook the reorganization of that enterprise.

No man can incur with impunity the hatred of an entire community, and it is common report that Mr. Huntington's later years were darkened by a perpetual fear which may serve to explain some of his evident unrest and peculiar methods of life.

THE BURMA RUBY MINES.

The Burma Ruby Mines, Limited, have at last arrived at a paying basis after many vicissitudes, and have just declared a dividend for the year ended February 28th last, of 12½ per cent. This company was first started in the early part of 1889, and those who saw the mad rush for shares at the Rothschilds in London are not likely to forget it. The wonderful prospects of the company have, however, so far not been borne out, for two reasons: first, the obstacles put in the way of private enterprise by the Indian Government, and secondly, the difficulty of organizing labor in such a way as to prevent thefts. The concession originally cost £55,000 in cash and was subject to a yearly rental of three lakhs of rupees and 20 per cent. of the net profits. The yearly rent was never paid in full and the company got into debt. After continual negotiation with the Government, the arrears of rent were wiped off and the yearly rent reduced to two lakhs of rupees, while the proportion of net profits payable to the Government was raised from 20 to 30 per cent. At the same time the capital of the company was reduced from £180,000 to £120,000 by writing off 8s. per share. During the year ending February, 1898, the effect of this arrangement was observable, as the profits allowed the distribution of a dividend of 5 per cent. The succeeding year showed a still further improvement, for, as already mentioned, the dividend has risen to 12½ per cent. The accounts show a profit of £35,093 after the fixed rent has been paid, and after paying £9,943 to the Government, as the percentage of profit due, there remains £25,050 available for the shareholders. Out of this the dividend has been paid. During the year 818,135 loads of earth have been washed, as compared with 652,456 loads in the previous year. Very little detail of the production is given in the report; in fact, the only information given is that £84,000 was received by sale of stones. Some account of the company's operations will be found on another page.

NOVA SCOTIA COAL MINES.

Coal mining in Nova Scotia dates back more than a century, the first shipments reported being 1,668 tons in 1785. For 50 years, however, the production was small. Up to 1820 the total shipments exceeded 10,000 tons only in one year; by 1830 they had risen to 27,269 tons, and in 1835 to 56,434 tons. From that time on the increase was more rapid, and at the end of the second 50 years, in 1885, the shipments were 1,254,510 tons. In 1899 the production almost doubled that of 1885, amounting to 2,419,137 tons, and for the current year it will probably exceed 3,000,000 tons. The total quantity shipped up to the close of 1899 is estimated by the Mines Department at 48,851,162 tons.

According to the same authority there were employed in the Nova Scotia coal mines underground 2,088 miners, 1,443 laborers and 555 boys; in surface work 432 skilled workmen, 802 laborers and 180 boys; in construction 59 mechanics, 46 laborers and 7 boys. The total number of workmen last year was 5,612, and the total number of days' work was 1,509,302; an average working period of 269 days, showing that the men were steadily employed, as a rule.

As it is of some interest to note what the market for this coal was, we find that the shipments and sales for two years were as follows, in tons:

	1898.		1899.	
	Tons.	Per ct.	Tons.	Per ct.
Nova Scotia	667,252	31.3	729,477	30.2
Other Canadian provinces	1,273,000	59.6	1,423,673	58.8
Newfoundland	93,241	4.3	106,755	4.4
West Indies	3,877	0.2	6,044	0.3
United States	98,027	4.6	153,188	6.3
Totals	2,135,397	100.0	2,419,137	100.0

The shipments to other Canadian provinces last year were to Prince Edward's Island, New Brunswick and Quebec, the last named taking the larger quantity, about 72 per cent. No Nova Scotia coal was sent as far as Ontario, the transportation charges being too high to enable it to compete with coal from the United States in any section west of Quebec.

In addition to the shipments above given, there were 176,065 tons used at the collieries, making the total mined 2,642,333 tons. The coal consumed in mining was 7.3 per cent. of the shipments, or 6.7 per cent. of the total mined. This is not a high proportion.

Most of the Nova Scotia mines are deep and nearly all of them are fiery. There have been some bad accidents in these mines in the past, but owing to greater care in working and improved ventilation, the number has been greatly diminished in recent years.

On the sketch map of Nova Scotia on the following page the location of the coal-fields is plainly shown. The gold fields are chiefly along the southern or Atlantic shore.

On the mainland of Nova Scotia the important coal-fields are in the counties of Cumberland and Pictou in the northeastern section of the peninsula, adjoining the isthmus which connects it with the mainland of New Brunswick. The most important coal-field is on the island of Cape Breton, which is really the eastern end of the peninsula, being separated from it only by a narrow strait. The coal mined last year in Cape Breton was 65.6 per cent. of the total; and this proportion will probably be increased in the future, as the two companies operating most of the mines in the island—the Dominion Coal Company and the General Mining Association of Nova Scotia—are progressive concerns which are doing much to increase their trade. The Dominion Coal Company has shown that Cape Breton coal can be made into excellent coke in by-product ovens at a profit, and has established outlets for its coal in the coking plants at Halifax and Boston. This company also is closely connected with the Dominion Steel Company, which is building large works near the coal mines. The General Mining Association has lately concluded arrangements for a consolidation of its interests with those of the Nova Scotia Steel Company, and will also build iron works near its mines.

Coal mining in Nova Scotia presents many interesting features and has undoubtedly a prosperous future. Its expansion will be largely in connection with the iron and steel industry.

IRON AND STEEL MAKING IN CAPE BRETON.

The establishment of an important ironmaking plant in the island of Cape Breton, which is largely due to the enterprise of the Dominion Coal Company in finding an outlet for its coal, will be brought prominently to the notice of the members of the American Institute of Mining Engineers at their fall meeting and excursion. The iron ores to be used will come chiefly from the mines of Bell Island, Newfoundland, which have been described in the "Engineering and Mining Journal," June 2d and August 11th, 1900.

For the plant, which is located near Sydney in Cape Breton, the Dominion Steel Company let contracts for the construction of 400 Otto-Hoffman by-product coke ovens, located between the iron works and the coal mines, and which will cost, when completed, over $1,000,000. The gas secured in this plant will be utilized in the steel mill and the other by-products will be saved and prepared for market.

The iron ore of Great Bell Island contains from 54 to 59 per cent. of metallic iron, the average being 55 per cent. At the Ferrona Furnace in Nova Scotia the average charge per ton of pig iron made is 1.8 tons Great Bell ore, 0.75 ton Cape Breton limestone and 1.25 tons Cape Breton coke.

The plant at Sydney, when fully completed, will consist of four blast furnaces, each having a capacity of 250 tons of pig iron per day under ordinary conditions. Each will be 85 ft. in height and 19 ft. in diameter. In the steel mill the basic open-hearth system will be used. There will be from 10 to 12 furnaces in the steel plant. The estimates as to the cost of making pig iron at Cape Breton give a total of about $5.50 per ton under present conditions. The present Dominion law provides for a bounty of $3 a ton on pig iron made from Canadian ore, or $2 if made from other ores, and for $3 a ton on steel ingots made from Canadian iron. This is in force until 1907.

Following is the estimate of the Dominion Iron and Steel Company in detail:

1.8 tons of ore	$1.80
1.25 tons of coke	1.80
0.75 ton of limestone	.40
Labor, repairs and incidentals	1.50
Total	$5.50

This estimate is for pig iron made exclusively from the ore of Great Bell Island, Newfoundland. It is probable that mixtures with other ores will be used, which may slightly increase the cost per ton. The company owns a valuable mine in Cuba, and the works are favorably located for securing iron ores of any quality desired by water from outside points.

To convert the pig iron into steel billets will cost about $5 per ton, so that steel billets can be produced for about $10.50, it is claimed.

The Nova Scotia Steel Company, which has for several years past been operating a plant at Ferrona, chiefly on Nova Scotia ores, has recently arranged to consolidate its interests with those of the General Mining Association, and the consolidated company proposes to build iron and steel works near Sydney also.

The present indications are that an important steel and iron industry will be built up on the island of Cape Breton, which will far surpass anything of the kind which has ever existed in Canada. The abundant supply of fuel and the ease and cheapness with which iron ores can be supplied from Nova Scotia and Newfoundland mines, all point to the possibility of cheap manufacture; while the works will be favored for some years to come by the bounty on pig iron offered by the Canadian Government. The works are well situated not only to supply the Canadian trade, but to export to Europe. Under present conditions they will be bale to meet any prices that could be made for pig iron in Liverpool or Hamburg by furnaces in Europe or the United States.

The natural conditions favoring the manufacture of iron in Cape Breton have always existed, but their present utilization has been made possible by the enterprise of the Dominion Coal Company and its allies in introducing the by-product oven for making coke from Cape Breton coal. The success which has attended its experimental work has led to the establishment of this new industry. From the course of the management heretofore there is no doubt that the works will have the most approved appliances and the latest economies; and they may be important competitors for trade.

NEW PUBLICATIONS.

"The Russian Empire and the Trans-Siberian Railroad." Prepared by the Bureau of Statistics, Treasury Department, Washington; Government Printing Office. Pages, 100; with map and diagrams.

This monograph gives a considerable quantity of information in relation to the resources of Siberia and the effect of the new railroad on their development; on the internal trade of Russia, and on the effect of the Siberian Railroad on the trade of the East. The material is gathered chiefly from consular reports and Russian official publications. It gives much information on a subject which is attracting a good deal of attention now in connection with affairs in China. The possibilities of agricultural and mining industries in Siberia are greater than has been generally understood, and a large emigration is now in progress from European Russia to the territory along the line of the new railroad, especially the western section. As a military line the value of the Siberian Railroad has been generally accepted as very great to Russia; its commercial possibilities are developing in a way which surprises even the Russians who were most in favor of the building of the line.

"Syllabus of a Course of Lectures on Economic Geology." By John C. Branner and John L. Newsom. Stanford University, Cal.; published by the authors. Pages, 304; illustrated. Price, $2.75.

This book is intended as an outline or skeleton, to be filled up by the student from reading, from lectures and from experience gathered in the field. Taking the minerals and metals of economic value in succession it gives for each its uses; its associations; its ores if a metal, or the combinations in which it is usually found; its geological distribution; the method of treatment in preparation for market; the production in the United States; and other useful particulars. All of these are expressed in the briefest possible shape, and are accompanied by references to authorities where the student will find further information.

The plan and purpose of the book are so well expressed in the preface that we quote several sections of it below: "This syllabus is intended for the use of students both while in college and afterwards. The outlines given can be expanded by notes taken from the lectures, from reading and from observation, and written out on the opposite pages left blank for that purpose. One of the most important things a student of economic geology needs to learn is where to find and how to use information that has been published. We have therefore endeavored to give references: First, to the works on the general subject of economic geology; second, to periodicals in which articles are to be looked for upon various economic subjects; third, to papers and reports upon special subjects. The general works and periodicals are listed on pages iv and vi, and the references to special topics are given as foot-notes in the body of the syllabus under each topic. The list of references is not complete in any case, but it is usually sufficient to put the student in the way of finding other titles. By posting titles in the syllabus as the articles appear the student can add greatly to its usefulness, and in this way keep his own copy up to date. More space is given to the economic geology of the United States than to that of foreign countries. Some of the substances are necessarily but briefly treated. For the sake of uniformity the tons mentioned in this syllabus have all been reduced to short tons of 2,000 lbs. The compositions of minerals, unless otherwise stated, are the theoretic ones, and are taken from Dana's 'System of Mineralogy.' A few blank pages are left at the back of the book for the addition of notes and memoranda on special subjects not treated in the syllabus."

The book is an excellent one in plan and execution and will doubtless find full appreciation among students and others.

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.

"Twenty-fourth Annual Report of Her Majesty's Inspectors of Explosives; for the Year 1899." London: H. M. Stationery Office.

"Western Australian Year Book for 1898-99," Volume I. By Malcolm A. C. Fraser, Registrar-General, Perth, W. A.; Government Printers. Pages, 344; with maps and illustrations.

"American Foundry Practice." Fourth Edition. By Thomas D. West. New York: John Wiley & Sons, and London: Chapman & Hall, Limited. Pages, 408; illustrated. Price, $2.50.

"History of the Prudential Insurance Company of America (Industrial Insurance), 1875-1900." By Frederick L. Hoffman, Statistician of the Company. Newark, N. J.: the Prudential Press. Pages, 338; illustrated.

"Paper in Foreign Countries: Use of Wood Pulp." Volume XIX., Special Consular Reports. Prepared by the Bureau of Foreign Commerce, Department of State. Washington: Government Printing Office. Pages, 520.

"Prehistoric Implements. A Description of the Ornaments, Utensils and Implements of Pre-Columbian Man in America." By Warren K. Moorehead. Cincinnati, O.: The Robert Clary Company. Pages, 432; with 621 figures. Price, $3.

CORRESPONDENCE.

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

Letters should be addressed to the MANAGING EDITOR.

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

The Gardiner Leaching Process for Copper Ores.

Sir: In your issue of June 23d you have an editorial on "Wet Methods of Copper Extraction," in which you criticise rather unfavorable the Gardiner leaching process. At the time I read the article I was of your opinion, but as the owners of this process had a small mill here, where they claimed to treat copper ores, I went there to investigate with saveral others, who posessed more or less knowledge of chemistry. The day I was there they made a run of 800 lbs. of copper glance, ground to about 30 mesh. All of the chemists present gave it as their opinion that, while they might succeed on other kinds of ores, this test would not be a success. In just 40 minutes the copper was extracted, and in 10 minutes was precipitated and was soon dried and melted into bars. The tailings were practically clear, an assay showing 0.20 per cent. copper.

I am not interested in this process, but this evidence convinced me that it would not do to brush their claims aside with indifference. Since making the test mentioned the owners of the plant are enlarging its capacity so as to treat from 25 to 50 tons per day.

Michael J. Howard.

Denver, Colo., August 3d, 1900.

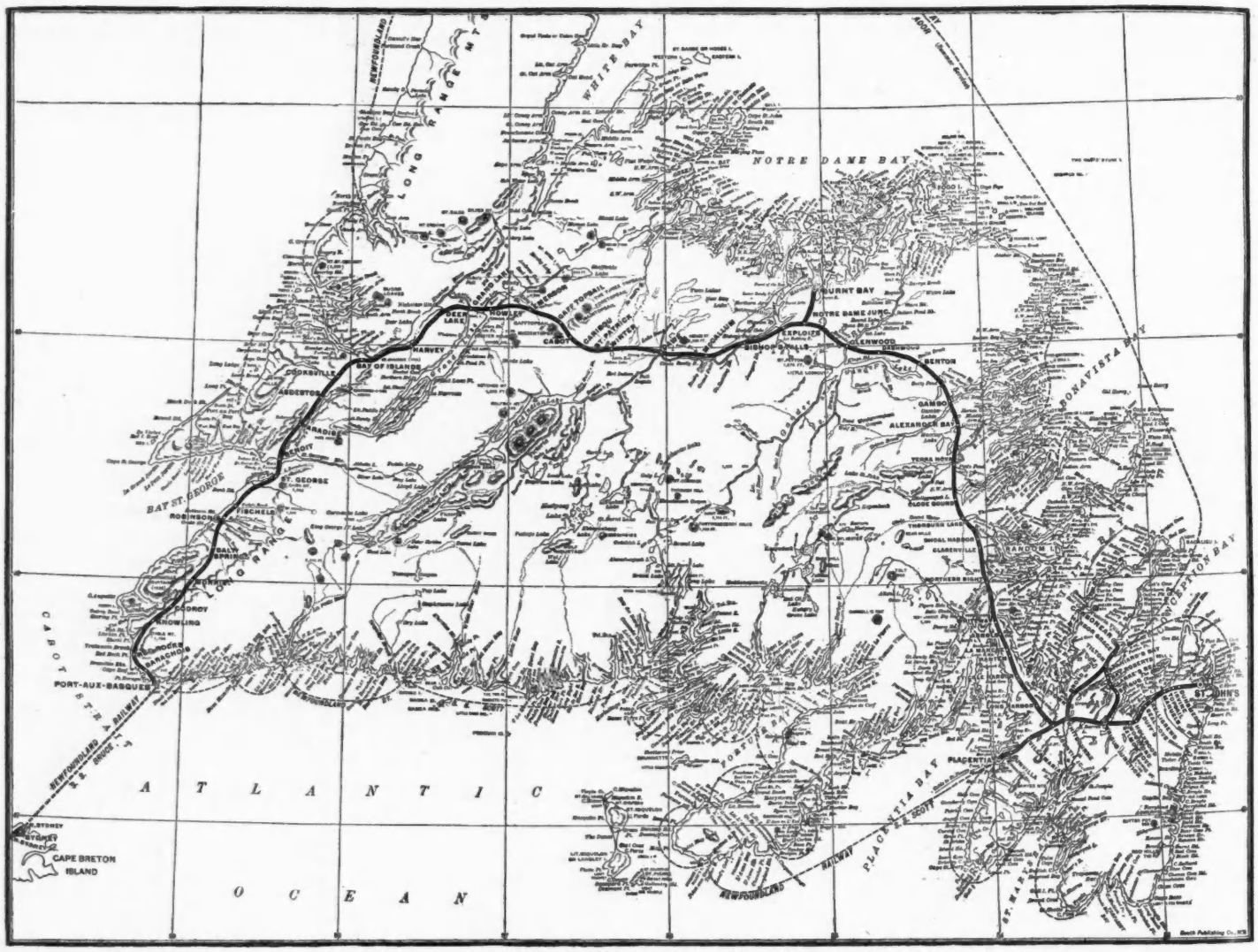
COAL IN SPITZBERGEN.—The coal deposits which Spitzbergen possesses, or is supposed to possess, says London "Engineering," continue to attract a fair amount of attention, and in Norway no less than three syndicates have been formed for the purpose of exploiting them. A representative for one of these concerns has recently set out for Spitzbergen in order to erect buildings and commence working. The latter is not supposed to offer any difficulties, as the coals lie high in the ground, and the coast conditions are also favorable, which is more than can be said of the Bear Island coal deposits. These are supposed to amount to an aggregate of some 8,000,000 tons, but as the Lerner Syndicate has sold its rights and property, the manner in which these deposits are going to be worked is still uncertain.

THE XYLOSOTE PROCESS OF WOOD PRESERVING.—This process of wood preserving was invented by Mr. Fritz Hasselmann, says London "Engineering." It consists in boiling the wood under pressure varying from 15 to 40 lbs. per square inch in a solution of metallic and mineral salts. The impregnating liquid consists of a solution of the sulphates of copper and iron (crystallized together in the proportion of 80 per cent. of iron to 20 per cent. of copper) and alumina and kainit, a salt consisting chiefly of sulphate of potash and magnesia, and chloride of magnesia. The sap is dissolved and carried off in the liquid; the copper destroys any germs of decay that may be present in the wood, while the iron forms a chemical combination, insoluble in water, with the cellulose or woody fiber. When the timber has been dried the salts are not left in the form of crystals in the pores, ready to be dissolved out again by rain. Experiments made by Dr. L. Roesler of Klosterneuburg, near Vienna, show that the process is very successful in protecting wood from decay. The process has been adopted by the Imperial and Royal State Impregnating Works, Kerchseeon, Bavaria; the South Germany Impregnating Works, Haar, Bavaria; the North German Impregnating Works, Berlin; the Upper Bavarian Mining Company, Penzberg, and others.

THE NEWFOUNDLAND RAILWAY.

The accompanying sketch map shows the great island of Newfoundland, with the exception of the extreme northern end. It also shows how the construction of the Newfoundland Railway has opened up the interior of the island to settlement and development for the first time. This road was built and is owned by Mr. R. G. Reid, a Canadian contractor, who received in return a land grant and mineral concessions which will be of great value in the future.

The main line of the road extends from St. John's to Port-aux-Basques, a distance of 548 miles, passing nearly through the center of the island. In addition there are three branches, making 100 miles more, or 648 miles in all. The forest, agricultural and mineral resources of the island are all largely dependent for their future development on the new road. The map, taken in connection with the article on the Mineral Resources of Newfoundland, published in our last issue, will give a good idea of the extent and possibilities of the island. These have been little known or considered heretofore, but will surely attract more attention in the future. With coal and iron in abundance, besides other valuable minerals, the country has a period of growth before it, which will doubtless place it in an important industrial position.



MAP OF NEWFOUNDLAND.

NOVA SCOTIA TOPOGRAPHY.

The sketch map of Nova Scotia which is given herewith will enable readers to follow the summer visit of the American Institute of Mining Engineers to the mines of that Province. The coal mines are found, as indicated, on the map, in the eastern end of the main peninsular and on the island of Cape Breton, which is really an extension of the mainland. The belt in which the iron ores are found adjoins the coal-fields. The gold belt extends along the southern or Atlantic face of the peninsula, its location being referred to in the article published in our last issue. Some particulars in relation to the coal mining industry will be found on another page.

The extended water line shown on the map indicates the advantages of water transportation accessible to a large section of the Province. On some sections of the coast good harbors are lacking, but access in most places is possible for small vessels. In Cape Breton there are harbors sufficient for the largest ships, and the free water communication will be most valuable to the new iron industry there.

Nova Scotia has always had close commercial relations with the United States, and our citizens are well-known there. The members of the Institute will doubtless receive a hearty welcome, and we hope that their visit will be not only agreeable, but profitable to both hosts and guests.

CONCRETE MIXING.—According to Mr. G. J. Morrison, the best way to produce a satisfactory concrete is to decide tentatively on the quantity of large and small stones, trying, if necessary, two or three different proportions. Sand should be added till the mixture, after being well turned over and shaken down, shows a decided increase in bulk. This increase should be at least 5 per cent. Cement should then be added to an amount equal to between one-third and one-half the sand. Taking this amount of cement as unity, a specification can be drawn up. Within the limits named all concretes will be strong and solid. For many purposes cement equal to one-third the quantity of sand is sufficient, but an increase in this item up to half the sand will give a stronger and more waterproof concrete. If, however, an attempt is made to improve a fairly good concrete, with one cement to three sand, by reducing the sand, it will probably be ruined. On the other hand, concrete which is honeycombed may often be improved by the addition of sand or gravel, so that a well-proportioned eight-to-one concrete may actually be superior to a badly-proportioned seven-to-one article. If gravel is used the sand must be separated in the experimental mixture and the specification modified accordingly.

THE BRUCKHAUSEN IRON WORKS.—The Deutscher Kaiser Company, at Bruckhausen-on-the-Rhine, has large iron works. The proprietors were originally a coal-mining company. The first portion of the iron plant, constructed in 1890, was the Siemens steel works, containing seven basic-lined furnaces. Blast furnaces and basic Bessemer converters were added in 1895. The completed plan includes six blast furnaces 82 ft. high. Two compound twin-blowing engines with 6½-ft. cylinders and 5-ft. stroke are provided for each furnace, whose daily output is from 250 to 300 tons of basic pig. The coking plant includes 256 ovens, of which 188 are at work. The total output will be about 30,000 tons of coke monthly, with 1,200 tons of tar, 400 tons of sulphate of ammonia, and 300 tons of benzole as by-products. The Thomas plant includes four 15-ton basic converters, with a present output of 20,000 tons of ingots monthly, and also a cogging mill in direct communication with the rolling mills, arranged for the conversion of ingots into rails, billets, or medium-sized beams at a single heat. There are six rolling mills with a total capacity of 30,000 tons of finished iron and steel per month. The accessory machinery is for the most part served by electric motors, the generators being supplied with steam from boilers fired with blast-furnace gas.

NOTES ON LEAD SMELTING AND GOLD AND SILVER REFINING.*

COST OF SMELTING AND REFINING AT THE GLOBE WORKS, DENVER, COLORADO.

Written for the Engineering and Mining Journal by Malvern W. Iles.

In the technical literature of lead smelting there is a lamentable lack of data on the subject of costs. The majority of writers consider that they have fulfilled their duties if they discuss in full detail the chemical and engineering sides of the subject, leaving the industrial consideration of cost to be wrought out by experience. When an engineer or metallurgist collects data on the costs involved in the various smelting operations, he generally hesitates to give this special information to the public, as he regards it as private, or reserves it as stock in trade to be held for his own use.

The following tables of cost have been compiled from actual results of smelting and refining at the Globe Works, and are offered in the hope that they will prove a valuable addition to the literature of lead smelting. These results are offered tentatively, and, while true for the periods stated, they require considerable adjustment to meet the smelting conditions of the present time.

Cost of Hand-Roasting per Ton (2,000 lbs.) of Ore.

1887	$3.975	1891	$3.530	1895	$2.806
1888	4.280	1892	....	1896	2.840
1889	4.120	1893	....	1897	2.740
1890	3.531	1894	3.429	1898	2.620

At first the roasting was done mainly by hand roasters, later two Brown-O'Harra mechanical furnaces were used, and the cost was reduced, but not to the extent usually conceded to this type of furnace, as the large amount of repairs and the consequent loss of time diminished the apparent gain due to greater output. The figures quoted above may be considered somewhat higher than the average, as the roasters were charged in proportion with expenses of general management, office, etc.

In viewing the yearly reduction of costs one must take into consideration many changes in the furnace construction and working, as well as the items of labor, fuel, etc. From 1887 to 1899 the principal changes in the construction of the hand-roasting furnaces consisted in an increase of width, 2 ft., which allowed an addition of 200 lbs. to each ore charge, and corresponded to a total increase per furnace of 1,200 lbs. in 24 hours. In the working of the charge an important change was made in the condition of the product. Formerly the material was fused in the fusion box and drawn from the furnace in a fused or slagged condition; and while this gave an excellent material for the subsequent treatment in the shaft furnace in that there was very little dusting of the charge, and a considerable increase in the output of the furnace, the disadvantages of large losses of lead and silver greatly overbalanced the advantages, and called for an entire abandonment of the fusion box. As a result of experience it was found that the best condition of product is a semi-fused or sintered state, in which the particles of roasted ore have been compressed by pounding the material which has been drawn into the slag pots with a heavy iron disk. The amount of "fines" under these conditions is quite small and depends upon the percentage of lead in the ore, the degree of heat employed and the extent of the compression.

The total cost was partly reduced from the lessened labor cost following the financial disturbance of 1893, and partly from the reduction in the fuel cost, the former expensive lump coal being replaced by the slack coals from southern Colorado.

The comparison of the cost of labor by the two methods shows a gain of 54c. a ton in favor of the mechanical furnaces. The writer, however, considers that this gain is a costly one, and is more than offset by the large amount of high-grade fuel required, and the expense of repairs not shown in the table. Indeed, he considers that at the end of five or ten years the average cost of roasting per ton by the hand roasters will be even smaller than by these mechanical roasters.

To illustrate the details of roasting cost and to furnish a comparison of the hand roasters and mechanical furnaces the following table has been prepared:

Details of Average Monthly Cost for 1898 of Hand Roasters and Mechanical Furnaces.

Month.	Total Tons Roasted.	Tons Roasted Per Day.	Hand Roasters. Labor.	Hand Roasters. Coal.	Hand Roasters. General Expense.	Brown-O'Harra Mechanical Furnaces. Labor.	Brown-O'Harra Mechanical Furnaces. Coal.	Brown-O'Harra Mechanical Furnaces. General Expense.
January	5,691	184	$1.47	$0.53	$0.80	$0.92	$0.80	$1.32
February	5,677	203	1.44	0.44	0.99	0.72	0.58	1.01
March	5,821	188	1.51	0.53	0.64	0.76	0.64	0.62
April	5,472	182	1.47	0.47	0.71	0.80	0.69	0.87
May	5,444	176	1.55	0.51	0.84	0.80	0.69	0.81
June	4,859	162	1.58	0.48	0.71	0.90	0.68	1.17
July	5,691	184	1.59	0.48	0.75	0.72	0.56	0.64
August	5,910	191	1.55	0.46	0.83	0.72	0.55	0.75
September	5,677	189	1.55	0.45	0.74	0.73	0.55	0.67
October	6,254	202	1 48	0.49	0.72	0.65	0.50	0.60
November	6,291	213	1.42	0.47	0.80	0.66	0.53	0.70
December	5,874	198	1.45	0 48	0.78	0.79	0.63	0.81
Average	....	...	$1.50	$0.48	$0.77	$0.76	$0.62	$0.83
Total	....	...	....	....	2.75	....	....	2.21

Cost of Smelting.—The lead-ore mixtures of the United States, in addition to lead, contain gold, silver and generally copper, and are treated to save these metals. The total cost of smelting is made up of a large number of items. The questions of locality and transportation, fuel, fluxes and labor are the principal factors, to which must be added the handling of the material to and from the furnace; the furnace itself, its size, shape and method of smelting, the volume and pressure of blast, etc. The following table of costs, from 1887 to 1898, shows in a general way the great advance that has been made in the development of smelting, and the consequent reduction in cost per ton of ore treated:

Average Cost of Smelting per Ton.

1887	$4.644	1891	$4.170	1895		$2.786
1888	4.530	1892	4.906	1896		2.750
1889	4.480	1893	3.375	1897		2.520
1890	4.374	1894	3.029	1898		2.260

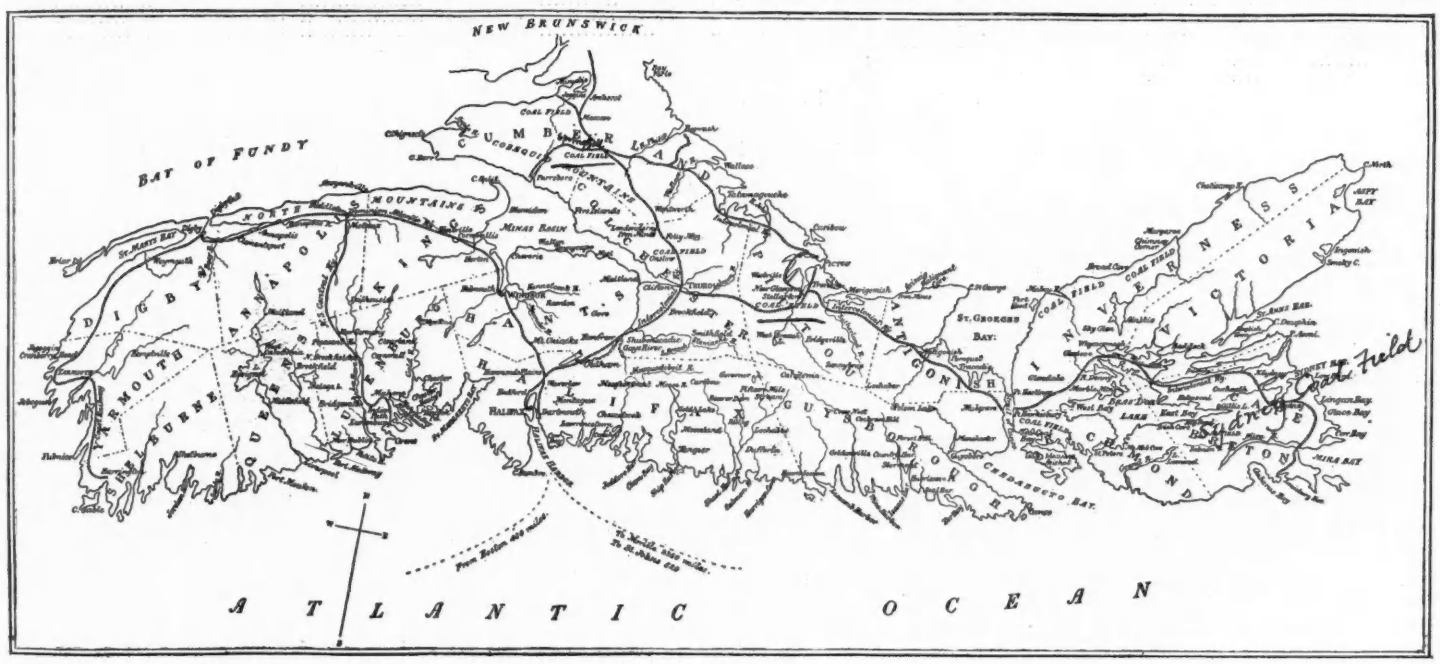
In connection with this table of smelting cost should be considered the changes developed during the interval 1887-1899, outlined as follows:

Conditions of Smelting in 1886 and 1899 Contrasted to Show the Progress of Development.

	Area of Furnace at Tuyeres, In.	Height of Charge from Tuyeres, Ft.	Blast Pressure, Lb. per Sq. In.	Fore Hearth Capacity, Cu. Ft.	Slag Settled.	Fuel.	Slag Removed, Lb. per Trip.	Matte Removed, Lb. per Trip.
1886	30×100	11	1	6	In pots.	Charcoal	By hand. 280.	By hand. 200.
1899	42×140	16	3 to 4	128	In furnaces.	Coke.	By locomotive. 3000-6000.	By horse 2000-3000.

The writer believes that there is room for further improvement in the substitution of mechanical transportation within the works for hand labor, and that the fuel cost can be materially reduced by replacing the coke, which at present contains 16 to 22 per cent. of ash, by a fuel of purer and better quality.

Cost of Refining by the Parkes Process.—In general it may be stated that the average cost of refining base bullion is from $3 to $5 a ton. This amount is based on the cost of labor, spelter, coal, coke, supplies, repairs and general expenses. When the additional items of interest, expressage, brokerage and treatment of by-products are considered,



Map of Nova Scotia.

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which go to make up the total refining cost, the amount may be stated approximately as $10 per ton of bullion treated.

Variations in the cost occur from time to time, and are due to several causes, principally the irregularity of the bullion supply and its consequent effect on the work of the plant. When the amount of bullion available for treatment is small, the plant cannot be run to its maximum capacity, and the cost per ton will naturally be increased. To illustrate this variation the average cost per ton of base bullion refined during nine months in 1893 was:

January, $4.864; February, $5.789; March, $5.024; April, $3.915; May, $5.094; June, $4.168; July, $4.231; August, $4.216; September, $5.299.

The yearly variation shows but little change, as the average cost per ton was for 1893, $4.75; for 1894, $3.99; for 1895, $4.21;, for 1896, $3.90. In considering the total cost of refining, the additional factors of interest, expressage, parting, brokerage and reworking of by-products must be considered. As the dore silver is treated at the works or elsewhere, so will the total cost be less or greater. The following table gives the cost in detail, when the parting is done at the same works:

Average Monthly Cost of Refining per Ton of Bullion Treated.

Items.	1895. Jan. to July.	1895. July to Dec.	1896. Jan. to July.	Av'ge.
Labor	$2.351	$1.718	$1.836	$1.968
Spelter	0.757	0.840	0.987	0.861
Coal	0.585	0.442	0.461	0.496
Coke	0.634	0.418	0.511	0.521
Supplies, repairs and general expenses	0.343	0.273	0.252	0.289
Interest	1.808	1.075	1.070	1.317
Expressage	1.360	1.015	0.882	1.085
Parting and brokerage	2.483	2.084	1.796	2.121
Reworking by-products	1.567	1.286	1.625	1.492
Total	$11.888	$9.151	$9.420	$10.151
Tons bullion refined	5,511.58	9,249.07	10,103.43	8,287.99

An analysis of the different items of cost is important, and a brief summary is given below.

Labor and Attendance.—The cost for this item varies but little from year to year, and its reduction depends, for the most part, on a larger yield per man rather than on a reduction of wages. If a man at the same or slightly increased cost can give a larger output, so will the labor cost per ton be diminished. This result is accomplished by enlarging the furnace capacity and by using appliances which will handle the bullion and its products in an easier and quicker manner. The writer criticises the small size of the furnaces, settlers and retorts used at modern refineries, and considers that great improvement can be made in this direction.

Spelter.—The cost of this item varies with the market conditions, and will probably be changed but little in the future, as the amount necessary per ton of bullion seems to be fixed.

Coal.—The amount required per ton of bullion is fairly constant, and while lessened cost for fuel may be attained by the substitution of oil or gaseous fuel, the fuel cost in comparison with the aggregate cost is very small, and leaves little opportunity for improvement in this line.

Supplies.—This item includes brooms, shovels, wheel-barrows, etc., and the amount is small and fairly constant from year to year.

Repairs.—This item is quite small in works properly constructed, and in this connection the writer wishes to call particular attention to the floor covering, which should be made of cast-iron plates from 1.5 to 2 in. thick, and placed on a 2 to 3-in. layer of sand spread over the well-tamped and leveled ground. The constant patching of brick floors is not only an annoyance, but is costly from the additional labor required. Furthermore, a brick floor does not permit a close saving of the metallic scrap material.

It will be found economical in the long run to protect all exposed brick work of furnaces or kettles with sheet iron.

In the construction of the refinery building the writer advises brick walls except at the end or side, where there is the greatest likelihood of future extension; here corrugated iron may be used. The roof should not be made of corrugated iron, as condensed or leakage water is liable to collect, and drop on those places where water should be scrupulously avoided. The presence of water in a mold at the time of casting, even though small in amount, will cause explosions and will scatter the molten lead, endangering the workmen.

The item of repair for the ordinary corrugated iron roof may be diminished by constructing it of 1-in. planks with intervening spaces of half an inch, the whole overlaid with tarred felt, and covered with sheets of iron at least No. 27 B. W. G., painted with graphite paint and joined together with parallel rows of ribbed crimped iron.

General Expenses.—This item is generally constant, and calls for no special comment.

Interest.—This important item is, as a rule, considerable, as the stock of bullion and other gold and silver-bearing material is quite large. For this reason special attention should be given to prevent the accumulation of stock or by-products. The occasional necessity of additional capital to run the business should preferably be met by an increase of working capital, rather than by a direct loan.

Expressage.—This item, as a rule, is large, and should be taken into consideration in the original plans for the location of the refining works.

Parting.—The item of parting and brokerage is the largest of the refinery costs, and for obvious reasons a modern smelting plant should have a parting plant under its own control.

Parting.—The item of parting and brokerage is the largest of the refinery costs, and for obvious reasons a modern smelting plant should have a parting plant under its own control.

The Working of the By-Products.—This constitutes a large item of cost, and considerable attention should be devoted to the improvement of present methods, which are regarded by the writer as faulty, slow and expensive.

Summary.—The items of smaller cost with their respective amounts per ton of base bullion treated are: Spelter, $0.85; coal, $0.50; coke, $0.50; supplies, repairs and general expenses, $0.35; total, $2.10. It is doubtful whether much improvement can be made in the reduction of these costs.

The items of larger cost are: Labor, $2; interest, $1.32; expressage, $1.10; parting and brokerage, $2; reworking by-products, $1.50; total, $7.92. The general manager usually attends to the items of interest, expressage and brokerage, leaving the questions of labor and working of by-products to the metallurgist.

The cost quoted for smelting practice, as employed at Denver, will differ necessarily from those at other localities, where the cost of labor, freight rates on spelter, fuel, etc., are changed. Refining can doubtless be done at a lower cost at points along the Mississippi River, and even more so at cities on the Atlantic seaboard, as Newark or Perth Amboy, N. J.

The consolidation of many of the more important smelting plants of the United States under one management will doubtless alter the figures of cost given above, particularly as the interest cost there stated is at the high rate of 10 per cent., a condition of affairs now changed to 5 per cent. Other factors have lessened the cost of refining; the bullion produced at the present time is softer, or contains a smaller amount of impurities, and admits of easier working with shorter time and less labor. By proper management larger tonnages are turned out per man, and the Howard stirrer and Howard press have simplified and cheapened the working of the zinc skimmings. To illustrate the comparatively recent conditions of cost I have compiled the following table for each month of the year 1898:

Cost of Refining During 1898, Including Labor, Spelter, Coal, Coke, Supplies, Repairs and General Expenses.

January	$3.59	May	$3.38	September	$3.35
February	3.28	June	3.56	October	3.45
March	3.26	July	3.65	November	3.20
April	3.59	August	3.54	December	3.56

Average cost during the year, $3.45.

It is understood, of course, that these figures do not include cost of interest, expressage, parting, brokerage and reworking of by-products.

THE PURIFICATION OF FURNACE GASES.

A paper by Dr. H. Wedding, as abstracted for the Institution of Civil Engineers, gives an instance of sucessful purification of escaping gases. At the Kotterbach iron mines, in a rich agricultural district of Upper Bohemia, the ores—consisting almost entirely of carbonates—are roasted before being sent to the blast furnaces, with the object of driving off the carbonic acid and of so saving about 33 per cent. in cost of carriage.

The sulphurous and mercurial vapors given off in the roasting process having done considerable damage to animal and vegetable life in the neighborhood, and the agricultural industry being at least of equal importance with the mining industry, a plant was put down to condense and absorb these noxious vapors. The gases are led from the tops of the roasting furnaces, and by means of steam injectors sent forward through a system of towers, which are constructed of timber, having three stories with open timber floors thickly set with blocks of limestone. A spray of water extending over the whole area of the tower is constantly dropping through the successive floors from a high-level tank. The gas enters at the bottom of one tower, ascending against the stream of water through the spaces between the limestone blocks to the top, then to the bottom of a second tower, to go through the same process, after which it is allowed to escape into the atmosphere. Condensation of mercury and its compounds, and also of arsenic and antimony compounds contained in the gases, takes place owing to the temperature being reduced by the dripping water, which also absorbs part of the sulphur oxides.

The remainder of the sulphur oxides displaces the carbon dioxide of the limestone, forming sulphites and sulphates of lime. The mercury—part of which is left in the gas trunks, the greater part, however, going through the towers and being collected in settling ponds—is purified and its value is sufficient to cover the cost of running the plant.

MINE REGULATIONS IN ITALY.—The London "Colliery Guardian" says: "Article 15 of a new set of mine regulations in Italy, which came into force at the end of June, enjoins that, at the top of self-acting inclines, there always be provided fences or barriers, so arranged as to prevent trams arriving from running down the incline; and at the bottom of every underground incline there must be a place of refuge where the man in charge can shelter while the trams are on the incline, so as to be out of danger in the event of the rope breaking."

A NEW TOOL STEEL.—The Bethlehem Steel Company, after long and careful investigation, has begun the manufacture of a special grade of steel. The object was to secure a uniform quality of steel, which could always be depended on, this being considered a necessary preliminary to securing the highest efficiency in the company's shops. The process used is the joint invention of Mr. F. W. Taylor, consulting engineer, and Mr. Maunsel White, engineer of tests of the company. Their researches culminated in the perfection of a process of tempering and hardening tools that give results greatly superior to any heretofore attained, both in uniformity and efficiency, as is demonstrated in the shops of the company. The new steel may be used at cutting speeds two to four times greater than those possible with other steels. The main lines of shafting of the Bethlehem shops have been speeded up from 90 to 250 revolutions per minute, and the gain in the average amount of metal cut per hour throughout the shop has been very large. Ordinary tool steel will not stand a temperature above 600° or 700° F., while the new steel may be worked at a temperature between 1,100° and 1,200° F. When working without water and at the maximum rate upon steel the chips oxidize to a deep blue immediately upon leaving the tool. As to physical properties, the improved steel is said to be slightly higher in tensile strength and elastic limit, and to be somewhat softer than ordinary steels. The latter property excludes it from use in making finishing cuts. Although patents are pending, the method of manufacture is a secret; but the process undoubtedly consists in exact methods and improved appliances for heating, hardening and tempering.

MINE TIMBERING IN WESTERN AUSTRALIA.

The accompanying illustration shows a method of timbering adopted in the Kalgoorlie Gold Mine in Western Australia. The arrangement is shown so clearly in the photograph—for which we are indebted to the Kagoorlie "Western Argus"—that little description is required. We may add that timber is scarce in Western Australia, and its cost is an important item in the expenses of mining, so that there is every motive for economizing in its use.

THE BURMA RUBY MINES.*

The Burma Ruby Mines, Limited, has now been established 11 years, and, until recently, was unsuccessful in its operations. This was partly, but only partly, due to the excessive rent payable to the Indian Government for the concession, which rent has during the 11 years eaten up nearly $850,000. This rent is now much modified, and the company's operations have entered upon the successful stage. The concession, which seems to cover the whole of the known ruby area in Burma—from which area the great majority of the world's present production of rubies is obtained—now runs until November 1st, 1910, at a rent of 2 lakhs of rupees, or $60,000 per annum, the Indian Government being further entitled to 30 per cent. of the net profits of the company. This rent was at first fixed at $120,000 per annum, plus 16 2/3 per cent. of the net profits, and was later reduced to $125,000 per annum, plus 20 per cent. of the net profits. The present rent stands until November 1st, 1903, when it is subject to reconsideration. The concession rent proper is usually more than covered by the amount received from royalties. For instance, up to date about $875,000 has been received in royalties, as against $850,000 paid in rent. The royalties now amount to about $95,000 per annum, as against the fixed rent. When the concession runs out the company will apparently have the first chance of getting an extension provided it offers as good terms as can be secured from others.

At first the work was confined to the alluvial ruby earth—"byon"—in the Mogok Valley, but this proved unremunerative, owing to the difficulty of working, and attention was paid to Pingutoung Hill, which is stated to be of volcanic formation with an extinct crater at the summit. The idea was that this volcanic pipe was "the home of the ruby," just as the volcanic pipe mines of Kimberley are the home of the diamond; but the tunneling work done was unsuccessful, and operations on the hill were abandoned. The belief that this hill was the home of the ruby has been abandoned by the company, since the rubies found in the tunnels and caves of the hill were water-worn, similar to those found in the valley workings. In the absence of more definite information, this does not necessarily dispose of the theory mentioned. At any rate, work is now being directed to the alluvial deposits, which the company is now enabled to work successfully, owing to large sections of ground being unwatered by powerful pumps put down in shallow shafts sunk for their accommodation. This enables the company to get rid of the water difficulty and to work the alluvial by means of open cuttings.

The natives in the past have treated most of the surface byon and the company is now dealing with the byon under the original surface. The practice is to strip off, say, 6 ft. of the top earth by contract, and under this top earth the byon, which always contains rubies, is found. None of the open cuttings are, as yet, deeper than 40 ft. However, with the aid of new electrical plant, which is now arriving at Mogok, the company will have double the power which is available at present, and then it will be able to go much deeper; in fact, to bed-rock. It is supposed that the best and largest rubies will be found near the bed-rock. Although the proposition is one that does not lend itself well to the purpose, a fair estimate of the life of the mines can be made. Presumably the ruby-bearing area of the valley will contain 20,000,000 loads of ruby ground, as experience has shown that the best way to work the byon is to put the whole of it, poor and rich, through the washing machines. In the earlier part of the company's history the practice was to treat only the better class of byon in small quantities; the present day programme is to treat large quantities of average stuff.

Although the company apparently controls all the known ruby ground in Burma, it does not keep all this to itself, but licenses natives to dig for rubies, the royalties paid—to which reference has already been made—being 20 rupees (about $6) per native per month. From 1,000 to 2,000 natives are thus licensed to compete against the company, and a large income is derived from this source. This income reached high-water mark in 1895-96, when $140,000 was received. It fell to $49,750 in 1897-98, because of the famine and plague; recovered to $70,000 in 1898-99, and to about $95,000 for the year ending February 28th, 1900. The revenue from this source will, in future, apparently range between $75,000 and $100,000 per annum. Large royalties of this kind, it is needless to say, are not an unmixed blessing to the company, which, however, has not a free hand in the matter, as the natives have mined for these rubies for ages, and have hereditary rights, which would doubtless be upheld by the Indian Government.

Winding up with a few general remarks, it may be mentioned that the production of the Burma Ruby Mines is estimated to amount to more than half of the world's production of rubies. Naturally, the company does not deal with the cutting of the rubies and their transformation into merchantable form. This cutting process is rather an expensive one, and it is estimated that the lapidary receives about $12,500 for the work he may have to do in connection with a consignment of the value of $30,000. Besides this, before the stones reach the hands of the public, they pass from one middleman to another, and so at last the final purchaser has to pay, say, $75,000 for a consignment of cut rubies for which as raw product the Burma Ruby Company may have received $30,000.

The Burma Ruby Company has, during the course of the last few years, found several fairly large stones, but such finds are rare. One of these large stones, which weighed 28 carats in its natural state, and after cutting was reduced in weight to 18½ carats, was a short time ago sold for a large sum. Other large stones with weights varying from 20 to 77 carats, are now being cut. Ruby merchants divide the stones into eight classes, according to their size and color.

From the last year's report it appears that 813,000 loads of dirt were washed; the average value per load being 50c.; average cost per load, 27c.; leaving a profit of 23c. per load. The total value of the output was $274,000, and the cost of mining and washing costs $206,500. Royalties and other income brought the total revenue up to $332,475 and the net income to $104,980.

*Abstract of article in the "London Financial Times."

TIMBERING IN KALGOORLIE MINE, WESTERN AUSTRALIA.

GERMAN CEMENT EXPORTS.—The exports of German cement have of late years increased at a very rapid rate. During the year 1894 the exports of this article from Germany amounted to 362,000 tons, and in 1899 to 528,700 tons. The demand appears to be steadily increasing, both for home consumption and export. The United States are the largest buyer of German cement, with imports of 150,000 tons; next comes Australasia, with about 33,000 tons; and China, with 25,000 tons. The exports to China show considerable increase, while those to Japan have almost closed. Brazil, Chile and the Cape are also good customers. In Europe the largest receivers were Great Britain, Norway and Portugal.

THE RELATIVE CORROSION OF WROUGHT IRON, SOFT STEEL AND NICKEL STEEL.*

By Henry M. Howe, Honorary President of the Congress.

This paper, of which the present is an abstract, gives the loss of weight by oxidation of many plates of wrought-iron, soft steel and nickel steel of 3 per cent. nickel, and of 25 per cent. of nickel, when exposed to sea water, to river water, and to the weather, for two periods of about one year each. Each plate was about 24 in. long, 16 in. wide and ⅛ in. thick. The total weight of all the plates was 2,597 lbs., and the total area exposed was 928 sq. ft. Thus the scale of the experiments was not only much larger than that of any previous experiments of which I know, but larger, I believe, than that of all previous experiments taken collectively. The paper also tabulates and compares the results of all other accessible and respectable investigations into this subject.

The general results are as follows:

Wrought Iron Compared With Soft Steel.—There is, at least in the United States, a strong and widespread belief that soft steel corrodes much more rapidly than wrought iron; and this belief has greatly retarded the introduction of soft steel for tubes for various purposes for which oxidation is a matter of vital importance. To this question then great attention was paid.

We, of course, recognize a reasonably constant difference in tendency to oxidize not only between metals much apart in their chemical properties, like sodium and platinum, but even between those which are far more nearly alike. We do not hesitate to say that manganese oxidizes more readily than iron, and iron more readily than copper.

Between wrought iron and soft steel such a difference might exist, and there are many who suppose that it does exist, that soft steel as a whole oxidizes more rapidly than wrought iron, just as iron oxidizes more readily than copper. But, while a difference of this kind might exist I find no evidence in the data thus far collected that it does exist; I do not thus far find that wrought iron as a whole corrodes more than soft steel as a whole, nor do I find the reverse to be true. Taking all common classes of wrought iron and of soft steel together, and all conditions of exposure to oxidation to which engineering structures are commonly exposed, except, perhaps, in marine boilers, I find it extremely difficult to say that either wrought iron or soft steel as a class on the whole excels the other in resistance to oxidation. But, while we find no marked difference between these two classes of iron taken as a whole, we often find moderate and somewhat constant differences in certain specific cases, and we sometimes find great differences. Thus in my own experiments soft steel corroded less than wrought iron in fresh water but more than wrought iron in sea water; and the difference, though always moderate, was in each case sufficiently constant to raise a considerable presumption that it was a real and not merely an apparent one. But, though soft steel in sea water thus corroded more than wrought iron in my experiments, it corroded much less than wrought iron in Krupp's very important experiments; and here, too, the difference was so constant as to raise a considerable presumption that it is real, and not merely apparent. And so on with other sets of experiments.

The inference which I have drawn is as follows:

1. That the difference in the rate of corrosion between wrought iron and soft steel is rarely enough to be of great moment except, perhaps, in marine boilers.

2. That the ratio of the corrosion of given soft steel to that of given wrought iron may vary greatly with the conditions of exposure.

Of the apparent discrepancies between the results not only of different observers, but even of the same observers, I suggest two chief causes.

1. The quasi accidental variations, individual peculiarities, etc.

2. That the susceptibility to corrosion of soft steel taken as a whole does differ somewhat from that of wrought iron taken as a whole; but that this difference is of such a nature that wrought iron as a class corrodes on an average faster than soft steel under certain conditions, but slower than soft steel under others.

But we may ask what are the differences in composition or constitution between wrought iron and soft steel which are capable of producing a difference in susceptibility to oxidation, which difference itself is liable to change not only in intensity but even in sign?

Apart from the fact that wrought iron usually contains less manganese but more phosphorus than soft steel, we have two important differences; wrought iron contains a considerable quantity of "cinder" or "scale" in flakes or sheets mechanically intermixed with the pure iron or ferrite; soft steel, while lacking this, has usually considerably more carbon than wrought iron. This carbon exists in the form of the definite carbide, Fe_3C, called cementite, of which there are 15 parts by weight for every part of carbon present; so that for every 0.10 per cent. of carbon there is 1.5 per cent. of cementite. This cementite lies in microscopic flakes. It is, indeed, present in both wrought iron and soft steel, but the latter has usually so much more cementite than wrought iron has, that the excess of its cementite is of about the same order of importance as the excess of the flakes of "cinder" or "scale" in the wrought iron.

Each of these substances, cinder and cementite, should have a twofold influence. First, each resists oxidation powerfully, each should, like so much paint, mechanically protect the particles of the pure iron or ferrite underlying it; second, each by difference of potential should retard or hasten the corrosion of the iron, as the case may be. Let us distinctly recognize this twofold influence of these two substances, the cinder of wrought iron, and the cementite present in relative excess in soft steel; first mechanically protective; second by difference of potential, perhaps hastening, perhaps retarding the oxidation of the underlying metallic iron. It is possible that this line of thought is new.

The resultant of these two influences should vary with the nature of the attacking medium, whether this be fresh water, sea water, acid or alkaline liquor; and it should also vary with the progress of the corrosion as I will now try to explain with the aid of Fig. 1.

*Abstract of paper read at the International Congress on Methods of Testing the Materials of Construction.

When a piece of wrought iron or steel is first exposed to oxidation, it is only what we may call the outcropping edges, A, of the sheets of cinder or of cementite which mechanically protect the underlying pure iron; B, from oxidation. Those parts, C, of the pure iron, which lie originally at the surface, without overlying sheets of cementite or cinder, receive no mechanical protection. But as oxidation proceeds and these outcropping parts, C, of the pure iron are gradually dissolved away, more and more of the cinder or cementite becomes exposed and thereby prevents the air or water from reaching and attacking the underlying pure iron or ferrite. Thus, in short, the mechanical protection of the flakes both of the cinder of wrought iron and of the cementite of soft steel should increase as oxidation proceeds; but the protection of the cinder need not increase in the same ratio as that of the cementite. It might well be that, since the cinder is distributed in the wrought iron in a manner very different from that of the cementite in soft steel, with the progress of oxidation and with the gradual removal of the outcropping pure iron, the mechanical protection of the cinder of wrought iron should increase much more than that of the cementite of soft steel. Hence it is quite possible that, though wrought iron and soft steel should corrode at the same rate initially, yet later (the oxidation of the wrought iron being retarded by the increased protection of its cinder more than the oxidation of the steel is retarded), the wrought iron should oxidize much less than the steel.

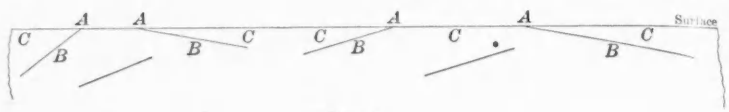


Fig. 1.

Knowing that there was a widespread belief that wrought iron oxidizes less than soft steel, and yet having before me the results of such extensive direct experiments which indicate that it does not, it occurred to me that the discrepancy might be explained in some such way as I have here outlined; for our direct experiments usually last a relatively short while, and represent rather the initial rate of oxidation than the later rate; whereas the opinions of industrial users of wrought iron and steel based on the results of industrial use, would represent longer trials, usually carried on to destruction.

Fortunately data for testing this hypothesis were at hand; for in my own experiments and in another very extensive series, the oxidation of soft steel and of wrought iron for each of two successive long periods was given. Comparing these, I do not find that the oxidation of soft steel accelerates relatively to that of wrought iron as the period of exposure continues.

Therefore, this reason for questioning the results of our direct experiments is weakened. But in view of it all of my plates are still under exposure, and I hope to re-weigh and report on them again after a further period of several years.

As to the influence of difference of potential of the cinder of wrought iron and the cementite of soft steel, I have carried out a long series of direct experiments with various liquors. It would carry us too far even to outline the results of these here.

The following table sums up the results of my own experiments:

Relative Corrosion of Soft Steel, Wrought-iron and Nickel Steel, Taking Wrought iron as a Standard.

	Sea water.	Fresh water.	Weather.	Average.
Wrought-iron	100	100	100	100
Soft steel	114	94	103	103
3% nickel steel	83	80	67	77
26% nickel steel	32	32	30	31

Nickel Steel both of 3 and 26 per cent. of nickel corroded under all conditions less than either wrought iron or steel, as was to be expected. The difference, however, was much less than might have been hoped. On a general average the 3 per cent. nickel steel corroded 77 per cent. as fast as the wrought iron, and the 26 per cent. nickel steel about one-third as fast as the wrought iron. The superiority of the 3 per cent. nickel steel in this respect, though decided, is hardly enough to weigh heaviily in determining its production. The 26 per cent. nickel steel, while it certainly has an enormous advantage over common soft steel and wrought iron as regards corrosion, yet probably is at a great disadvantage in this respect when compared with some of the copper alloys with which it will have to compete. We cannot call it a non-corroding metal under common conditions; it is simply a slowly corroding one.

PIG IRON PRODUCTION IN GERMANY.—The production of the German blast furnaces in June was 683,217 metric tons of pig iron, being 31,095 tons less than in May, but 19,802 tons more than in June, 1899. For the six months ending June 30, the output was 4,051,557 metric tons, which compares with 4,000,424 tons in 1899; an increase of 51,133 tons, or 1.3 per cent., this year.

A NEW IGNITER.—An igniter for mine shots invented by Hans Tirmann, of Pielach, near Melk, Austria, says the London "Colliery Guardian," consists of an outer metal case, cast with a longitudinal partition so as to form two compartments, the larger of which contains the conductors connected with a wire to be rendered incandescent, the priming and the closing arrangement, while the smaller receives the detonating cap. The longitudinal partition keeps the powder from falling out, and also protects it from damp, so that the igniters can be stored without detonators, when they are comparatively free from danger; and yet they can be made ready for use at any time by the simple pressing in of the detonator.

BRITISH COLUMBIA—HOWE SOUND DIVISION NEW WESTMINSTER MINING DISTRICT.

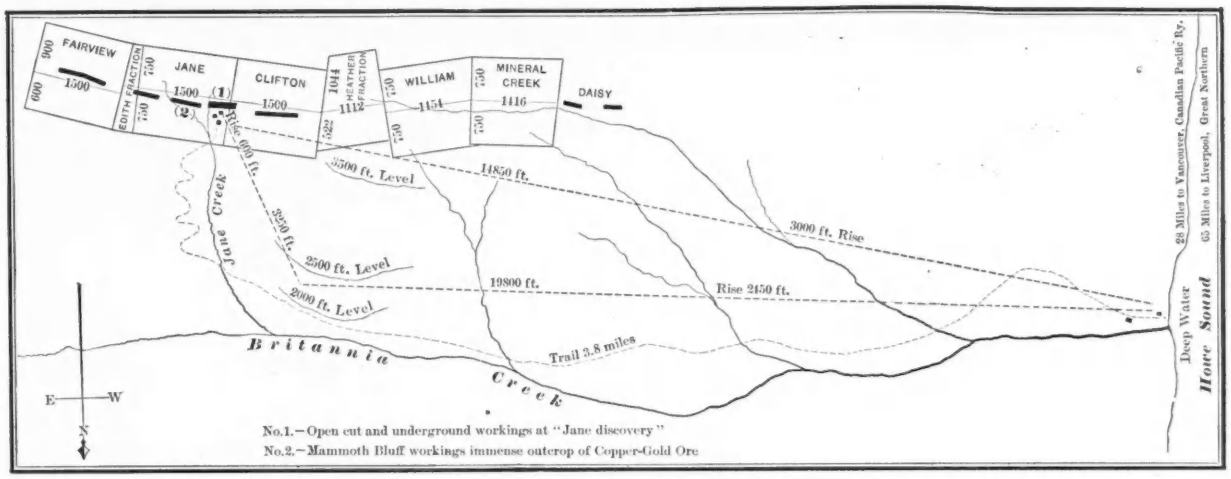
Special Report of W. M. Brewer, Traveling Correspondent.

During the latter part of June, the writer paid a second visit to this new mining camp on the Pacific Coast, about 30 miles distant from Vancouver. During the visit made in February last he was able, because of the depth of snow, to make only a very cursory examination of the discoveries. During his recent visit, however, he made a personal examination of that section, including a portion of the Britannia and Goldsmith groups of mineral claims.

The belt of schist in which the ore bodies of these groups occur apparently extends for some unknown distance westerly from Howe Sound across the Sound, and also easterly an unknown distance. The accurate line of strike of this belt of schist is north 70° west.

At the beach of the east shore of Howe Sound this belt of schist is upward of a mile in thickness, lying between areas of granite. In this respect there is a strong similarity between the mineral zone at Howe Sound, and the extensive mineral zones in the Upper Lillooet Country, described in the columns of the "Engineering and Mining Journal" in 1898. In fact, there appears to be a series of parallel belts of an igneous rock which has become schistose from shearing, extending northerly from Howe Sound into the Upper Lillooet section. All of these belts of formation are mineralized with iron pyrites, a large proportion of which is marcasite. So far as concerns the Howe Sound belt, actual development has demonstrated that within this main zone of mineralized schist there occur smaller zones in which have concentrated values in gold, silver and copper averaging about $10 per ton, if we figure the price of copper at 10c. per pound, based on dry assay.

On the Britannia group there has been performed altogether about 600 ft. of underground workings. Through these it has been demonstrated that at the extreme western end of the Jane mineral claim the known thickness of the ore-body carrying commercial values is 26 ft. and the thickness of the mineralized zone upward of 300 ft., with



BRITANNIA GROUP, HOWE SOUND, BRITISH COLUMBIA.

estimate to place the quantity of ore actually in sight in this bluff at 2,000,000 tons above the adit level. The results obtained from the assay of average samples taken from the 88-ft. tunnel are about as noted above.

On the accompanying map showing the Britannia group, as surveyed by the Government, the heavy lines on the Clifton, Jane, Edith Fraction and Fairview represent the portions of these claims on which ore-bodies are exposed, either by cross-cutting or actual development work. July 1st an ore-body, the line of strike of which conforms with that on the Mammoth Bluff, had been discovered on the Fairview mineral claim, which has been crosscut for 12 ft.; from this crosscut the highest grade of ore yet found on any of the claims has been taken.

On the claims of the group west from the west end line of the Clifton, no development work has been done, but on the Daisy, which joins the Britannia group on the west, and which is one of the Goldsmith group of mineral claims, the cross-section of an ore-body has been shown for fully 100 ft. in thickness by stripping an open-cut. The ore-body on this claim has been exposed by nature by the channel of Mineral Creek, which flows between bluffs, of from 100 to 300 ft. in height. On the precipitous side of this bluff are outcrops very similar to those which occur on the Mammoth Bluff on the Jane mineral claim.

Between the west end line of the Britannia group and the eastern shore of Howe Sound, along the same line of strike as that of the ore bodies on the Clifton, Jane and Fairview mineral claims, every foot of the country is located; and in several places, besides those where ore has been exposed on the Daisy claim, work has been done and low-grade ore exposed. None of these workings, however, are sufficient in extent to determine any material facts, beyond the probabilities that ore bodies very similar to those already referred to will be discovered. So far as the writer's observations go, there are in several places oxidized materials very similar to that on the Mammoth Bluff, though none of these occurrences, west from the Daisy, appear to possess the immensity which is so characteristic on the Daisy and the Britannia group.

Easterly from the eastern boundary of the Britannia group has been located the Empress group of mineral claims, which the owners propose to thoroughly exploit; and as the same belt of schist as that in which the other ore-bodies in the district are found extends for an unknown distance easterly from the Britannia group, it is impossible at this writing to form an estimate of the possibilities of that section of the country between the eastern boundary of the Britannia, at the head of the north arm of Burrard Inlet, which is about 20 miles from Vancouver. This belt of schist forms one side of a triangle, having one angle at Vancouver, one at the beach at Howe Sound and the other at the junction of the schist and shore-line at the head of the north arm of Burrard Inlet.

The staking of claims by prospectors has not been confined to the line of strike of the known ore bodies on the belt of schist, but discoveries of more or less value, it is claimed, have been made both on the north and south, at least from the beach at Howe Sound to the eastern boundary of the Britannia group. Easterly from that the ground has not been so thoroughly prospected, although there is no doubt that the fact that well-known engineers have reported favorably on the ore-bodies already discovered will stimulate prospectors to explore thoroughly the eastern end of this mineral zone.

But very little idea of the difficulties which prospectors have to overcome in the new camps in British Columbia can be formed by reference to a map. In the first place, it must be remembered that there are but very few Government roads, or even trails, constructed through the mining districts; in fact, it would appear as though former governments have been generous in making appropriations for the building of roads in agricultural districts, yet that they had never grasped the vast importance of the mineral resources of the Province, consequently the prospector has to force his way through very heavy underbrush, across high mountains, and pack on his back his blankets and supplies.

As the present Government is made up of men many of whom, and the Premier especially, are largely interested in the mineral bearing sections of the Province, it would appear that in future greater facilities will be extended to aid the prospector in his work of exploration, and that every effort will be put forth to bring the mineral resources of the province before the attention of the world at large.

mineral still in the breast of the main cross-cut. The 26-ft. ore-body has been drifted on in both directions on the foot wall side, showing that the ore maintains its continuity through the length of the drifts. This cross-cut and drifts are 120 ft. below the outcrop, where an open cut has been made. Following the line of strike of the mineralized zone toward the east, a basin about 900 ft. wide is traversed which has been formed by erosion. Beyond this occurs an enormous bluff about 300 ft. in height. This is locally known as the Mammoth Bluff; its entire face is heavily stained with iron oxides, and the reason that it has not suffered as great degradation as is apparent in the basin referred to is evidently because of the highly silicious character of the rock. North and east of the face of the bluff erosion has been so active as to scoop out another basin several hundred feet long and wide. At the east end of this basin the oxidized face of the bluff stands out bold and prominent, very similar to the breast of an enormous open cut, while in the basin itself are found very large boulders and masses of mineralized rock, which have evidently broken off from the northern and eastern sides of the Mammoth Bluff.

A systematic exploitation of this bluff was commenced last winter when a short tunnel was driven into the northern face about half way up its side. The first few shots exposed ore, and as driving was continued this ore became more solid and values continued to increase. As the snow commenced to disappear from the face of the bluff, it was deemed advisable to start a cross-cut tunnel nearer to the base, and thus gain depth, and the opportunity to block out a greater quantity of ore in sight. At the time of the writer's recent visit this tunnel had been driven 88 ft., every foot of which was through ore. Although really intended for a cross-cut tunnel, its course diverges a little from the exact right angle of the line of strike of the ore-body. Other work performed along the face of this bluff consists of a series of shots.

The mouth of the Mammoth Bluff tunnel is 3,300 ft. above sea level. From the survey the measurement of the ore in sight in this Mammoth Bluff above the level of the tunnel would give approximately the following figures: 650 ft. in length by 150 ft. in thickness, by 313 ft. in height, equals 30,517,500 cu. ft., which would represent 3,051,750 tons of ore, allowing 10 cu. ft. in place to the ton, and after making all due allowance for the operations carried on by erosion, it would be a safe

REPAIRING A COLLIERY SHAFT.

A recent paper by Bergingenieur C. Wurst, as abstracted for the Institution of Civil Engineers, gives an interesting account of the methods adopted in repairing an old shaft at the Vereins-gluck Colliery at Olsnitz in the Zwickau coal-fields. The coal is won by two shafts 40 m. apart, which were sunk to the base of the coal measures, a depth of 636 m., at different times between 1871 and 1877 in No. 1 shaft, and 1877 and 1885 in No. 2 shaft; 55 m. being in the coal measures, principally shales, and 545 m. in Permian strata, consisting of alternations of slatey clays, sandstones and conglomerates, the softer clayey beds being most abundant in the lower part of the section between 252 and 545 m. Both shafts are rectangular and of the same breadth, 2 m. clear, but No. 1 is 5.93 m. long, and divided into 4 compartments, while No. 2 is 3.6 m. long, and has only 3 divisions. With the exception of 45 and 30 m. of depth respectively below the surface where curved brick walls 20 in. thick are used, the whole of the ground was secured by timbering up the ordinary square frame, the frames being set 1 m. apart, and lined with plank. No thrust was observed during the sinking, nor was any expected, but from the defective arrangements for trapping the water in the upper levels, the clayey beds began to press in the timbering, which was further deteriorated, especially in No. 2 shaft, by the return air coming from a district where underground fires were common, so that it was necessary to replace it with a more durable lining. This was done principally by substituting for the timbers frames of I-iron, No. 15 standard German section, laid on the flat, and spaced 0.5 m. apart, which are carried at intervals of 4 m. by bearers of old railway rails laid flange upward. The sides between the frames are closely lined with 120-mm. round wooden props. Below 540 m., however, closely set timber frames, forming a complete rib, are used. The complete repair of No. 1 shaft extended over a period of 8 years, 1887 to 1895, and similar repairs had been part carried out in No. 2, when, on September 23d, 1894, the remaining timbering collapsed, and the shaft was blocked with the fallen ground to within 260 m. of the surface, the upper portion being protected by a strong bed of conglomerate at that level. As it was considered better to reopen the shaft than to put down a new one in another place, it was filled up with small waste from the coal workings to prevent further collapse, and then treated as a new sinking, the ground being secured by iron framing of a somewhat heavier section than that previously used. The heaviest falls were found between 262 and 525 m.; the horizontal section of the hollows varying in places from 17 to 113 sq. m., while the normal section of the shaft is only 10.6 sq. m. In these places the iron lining was secured by timber platforms and frames bearing against the solid ground. The heaviest of these structures was in the pocket, between 372 and 392 m. which had a maximum width of about 15 m., and required struts of more than 12 m. in length. Below 525 m. the original lining was found to be uninjured, and when the shaft was reopened in May, 1897, the provisional lining through the heavily broken ground was replaced by curved brick walling from 1 to 2 m. in thickness, carried upon bearing arches in the harder conglomerate beds, the dimensions being reduced to 3.6 by 1.8 m. The brickwork is carried back to the solid, and any irregular hollows remaining are filled with small waste rock rammed tight. Below 525 m., where there is no good foundation for masonry, the spaces behind the iron linings are filled with concrete. The ladders and changing platforms in the footway shaft have been entirely renewed in iron. The repairs of the shaft were completed in 3 years and 3 months for $65,000, or about half the time and cost that would have been necessary for putting down a new shaft.

THE CHROMITE DEPOSITS OF NORTH CAROLINA.

Written for the Engineering and Mining Journal by Joseph Hyde Pratt.

Although prospecting for chrome ore in North Carolina was first undertaken over 30 years ago, and has continued spasmodically ever since, there has never been any systematic development of the chromite localities. These are all found in connection with the peridotite rocks.

The general character of the chrome ore is nearly uniform throughout the entire area, being very hard and compact, though often of a fine granular appearance. There is but little ore that is friable. The masses of the ore are usually very free from seams of peridotite (or its alteration products). A high-grade ore can usually be obtained by cobbing and hand-picking.

Corundum is a mineral that is also found associated with the peridotite rocks, and a fact to be borne in mind is that wherever there has been corundum found in quantity in these rocks there is a scarcity of chromite; and, on the other hand, where chromite has been found abundantly in these rocks, little or no corundum has been discovered.

Only the more important chromite deposits and localities are described.

In Yancey County, one of the three more important deposits in the State occurs at Mine Hill, on Mine fork of Jack's Creek, 5 miles north of Burnsville on the Bakersville road. At this locality a large peridotite formation outcrops on both sides of the road. In this formation seams or pockets of chrome ore varying from 0.5 to 3 in. in width are very abundant, while some were observed 2 or 3 ft. wide. Near the summit of the hill on the east side of the road, about 150 ft. above the level of the stream bed, a seam of chromite about 1 ft. wide was opened by means of a pit 9 ft. deep and 25 tons of ore were taken out, considerable of which still remains on the dumps. The seam widens to nearly 3 ft. at the bottom of the pit. While this is the only work that has been done here, the numerous seams of chromite and the amount of float ore indicate the existence of a large deposit of chrome ore near the contact of the peridotite and the other country rock, where it would be expected that any large deposit of chromite would be found.

An analysis of a selected sample of the chromite gave 58 per cent. of Cr_2O_3 and 3.20 per cent. of SiO_2. Although the analysis represents a selected sample of the chromite, yet from the character of the material it is not unreasonable to expect an ore that by hand-picking and cobbing will assay 50 per cent. or over of chromic oxide.

This property is owned by Garrett Ray of Burnsville. The present shipping point for this locality is Asheville, on the Southern Railroad, about 40 miles to the south.

About 9 miles southwest of Burnsville, on Price Creek, near Price Creek post-office, about 70 tons of chrome ore were mined on land belonging to W. A. Robertson. This exhausted the pocket and since then no prospecting has been done in the vicinity. An analysis of a selected sample of this ore gave 59 per cent. of Cr_2O_3 and 3.2 per cent. of SiO_2.

Considerable prospecting has been done in connection with the large peridotite area in the vicinity of Webster, Jackson County; and numerous seams and pockets of chrome ore, of varying extent, have been found.

Most of the work that has been done has been on the south side of the Tuckaseegee River, the only deposit of any note found on the north side being one about 900 ft. south of the main street of the town, on the land of Daniel Schneider. A number of tons of chromite were obtained when the pocket pinched out. No further prospecting seems to have been done on this side of the river.

On the south side of the river following near the contact of the peridotite with the gneiss, a line of prospect pits has been dug all of which encountered chromite, some in considerable quantity. The prospecting has been done on the lands of Joseph Hooker, Lawrence Buress, Alf Wilson, James Ashe and Daniel Fullbright, all of Webster, N. C. Although no large deposit of chromite has yet been exposed, this is a promising field to prospect. Sylva, the nearest shipping point, is distant 3½ miles and is on the Southern Railroad, Murphy Branch.

Chromite has been found at a number of places in the mass of peridotite, extending a number of miles southwest from Balsam Gap, Jackson County. The most promising outlook for a large deposit is on Dark Ridge Creek, about 525 ft. to the south of the Dark Ridge trestle of the Murphy Branch of the Southern Railroad. On the east side of the creek a cut 18 ft. deep and 10 ft. wide was made on a pocket of chromite, from the bottom of which two seams of chromite 6 and 8 in. wide respectively extended. Fifteen tons of ore were taken out of the main pocket. About 200 yards further to the south and on the opposite side of the creek, a shallow pit was sunk which encountered considerable chromite. Both these openings were near the contact of the peridotite and the gneiss. Between these and in their near vicinity there is a large quantity of float ore. These facts point to this locality as one worthy of further development and with an expectation of finding a large quantity of ore. Its proximity to the railroad is also a great advantage. Analyses show the ore to carry about 49 per cent. of Cr_2O_3. The property owned by the National Abrasive Manufacturing Company of Waynesville, N. C.

As yet the existence of large deposits of chromite in North Carolina has not been conclusively shown, but the work done, however, points to the probability of large deposits in that State, those described above being the most promising ones known.

The standard chrome ore contains 50 per cent. of Cr_2O_3 and the value of the ore increases with each unit over this. Ores as low as 45 per cent. of Cr_2O_3 find a ready market if they are low in silica. The North Carolina ores are high grade and usually low in silica.

During the past few years there has been no chromite shipped from North Carolina, beyond a few tons for sampling.

GOLD DREDGING IN NEW ZEALAND.

Written for the Engineering and Mining Journal by P. G. Morgan.

(Concluded from page 162.)

Nature of Bottom Worked On.—In the case of a dredge working on a hard uneven rock bottom, as in the gorges of the Molyneux and Kawarau rivers, it is impossible to make a proper clean-up of the bottom, especially of the hollows, in which the richest dirt will be found. The only thing to be done is to keep the buckets scraping along the bottom until all the dirt that can be gotten at is lifted. If the bed rock is fairly soft, as is sometimes the case, it is possible to scrape up a good deal of it in the buckets and thus obtain the rich stuff that was in the little hollows and crevices.

Where the river flows through alluvial flats, and also on alluvial flats, there is usually a false bottom of clay, well adapted for being cleaned up. Occasionally a hard but fairly smooth conglomerate bottom is met, and in one or two places the wash is found to lie on a lignite seam. In some places good wash-dirt has been proved to exist below the false bottom on which the dredges work, at depths of perhaps 50 to 60 ft.

Dealing with Large Stones.—One of the greatest difficulties in working a dredge is to cope with large boulders in the wash. If not more than 4 ft. in diameter, they may, as previously mentioned, be lifted by the grab hooks fitted on the bucket belt. In the case of a very large boulder in the river bed, the dredge works round it as best it can. Sometimes it is possible to excavate a hole behind the boulder and work it into the hollow. Large boulders on a bank above water level may be broken up by blasting; a method reported to have been used for subaqueous boulders also.

Trees Buried in the Wash.—On some dredging fields (though not on the Molyneux) large trees embedded in the wash have given trouble. They are worked round as much as possible, and then an attempt is made to drag them out by passing a rope under the free end and lifting with a winch. Blasting has also been resorted to with good effect.

Losses of Gold.—Besides the gold never lifted by the dredge owing to uneven bottom, imperfect cleaning up, etc., great loss is undoubtedly experienced in many cases in the treatment of the dirt, especially when clay is present. On the rivers the wash-dirt is fairly free from clay, and so it is on some of the alluvial flats, but on others there is a surface covering of perhaps several feet of clayey soil, besides the clay distributed through the wash-dirt. The finer gold is then nearly all carried away in suspension by the thick muddy water that runs

over the tables, while the lumps of clay that pass through the cylinder carry with them many particles of the coarser gold. In order to break up the clay as much as possible, bars and spikes are sometimes fitted inside the revolving screen.

A loss of gold may occur also through imperfect washing of gravelly dirt, some of the gold passing out of the cylinders with the stony material. Nuggets of any size, if present, will also be lost, since they cannot pass the perforations in the cylinder. The occurrence of nuggets is, however, very rare.

Even under favorable conditions a good deal of the finer gold is lost, especially when much black sand is present, as the matting then speedily becomes blocked with the iron-sand and acts very imperfectly as a gold saver.

Capacity of a dredge.—The amount of dirt lifted by a dredge varies between wide limits, but for the larger dredges may be considered under favorable conditions to average for short periods 100 cu. yds. per hour. Often the buckets do not come up full, and there are so many stoppages that one-half this amount is a safer average. Work must be stopped for a few minutes each shift in order to oil up, and once a day at least for washing the mats. Next there are the temporary stoppages caused by stones and other obstructions, and, last but not least, there is the time consumed in making repairs, which often averages a day per week in dredges working heavy wash.

When a dredge is scraping along and cleaning up a rocky bottom with but a thin layer of wash-dirt on it, its capacity is still further reduced. The buckets may be stopped every few minutes by some obstruction, and will come up almost empty of wash.

Size and Cost of Dredges.—The size of dredge to be employed on a given claim depends on the depth of wash-dirt to be dredged. If the ground is shallow—under 20 ft.—a small dredge costing £3,000 to £5,000 ($15,000 to $25,000) is best suited for the work, and would pay where a larger dredge might be a failure. For dredging ground up to 35 ft. in depth a £5,000 to £8,000 dredge ($25,000 to $40,000) would suffice. The largest dredges built have cost £8,000 to £10,000 ($40,000 to $50,000) and are capable of dredging to depths of 50 ft. In the future, dredges costing as much as £15,000 ($75,000) may be built, but it is hardly likely that this price will ever be much exceeded.

Capital Required.—The capital required by a dredging company is surprisingly small when compared with that necessary to operate a quartz mine. Practically the only expense is the cost of building a suitable dredge and, in an alluvial flat claim, of excavating a paddock to float the dredge. The usual capital of a dredging company does not exceed £7,000 to £10,000 ($35,000 to $50,000), and £14,000 ($70,000) is never exceeded, except when more than one dredge is to be built. The preliminary expenses are always small, and promoters' demands have hitherto as a rule been very moderate.

Men Employed.—The usual crew of a dredge consists of 7 men, a dredgemaster and 6 others. As the dredges work day and night, with the exception of Sunday, there are generally only 2 hands on each of the three shifts—a winchman and a fireman. The dredgemaster attends to the washing of the mats, the streaming down of the concentrates, the cleaning of the gold, etc., orders supplies, and does any clerical work required. Besides controlling the general working of the dredge, he takes part in the repair work. The winchman never leaves the winches unless the buckets are stopped. He watches every bucket as it comes up, and slowly shifts the dredge along the cut that is being made. Upon the care and intelligence of the winchman the success, and, when working in the river, the safety of the dredge, depends. The fireman attends to the firing of the boilers, and looks after the main engine. He does most of the odd jobs about the dredge also. Some large dredges have a general hand or a cadet for this class of work. On the whole, the work, though at times heavy, is not hard on the men. During the winter nights, however, they often suffer severely from the cold.

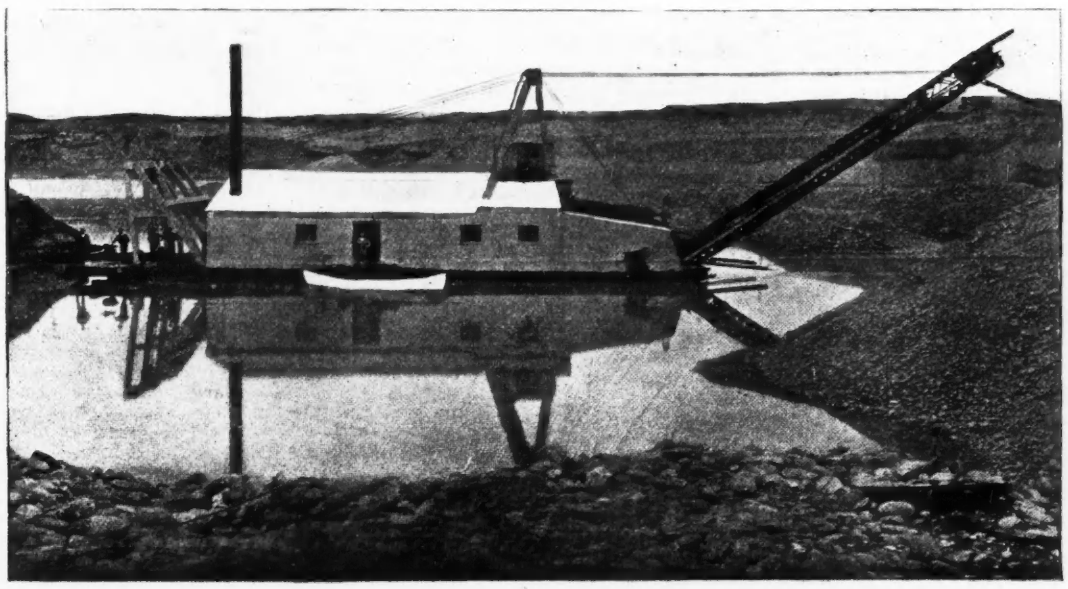
Costs.—Dredgemasters receive £4 to £6 ($20 to $30) per week; sometimes also a small percentage of the profits. The standard wages for winchmen and firemen are 10s. ($2.50) per day. Fuel may be reckoned at £10 to £16 ($50 to $80) per week; repairs perhaps £6 to £12 ($30 to $60) per week; sundries £2 ($10) per week. Hence the cost of running a large dredge may be taken as about £50 ($250) per week. The smaller dredges may be run for £40 ($200) a week, or even less.

Under favorable circumstances and when working continuously, a large dredge will lift and treat 1 cu. yd. of dirt (loose measurement) for about 1d. (2c.); but the average cost is probably nearly double this, so that it may be estimated that from 1 cu. yd. of wash-dirt at least 1 grain of gold must be saved to be profitable. The dredges of Otago average 25 to 30 oz. per week; so that about 50 per cent. of the returns is clear profit. As much as 786.5 oz. has been obtained by one dredge in a single week.

Nature of Wash-dirt.—The nature of the wash varies much in different localities. On sea beaches it consists mainly of quartz and iron-sand, while the gold is invariably so fine that it is very difficult to save it. The presence of much iron-sand, as previously mentioned, impedes the saving of the gold and, though sea beaches are often fairly rich, success has not attended dredging thereon so far.

On some alluvial flats the wash consists of rather fine gravel, which has been borne a long way from its source. The gold is correspondingly fine, but not too fine to be saved in payable quantity. On flats of this character the presence of clayey ground often causes the loss of much gold. As a compensation, the item of repairs, on account of of the absence of heavy ground, is light.

On the Molyneux River and the adjacent flats the wash as a rule consists of rather coarse gravel, the greater part of which will not pass the holes in the revolving screen. Those dredges working on alluvial flats find that the best gold occurs in the coarser seams of gravel. On the river the best wash lies along the bottom on which



DREDGE AT GOLD BEACH, NEW ZEALAND.

the dredge works—be it clay, cement or rock. An extremely good indication of gold in the wash is the presence of numerous small but heavy black pebbles which are of sizes up to 1 in. or more in diameter. These pebbles, commonly called "Maori stones," are invariably strongly attracted by a magnet.

Favorable Ground for Dredging.—The following classes of ground may be successfully worked by dredges:

1. Wash-dirt lying on a fairly smooth not too hard rock bottom in rivers large enough and deep enough to float a dredge. If the bottom is hard and rough, and the wash full of large boulders, these are unfavorable conditions, though, seeing that these conditions are favorable for arresting gold in the bed of the river, they may also lead to phenomenal success, as in the case of the Hartley & Riley dredge, a striking example of a successful dredge in a gorge-bound part of the Molyneux River.

2. Wash-dirt lying on a smooth false bottom of clay or cement in a river of sufficient size to carry a dredge. On a clay bottom a skilful winchman will clean up the wash without removing more than a mere shaving of clay.

3. Low-lying alluvial flats (and sea beaches), but little above the general water level. In many cases these flats are worked by dredges without an elevator. If there is a great thickness of wash to be dredged a short elevator may be needed.

4. Alluvial flats whose surface is not more than 30 ft. above the level at which water can be kept in the dredge pond or paddock. With the development of the elevator, still greater heights of bank will be dealt with successfully. Tolerably high river banks (40 or 50 ft.) may even now be worked for some distance back from the river. There is a danger, however, that a high face may suddenly cave in, perhaps sinking the dredge and almost certainly jamming the bucket ladder.

Effect of Dredging on the Land and Rivers.—Dredging does not disfigure the surface of the land nor pollute the watercourses to the same extent as hydraulic sluicing. Alluvial flats which have been dredged without the use of the elevator are simply turned over, and often admit of being grass sown. When an elevator has to be used, the surface is covered with stones and rendered quite useless for other

purposes, but at any rate the destruction of land is confined to the area dredged.

Prospecting.—The usual method of prospecting alluvial flats intended to be dredged is to sink small shafts here and there to determine the depth and richness of the ground. Water, however, often prevents these shafts from bottoming. In most cases boring would be a better and cheaper mode of prospecting, though of course it does not give quite so full and reliable information as the sinking of a shaft does.

As regards rivers, unless a small prospecting dredge is available, the intending dredger must be guided by the returns of neighboring dredges, by an examination of the banks, and by a careful consideration of the nature of the river bed. For instance, in a rocky gorge traversed by a swift flowing river the chances of failure are great. When the gorge opens out into a valley, and particularly below the junction of a large tributary with the main stream, good claims may be looked for.

In a new dredging field it may be certain that a river bed or alluvial flat is auriferous, but it may be difficult to determine the prospects of successfully dredging it.

Literature.—The following publications may be mentioned as dealing with dredging in New Zealand:

1. "Dredging as a Profitable Means of Working Alluvial Auriferous Drifts," by W. H. Cutten. Published in the "Transactions" of the New Zealand Institute of Mining Engineers, 1898.

2. "Gold Dredging in Otago." Published by the Otago "Daily Times" Company, Dunedin, N. Z.

3. "Mines Reports" of the New Zealand Government, 1898 and 1899; also those of previous years. Mr. Cutten's paper above noted is reprinted in the 1899 "Mines Report."

ABSTRACTS OF OFFICIAL REPORTS.

Ducktown Sulphur, Copper & Iron Company, Tennessee.

This London company owns and works a large property in the Ducktown District in Tennessee. The capital outstanding consists of 5,000 ordinary shares of £10 each; 1,000 preference shares of £10 each; 200 founders' shares of £1 each; £44,500 first mortgage 5 per cent. debentures; £7,905 second mortgage 7 per cent. debentures; a total of £112,605.

The report for 1899 gives no particulars of mine operations and no statement of production. The financial accounts are stated in sterling, from the London office. The receipts were net revenue from mines, £28,208; interest, £83; total, £28,291. The payments were: General and office expenses in London, £2,812; interest and taxes, £3,323; depreciation of plant, £2,750; reserve fund, £2,000; total, £10,885, leaving a balance of £17,406. From this there was paid in dividends 7 per cent. on the preferred stock, 15 per cent. on the ordinary stock and £32 10s. per share on the founders' shares, a total of £17,200. The balance of £206, added to £144 brought forward from 1898, left a total of £350 forward to current year.

De Lamar Mining Company, Idaho.

The report of this company is for the year ending March 31st, 1900. The net revenue, as stated in sterling from the London office, was £21,122, with £357 brought forward from previous year, a total of £21,479. From this £3,500 was appropriated to machinery fund, and £10,000 as a dividend of 6d. per share—2½ per cent.—leaving a balance of £7,979 to current year.

The unexpended balance of capital is £35,638; reserve and revenue accounts amount in all to £20,580, making a total of £56,218 available resources, outside of property and plant. The company has been carefully and prudently managed, but the mine is now nearly exhausted, and it is looking out for another property.

There were 20 tons of shipping ore mined, the gross returns from the smelter being $10,668, or $533 per ton. In the mill there were 53,233 tons, dry weight, of ore treated, the recovery being 21,276 oz. gold and 52,279 oz. silver. The total value of the mill product was $472,116, or $9.11 per ton. In the tailings plant there were 12,079 tons dry weight treated, the product being 2,380 oz. gold and 14,620 oz. silver; the value was $57,717, or $4.71 per ton. The proportion of recovery in the mill was 77.95 per cent.; in the tailings plant 74.57 per cent. of the assay value.

The total income and cost was as follows:

	Receipts.	Costs.	Profit.
Shipping ore	$10,668	$2,914	$7,754
Mill ore	472,116	388,665	83,451
Tailings	57,717	18,990	38,727
Miscellaneous	5,525	.....	5,525
Totals	$546,026	$410,569	$135,457

The average profit on mill ore was $1.77, and on tailings $3.21 per ton. The mill costs in detail were as follows, per ton worked:

Yield per ton, dry weight		$9.1193
General mining cost	$3.5785	
Prospecting costs	0.5316	
Mining and marketing shipping ore	0.0547	
General milling costs	2.2511	
General expenses, taxes, express, etc	0.2513	
Tota		6.6472
Profit per ton		$2.4631
Cost of mill tunnel		0.6935
Net profit remaining		$1.7696

The cost of cyaniding tailings is given in detail in the following table:

Recovery per ton, dry weight		$4.7130
Labor, including excavation	$0.4441	
Chemicals	0.7768	
Fuel	0.1234	
Other supplies	0.0870	
Refining cyanides, assaying and express	0.1409	
Total costs		1.5722
Profit per ton		$3.1308

In nine years' working the mills have treated 345,914 tons of ore and 12,078 tons tailings, the total yield being 191,897 oz. gold and 2,646,743 oz. silver; in addition 1,576 tons of shipping ore have been sold for $752,722. The company has paid in dividends a total of $2,400,000, or 120 per cent. on the stock.

The directors' report says: "No new discoveries of importance have been made in the mine, but careful working of known ore bodies has resulted in the development of a larger tonnage of payable ore than seemed possible a year ago. The end of these, however, now appears to be not very far off. There remain many thousands of tons of ore of too low a grade to be profitably worked under existing conditions. The chief exploratory work during the year has been the driving of the mill or low level tunnel under the old workings, which has been prosecuted at a speed and cost reflecting great credit on all concerned. The distance recommended to be driven, 2,800 ft., has been more than accomplished, and drifting laterally is now in progress. So far no discovery of importance has been made. The tunnel cost has been defrayed out of revenue. The suit brought against the company by Mr. J. R. De Lamar for infringement of the Waldstein patent has not yet come to trial. All necessary steps have been taken in the matter, and the board are advised that they have a good and strong defence. Much thought and time and some money have been expended in efforts to acquire for the company another property, but so far without success. The Buffalo Hump District, in Northern Idaho, mentioned in last report, proved on examination by Mr. Huntley, after the snow had gone, to be most disappointing and altogether unworthy of the attention directed to it. The board propose continuing the search for another property."

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

DUTY ON ZINC DUST.—An article may be crude for the purpose of classification under the tariff laws, by reason of the use to which it is to be applied, where it is crude in the sense that it is unrefined, although it may be the result of some manufacture. Held, accordingly, that zinc dust, commonly known as indigo auxiliary, an article crude in the sense that it is unrefined, although it may be the result of some process of manufacture, unintentional or otherwise, and which is chiefly used in dyeing, is free of duty under the tariff acts of 1894 (paragraph 386) and 1897 (paragraph 482), as an article "in a crude state, used in dyeing, * * * not specially provided for," and is not dutiable either as a manufacture of metal, not specially provided for, or, by similitude, as zinc in blocks or pigs.—United States Board of General Appraisers.

USES OF VANADIUM.

Vanadium is used in the manufacture of aniline black, which is formed when vanadic acid or a vanadate is heated with aniline chloride, with reduction to V_2O_4. The latter oxide may again be made active by oxidation with potassium chlorate, so that the reaction may be often repeated without any fresh addition of vanadium. This method is useful for staining wood black, as well as in producing an indelible black writing ink. When applied to pottery and fired at a high red heat, the oxides give a fine gold color with a greenish tinge.

Alloys of vanadium and other metals have been obtained in considerable variety by first using aluminum. A cast bar of 1 per cent. vanadium had a tensile strength of 11 tons, an elongation of 7 per cent.; aluminum bronze, with 8 parts aluminum and 1 part vanadium, gave 45 tons tensile strength and 12½ per cent. elongation.

Ordinary malleable iron of about 24½ tons tenacity and 19 per cent. elongation, was changed by the addition of 0.5 per cent. vanadium to 39 tons and 12 per cent. elongation in the forged bar, and 33.7 tons and 32 per cent. elongation annealed. This has called attention to the remarkable malleability and ductility of the alloy. A mild steel of 30 tons tenacity and 17 per cent. elongation, with 1 per cent. vanadium, gave 61 tons tenacity and 14 per cent. elongation, and when annealed 45 tons and 20 per cent.; and, although very soft when annealed, these alloys become very hard by tempering.

At present there are no steel manufacturers using the oxide in quantity, as the demand for vanadic acid as a mordant in dyeing takes the entire supply from the slags of the Creusot Steel Works in France—about 165,000 lbs. per annum. A large supply should admit of the use of vanadium in the manufacture of steel for armor plate, forgings for ordnance and naval machinery, projectiles, tools, rolls, calendars, etc., and various bronzes.

WELDING PLATES.—The London "Engineer" says that for facilitating the welding of two pieces of iron or steel, M. A. Cherbonnier, of Paris, prepares plates made from a composition of borax and iron filings, strengthened by a web of iron-wire mesh. The plates are also indented by lines crossing one another at right angles, so as to permit of a piece being broken off readily to suit the surface to be welded. It is found by experience that with these plates the weld is far sounder than can be obtained without them, and also that the metal can be welded at a far lower temperature, which is of great importance in the case of steel.

SAULT STE. MARIE CANAL TRAFFIC.—From the opening of navigation to August 1st the total freight passing through the Sault Ste. Marie Canals was 12,775,246 short tons; of this 10,069,802 tons (78.8 per cent.) were eastbound, and 2,705,444 tons (21.2 per cent.) westbound. The total compares with 10,433,875 tons in 1899, and 9,568,599 tons in 1898. The chief items of mineral freight were, in short tons:

	1898.	1899.	1900.
Anthracite coal	192,535	392,523	317,303
Bituminous coal	1,630,568	1,227,038	2,111,187
Iron ore	5,778,122	6,474,735	8,258,822
Copper	62,246	45,343	59,801

Other items included 75,096 tons pig and manufactured iron; 10,616 tons building stone, and 101,193 bbls. salt.

A NEW METHOD OF BLAST FURNACE CONSTRUCTION.*

By F. Burgers.

This paper describes a new method of constructing the shaft of a blast furnace, which is made of iron instead of refractory fire brick. Before describing in detail the new system, it briefly indicates the method of construction hitherto in vogue. The walls of the furnace were of masonry, and ring-shaped, the thickness ranging from 32 to 50 in. They were cased with iron plates, or strengthened with rings of iron (Fig. 1). In Germany the former system has fallen into disuse, and the latter method enjoys the preference. It is well known that refractory brickwork, after the furnace is blown in, is rapidly destroyed, both on account of chemical as well as mechanical causes. Accordingly enlargements of the interior occur, which bring with them considerable modifications of the outline of the sides and lead to the irregular working of the furnace and to an increased consumption of coke. The efforts made to remedy the enlargements in the shaft tended—in Germany, at any rate—in the direction of discarding the external casing of iron, so as to enable the outside air to contribute at least partially to the cooling of the furnace, and also to introduce the masonry water-boxes, through which a circulation of water was maintained. In some instances cooling plates are fitted throughout the entire length of the shaft, and in many cases at least the boshes are supplied with them, especially in the more modern blast furnaces constructed in America. There, cooling plates are plentifully introduced, with the idea of preserving the original shape of the boshes (see Fig. 2). The new blast furnace of the National Steel Company in Youngstown, which has a production of 600 tons per day, is furnished with from 130 to 150 bronze cooling jackets. Two rows of these are placed underneath the tuyeres, and 9 rows in the boshes, and further two rows of cast-iron jackets are introduced in the part immediately above the latter. The shaft of the furnace is 60 in. in thickness. If 5 of these water jackets are fed with a 1¼-in. pipe the consumption of water for cooling the boshes of a furnace in this manner would be 176 cu. ft. per minute; or, if fewer jackets are fed with one pipe, a larger quantity still would be required. All closed cooling jackets have this disadvantage of consuming a large quantity of water, and, especially when there is a large number present, they are difficult of inspection. In the case of something going wrong it is very hard to identify which one it is, and further, the leakage passes directly into the furnace.

The author's efforts to maintain and prevent the deterioration of the boshes and the shaft led him to diminish, especially in the upper portions of the boshes, the thickness of the walls of masonry; to strengthen the latter as much as possible with iron; and to introduce cooling jackets in the structure.

Two furnaces constructed in this manner are shown in Figs. 3 and 4. The last one was built at a time when two blast furnaces were shortly to be blown out, and it was a question of making rapidly a temporary one in a confined space. This furnace is therefore very simple in construction. It has no shaft columns, but a casing of iron, and on both sides of the 8 tuyeres it is strengthened with I-beams 14 in. high. Upon this and upon the casing a cooling chamber is laid, and the shaft is built up above this. This furnace was built in about 6 months, and reached an average production of about 240 tons per day. The measurements are 71 ft. in height and 19 ft. in diameter. This one was followed by the furnace shown in Fig. 5, which is of similar construction, but in which a novel method of supporting the shafts is introduced, and in this case the circular cooling chamber appears. This, in those of later construction, forms a very considerable portion of the furnace. This circular cooling chamber or curb has in several instances been in continuous use for a number of years; it consists of 8 segments, which, by means of screws, are fastened to a ring, the joints of which rest upon the columns. For further security two iron bands surround the curb, the interior wall of which is kept cool with water, which collects at the bottom, and can thence at pleasure be drawn off. The surface facing toward the interior of the furnace is lined with small fire bricks of a thickness of about 2 in. The next step was to completely sheath both the boshes and shaft of the furnaces with an iron construction similar to that of the cooling curb. In this case the shaft is built up in the following manner:

Upon the curb the rings, from 40 to 60 in. high, are built up, each ring consisting of segments from 40 to 60 in. in width. These segments are united together by means of strong bolts, and, besides, each ring is surrounded by a strong band. Each ring along its lower flange is furnished with a hollow channel or gutter. By an appropriate arrangement the single rings are connected together to permit the water which collects to be drawn off in a few places. The shaft of the furnace is next continued by the superposition of a number of rings 60 in. in height. As regards the tightness of the whole, all the surfaces are dressed by machinery, so that the joints are inconsiderable in size; they are, moreover, packed with asbestos, and in addition a rust cement joint is added. Up till now each segment has been supplied singly with water at a low pressure issuing from large openings, instead of with a high-pressure stream flowing from a small inlet, because in the latter case the holes are liable to become stopped up. In future construction it is intended to employ smooth segments, and only use an inlet for every third ring, because the circulation of the water is thereby simplified. This arrangement is shown in Fig. 6. The inner lining of the segments is, as may be seen in Fig. 7, of fire brick. In the No. 3 furnace of the Vulcan Iron Works the boshes and shaft are made of iron, and their construction is shown in the drawing, Fig. 8. Mr. Burgers received the first suggestion as to the possibility of constructing the blast furnace of iron from the large cooling chambers used for the reception of the tuyeres, which were used for the first time in Germany by Herr Schmidtbrenner, at the Rolandshutte, near Essen, about 1868, and which were also introduced at Gelsenkirchen. Here a large iron surface, measuring 32 by 32 in. in area, exposed to the most intense heat, proved that cast-iron, sprinkled with water externally, had, for the purpose in view, the resistance required. It is well known that other experts have conceived the idea of constructing the blast furnaces of iron. Thus Herr Sorge, at the time manager of the works at Rombach, proposed to use a casing of iron for the shaft of the furnace, and to cool the casing with water. The late Herr F. Buttgenbach also made a similar proposal, without, however, adding any practical instructions as to how to proceed. The all important question in this construction of a blast furnace was the possible lowering of the inside temperature in consequence of the withdrawal of the heat by the water. By means of experiments undertaken in the shaft of a small furnace, in which coke at a white heat was burned, it was ascertained that the cooling effect produced was not of such a nature as to render the system of doubtful application, so long as there was a lining of fire brick of about 2¾ in. in thickness in front of the plates. This is also proved by the blast furnace at the Vulcan Works, which consumes 26 cu. ft. of water per minute, or about ⅛ gallon per square foot. The increase of the temperature of the water is 68° F. The consumption of the coke in the furnace in question at the Vulcan Works is, during most months, 5 per cent. higher than in an adjoining one of larger size and of the old pattern. However, a comparison instituted between two furnaces of different size cannot be considered as decisive. At the present time, on account of short blast, the furnace is only producing 85 tons of hematite iron per day, with from 2½ to 3 per cent. of silicon; but since starting the working has been attended with no difficulties, so that it may be called a durable blast furnace.

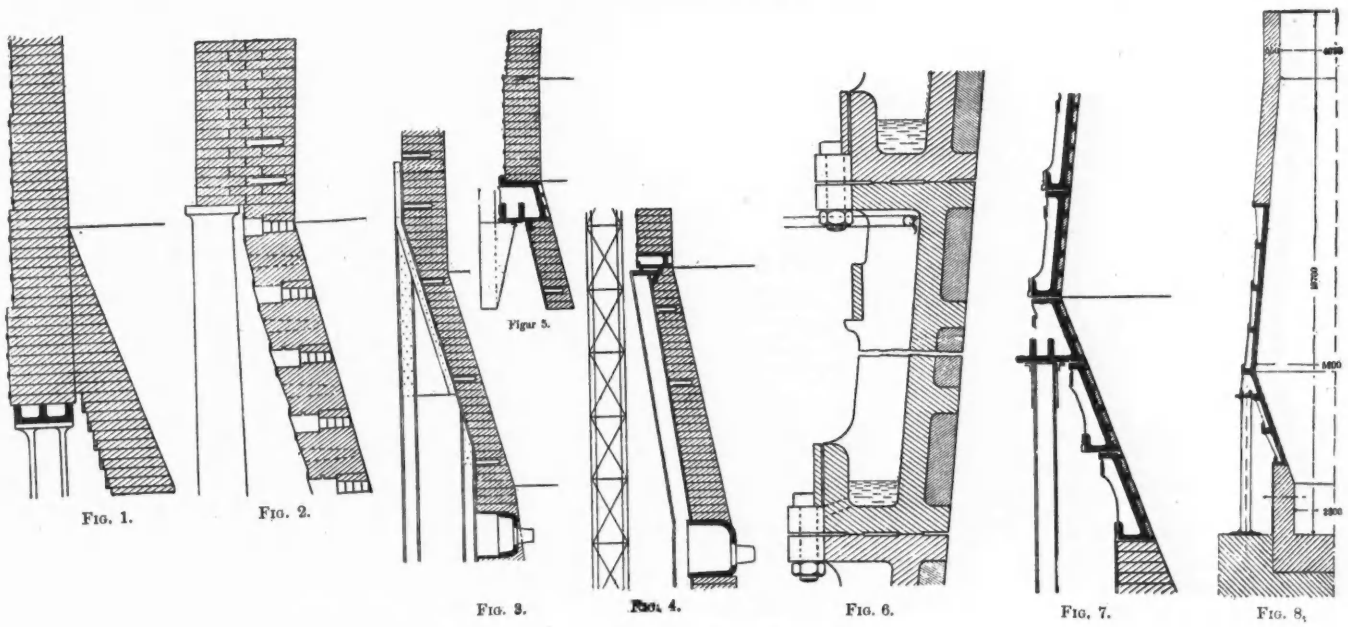


Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 6. Fig. 7. Fig. 8.

New Type of Blast Furnace Construction.

*Abstract of paper read before the Verein Deutscher Eisenhuettenleute.

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.)

196.—Books on Mineralogy.—J. H. A.—There are a number of treatises and text books that we can recommend to prospectors or to students of mineralogy and geology. The best very elementary work we know of is Dana's "Minerals and How to Study Them," price $1.50. This gives information about the commoner minerals, systems of crystallization, the use of the blow pipe, etc., but it is hardly suited for the prospector inasmuch as it does not contain enough about the minerals that form the ores of the precious metals. For a good handbook there is nothing better than Dana's "Text Book of Mineralogy," price $4. This contains a standard treatise on crystalligraphy, including descriptions of the different systems of crystallization and the measurements of crystals; the physical characteristics of minerals at length, including optics and the optical determination of crystals; and a shorter statement on the chemical examination of minerals, including the use of the blowpipe. Then follow 276 pages of descriptive mineralogy containing descriptions of all mineral species of commoner occurrence and mention of the rarer minerals. For instructors, museum assistants or advanced students of mineralogy the standard work is Dana's "System of Mineralogy," price $12.50. It contains mention of all the new minerals found and gives under each mineral the American localities known to collectors. This list of localities is published separately as a "Catalogue of American Localities," price $1.50.

The mining man or student of geology who wants particularly a knowledge of minerals as rock constituents, will find it in Dana's "Manual of Mineralogy and Petrography," price $2. For the prospector, or explorer who is chiefly interested in the determination of the economically important minerals Ross's "Blowpipe in Chemistry, Mineralogy and Geology," price $2, is a good book, while about the best treatise on the determination of minerals by the blowpipe is Endlich's "Blowpipe Analysis," price $4. This is a most useful adjunct to such a work as Dana's "Text Book" as it contains descriptions of the appliances and reagents required for blowpipe work, the methods of qualitative blowpipe analysis, tables of reactions of earths and metallic oxides, blowpipe reactions for the elements and their principal mineral compounds, directions for determining compounds, and an excellent set of determinative tables.

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.)

Tin Ores.—Do you know of any place from which complex sulphide tin ores containing antimony, arsenic, silver and lead, or any of these, can be obtained in large quantities?—S. V.

Answer.—In our previous answer to this question, which appeared in the "Engineering and Mining Journal," May 5th last, we suggested Bolivian tin ores. A correspondent, Mr. C. R. Glass, now writes from Corocoro, Bolivia, as follows: "In answer to the question of S. V. I wish to say that I can get almost an unlimited quantity of such ores. That is, the ore is known to contain tin, antimony and silver; as to the other metals I cannot say. The mine is within 1 mile of Lake Titicaca, in a very good location to obtain labor. No wood is obtainable for smelting purposes, but coal of an inferior quality is found on the surface near by. Water power can be found within 20 miles for electric transmission. The 'barilla,' or washed metal contains 30 to 45 per cent. tin, a large per cent. of antimony and 25 oz. silver to the ton."

Blast for Copper Converters.—Can you tell me anything about the blast pressure required in Bessemerizing copper matte? What type of blowers are used?—Matte.

Answer.—According to Mr. James Douglas the only type of blower heretofore used for Bessemerizing copper matte has been one or other pattern of the direct-connected blowing engine. The pressure required in the upright converter is from 12 to 15 lbs., but in the trough or barrel converter from 3 to 10 lbs. pressure suffices. Experiments have been made lately with a direct-pressure blower. The two vanes in this type of blower revolve in a shell. When applied to increase high pressure, the vanes and shell must be thoroughly cooled by water jacketing or by water lubrication. The heat generated by the high pressure otherwise melts the dope with which the vanes are coated. It was found quite possible with water lubrication to carry the pressure up to 12 lbs., and the power consumed did not seem to be in excess of that of the blowing engine, but the water as a lubricant proved to be objectionable. Though all free moisture appeared to be condensed and the hot air when under pressure was apparently dry, as soon as the pressure was removed sensible moisture was liberated. This moisture did not affect the operation during the first half of the blow, when no metallic copper was formed, but it seriously retarded the second half. Long noses of chilled copper formed, which protruded from the lining into the body of the converter, and remained intact after the charge was poured. By thus reducing the effective size of the converter, these noses may have been the principal cause of the retardation. The experiment, though not conclusively satisfactory, encourages one to believe that this cheap, and cheaply installed, form of blower may supplant the costly blowing engine where the trough or barrel converter which demands but a low blast, is used.

Roofing for Roasting Furnaces.—I should like some advice in reference to the roofing over the roasting ovens in the amalgamation plant of our mining establishment. Until now we have always used galvanized-iron sheets, but the acid fumes from the ovens eat these up so quickly that we have to renew them constantly. The material is of itself expensive enough in this country, but it becomes much more so before we can place it in position, as it has to be transported on mule back in from 4 to 5 days' journey to the height of 14,500 ft. I should be very much obliged, then, if you could let me know of some kind of roofing which would obviate this constant renewing. The conditions that the roofing would have to resist are the following:

1. (And principally.) The acid fumes from the ovens.
2. Sudden changes of temperature. It is often warm in the day time from 9 a. m. till 6 p. m., and then cold to some degrees below zero at night.
3. Very wet and very dry seasons.
4. The roofing should not be too expensive, should be light, and in pieces suitable for mule-back transportation.—J. P.

Answer.—Of course slate would make the best roof, but would not meet the conditions of transportation. No metal roof would answer, as you already know. We would suggest a roof of asbestic, which is an asbestos plaster, composition made of a short-fibered asbestos mined at Danville, Quebec; or of asbestos felt, which is made from asbestos fiber, from asbestos mined at Danville, Quebec. This felt is saturated with asphaltum to make it waterproof. The asbestos roofing is well adapted for transporting by mules, as it is made in rolls of 108 sq. ft. or one square; 216 sq. ft. or two squares in a roll. It is made in various weights and thickness up to 50 lbs. per square. There are several grades of this roofing, which, after being saturated with the asphaltum, are lined, some on one side and some on both sides, with unsaturated asbestos sheathing, better protecting them from heat, sparks, burning embers, acid fumes, etc. The heavier grades would, perhaps, be suited for your purpose. These would cost, net, $2.50 to $3.50 per square, f. o. b. New York. The application of this roofing is very simple, it being only necessary to cement the laps.

There is nothing new made outside of tiles and slate that will withstand steam, gas and acid fumes so well as this.

Possibly some of our readers can suggest other materials which would serve the purpose.

NEW BLAST FURNACES IN SPAIN.—Two new blast furnaces are being established at Santander, Spain, by La Sociedad Nueva Montana. A German firm has been awarded the contract for two blowing engines of 600 H. P., while La Sociedad Maquinista Terrestre y Maritima of Barcelona will supply the boilers, etc. The electric lighting installation will be driven by gas engines operated by the waste gases from the blast furnaces.

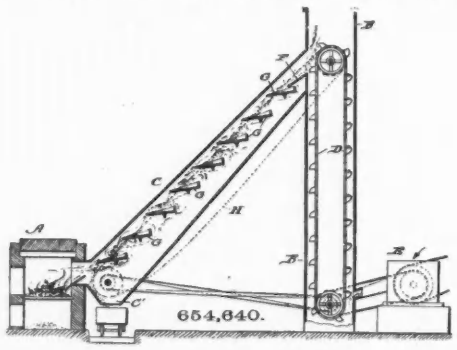
PATENTS RELATING TO MINING AND METALLURGY.

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 July 31st, 1900.

654,629. CONVEYING APPARATUS. William J. Haskins and Thomas A. Coffin, New York, N. Y. In combination, a track, a pit, located in position to receive coal dumped from a car on said track, a tower above said pit and having a clear hoisting-opening above the pit,



a pivotal support extending laterally from said tower, a trackway upon said support, a bucket-carriage upon said trackway, a bucket, and means whereby said bucket may be hoisted and lowered both within said tower and from said trackway.

654,640. CALCINING FURNACE. Godfrey Hughes, El Paso, Tex., assignor of one-half to James Alexander Halstead, same place. The combination of a chute having slots, dumping-plates pivoted and provided with stop projections extending through said slots, bearing-rollers, and a chain having tripping projections engaging said bearing-rollers.

654,661 and 654,662. ORE SEPARATING MACHINE. John F. Mitchell, Topeka, Kan. A machine comprising a circular tank with inclined bottom, a central cylinder having a cone-shaped top, an axle resting on braces, a feed-pipe, an elongated cogged hub turning on the axle and having arms attached to and radiating from near its base, fans attached near the outer extremity of the arms, a screw attached to the top of the hub by a swivel connection, a pulley-wheel attached to the upper end of the screw connected by an endless chain or belt to a pulley-wheel supported by an upright screw terminating at its lower end in a handle or crank.

654,688. SUBSTITUTE FOR CELLULOID, ETC., AND PROCESS OF MANUFACTURING SAME. John E. Thornton and Charles F. S. Roth-

well, Manchester, England. The method of producing a flexible transparent substance by treating the aluminum salt of a fatty acid with a quantity of volatile solvent and drying and hardening.

654,689. ARTICLE APPLICABLE FOR VARIOUS PURPOSES, TOGETHER WITH PROCESS OF MANUFACTURING SAME. John E. Thornton and Charles F. S. Rothwell, Manchester, England. The method of producing a flexible transparent substance by treating the zinc salt of a fatty acid with a quantity of a volatile solvent and drying and hardening the same.

654,706. OIL-WELL PUMP. Harley E. Braymer, Prairie Depot, Ohio, assignor of one-half to Fred H. Braymer, Cygnet, Ohio. The combination of a casing-head top having a barrel provided with a lateral branch, a packing-head movable therein, and comprising a tubular sleeve internally threaded at both ends, externally-threaded plugs adapted to threaded engagement with the ends of the sleeve and provided with orifices to receive a sucker-rod, a compressible cylindrical gland within the sleeve around the rod, and packing-cups.

654,729. ARTESIAN OR OIL WELL. Robert D. Green, Cyclone, Pa. A well comprising a working barrel having at its lower end a standing valve, and a telescoping member passing through the lower end thereof and projecting therein and adapted to lift the standing valve from its seat when the working barrel is lowered.

654,804. PROCESS OF OBTAINING OXIDE AND CARBONATE OF ZINC FROM MATERIALS CONTAINING ZINC. Gilbert Rigg, Swansea, England. The process consists in leaching the zinciferous material with a solution of ammonia and carbon dioxide wherein the carbon dioxide is in such proportion to the ammonia as to impart to the latter an approximately-maximum zinc-dissolving capacity.

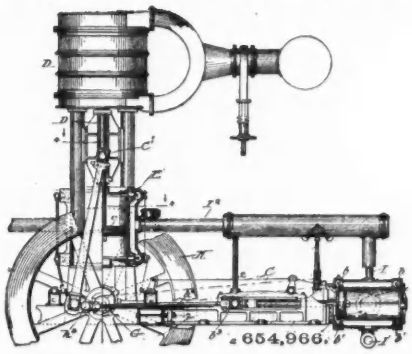
654,819. METHOD OF WELDING. Charles G. Wiborg, Galesburg, Ill. The method consists in placing the pieces of metal to be welded together, inclosing and holding together the portions of the same exposed to the heat by a refractory coating, and subjecting the whole to a welding heat.

654,838. GOLD SOLVENT FOR REFRACTORY ORES. David Mosher, San Francisco, Cal., assignor of one-half to Peter A. Wagner and George A. Hinkelbein, same place. The process consists in reducing the ore to a pulp, adding thereto a solution of bromine in hydrochloric acid and then adding an oxygen salt of an alkali metal capable of reacting on hydrochloric acid to evolve free chlorine to transform the hydrochloric acid conjointly with the bromine into strong gold solvent.

654,875. TUBE-WELL. August D. Cook, Lawrenceburg, Ind. The combination with a well-tube, of a tubular anchor comprising a cylindrical body having its upper end flared and provided with kerfs or slits forming spring-tongues, a ring having an annular flange or shoulder arranged to receive the lower end of said body, serrated jaws secured to said tongues and having reduced flanged portions arranged to receive the latter, and a conical spreader arranged to spread said tongues.

654,918. DUPLEX STEAM-PUMP. Harmanus L. Perrine, Milwaukee, Wis. In a duplex pumping-engine and in combination with two simple or high-pressure steam-cylinders and their pistons having equal diameter and stroke, each cylinder having its own three-ported seat, a ported casting between and joining said cylinders with ported faces in communication therewith.

654,966. COMPOUND BLOWING-ENGINE. Ferd G. Gasche and Frederick H. Foote, Chicago, Ill. The combination of a high-pressure cylinder, a low-pressure cylinder at right angles to the high-pressure


654,966.

cylinder, a movable piston in each cylinder, one piston having a horizontal and the other a vertical traverse in relation to each other for the advance movement of one piston to be coincident with the return movement of the other piston at the point of greatest power.

654,981. BORING APPARATUS. Josef Howarth and Wladyslaw Pruszkowski, Schodnica, Austria-Hungary. Shaft or well boring appliances, comprising a bore tube or casing, a boring-tool, a vertical hydraulic power-cylinder, its piston, means for supplying water under pressure to the pressure-chamber of the cylinder below the piston, a spring acting upon the upper face of said piston, a connection between the said piston and tool, means for severing said connection when the tool is raised and for re-establishing said connection by the downward movement of said piston, and means for exhausting the water from the power-cylinder into the lower end of the bore-casing.

654,984. PROCESS OF PRODUCING STEEL. Elias M. Johnson, New York, N. Y. The process consists in placing in a closed metal receptacle metals which will form an alloy with said receptacle, placing the receptacle in a crucible and piling the charge of steel around it, heating the charge until the contents of the receptacle form an alloy with said receptacle, and continuing the application of heat until the alloy thus formed is taken up and mixed with the entire charge.

655,037. PUMP. Frederick M. Wheeler, Montclair, N. J., assignor to the Geo. F. Blake Manufacturing Company, New York, N. Y. The combination with the steam-cylinders, of pumps operatively connected to the steam-cylinders, inlet water-pipes and exit water-pipes to each pump and valves in the said inlet and exit pipes whereby the pumps may be operated simultaneously yet independently of one another, or either one be operated alone.

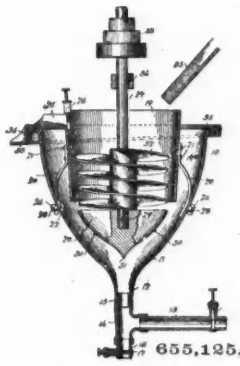
655,102. PROCESS OF CONVERTING EARTH OR SOIL INTO FUEL. Georg Montag and Friedrich Kresser, Mannheim, Germany. Process for the manufacture of fuel essentially composed of earth or soil, consisting in adding to disintegrated earth or soil according to its quality 6 to 8 per cent. of a material prepared by intimately mixing pitch or resin with sawdust and earth, simultaneously adding 0.5 to 1 per cent. of a mixture of 5 per cent. sulphuric acid, and hot water.

655,125. CORUNDUM-SEPARATOR. Jesse B. Stalcup, Waynesville, N. C. The combination of a bowl having a water-inlet at its lower end, an open-ended hopper arranged within the bowl to form an intermediate water-passage, a conveyor revoluble within said hopper, and a deflector revoluble with said conveyor, and having a conical under surface which faces said water-inlet, the greatest diameter of the deflector being less than that of the hopper, and said deflector arranged contiguous to and below the open end of said hopper to form an unobstructed narrow space therebetween.

655,130. METHOD OF TREATING WURTZILITE. Robert M. Thompson, Sutton, Neb. The process of treating wurtzilite to render it available for commercial use, which consists in reducing the mineral to a softened or fused state by the action of heat, substantially as described.

655,131. WURTZILITE METHOD AND PRODUCT. Robert M. Thompson, Sutton, Neb. The method of treating wurtzilite, which consists in softening the same, and combining a hardening material therewith.

655,139. OPEN-HEARTH FURNACE. Samuel T. Wellman, Charles H. Wellman and John W. Seaver, Cleveland, Ohio. An open-hearth furnace having at the base transverse structures resting upon the furnace-supports, longitudinal side girders connected to the ends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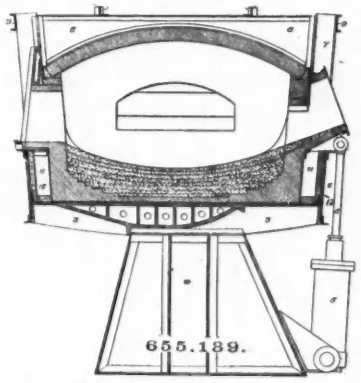
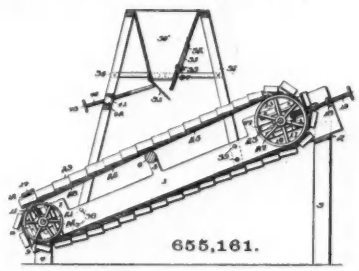

655,139.

of said supporting structures, transverse base-beams alternating with the supporting-structures but not resting upon the supports, and upright buckstaves at the sides of the furnace, said buckstaves and base-beams being secured to the longitudinal side girders whereby the latter serve as the mediums for conveying the weight of the furnace to the transverse supporting structures.

655,160. MINERAL-SCREEN. Phillip F. Poorbaugh, Allegheny, Pa., assignor to The Pittsburg Coal Mine Supply Company, of Pennsylvania. The combination of a supporting-frame, an operating-shaft mounted in the lower end thereof, cams suitably mounted on said shaft, a screen-shoe provided with a suitable screen-plate and operated by said cams, guides connected to the inner face of each side of said frame, slide-plates mounted in said guides, a shaft journaled in said slide-plates and with which the shoe is pivotally connected at its upper end, and vertical adjusting means connected to each of said slide-plates and to the said screen-shoe.

655,161. SLATE AND COAL SEPARATING DEVICE. Phillip F. Poorbaugh, Allegheny, Pa., assignor of one-half to Frederick C. Mancourt, Belleview, Pa. The combination with a frame mounted at an incline, of guides secured to the inner faces of the frame at its lower end, bearings mounted to slide vertically in said guides, adjusting-screws connected to said bearings and operating through guides


655,161.

attached to the frame, a shaft journaled in said bearings, a drum mounted upon said shaft, longitudinal guides secured to the inner faces of the frame at its upper end, bearings mounted to move within said longitudinal guides, adjusting-screws connected to said bearings for operating the same, a shaft journaled in said bearings, a drum mounted upon said shaft, an endless carrier mounted upon said drums, and means carried by the frame for supporting the carrier intermediate of the drums.

655,162. COKE-BREAKER. Phillip F. Poorbaugh, Allegheny, Pa., assignor to The Pittsburg Coal Mine Supply Company, of Pennsylvania. The combination with the undershot drum or cylinder having the teeth seated therein, of an inclined plate having a ledge at its lower end, a breaking-plate arranged at an incline in front or said drum or cylinder and having a portion of its receiving-face set at an angle to the remainder of such face, a series of teeth seated in the lower portion of said breaking-plate and in the angular bent portion of its face, and screw-rods near the lower end of the inclined plate for adjusting the position of said breaking-plate.

655,163. STEEL-CAR CONSTRUCTION. Phillip F. Poorbaugh, Allegheny, Pa., assignor to The Pittsburg Coal Mine Supply Company, of Pennsylvania. In a steel pit-car, the combination with the body of a car provided with an end-gate or door, of a pair of bearing-sleeves suitably secured thereto, a hollow axle mounted in said sleeve so as to prevent the lateral motion thereof, a stub shrunk in each end of the said axle, and a wheel suitably mounted upon said stub.

GREAT BRITAIN.

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

Week Ending June 30th, 1900.

11,542 of 1899. ORE TREATMENT. H. J. Phillips, London. Treating pulverized ores under heat and pressure, with bichloride of sulphur which dissociates, and the liberated chlorine extracts the metals.

5,904 of 1900. STEEL INGOT CASTING. H. Harmel, Paris, France. In forming compressed steel ingots, methods of preventing lateral expansion.

Week Ending July 7th, 1900.

15,640 of 1899. ARTIFICIAL STONE. F. Gernaert and C. Libert, Brussels, Belgium. An artificial stone, capable of resisting frost, made with sand finely disintegrated by crushing or by heat.

8,338 of 1900. ELEVATOR. W. H. Baxter, Leeds. Improvements on the inventor's system of elevating buckets for moving crushed stone, ore, etc.

PERSONAL.

Mr. Gotth. Haist, surveyor and mining engineer of Virginia City, Nev., is in San Francisco.

Mr. R. W. Petrie, of Baltimore, Md., is examining some copper properties in the Lake Superior country.

Mr. W. Reed, of the Bassick Mine in Custer County, has been in Gilpin County, Colo., during the past week.

Mr. T. E. Wheeler, of Creede, Colo., has been examining mining property near Central City in Gilpin County.

Mr. John P. Young, of Florence, Colo., is at Patagonia, Ariz., making examination of mining property for Colorado men.

Dr. James Douglas presided at one of the sessions of the recent Congress of Mining and Metallurgy at the Paris Exposition.

Mr. J. M. Cassell, of Cripple Creek, Colo., has an option on the Victor Mine, Santa Cruz County, Ariz., and is shipping ore from Patagonia.

Mr. T. C. Archer, mining engineer, has returned to San Francisco from Prince of Wales Island, Alaska, and reports fine copper prospects there.

Mr. A. J. Bowie, mining and hydraulic engineer of San Francisco, has returned to that place from Dawson City, N. W. T., after a year's absence.

Mr. J. M. Hetrick, brother of Mr. Frank Hetrick of the New Orleans Mint, has been appointed assistant assayer at the Carson City, Nev., assay office.

Mr. Frank N. Gibbs, who has been with the Cherokee Mining Company, at Cherokee, Cal., is now on his way to Port Arthur, Ont., by way of Rossland, B. C.

Mr. D. M. Riordon of Arizona and Mr. John B. Farish of Colorado are examining copper mines in Mexico, on behalf of the General Electric Company of New York.

Dr. W. B. Phillips has returned from Arizona, where he has been examining mining properties for several months and is at present resting at Swannanoa, Buncombe County, N. C.

Mr. Samuel S. Fowler, mining engineer of the London & British Columbia Gold Fields, Nelson, B. C., has been visiting Rossland and other points in southern British Columbia.

Mr. Benjamin Hirsch, of the firm of Aaron Hirsch & Son, metal dealers, of Halberstadt, Germany, is visiting this country. He is making his headquarters at the New York office of the firm.

Mr. E. E. McNab has resigned at Bland, N. M., as superintendent of the cyanide department at the big mill of the Albermarle Company. His successor is Mr. S. Hubert Williams, late of Utah.

Lieut. Charles H. Burritt, 11th Cavalry, U. S. V., formerly of Buffalo, has been placed in charge of the Government mining bureau of the Philippine archipelago, with headquarters at Manila.

Mr. R. S. Van Horn, formerly of the Esperanza Mining Company, of El Oro, Mex., has gone to Canada to take charge of the mill of the Manitou Mining Company, located in Lake Manitou.

Mr. Frank Nicholson of New York City is on a visit to Joplin, Mo., whence he intends going to California, to examine gold placer deposits, and to Washington to examine some gold quartz propositions.

Mr. B. Crowell, of the firm of Crowell & Peck, mining engineers and chemists, Cleveland, O., is at present examining the property of the C. & C. Hydraulic Mine, Oregon, and also mining property in Montana.

Mr. Charles M. Benedict, treasurer of the Bonanza King Mining and Milling Company, has taken a flying trip to the property in the Indian Mining District, Humboldt County, Nevada, to inspect the progress of work there.

Messrs. F. E. and A. S. Elmore have begun business as consulting electro-metallurgists in London and have opened offices at No. 4 Bishopsgate street, Within. Messrs. Elmore are well known in connection with the copper depositing process bearing their name.

Mr. Bernard Macdonald, general mine manager of the British American Corporation, besides his duties as chief manager of the Le Roi, is also consulting mining engineer of the new companies recently floated in London to develop and promote Rossland properties.

Prof. Henry M. Howe was elected an honorary president of the recent International Congress of Methods of Testing and Materials of Construction at the Paris Exposition, and also of the Congress of Mining and Metallurgy. He presided at one section of each congress.

Mr. A. M. Robeson, who has been with the Alaska-Mexican and Alaska United Companies at Douglas Island, Alaska, is to go to South Africa to take the position of consulting mechanical engineer for the Rand Mines Company left vacant by the recent death of Major Seymour. Mr. Robeson before he went to Alaska was assistant general manager of De Beers Consolidated Mines, Limited.

Mr. Edward A. Hopkins, of Evansville, Ind., who was elected president of the Sloss-Sheffield Steel and Iron Company at a meeting of the directors in New York last week, has been a director in the company some time. He will move his family to Birmingham, Ala., taking active control of the office on September 1st. Mr. Sol Haas, former president, has gone to Arden, N. C., in search of better health.

Mr. W. Weston, mining engineer, of Cripple Creek, Colo., has just returned from O'Brien's Camp, near Wickenburg, Ariz., where he went to examine the Homestake Gold Mine for Michigan men. He now takes charge as manager of the St. Patrick Gold Mine at Victor, in the Cripple Creek District, for a Scotch syndicate, the chief purchasers being Messrs. Henry and Archibald Coats and Sir Robert Moncrieffe, all of Perth.

Mr. O. W. Weiler, one of the directors of the Cochiti Gold Mining Company, of Bland, N. M., who is acting general manager, in the absence of Mr. O. P. Posey in France, is in Bland, and was met there by Mr. Duncan McVichey, superintendent of the Golden Gate Mine at Mercur, Utah, and also the general manager of the De Lamar properties in Nevada, Utah and Idaho. Important improvements and the new Star mill brings them together.

Dr. A. P. Coleman, geologist for the Ontario Government, has gone to the Paris Exposition to take part in the congress of geologists. He will return to England and be present at the annual meeting of the British Association for the Advancement of Science. Dr. Coleman has 2 papers for this meeting, one of which deals with glacial drift phenomena in the vicinity of Toronto, and the other with the occurrences of jasper bands in Northern Ontario, as well as in the States of Michigan, Wisconsin and Minnesota. Dr. Coleman's work for the Ontario Bureau of Mines this year consisted in tracing out the jasper formation from the boundary line between Algoma and Nipissing districts westward.

OBITUARY.

Louis R. Barrett, New York sales agent for the Lehigh Valley Coal Company, died August 12th, in Colebrook, N. H., where he was spending the month of August with his family. His death, due to heart disease, was quite unexpected. Mr. Barrett was in his 50th year; he had been with the Lehigh Valley Coal Company for the past 25 years, for 18 of which he had occupied the position of New York agent. In that time he had become widely known in the coal trade. Mr. Barrett lived in Bloomfield, N. J. He leaves a widow and one son.

John R. Davis, a veteran anthracite coal operator died at his home in Scranton, Pa., on August 9th, aged 78 years. Mr. Davis was born near Norristown, Pa., and worked on his father's farm till he was 18 years old. He became clerk in a store at Pottsville and then engaged as general manager of the coal department of the Ashland Iron Works at Wrightsville. From there he removed to Baltimore, Md., and in 1851 engaged in the retail coal trade with R. W. Cliff & Company. The same year he went to Wilkesbarre as manager of the Black Diamond Colliery, which he rebuilt for Roberts, Walton & Company of Philadelphia. In 1855 he built and opened the Stafford Meadow Brook Colliery, near Scranton city, now known as Davis' Patch. In 1861 Mr. Davis built the Jersey Colliery at Plymouth, and 2 years later began operating the Roaring Brook Colliery at Dunmore. He also built the Mineral Spring Colliery at Parsons Station. At the expiration of the lease at Roaring Brook, in 1881, he built Clear Spring Colliery at West Pittston, which he sold in 1885. He then built the Moosic Mountain Colliery at Marshwood, selling his interest in it in 1888. In 1891 he assisted in organizing the Enterprise Coal Company, whose colliery is situated at Excelsior Station. He was the president of the company.

James Hemphill, a prominent builder of heavy machinery, died at Pittsburg on August 7th. He was born in Mechanicsburg, Cumberland County, Pa., July 22d, 1827, and lived there until 1846, when his family removed to Tarentum, in Allegheny County, Pa. In 1847 he was apprenticed to a blacksmith, at which trade he served 3 years. In 1850 he went to Pittsburg and was employed under Joseph French, of Pittsburg Water Works. On Mr. French's appointment as superintendent Mr. Hemphill succeeded him as engineer. About 1856 he invested some money, with others, in a little machine shop, which was really the tool shop of the abandoned steel works of McKelvy & Blair, standing on the ground subsequently occupied by Hussey, Wells & Company, one of the first steel works in Pittsburg. He later withdrew from that partnership, and in 1859 he entered into one with the late W. S. Mackintosh and H. F. Hart, in a machine shop in Pittsburg, and from this small beginning the Fort Pitt Foundry of Mackintosh, Hemphill & Company has grown. As an engineer Mr. Hemphill showed himself in advance of his time by the massiveness and solidity of his work, particularly in the weight of the bed plates of engines. His judgment is shown by the fact that to-day the weight, solidity and bearing surface of the bed plate are greater in proportion to the cylinder than in the engine of 1860. And as mill men gradually grew up to Mr. Hemphill's ideas of strength and massiveness as prime requisites, he began work in economy of fuel, at the same time insisting on simplicity of construction. The present development of the steel industry in this country rests largely on Mr. Hemphill's forcing the reversing blooming mill to the front. This mill he put in at the Pittsburg Bessemer Steel Works, the small plant from which the Homestead Works of the Carnegie Steel Company has developed. Mr. Hemphill, though a man of great energy and capacity for work, realized in his old age that he was no longer capable of carrying the load of youth, and in the last few years of his life he left others to work out the ideas he suggested, or confined himself to approving and improving the ideas suggested by his subordinates. A striking tribute to his character is the fact that in his long career as a manufacturer there was never a strike of workingmen aimed against his establishment.

INDUSTRIAL NOTES.

The Savage Arms Company, of Utica, N. Y., states that it has just received notice that it has been awarded the grand gold medal at the Paris Exposition for the finest firearms.

The Glens Falls, N. Y., Portland Cement Company has started its works with a full force of over 300 men, after an idleness of over 12 months, owing to the destruction of the plant by fire.

The Crane Company, of Chicago, states that it has recently furnished the complete piping equipment for the Gold Coin Mining and Milling Company, Colo., and the Tennessee Copper Company, Isabelle, Tenn.

A large part of the plant of the Pittsburg Reduction Company's aluminum works, at New Kensington, was destroyed by a tornado on August 12th, entailing a loss of nearly $100,000. Ten of the 250 employees were working, but all escaped except Frank Johnston, an engineer, who was injured by falling debris.

The Risdon Iron Works of San Francisco has elected the following trustees: W. H. Taylor, R. S. Moore, Louis R. Mead, A. Dalton Harrison, Augustus Taylor, Frank G. Drum and William Alvord. Mr. William H. Taylor was elected president, R. S. Moore vice-president and manager, and Louis R. Mead secretary.

The M. C. Bullock Manufacturing Company, of Chicago, has just secured a contract from the Chilean Government for a diamond drill and outfit for mining purposes capable of sinking 2,500 ft. Another contract has been secured by the same company for an 800-ft. equipment. The company reports its foreign trade constantly increasing.

The B. F. Sturtevant Company, of Boston, Mass., has obtained some substantial foreign orders lately. For forges alone it has orders on its books as follows: 200 for Japan, 75 for Russia, 40 for Germany, 32 for Canada and 24 for Sweden. In addition to these, the concern is constantly making heavy consignments of its various products to its London and various Continental stores.

TRADE CATALOGUES.

One of the later of the long series of illustrated circulars issued by the Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa., is No. 1029, a 23-page pamphlet which describes the company's type C polyphase induction motors.

The Commercial Electric Company, of Indianapolis, Ind., in its circular No. 520, describes its direct-connected engine type dynamos. The 15-page pamphlet gives details of construction of the field frames, armatures, commutators, brush-holders, etc.

The Chicago Pneumatic Tool Company, of Chicago, Ill., is out with a brand-new 32-page catalogue with a purple and gold cover which contains numerous fine half-tone cuts showing the

company's various tools and the many uses to which they are put. The tools include riveting, chipping and calking hammers, drills, boring machines, flue cutters, pneumatic jacks and pneumatic painters; also a portable oil rivet forge.

Prospectors and exploring parties, as well as pleasure-seekers, will find suggestions on camp furniture in a neat little 16-page pamphlet published by the Gold Medal Camp Furniture Company, of Racine, Wis. Folding beds, tables and chairs are shown, which, it is stated, can be quickly knocked down and folded into compact packages for transportation anywhere. Testimonials are given from men who have had experience at "roughing it."

The Kent Mill Company, of New York City, issues a 24-page illustrated catalogue describing the free ring, 3-roller mill that it manufactures. Several claims are made for this mill, which has been tested at mines, fertilizer works, cement plants, etc. The advantages named are that it needs no heavy foundations, but can be set up to run on any angle, as it is free in discharge and devoid of vibration; it discharges no oil in the product; grinds by impact; grinds to any fineness, and will even grind its own tailings. Several improvements which have been added since the mill was introduced to the public are described.

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 "Enginering 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 July the United States exported 12,811,769 gals. crude oil; 433,589 gals. naphthas; 69,701,764 gals. illuminating; 4,686,232 gals. lubricating and paraffine, and 1,697,934 gals. residuum; total, 89,331,288 gals., as against 81,171,542 gals. in July, 1899. In the 7 months ending July 31st, 1900, the exports aggregated 535,664,417 gals., against 521,895,086 gals. last year, showing an increase of 13,769,331 gals.

Oil Production.—Both runs and shipments show a decrease for July, but the runs were again away ahead of the shipments and there was an enormous gain in the net stocks, says the Oil City "Derrick." The runs of Pennsylvania oil averaged 97,838 bbls. a day in July, a decline of 2,171 bbls. from the June average. For July, 1899, the runs were 89,565 bbls. a day. The net stocks of Pennsylvania oil were increased 279,116 bbls. in July while the Buckeye stocks made a gain of 734,287, aggregating a total increase for the month of 1,013,403 bbls. In June, Pennsylvania stocks increased 115,047 and Buckeye 676,560 bbls.

The net stocks of Pennsylvania oil at the close of 1899 amounted to 13,163,819 bbls., and on July 30th to 13,729,698 bbls. Adding the net stocks of the Buckeye and other pipe lines handling Lima oil makes the net stocks at the present time 26,800,275 bbls.

The Buckeye pipe line runs averaged 51,573 bbls. a day in July, or 2,138 bbls. below the June average, which was the heaviest on record since September, 1897. The total runs of Pennsylvania and Lima oils amounted to 149,411 bbls. a day and the shipments to 120,880 bbls. a day in July. For June the runs averaged 153,720 bbls. and the shipments 133,184 bbls. a day.

ALASKA.

Copper River District.

(From Our Special Correspondent.)

It is reported that new placer grounds have been discovered on Slate Creek, a tributary of the Chistaching River, which flows into the Copper River. Discoveries have also been made at the headwaters of the China Creek. These camps are 240 miles inland from Valdes, which is connected by wire with Swanport, the United States Army station in the district. A copper strike is reported to have been made on Virgin Bay, 30 miles from Port Valdes.

Captain Abercrombie, in charge of the United States work in the Copper River District, has completed a military road reaching 100 miles into the interior from Port Valdes.

ARIZONA.

Graham County.

Arizona Copper Company.—The interim report for the half-year ended March 31st last states that the surplus, after payment of preferential dividends, but subject to payment of redemption fund, is £138,231. The capital outlay was £80,345. Debenture stock to the amount of £70,599 has been redeemed. The directors have resolved to make an interim payment of 3s. 6d. per share, free of tax, on account of the dividend on the ordinary shares for the year to September 30th next, leaving a balance of £82,397, subject to payment of redemption fund.

CALIFORNIA.

Butte County.

Spring Valley Mining Company.—This company's property was purchased in February by Pittsburg men, who formed the Cherokee Mining Company, with Mr. Mellan, a Pittsburg banker, the chief stockholder. The new company is constructing an immense restraining dam to hold the debris from the mine, but it will be nearly a year before the company is in complete running order, as the work contemplated is very extensive. The mine has lain idle 13 years.

Calaveras County.

(From Our Special Correspondent.)

Grand View.—At this gravel mine near Angels, a large flow of water was recently struck and a new 50-H..-P. engine is being put in to run the 6 and 10-in. pumps.

Oriole Mining Company.—This company employs 14 men on its property at Angels. A crosscut is being run on the 400 ft., and a station cut at the 300-ft. level.

El Dorado County.

(From Our Special Correspondent.)

Columbus Development Company.—This company is making arrangements to resume development work on its property, 3 miles west from Placerville, on Cold Springs Flat.

Crystal.—This property has been purchased by Woodruff & Mau, who intend to equip it with a mill having a daily capacity of 50 tons. The ledge at the deepest workings is 25 ft. wide. The ore is low grade. The property is located 3½ miles south from Shingle Springs.

Kimball.—At this mine, south from Placerville, the mill is crushing about 120 car loads of gravel per day of 10 hours. Thirty-one men are employed.

Ribbon Rock.—On the 200-ft. level drifts are being run both north and south, the north being in 105 ft. and the south 65 ft. The entire face in both is in good milling ore. Three 8-hour shifts are worked. The mine adjoins the Superior Mine, about 2½ miles south from Placerville.

Humboldt County.

(From Our Special Correspondent.)

Orleans Bar Gold Mining Company.—This company has 800 in. of water, which has been brought to the bar from a distance of 12 miles in a 5-ft. flume at a cost of about $50,000. The property can now be worked all summer. The mine, which is located at Orleans Bar, prospects well.

Inyo County.

(From Our Special Correspondent.)

The conveyances of about 2,700 acres located on the nitrate beds on the Armagosa Wash, along the boundary line between this and San Bernardino counties, were recorded on August 1st.

Plumas County.

(From Our Special Correspondent.)

J. D. Williams, who holds the bond on the Hughes Ranch, at Meadow Valley, is prospecting the property for gold by drilling. If the results are satisfactory, a dredging plant is to be put on. A. W. Keddie is making extensive surveys of mining lands in the Genessee District for Mr. Williams.

Riverside County.

(From Our Special Correspondent.)

O. K.—This mine has been developed to a depth of 300 ft. with levels every 50 ft., and winzes connecting the levels. It is estimated that 10,000 tons of $10 free milling ore are in sight. Three hundred tons taken from the different levels milled $3,600, while the tailings (which can be cyanided) averaged $9 more. Water is hauled 9½ miles at a cost of 2¼c. per gal. The capacity of the mill is to be increased from 2 to 7 stamps, and a cyanide plant will be erected. Jos. Ingersoll is superintendent. The claims are in the Monte Negras District.

San Bernardino County.

(From Our Special Correspondent.)

The whole country is said to be located from Coolgardie to Lanes' Mill, both west and south of Camp Vera.

Copper ledges are reported to have been discovered north of the Calico Hills, and 40 claims located through a belt about 6 miles long and 2 miles wide. The surface ore is high grade, and some veins are said to assay 10% copper with a little gold and silver.

Gold Mountain.—At Bear Lake, about 2 miles from this mine, a valuable flow of water has been tapped by well at a depth of 150 ft., and piping to the mine has begun. The supply will be ample for a 100-stamp mill. The 40-stamp mill will start up soon.

Duncan & Clark.—Ten men are at work on the claims owned by these parties, operating 2 dry placer machines, which are said to clean up $200 per day. Water is very scarce, most of it being hauled about 12 miles. The camp is called "Black Nugget," and is located about 20 miles north from Barstow, a station on the Santa Fe Railroad.

Macready.—The new gasoline hoists at this mine at Searchlight are working nicely. An inclined shaft is being sunk to the 400 ft. level. The ore, it is stated, continues to improve and averages from 15 to 18 ft. wide, value supposed to be $8 to $15 gold.

Shasta County.

(From Our Special Correspondent.)

Uncle Sam.—A new bond has been given on this property, 7 miles west of Kennett, in the Backbone District, to the same New York parties whose bond expired July 1st, and prospect and development work will be resumed under G. W. Milliken, superintendent. No ore is to be milled.

Sierra County.

(From Our Special Correspondent.)

Morgan.—This property on Grizzly Peak, near Goodyear Bar, has been leased for 2 years to the Bovee Brothers, who have started development work.

Pilgrim.—Ten men are employed at this mine near Forest, in improving the road and building bridges between American Hill and the mine. Work on a new tunnel to tap the ledge below the old works, has been commenced. T. A. Patterson is manager.

Sierra.—The 900-ft. pipe line is completed and will supply water under a pressure of 420 ft. to run the jet pump, now pumping out the 60-ft. shaft. A hoist and a waterwheel will be put in next, and sinking resumed. Seven men are employed under J. W. Finney, superintendent. The mines are located on the East Fork of the North Fork of the Yuba River, about 1½ miles east from Doonieville.

Siskiyou County.

(From Our Special Correspondent.)

Several locations of asbestos beds have been made on Siskiyou Mountains, at the head of Applegate Creek. The quality is said to be excellent.

Dewey.—From this mine in the Gazelle District, about 20 tons of quartz are shipped daily by rail to the Keswick smelters. The average net yield is over $37 per ton. Eighty men are employed.

Tuolumne County.

(From Our Special Correspondent.)

Bonanza.—At the bottom of the incline shaft a crosscut is being run east for the vein. From the old works on Piety Hill to the bottom of the incline is 1,800 ft., and from the present location of the hoist 1,400 ft. This pocket mine has been a large producer.

Continental.—This old mine at Columbia, owned by the Zealander Mining Company is being developed by a 500-ft. tunnel, which is being driven to strike the pay shoot. It is in now 250 ft.; 8 men are employed.

Imogene.—This mine at Stent, owned and operated by the Alder Creek Mining Company of Des Moines, Ia., has closed down, and it is reported that the surface improvements, buildings and machinery are to be removed.

Kanaka.—A new air compressor and concentrators have been put in at this mine, 5 miles east of Groveland and work will be pushed as rapidly as possible. J. M. McCallum is superintendent.

Little Giant.—This mine, 2 miles from Parrott's Ferry, near the Densmore, has been bonded to James McCormick and others, who will commence development work at an early date.

Little Wonder.—This mine, 2 miles northwest from Big Oak Flat, has been shut down and the men discharged. The management says the mine will start up again soon.

Riverside.—A cross-cut is being run at this mine in the 1,900-ft. tunnel through which a track is laid, and the mill will start up soon on ore from the old shoots. Ten men are at work. The mine is located 11 miles north from Soulsbyville.

Sonnett.—Ten men are employed at this mine, about 10 miles north from Soulsbyville, crosscutting for the Crab Vein, which was partially worked years ago, and is known to be very rich. The mine is owned by Davis & Lane, who are trying to get water on the property.

COLORADO.

Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—J. Best to Saratoga & Cyclops Consolidated Gold and Silver Mining Company, the Vindicator Claim and Mammoth mill site in Russell District; C. R. Baer to L. Paist et al., the Loretta Lode in Pine District; L. Dugall to J. Berry, the Eliminator and Exterminator Lodes in Russell District; C. H. Carlson to H. R. Burn, option to purchase Half and Half Lode in Russell District.

Banta-Hill Consolidated Mining Company.—This company is carrying on active developments, sinking in 2 shafts, and good ore is being opened in each. Shipments of concentrating and smelting ore, the latter carrying good values in lead, are made.

Brooklyn.—Sinking with air drills has begun at 415 ft. Regular shipments of concentrating and smelting ores are made. The property is worked by the Seneca Gold Mining and Reduction Company.

Calumet Gold Mining and Milling Company.—A good strike of gray and yellow copper ore has been made in sinking the shaft at about 577 ft. Daily shipments of concentrating ore amount to between 40 and 50 tons, of a fair quality, and the smelting ores carry values of from $100 and up per ton. J. B. Phillips, Russell Gulch, is manager.

Carr.—This property is reported sold to a Belgian syndicate. The property has been one of the most consistent producers of good grade of ore in the country. The syndicate has wired Steve Hoskin, of Central City, to take charge as its agent.

Kokomo.—A body of ore 12 ft. wide, carrying average values of $35 per ton, has been opened after a little development by Burton & Company, the new lessees.

O'Neill.—An addition is completed for the engine room and also the new ore building, capacity of 400 tons. The big hoisting plant is expected every day. H. C. Eastman, Central City, is manager.

Old Town.—This property is being opened by Chicago men under the management of G. H. Kimball, Jr., of Idaho Springs, and it is believed that a consolidation of adjoining property will be effected.

Ridgewood.—At this property, where the strike was made about 2 weeks ago, the new ore body in the 600 east level is widening to 3 ft. A late assay carried values of 92 oz. gold. Daily shipments of 25 tons of mill ore are made to the new mill. M. P. Dalton, Central City, is manager.

Lake County—Leadville.
(From an Occasional Correspondent.)

Leadville Ore Output.—The past 2 weeks have seen another falling off in tonnage, as so many of the big mines have subordinated production to development work, as follows: Capital Hill Mining Company, sinking new shaft; Valentine Mining Company, sinking 3 new shafts; California Gulch Mining Company, sinking to contact; Home Extension Company, sinking new shaft; Home Mining Company, sinking old Penrose shaft still deeper; A. V. Mining Company, sinking new shaft; Nubian Mining Company, putting down P. O. S. shaft; Poverty Flat Mining Company, sinking new Seeley shaft; Toledo Avenue Mining Company, sinking new shaft on the Humboldt and prospecting on old workings; Moline Mining Company, Arnold Mining Company, Comstock Mining Company, Revenue Mining Company, Banker Mining Company, Diamond Mining Company, Chippewa Mining Company, Bug Mining Company, Resurrection Mining Company, Fidelia Mining Company, Silver Mining Company, Black Iron Company, and a number of others are all sinking, while the Iron Silver Mining Company, the A. M. W., the Doris, the Curran, the Coon Valley and a number of smaller properties have prospecting under way.

Leadville Stocks.—There being no exchange here, parties buying are holding their stocks at present, as the brokers are all selling original stock. It is expected that within the next few months an exchange will be started.

Lead Prices.—The announcement that the price of lead will be $4 from now until January 1st is very important to Leadville mines. Manager J. H. Weddle, for the American Smelting and Refining Company, says it is due to an agreement recently entered into after a consultation with the heaviest lead producers of the company.

Butcher Boy Group.—This comprises the Butcher Boy, Black Hawk and Fitzgerald claims lying at the head of Iowa Gulch on the gold belt. The group has been leased to Peter L. Kimberly of Pennsylvania who has bought a fine plant of machinery and will sink at once, if necessary to 1,500 ft. Work in a small way in the past has made a good showing. Terry Connors will have charge.

Capital Hill Mining Company.—This concern will take up the new shaft on the Neusitz placer with the intention of sinking to contact. The territory is on Capital Hill at the rear of the high school building.

Carbonate Hill Mining Company.—The Aetna, May Queen and Can claims are being worked by this new concern. The old shaft is down 290 ft., and a contract has been let for a further depth of 300 ft.

Doris.—The pumps will have the property drained by August 18th and the drifts at 180 ft. level will then be cleaned.

Elva Elma.—Frank Williams is sinking a shaft. This is a new gold belt proposition.

Famous.—The heirs of the late John Sinnott are suing J. T. Root and directors of the Famous Mining Company for recovery of 300,000 shares of stock, claiming that the mine was leased to Root for little or nothing, and that the lease was made without the consent of the heirs. The best legal talent of California has been secured to fight the case by Mrs. Sinnott and 2 daughters.

Garbutt.—This property will be actively worked by new lessees who have begun development on a good vein of ore to be handled by the Boston smelter. The Garbutt is being equipped with a new plant of machinery.

Huckleberry.—Lessees have opened up a vein 8 to 14 in. wide, carrying 130 to 400 oz. silver and 18% lead. The property lies in St. Kevin district and has been idle for years owing to litigation.

Klondike Tunnel.—David Littler, of Illinois, has given a contract to T. W. Jaycox to drive the tunnel in on Fletcher Mt. a further distance of 600 ft. This tunnel is already in 1,854 ft.

Maid of Erin Silver Mines Company.—Thirty sets of sub-lessees are doing a large amount of developing and shipped 9,077 tons of ore last month. A large part of this tonnage was zinc sent to Belgium.

Mikado.—This mine is being worked above the water line only by lessees who are taking out some fine sulphide silver ore.

Moline Mining Company.—Maurice Starne has the new shaft under way. It is named the Evelyn and will be 1,000 ft. deep. It is on the line of the Wm. Wallace and X 10 U 8 claims.

Only Chance.—Lessees are making small shipments of $65 lead ore. The property will shortly be worked by a company now forming.

Orion.—Thirty tons of iron ore are shipped daily. Drifting into the big ore body continues and September 1st shipments will be increased.

Triumph.—This gold belt property has been leased and the old workings are being cleaned out.

San Juan County.
(From Our Special Correspondent.)

Mining Transfers.—Nellie Tully to S. M. Crittenden and F. P. Moore, Boston Dip lode; Moultre Mining Company to E. A. Reed, Moultre lode; E. G. Condit and Geo. C. Scott to Sioux Mining Company, Grand Mogul lode; A. M. Blair to C. F. Meek, Despised lode; Mrs. Laura V. Reed to Mrs. Katherine Miller, Brewster lode; C. S. Casad to the Mineral Mountain Company, Burrows et. al. lodes; Edwin E. White to Chas. E. Robin, Tennessee lode; Benjamin Duval to Sidney Duval, Picket lode; J. H. Davis to G. H. Burrows, Peerless lode; John Perung to Chas. Fisher, Kendall Mountain placer; Chas. E. Robin to John E. Woods, Potomac lode; Wm. Sullivan to John H. Werkheiser, Dreadnaught lode; Wm. Bird to K. Benson, Black Rock lode; C. S. Casad to John Bordeleau, Edward lode; Robert Collier to Jay D. Maben, Grivitza lode.

Anti-Perodic.—This Silverton property, on Galena Mountain, is undergoing much development and large bodies of high-grade ore are blocked out. In one tunnel the vein is 5 ft. wide, with a 20-in. pay streak running high in silver and lead. In No. 2 tunnel the pay streak is cut near the center by a 6-in. streak of talc carrying very high silver values.

Broadway Mining Company.—This company has started up with 60 men on the Superior Mine, between Silverton and Lake City, and is also putting in heavy machinery for drills and hoisting. A new flume is being built from Wagner Creek to furnish power for an 800-H. P. electric plant, to be constructed at once 4 miles from the company's mines.

Columbian.—A strike of rich gray and yellow copper ore is reported from this claim operated by Peterson et al. The vein is 13 in. wide.

Grub Stake Coal Company.—This company is developing ground near Gladstone, and driving a long tunnel north to cut a number of the prominent veins in the gold belt.

Hercules Consolidated Mining Company.—This Silverton company has completed its new flume on Sultan Mountain and the new 150-ton mill starts August 15th on ore from both levels of the Little Dora. The company owns 12 claims and the Hercules tunnel, now in 2,300 ft., will cut all these veins at depth; 5 veins of good milling ore have been encountered. In the mill 6,000 tons of ore are awaiting treatment and thousands of tons are blocked out in the mine.

Little Bess Group.—This group near Silverton consisting of the Little Bess Nos. 1 and 2 and the Lillie B. lodes, has been leased and bonded to a California company that will spend $20,000 in development.

Old Abe.—A 3-ft. vein of high-grade sulphurets has been opened in this claim near Silverton by Jackson & Calibean.

Sunnyside Mill.—The larger Cornish rolls have been supplanted by stamps and the output is 3 car-loads of concentrates per day.

Victor Hugo.—Peter Rudelette has made a rich strike. Four car-loads of high-grade gold ore await shipment.

Woods Investment Company.—This company, working a group of claims on Bare Mountain, under bond and lease, has obtained an extension of time for taking up the bond.

San Miguel County.

Butterfly-Terrible Mining Company.—This company is contemplating a large number of improvements in the mine and the mill. A new level is being driven 150 ft. above the present workings and the company is negotiating for a silver-lead mine which can be worked to advantage through the Butterfly workings.

Duffy.—A strike of fine ore is reported in this group of 6 claims near Ophir, owned by Adams & Hilgenhaus, of Telluride. The ore carries values in silver and lead, with some gold.

Palmyra.—This mine, owned and worked by the Four Metals Company, has made a number of test shipments to different smelters and the company is about to begin shipping on a large scale, having developed several hundred feet of stoping ground above the tunnel level. The claim was located by Michael Dowd and Joseph Watton 23 years ago at the head of Turkey Creek. The vein has an average width of 4 ft. and carries a mineral streak from 1 to 4 ft. wide, and a streak of gouge matter that carries fair values. Pockets of rich galena and of gray copper carrying high silver values are frequently encountered, but these are insufficient to pay expenses. Last fall, when the mine was purchased by the Four Metals Company, it was demonstrated that chloride and sulphide of silver respectively was carried by a rose-colored quartz which had been thrown on the dump for years.

Teller County—Cripple Creek.
(From Our Special Correspondent.)

Cripple Creek Home Mining Company.—This company, which has obtained a 20-year franchise for mining under the streets and alleys of the city, has begun work on a 160-ft. shaft, from which it hopes to cross-cut the entire length of the city. The shaft is now down about 30 ft.

Elkton.—This mine is to have one of the largest pumping plants in the district. A new Prescott pump, manufactured by the Edw. P. Allis Company, of Milwaukee, Wis., with a capacity of 1,000 gal. per minute from a depth of 1,000 ft., is being installed on the 8th level.

Gold Belt Mines and Investment Company.—This company has sold to the St. Patrick Gold Mine Syndicate its St. Patrick lode claim, in the neighborhood of the Gold Coin. This sale brings in foreign capital. Directors of the new company are: Henry Coats, Sir Robert D. Moncrieffe, F. Norie Miller, D. J. Wilson, J. P. Banker, F. Rickey and W. Weston. The registered office is in Perth, Scotland. The former owners retain an interest in the new company, and it is likely that Mr. McConaghy, who was superintendent of the Gold Coin Mine for 4 years, will be asked to retain the management. Mr. Weston has done much work as a mining expert here.

Rich strikes have been reported in the Rubie and La Fayette of the Princess Alice Company, and in the Romona on Bull Hill.

Victor Mines and Land Company.—This company has ordered a hoist and 25-H. P. boiler for its Long John claim at Cameron. A 600-ft. shaft will be sunk to prospect the locality.

IDAHO.

Idaho County.

C. H. Scheu, of Salt Lake, has taken option on 2 groups, embracing 7 claims, on Miller Mountain. The vein expored is said to be 10 to 50 ft. wide and to carry free gold, but little has been done to show whether or not the ore goes down.

Jupiter.—John Kinkaid is down over 100 ft. on this claim on Deer Creek. The ledge is said to be from 3 to 5 ft. wide. Trains are hauling the ore to the Buffalo Mill, which is crushing it.

New England.—This company's new scoop dredge on Moore Creek is now working from 2,500 to 3,000 cu. yd. per day and making big clean-ups. The company will soon begin constructing 3 more, one to be placed on Cold Spring Flat, 5 miles below Idaho City, and the other 2 at Idaho City, one on Moore and the other on Elk Creek.

War Eagle.—This company has its new 20-stamp mill building at the Iowa Group at Quartzburg, nearly completed. Development work is going on at a depth of nearly 500 ft. by a tunnel that is running along the vein through the Iowa Mine into the Yellow Jacket and another claim. A 10-stamp mill has been running on this property for the past 3 years. The mill will have each battery supplied with 2 sets of concentrators.

Willow Creek District.—This district, which

caused some excitement last year, is 4 miles west of Idaho City. There are now a number of miners developing claims in the district, the veins carrying free gold. Most of the veins so far developed are rather narrow. Some pockets run high, but the average value of all the veins opened is under $20 per ton.

Lemhi County.

Blackbird District.—In this copper district a Buffalo syndicate is reported to have taken over the Uncle Sam Group, the Noble Group and the Dandy Claim. Through these claims, it is said, runs an ore zone or series of veins 150 ft. wide. The Black Pine Group on Copper Creek has been bonded by a Kansas City company.

Washington County.

Lookout.—This claim, at Ruthburg, the old Belmont, is owned by Alers & Norsman, but is under bond to H. Emerson. A 10-stamp was erected on the property, but with depth the ore changed from chlorides and ruby silver to galena. Alers & Norsman started water level tunnel, which Mr. Emerson will continue.

MINNESOTA.

(From Our Special Correspondent.)

The Duluth, Missabe & Northern road has completed its No. 3 ore dock at Duluth. The dock proper is 1,152 ft. long, half the length of No. 1 and 2. It is the company's highest and widest dock, being 67 ft. high and 65 ft. wide. The dock has 192 pockets, each of 220 gross tons capacity, making a total storage capacity for 42,220 tons, all of which can be shipped out in perhaps 36 hours. There are 5 lines of rails, even spaced, over each side the dock, giving 4 tracks above each pocket. In dock and approach are about 8,500,000 ft. of timber, and the dock is held by piles, some of which are 75 ft. long. The approach is 2,750 ft. long, and is partly of timber and partly of steel plate girder construction. Two steam dredges are working to cut some 500,000 yds. of earth beside the dock to make water deep enough for ships drawing 20 ft.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Lake Superior Consolidated Mines.—This company has passed papers with the Oliver Iron Mining Company (Carnegie) that show clearly that the recent sale of the Stevens was a mere detail of traffic contracts. The Consolidated Mines now sells all the ore from the Stevens to the Oliver Company at 15c. a ton, the royalty price, so that the Oliver Company is to do the mining. But there is a clause by which the Consolidated's road, the Duluth, Missabe & Northern, will haul the ore to Duluth, at the open current rate, and the Associated Bessemer Steamship Company will carry the ore to Conneaut at 50c. a ton. This is aside from dock charges, and is 12½c. a ton under what the same company carried the Carnegie ore for last year and 75c. less than it is carrying that same ore for this season. This agreement is terminable on 60 days' notice, but otherwise extends to the life of the mining lease—49 years. This deal indicates that the Carnegie Company is not prepared to build ships to carry all its own ore.

Oliver.—At this mine a pump shaft has been sunk under the levels now mined by steam shovels and a set of pumps installed. The mine is now pumping both surface and underground water. Several benches of lean ore have been mined off by shovel and stock piled on the surface ground. A large coal dock has been built and the mine put in shape for a large production. The Norman, now belonging to the Oliver Company, will be mined as a portion of the main property when reopened another year.

Sauntry.—This mine has laid off nearly all its force and will do little for some time. Its output this year will hardly be up to the 200,000-ton mark.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

New Mining Companies.—The Sango Mining Company, St. Louis, capital $60,000, organized by F. B. Tait; Wyoming Mining and Milling Company, Granby, Mo., capital $20,000, incorporators, T. A. Wright, James Fagan and L. O. Hoover of Wilkesbarre, Pa.; Norwood Mining Company, Carterville, Mo., incorporators, W. B. Kane, Matt Zogg and J. C. Davidson, all of Carterville, Mo.; Cushing Zinc Smelting Company, Joplin, Mo., capital $600,000, incorporators, Samuel S. Rapp, M. W. Geisenger, A. F. Hodges and N. F. McAuliffe, all of Brooklyn, N. Y.; Tulare Zinc Company, Springfield, Mo., capital $150,000, incorporators, E. Sampson, C. McGill, C. Busey, J. Brisco and J. L. Woods, Martinsburg, W. Va.; Joplin Zinc and Lead Union, capital $250,000, incorporators, Joseph H. Schlund, Chicago, Henry F. Albers, John Mattock and Abner Griffing, New York, N. Y.; War Eagle Mining Company, Joplin, Mo., capital $50,000, incorporators, W. F. Thomas, S. C. Hubbard and R. G. Blair, Joplin, and G. H. Eggemeyer, Richmond, Ind.; Commander Zinc and Lead Company, Joplin, capital $110,000, W. and A. A. Coats, Fred Wells and Fred Nichols, Joplin, Frank Billings, Webb City.

Joplin Ore Market.—The market for zinc ore was much stronger last week than the week before and a large quantity of high grade ore sold for $28 per ton, while something over a carload from the King Jack Mine on the land of the United Zinc Company at Joplin sold at $28.50 per ton, the highest price in the district. Most of the ore from Oronogo, Carthage, Zincite, Springfield and the bulk of the Joplin ore sold at $28 as well as over 1,000,000 lbs. from Neck City. Lead sold as for 3 weeks past at $23.50 per 1,000 lbs. Following is the turn-in by camps of the Joplin District for the week ending August 11th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	1,848,090	422,960	$35,352
Galena-Empire	857,660	.....	10,292
Carterville	1,100,780	399,460	24,198
Oronogo	455,600	7,730	6,467
Belleville	515,950	2,680	6,796
Webb City	433,930	45,690	6,715
Aurora	855,210	31,240	9,142
Duenweg	583,750	90,170	8,224
South Jackson	49,740	1,480	681
Cave Springs	133,800	.....	1,806
Central City	79,200	2,000	1,093
Carthage	225,520	.....	3,157
Neck City	1,036,440	6,270	14,650
Granby	264,100	12,020	2,840
Springfield	42,680	22,000	1,118
District total	8,487,450	1,043,710	$132,535
Total 32 weeks	298,647,530	34,795,520	$5,106,269

There were 36 cars of zinc loaded in the Galena District last week, but a portion of this, with the lead, was not reported in time for the table and will be included in next week's report.

During the corresponding week last year, top grade zinc ore sold for $45 per ton and lead for $27.50 per 1,000 lbs. The lead sales were less than last week by 86,700 lbs., the zinc sales greater by 3,031,110 lbs., and the value greater by $121,575. For the corresponding 32 weeks last year, the lead sales were less by 5,522,420 lbs., the zinc sales greater by 30,679,930 lbs., and the value greater by $1,983,841. Compared with the previous week the sales were less by 1,062,780 lbs. of zinc and 23,330 lbs. of lead and the value less by $27,856.

John Jackson.—This mine at Chitwood Hollow, west of Joplin, for the 5 years ending August 11th, has produced and sold a little over 12,000 tons of zinc ore, for $380,000. For three years the mill was run single shifts, and 2 years double shifts, and during that time has never been without ore. The cost to the original owners for the development work and the mill was only between $9,000 and $10,000. The mine is said to be the nearest to a vein deposit of any in the Joplin District. The mine turned out 5 cars of ore last week running single shifts.

Another effort is being made by Joplin men to develop natural gas with a view to piping it to Joplin. The Lyon & Leddy Company has secured 10,000 acres of gas land near Oswego, Kan., 30 miles away, and formed a strong company to drill for gas and develop the other natural resources of the land. A strong flow of gas was developed on this land several years ago, but for various reasons, nothing was accomplished by the company which controlled the leases.

St. Francois County.

Federal Lead Company.—This company, which is controlled by the Guggenheim Brothers, of New York City, owns the Shannon Mine and the smelting works of the Missouri Smelting Company in St. Louis. The Guggenheim Brothers are now negotiating for the lands of the Columbia Lead Company.

MONTANA.

Deer Lodge County.

(From Our Special Correspondent.)

Nancy Hanks.—This Garnet property has been turned over by the owner, Sam Richey, to L. C. Parker, who will work it. The mine produced during the past few years over $300,000. The terms on which Col. Parker acquires the property are private.

Shamrock.—This mine at Garnet is shipping regularly to the Musingbrod Mill. The Supreme Court is expected to soon decide the suit for ownership.

Madison County.

(From Our Special Correspondent.)

Bowery Mining Company.—No active mining has been done recently, owing to the erection of the cyanide mill, which will be in operation by August 20th.

Missoula County.

(From Our Special Correspondent.)

Copper Cliff.—Sam Richey, Leinerman & Schmidt and Judge Burton, who own this property, are considering an offer to sell for a good round sum. The shaft is 200 ft. deep and levels are run each way. The ore now blocked out will give an output of a car a day. The ore is said to ship 20% copper and $8 gold on an average. The property is 8 miles west of Garnet.

Silver Bow County.

(From Our Special Correspondent.)

Parrot.—The fire which destroyed the shaft-house and warehouse is thought not to have injured the shaft for more than a few sets near the collar. The hoisting machinery and compressor plant are ruined. It is thought the boilers are but slightly damaged. Most of the miners have been put to work cleaning up the rubbish. It is understod that the property will be worked through the Never Sweat and Belladona for the time being.

Shamrock Copper Mining Company.—Articles of incorporation of this company have been filed by John A. Persson, Fred S. Brundage and J. H. Heilbronner. The capital stock is $100,000, divided into 10c. shares.

Schwitzer.—Hiram Knowles and others have sold to S. S. Raymond the mineral rights of this property for $65,000. The purchase is supposed to be in the interest of Heinze.

NEW MEXICO.

Grant County.

Orion Mining Company.—This company at Shakespeare is driving development work on the vein, and is and sorting from 1 to 2 car-loads of good shipping ore per month. It recently received smelter returns on a car of 23 tons, netting $560.

Sierra County.

Philadelphia Mining and Milling Company.—This company at Andrews is rushing work. The new mill is running full time. The new shaft on the El Oro is down about 100 ft., with a good showing of ore. The company is working about 90 men.

OREGON.

Grant County.

Cougar.—At this mine, 3 miles north of Granite, the tankage capacity is to be increased to permit of handling 250 tons of ore daily. The present capacity is but 35 tons daily. The ore is said to average $12 per ton.

Magnolia.—This mine, by reason of non-payment of a $10,000 installment by W. L. Vinson on August 1st, has reverted to the original owners, John Coyle, of Granite; P. A. Conde, of Baker City, and Al. Jones and brother, of Sumpter, who propose to work the mine themselves in the event the representative of the English syndicate, now on his way here, is not disposed to take up the property. This syndicate has spent about $50,000 on the mine through Vinson. It is the intention of the owners to build settling tanks for saving the fine gold. The new 10-stamp mill is in perfect order. The mine is opened up by 3 tunnels—1 in 700 ft., another 600 ft. and the 3d 250 ft. The ledge, which is from 4 to 16 ft. wide, has been opened up for nearly 900 ft.

Tempest.—This mine, in Greenhorn District, about 12 miles from Granite, will once more ship ore, which must be hauled 84 miles to the railroad. It is to be shipped to the smelter at Everett.

Josephine County.

Alexander & Bent.—The old Channel Mining Company, which bought the Six Mile Creek Mine on Illinois River about a year ago, has bought this hydraulic property comprising a placer deposit covering 1,000 acres—the gravel in some places being 200 ft. deep. The ground covers a channel 4 miles long, which is divided by a fork of Galice Creek into 2 separate mines. The upper head of the channel is supplied with water from a ditch 8 miles long, from the left fork of Galice Creek. The lower property is supplied by a 9 mile ditch from the right fork of the creek. Alexander & Bent have worked 1 or 2 giants on this property and their annual clean up has been from $15,000 to $20,000 a year, but they were not rigged to work the high banks, neither did they have undercurrents, to save fine gold. Their ditch carried 350 to 400 miners' inches of water. The new company have already started in to refit the mine and will work 3 giants this winter. The new equipment, which will cost from $20,000 to $25,000. The mine is situated on Galice Creek, a tributary of Rogue River, 25 miles north of Grants Pass and 50 miles from the Pacific Ocean. The officers, who are the principal stockholders, are: C. B. Beardsley, of Chicago, president; J. R. Harvey, formerly of Nebraska, but now of Grants Pass, vice-president, and Wm. Hale Thompson, of Chicago, secretary and treasurer.

PENNSYLVANIA.

Anthracite Coal.

Anthracite Miners' Convention.—The convention of delegates from the various mines in the anthracite region opened at Hazleton on August 13th. Over 200 delegates were present, representing the Lackawanna, Luzerne and Susquehanna Districts. The first day was given to the enrollment of delegates and speeches calling attention to the alleged grievances of the men. A committee of 9 members was appointed to report on a wage scale. The following day the miners' grievances were discussed at length, and the wage scale committee made its report. At the final session on August 15th the report of the wage scale committee was adopted, and a committee was appointed to meet the operators in a

proposed joint conference at Hazleton on August 27th. A permanent scale committee was also appointed. The grievances stated by the scale committee are the system of dockage for improperly loaded cars, the different rates paid for mining in the same districts, too low a rate for mining, non-payment of wages semi-monthly, the high price of powder, the company store and the company doctor. The committee on resolutions recommended an increase of 10% for inside work, of 15% for outside work, a reduction in the price of powder from $2.75 a keg to $1.50 a keg, and a joint conference between the committee representing the National Mine Workers and the operators within 10 days.

Delaware, Lackawanna & Western Miners' Union.—At a meeting at Scranton on August 10th, as a result of a vote of the Delaware, Lackawanna & Western Company's miners, it was decided to form a new union to be known as the Lackawanna Union. There were 2,643 votes cast in favor of the project and 1,021 votes against it, the vote representing about ½ the employees in the company's mines from Taylor to Priceburg. The reason given for forming this union was that officials of the company had stated they would recognize it, while they would not recognize the United Mine Workers, whose officials are from the bituminous fields and unfamiliar with conditions in the anthracite district.

Cayuga.—This mine of the Delaware, Lackawanna & Western Company, near Scranton, is about to resume work after a month's shut down for repairs.

Williams.—This colliery at Pottsville, which shut down last spring, is to resume work soon, giving employment to 300 hands.

Bituminous Coal.

Lucius W. Robinson, president of the Rochester & Pittsburg Coal and Iron Company recently closed deals for 8 tracts of coal land about Indiana: From John D. Cummins of Washington Township, 110 acres for $3,282; D. C. Leasure, surface of 367 acres, the coal of which was included in a previous purchase, $7,338; R. F. Getty, 73 acres in White Township, $2,175; W. A. St. Clair, 75 acres in White Township, $2,268; James A. Fleming, 162 acres in Armstrong Township, $4,553; John Jacoby, 110 acres in White Township, $3,297; Samuel Shirey, coal and surface of 49 acres in Rayne Township, $3,434; James D. Wilson, 15 acres in Washington Township, $460. The total amount paid is $25,807. This practically closes out the Crooked Creek field, at least so far as this company is concerned. Between four and five thousand acres have been bought at a price aggregating nearly $150,000.

Berks County.

Philadelphia men, it is stated, have bought and will reopen the iron mines at Boyerston. The price was $16,000.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Crown Hill Mining Company.—S. E. Young, general manager, has returned to the Spokana Mine from the East, and will begin shipments of concentrates to the Omaha smelter. The company will sink the shaft to the 500-ft. level. The ore body is said to be 25 ft. wide at the 200-ft. level.

Daly.—This mica property has been sold to Eastern people and a steam drill is being put in.

Iron Mountain Mining Company.—Shipments of iron ore have been resumed from this company's mine, 8 miles north of Custer, to the smelters at Omaha and Denver.

Lawrence County.

(From Our Special Correspondent.)

Detroit & Deadwood Company.—This company has started its new cyanide plant on Annie Creek, in the Ragged Top district. The ore will be hauled 1½ miles. The average value of the ore is said to be about $8 per ton. In 60 days more the Spearfish Mining Company, the Cleopatra Mining Company and Wasp Mining Company will have cyanide plants in operation. The average value of the ore that will be treated by these mills will not exceed $10 per ton, gold.

Homestake Mining Company.—A 30-ft. vertical of free milling ore has been exposed in the south end of the excavation of the new 1,000 ton cyanide plant being built by the Homestake company at Lead. The vein runs parallel with the Homestake lode, and the average value is about as the Homestake ore. The vein cuts across patented ground owned by John Skelly of Deadwood. The company expects to get the Spearfish water in by September 15th. The old Caledonia stamp mill at Terraville, will be ready that time.

Portland Mining Company.—This company has purchased the 20-stamp mill of the Baltimore & Deadwood Mining Company of Chicago, at the mouth of the Blacktail gulch. The Baltimore Company attempted to run on the cement ore back of the mill, but found it was too low grade. The Portland Company will put in a cyanide annex and will ship ore from the mines at Portland. The Elkhorn Railway Company is surveying for a spur to the Baltimore mill.

Shawmut Mining Company.—This company, of Boston, Mass., has begun the excavation for a 50-ton cyanide plant at the Esmeralda Mill, in Blacktail Gulch. Edison E. Dewey of Boston is president.

Pennington County.

(From Our Special Correspondent.)

Tom Blair.—This property has been bonded for one year for $12,000 to Iowa men. A cut has been run on the vertical of free milling ore 300 ft. and a tunnel is being run 200 ft. to tap the main vertical.

Yellow Bird.—A test run on 100 tons of ore from this mine in Hornblende District gave $14 per ton, gold. Colorado parties are negotiating for the property.

UTAH.

(From Our Special Correspondent.)

Bullion and Ore Shipments.—During the week ending August 11th there were sent forward from the different smelteries 21 cars, or 901,158 lbs., lead-silver bullion; 3 cars, or 164,031 lbs., copper bullion. In the same week there were shipped to smelteries outside the State 100 cars, or 4,184,050 lbs., lead, silver and gold ores, and 4 cars, or 202,000 lbs., copper ores.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week of August 10th there were sent forward from the 3 rail points of the district 1 bar of bullion, 5 cars concentrates and 112 cars of ore, made up as follows: Mammoth, 1 bar bullion, 17 cars ore; Centennial-Eureka, 37 cars; Bullion-Beck, 12 cars; Swansea, 12 cars; Uncle Sam, 8 cars; Gemini, 7 cars; Grand Central, 7 cars; Godiva, 4 cars; May Day, 4 cars; Star Consolidated, 2 cars; Tesora, 2 cars, and Eureka Hill, 5 cars of concentrates.

Bullion-Beck.—Purchase of the Alamo tract of 5 claims is consummated by the payment of $25,000. Before work was stopped in this ground one ore body, opened from Beck 700 level, yielded $140,000 profit.

Centennial-Eureka.—The semi-annual statement to July 1st on August 11th was mailed to the Boston office. Figures released here show a yield of 14,628.081 ozs. gold, 384,638.27 ozs. silver, 1,148,455 lbs. copper, of a total worth of $712,655. No figures of ore tonnage are given, or treatment costs. In that period $200,000 were paid in dividends.

Summit County.

(From Our Special Correspondent.)

Daly.—It is semi-officially announced that the mine will start about September 1st.

Park City Shipments.—In the week ending August 11th there were marketed through the Mackintosh sampler 3,104,440 lbs. smelter products, contributed as follows: Silver King, crude, 1,071,200 lbs.; Ontario, crude, 527,900 lbs.; Daly-West, crude, 439,170 lbs., concentrates, 455,700 lbs.; Anchor, concentrates, 398,100 lbs.; California, concentrates, 118,650 lbs.; Loring Bros., concentrates, 93,720 lbs. Total July shipments were 13,934,490 lbs.

Tooele County.

(From Our Special Correspondent.)

Consolidated Mercur.—The day Captain De La Mar left Salt Lake he said that the combined properties had 1,500,000 tons of ore blocked out, which would be mined so as to maintain a uniform battery of $8 per ton, as loaded into the leaching tanks, that cost of mining and milling was $3, loss in tails 75c. to $1, a profit of $4 per ton, or $6,000,000 net from present reserves. Since January 1st Mercur opened more ore than it ever had exposed at one time. The mill will treat 1,000 tons daily, giving a profit of $120,000 per month. Dividends will be paid quarterly. Hitherto it has been difficult to maintain a $6 battery, but the high-grade base Mercur ores, it is expected, will raise the gold content to $8.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

Flag Hill.—Work is resumed on the Flag Hill Mine under new management, the control of the stock having been secured by Alexander Dick, of Rossland; Major R. G. Edwards Leckie, manager of the Republic Consolidated Gold Mining Company, of Republic, and associates. D. F. Hallahan, the secretary of the Republic, was elected president of the Flag Hall, and Hugh C. Baker manager. The main tunnel is in 155 ft., and 2 men are cross-cutting for the east vein. Three men are also sinking an incline shaft, to define, if possible, the position of the vein. There are 3 separate veins on the property.

Gold Ledge Consolidated Mining and Milling Company.—This company has succeeded the Gold Ledge and Gold Ledge Extension companies and has acquired the Gold Ledge Fraction, Mattey, East San Poil, San Juan, San Juan Fraction and Badger claims, upward of 80 acres, on Gold Hill, 3 miles east of Republic. The present value of the property is estimated at $100,000. The capital stock is 2,000,000 shares, par value 5c. The stock is unassessable. The directors are H. L. Lillienthal, R. J. Denson, J. D. Omo and F. E. Lucas, of Spokane, and J. W. Rounds, of Kettle Falls, Wash. The executive officers are H. L. Lillienthal, president and general manager; J. W. Rounds, vice-president; F. E. Lucas, treasurer, and J. A. Elliott, secretary. The principal place of business is Spokane, Wash. The treasury stock is 1,000,000 shares, of which about 1/3 has been expended in the consolidation, in exchange for the shares of the Gold Ledge Extension Mining Company's shares and the Badger claim. The original Gold Ledge Mining Company sunk a shaft 135 ft. A 6-ft. quartz vein was developed, and a number of tons of rich ore extracted. Drifts were driven northeast and southwest. The quartz is coming in at the breast and looks promising. Two cross-cuts show the vein to be 40 ft. wide. The country rock is principally dolomite, but eruptive rocks, granite and syenite come to the surface near by; these are principally granite and syenite. The San Juan shaft, several hundred feet southwest of the Gold Ledge shaft, is down 65 ft. and shows quartz. Tunnels proposed will run under the San Juan shaft, and the consolidation is principally for concentrating of work and development of the various claims by tunneling. A. J. Turping has been appointed superintendent.

Morning Glory.—The winze is down 200 ft. below the tunnel level, carrying a small streak of rich ore in the vein. Preparations are being made for drifting. The mine is equipped with a 22-H. P. gasoline engine, for hoisting and a 2½-H. P. engine for running a fan. The ventilation of the lower level is effected by means of a box pipe, through an upraise from the tunnel to the surface, connected with galvanized iron piping down the winze. The exhaust from the engine is through iron piping to the mouth of the tunnel.

Mountain Lion.—The pay shoot on the main tunnel level is being stoped in blocks 200 ft. long. The center block has been stoped out a height of 86 ft., and another stope has been started. On the 430-ft. level, 125 ft. below the tunnel level, drifts have been driven 255 ft. on the pay shoot. The mill is treating from 80 to 90 tons of ore per day. About 5,000 tons remain in the stopes as a reserve to be drawn on, and there are about 2,000 tons on the dump. Bullion shipments are of daily occurrence.

Princess Maud.—The winze is down 200 ft. below the tunnel level, and a drift is being run on pay ore, which the superintendent reports is improving right along.

San Poil.—A road has been built to the No. 1 tunnel, for hauling timbers and shipping the ore on the dump to the custom mills. A 50-ton ore bin has been built at the No. 2 tunnel and filled with ore, which Superintendent Wm. Crummer says will run $40 per ton. Ore has been stoped from the top of the upraise from the No. 2 level south drift, about 70 ft. below the No. 1 level, that will average about $30 per ton; the stope is 30 ft. long, 30 ft. high and averages over 4 ft. wide. The ore remains where it was broken, as the mills are not yet ready to receive it. On the No. 1 level a cross-cut found a rich streak of ore. The only work going on is in the south drift, which is in on the vein about 530 ft. and has developed 3 bodies of ore, the values running from $10 to $75 per ton, mainly gold. The company's engineer claims for the San Poil vein the highest average of values in the camp. Development is suspended until the custom mills get ready.

Tom Thumb.—This mine has been supplied with a 60-H. P. boiler and a new steam hoist and 8-drill Leyner air compressor have also been installed. The No. 3 vertical shaft is down 300 ft., and stations have been cut on the 286-ft. level. At 276 ft. the shaft cut onto a vein and passed down through it 10 or 12 ft. The superintendent claims that there are at least 2 quartz veins traversing the property. A vein was cut in the No. 1 shaft. No. 2 shaft, east of the No. 1, cut it at a depth of 100 ft. This shaft was sunk 50 ft. more, where a cross-cut intersected the vein, on which drifts were driven and pay shoot 160 ft. in length developed. but the Nos. 1 and 2 workings were never connected. The cross-cut in No. 3 shaft is to be driven with 2 Leyner drills 170 ft., in the expectation of striking the vein.

FOREIGN MINING NEWS.

AUSTRALASIA.

New South Wales.

Broken Hill Proprietary Company.—This company reports for the 4 weeks ending July 19th the output of the refinery was 3,192 tons lead, 71 tons hard (antimonial) lead, 389,131 oz. silver and 1,253 oz. gold.

New Zealand.

(From Our Special Correspondent.)

Waihi Mine.—The additional 100 head of stamps which this company is erecting will shortly be at work. The present 190 head of

stamps are dry crushing, but the new stamps are designed for wet crushing and probably at no distant date the whole plant will be altered to a wet crushing one; a series of careful experiments having shown that the sulphide ore which is found in the lower levels can be successfully treated by wet crushing and subsequent separation into a number of products.

The plant is to separate the ore by means of vanners, spitzkasten, and overflow tanks, into concentrates, sands and slimes, each of which is to be treated separately with cyanide solution.

Tasmania.

Mount Lyell Mining Company.—The statement for the 4 weeks ending July 25th shows 20,197 tons ore smelted, the yield being 667 tons blister copper containing 659 tons fine copper, 51,211 oz. silver and 1,811 oz. gold. The average result was 3.26% coper, 2.53 oz. silver and 0.09 oz. gold per ton. A smaller quantity ore was treated on account of the fire at No. 1 smelting plant, and in minor degree to temporary suspension of work due to a strike now terminated.

Western Australia.

The gold exported or sent to the Perth Mint in July was 113,602 oz. crude. For the seven months ending July 31st the total was 869,906 oz., against 847,727 oz. in 1899, showing an increase of 22,179 oz., or 2.6%. The total this year was equal to 780,090 oz. fine gold, or $16,124,454.

CANADA.

British Columbia—East Kootenay District.

(From Our Special Correspondent.)

Ore Shipments.—For the 7 months and 9 days ending August 9th there were shipped to local and other smelters and concentrators from East Kootenay mines 22,000 tons of ore.

British Columbia—West Kootenay District.

(From Our Special Correspondent.)

The managers of the various producers about Rossland have decided to close the mines on Sundays beginning on September 5th.

Boundary Ore Shipments.—The output of ore milled and smelted from Boundary Creek for 7 months and 9 days ending August 9th amounted to 20,000 tons.

Rossland Ore Shipments.—The output of ore sent to smelters for the 7 months and 9 days ending August 9th from Rossland mines amounted to 97,000 tons gross.

Slocan Ore Shipments.—The outturn from Slocan mines for the 7 months and 9 days ending August 9th amounted to 10,000 tons gross.

Dundee.—The mill, shaft house, etc., of this Nelson mine were recently destroyed by an extensive forest fire which swept along Bear Creek and the adjoining country, the town of Ymer having narrowly escaped destruction.

Homestead.—This company is advertising for tenders to purchase all the remaining shares of the company that have not been sold or disposed of. Bids must be accompanied by cash equal to ¼ the amount offered per share. The property is situated about 1 mile south of Rossland.

Le Roi No. 2.—The engineers working on the Josie and No. 1 properties are at present on a strike and these mines are closed. They have declined to work a 12-hour shift instead of 8 hours.

Velvet.—A prospector named Frederick Algiers recently located and recorded the Portland and other fractions adjoining this mine. The management had permitted the location to lapse, of which Algiers took advantage. It is stated that he has been offered a considerable sum to surrender his newly acquired right.

War Eagle and Center Star.—It is not definitely known when these companies will resume shipments. T. G. Blackstock has authoritatively denied the report of the negotiations for the purchase of these mines by the British America Corporation, and, further, that at present these companies have any intention of purchasing the Trail Smelter from the Canadian Pacific Railway Company.

Ontario—Algoma District.

It is announced that the Algoma Central Railway, which has a charter from the Canadian Government for a road between the Soo and Missanabi and the connecting branch from Michipicoten to Dalton, has secured stock in the old Hudson Bay & Sault Ste. Marie Railway Company, thereby acquiring its charter and privileges. The charter gives the company the right to construct a road from Missanabi to Moose Factory, on Hudson Bay, and carries with it a subsidy of $500,000 and 1,250,000 acres of land along the proposed route. The length of this division is about 250 miles. The road will be an extension of the Algoma Central. Mineral lands will be tapped.

Ontario—Hastings County.

Canada Corundum Company.—This Toronto company has started its mill at Combermere with regular concentrating and cleaning. The mine is producing well. B. A. C. Craig, managing director, of Toronto, and G. K. Knapp, of Bridgeport, Conn., recently looked over the several properties of the company and were present at the starting of the mill. They were accompanied by a Mr. Williams, of Winsted, Mass.

Ontario—Rainy Lake District.

(From Our Special Correspondent.)

Foley.—At this mine they have cut the Daisy vein with a drift at a depth of 200 ft., and are now pushing through to the Lucky Joe vein, which they expect to strike in about 30 days. At surface this latter vein was very rich, and many of the specimens said to have been found in other veins of this region were from the Lucky Joe. The Daisy has 7 ft. of quartz. Development of both veins will be carried on.

Gold Panner.—This mine has made the first clean-up of 326 tons, which averaged $8 to the ton. There was a saving on the new plates of $900.

Manhattan Gold Mining Company.—This company has consolidated with the Decca and the Manhattan is advertising for a large number of miners. It is down 300 ft. in a vein of free milling quartz, 20 ft. wide, and is one of the best-looking properties in the vicinity. The Decca adjoins.

Mikado Gold Mining Company.—This company has sent down its bullion for July, amounting to $14,000. Improvements to the cost of $45,000 are to be made about the mine and mill.

Olive.—This mine is now running again, day and night crews being employed. The mine is looking well.

MEXICO.

Press reports from Queretaro state that an American syndicate is negotiating for the purchase of the opal mines which are located around Queretaro. Improvements to the mines will be made if the negotiations succeed. J. C. Block, of New York, is at the head of the syndicate.

Michoacan.

(From an Occasional Correspondent.)

Inguaran Copper Mines.—The work of development in these mines is progressing with gratifying results. Large ore bodies have been found and competent engineers agree that the ore body opened up by Tunnel No. 1 is capable of producing a large tonnage for many years to come from ore already in sight. Four other tunnels are exposing other strong ore bodies, which will give equally good results. The survey of the railroad having been completed work of construction will begin after the rainy season. The company's smelting and refining works will be built at the junction of the Marquez and Balsas rivers. The Inguaran Mines are owned in Paris, and are practically under the same management as the Boleo Mines of Lower California. The Guggenheim Exploration Company is pumping out the aMria Copper Mine located in the Azteca Mining District. The mines will be further developed as soon as the water is under control.

COAL TRADE REVIEW.

New York. August 17.

Anthracite.

The market for hard coal in the west shows little improvement yet either at Duluth or in Chicago territory. Receipts at upper lake ports continue rather light, though the freight from Buffalo to Duluth is down to 35c. There is, however, a pretty good movement from the mines. Some of this coal is going to lower lake ports, but the bulk of the movement is to inland points in the east Central States. In spite of the threatened general strike, buyers at seaboard points seem in no hurry to lay in coal. Supplies at Boston are reported none too good, but buyers there, as at New York and Philadelphia, have become so used to waiting as long as possible that the lesson they received last year has apparently had little effect. Trade about New York Harbor is very quiet indeed.

The labor organizers have held their convention and named the supposed grievances of the miners and made their demand for recognition. It is not likely that many of the large producers will be represented at the proposed joint convention to be held on the 27th. It is even rumored that but one operator of any prominence is likely to attend. The statement of grievances as published contains many inaccuracies and half truths. To compare the prices paid for hand mining in the bituminous region with those in the anthracite fields is, to say the least, unfair, inasmuch as a large part of tne output of the central bituminous field is machine mined and machines are unknown in anthracite mines. The demand for increased wages rests on an equally unsubstantial basis. It is evident, however, that there are powerful interests at work and the more conservative men who have known the miseries of a prolonged strike may be unable to hold back the young and hot-headed.

The list prices for freeburning anthracite f. o. b. New York Harbor are, stove and nut $4, egg $3.75.

Bituminous.

The seaboard bituminous trade shows a good demand for coal, especially the better grades, and this demand for good coal helps the sales of the poorer grades. Sales agents at New York report orders plenty, and the general opinion is that "midsummer dullness" is now over for good. All indications are that from now on there will be a steadily increasing activity in soft coal to the end of the year.

During the past week representatives of large foreign houses have been going the rounds of the trade looking for chances to get agencies for large producers. These men from abroad have been much more inclined to talk business than some months ago, and in case they could not secure agencies they sought an introduction that would enable them to secure for their houses single cargo lots as needed. They were also willing to talk terms and learn methods and discuss f. o. b. prices as compared with c. i. f.

The far east is taking all coal shipped to it and calling for more. Much the same condition prevails along Long Island Sound. New York Harbor trade is still quiet, but shows improved conditions. All-rail trade is taking a great deal of coal, but doesn't show the demand that prevails to eastward.

Transportation continues slow. It takes a week or 10 days for cars to get through from the mines to tidewater. Car supply is fair. Railroads are now demanding pre-payment of freights from nearly all shippers.

In the coastwise vessel market, vessels are in fairly good supply. Rates are firm. We quote current ocean freight rates from Philadelphia as follows: Providence, New Bedford and the Sound, 60@65c.; Boston, Salem and Portland, 70c.; Portsmouth, 75c.; Wareham and Gardiner, 75@80c.; Lynn, 80c.; Bath and Bangor, 75c.; Newburyport, 85c.; Saco, 90c. and towages; Dover, $1@$1.20 and towages; the farther lower ports' rates are 10@15c. higher.

Prices for coal are practically unchanged and we continue to quote: Clearfield at $2.35@$2.65 f. o. b. New York Harbor ports; other standard coals, $2.25@$2.50 f. o. b Chesapeake Bay ports.

Birmingham, Ala. August 13.

(From Our Special Correspondent.)

Nothing new has occurred recently in the coal market in this State, and the activity which has been noted now for some time continues. Indications point to a steady output at the Alabama mines during the balance of the year.

All the work on new mines and new collieries is being rushed so that at the earliest possible moment the product can be placed on the market. The production in the State is steadily increasing. The price obtained for coal in Alabama is holding its own, notwithstanding the reduction in the wage scale of the miners, brought about by the general decline in the pig iron market.

Chicago. Augsut 15.

(From Our Special Correspondent.)

Anthracite Coal.—There is no business worthy of notice being transacted in the anthracite coal line, sales being few and for small quantities and generally the consumer is hesitating. The condition is doubtless largely due to the fact that this is midsummer and the usual annual inactivity prevails. Uncertainty as to future causes many to stay out of the market. Agents for a number of companies say that present circular rates will be maintained. No large quantity of hard coal on hand among agents and no effort is evidently being made to increase supply. Circular price is yet, grate $5.25; egg, stove and chestnut, $5.50.

Bituminous Coal.—Has settled down to a period of inactivity, the market absorbing during the past week but small quantities of coal and the prospects are for a lesser business for the next few weeks. There is as usual a vast amount of soft coal about in cars on the tracks in the city, and the question of demurrage stares many in the face. Manufacturers and railroads have bought very much less coal than was expected.

Coke.—Is in light demand, with but little inquiry and no early prospective increased demand. Connersville coke is quoted at $5@$5.50.

Cleveland, O. August 15.

(From Our Special Correspondent.)

The shipment of coal to Lake Superior prior to August 1st was 1,000,000 tons over that period last year. To Lake Michigan the shipment has increased about 500,000 tons. The movement has been so heavy that the docks are pretty well jammed and nothing is being sent up now but lump coal. The nut coal and slack have been collecting in the cars here until the yards in some places are congested. The railroads are therefore urging the shippers to move the stuff especially as there is a new demand for cars. The movement of coal is now restricted almost entirely to contract tonnage, hardly enough wild boats being taken to make a market. This week has seen the Milwaukee rate lowered to 30c. and the Duluth rate now promises to come down to the same level.

Pittsburg. August 15.

(From Our Special Correspondent.)

Coal.—There is no diminution in the demand for coal in the local markets, as all the mills in this district, with the exception of two tin-plate

plants, are in full operation. The iron and steel combinations have no mills in this section that are tied up on account of wage disputes. The Pittsburg Coal Company is operating all its mines and rushing coal to the Lake ports to fill the heavy contracts for the Northwestern markets, and it is now believed that the entire tonnage contracted for can be sent forward before the close of the Lake shipping season. The river mines are not being operated as fully as usual this week.

John H. Jones, for years one of the leading river coal operators in this district, to-day tendered his resignation as a member of the board of directors of the Monongahela River Consolidated Coal and Coke Company. He has made an emphatic denial of the report that he intends to engage in the coal business in competition with the river coal trust, of which he was the principal promoter. Mr. Jones is developing a large coal tract at Canonsburg, in this district, and will engage in the railroad coal business. He has also established mines, coke works, a brick plant and stone quarry at White Rock.

Connellsville Coke.—The demand for coke is unusually dull and the production is falling off at the rate of about 10,000 tons a week. This is due to the closing of the blast furnaces, but the dull period is not expected to continue for more than two months. There is but little or no inquiry for new business. Furnace coke can be had at $2 and foundry at $2.25. Some producers in the fields adjoining the Connellsville Region are offering coke at less than $2 a ton. Of the 20,420 ovens in the region, 14,952 are active and 5,468 are idle. The production last week was 152,850 tons, a decrease of 11,241 tons compared with the previous week. The shipments for the week aggregated 7,186 cars, distributed as follows: To Pittsburg and river tipples, 2,517 cars; to points west of Pittsburg, 3,250 cars; to points east of Connellsville, 1,419 cars. This is a decrease of 135 cars compared with the shipments of the preceding week.

SLATE TRADE REVIEW.

New York. August 17.

Business continues quiet. Dealers and quarrymen are working on new price-lists for roofing slate in anticipation of an increased trade in the fall. Mill stock is unchanged, and a quiet trade is being done.

The shipments of slate from Slatington and Walnutport, Pa., for the week ending August 9th were as follows: Roofing, 4,294 squares; school slates, 581 cases; blackboards, 630 crates. In the week of August 2d the shipments of roofing slate were 4,757 squares, 427 cases school slates and 631 crates blackboards.

In export circles a few more orders are heard of, but so far the movement this month has been comparatively small.

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

Size, inches	Monson or Br'nville.	Bangor.	Bangor Ribbon.	Alb'n, or Jackson Bangor.	Lehigh.	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
24 x 14	6.50	3.50	3.00	3.25	3.10	5.10	3.15	.....	.....
24 x 12	6.60	3.50	3.00	3.25	3.10	5.25	3.15	3.75	.....
22 x 12	6.60	3.50	3.25	3.50	3.25	5.25	3.15	3.75	.....
22 x 11	6.50	3.75	3.25	3.50	3.25	5.25	3.15	4.00	.....
20 x 12	6 90	3.75	.....	3 50	3.25	5.25	3.15	3.75	.....
20 x 11	6.80	.....	.....	3.75	3.50	5.25	3.15	.....	.....
20 x 10	6.80	4.25	3.50	3.75	3.50	5.35	3.15	4.25	10.50
18 x 12	6.80	3.75	.....	3.50	3.25	5.25	3.15	3.50	.....
18 x 11	7.00	.....	.....	.....	.....	.....	3.15	3.75	.....
18 x 10	7.00	4.25	3.50	3.75	3.50	5.35	3.15	4.00	10.50
18 x 9	7.00	4.50	3.50	3.75	3.50	5.35	3 15	4.25	10.50
16 x 12	6.80	3.75	.....	3.50	3.25	.....	2.95	3.50	.....
16 x 10	7.00	4.25	3.50	3.75	3.50	5 25	2.95	4.00	10.50
16 x 9	7.00	4.25	.....	3.75	3.50	5.35	2.95	4.25	10.50
16 x 8	7.00	4 50	3.50	3.75	3.50	5.35	2.95	4.25	10.50
14 x 10	6 60	3.75	3.25	3.25	3.25	5 25	2.85	3.75	10.50
14 x 9	6.50	.....	.....	.....	.....	.....	2.85	3.75	10.50
14 x 8	6 60	3.75	3.25	3.25	3.10	5.10	2.85	4.25	10.50
14 x 7	6.40	3.75	3.25	3.25	3.10	5.10	2.60	4.25	10.50
12 x 10	5.75	.....	.....	.....	.....	...	2.60	3.25	....
12 x 9	5.60	.....	.....	.....	.....	.....	2.60	3.25	.....
12 x 8	5.50	3.50	.....	3.00	2.80	4.85	2.60	3.50	9.00
12 x 7	5.00	3.25	.....	3.00	2.80	4.85	2.50	3.50	9.00
12 x 6	4.80	3.25	.....	3.00	2.80	4.75	2.50	3.50	8.50

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

IRON MARKET REVIEW.

NEW YORK, Aug. 17, 1900

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Aug. 18, 1899. F'ces.	Tons.	Week ending Aug. 17, 1900. F'ces.	Tons.	From Jan., '99. Tons.	From Jan., '00. Tons.
An' racite & Coke.	222	262,400	220	239,575	7,982,685	9,258,365
Charecal.	22	6,275	20	5,375	169,319	231,592
Totals..	244	268,675	240	241,950	8,152,004	9,489,957

Somewhat better conditions can be noted in the iron market. There is more disposition to buy, and the fact which we have always insisted on that a large volume of business was in sight as soon as prices became settled, is beginning to be manifest. This is more the case just now with finished products than with pig iron and steel billets, but the movement involves one in raw materials a little later, as soon as stocks begin to diminish.

The structural people have somewhat unexpectedly arranged for a reduction in prices amounting to about $8 a ton. Their business is already large, and many new contracts will be placed on the new decrease.

Notes of the Week.

The report of the Southern Iron Committee shows the following figures of shipments made during the month of July: From Alabama and Tennessee, Pig iron, 67,632 tons; cast iron pipe, 6,775 tons; total, 74,407 tons. From the Birmingham District alone, 38,390 tons pig iron; 1,887 tons cast iron pipe; total, 40,271 tons. Export shipments from Alabama and Tennessee, pig iron, 10,798 tons; cast iron pipe, 633 tons; total, 11,431 tons. Export from Birmingham District alone, pig iron, 10,700 tons; cast iron pipe, 220 tons; total, 10,920 tons. The showing is small as compared to last July's shipments, being the lowest amount sent out in any month in the last twelve.

Birmingham, Ala. August 15.

(From Our Special Correspondent.)

No improvement is to be noted in the pig iron market in this section. There is nothing yet to be heard concerning the movement to curtail production by a general shut-down of furnaces throughout this section; from the best information at hand the furnacemen in this section are adverse to such an idea, believing that it is better to accumulate some iron than to shut down the furnaces completely, lose track of the labor and cause a general downcast feeling throughout the district.

There is but little demand for iron right now. There is no doubt that the average selling price of pig iron is below $11 per ton. It was stated that some No. 1 Foundry brought $12.50 during the past week. There are some healthy orders in the export trade yet to be filled.

The local market is a little better this week. The steel plant at Ensley is in operation again, as anticipated last week. A strike among machinists will retard work some in several of the machine shops in and around Birmingham, but the strike so far does not seem to be very extensive. The machinists went out because an increase in wages from $3 to $3.25 a day was refused them. One shop, that of the Hardie-Tynes Machine Company, employing quite a number of men, shut down immediately when the demand of the machinists was communicated to them. The other shops where the demand was made have kept in operation using that labor which failed to go out and other labor picked up to bridge them over the trouble..

The following quotations are given: No. 1 Foundry, $13@$13.50; No. 2 Foundry, $12.50@$13; No. 3 Foundry, $12@$12.50; No. 4 Foundry, $11.50; Grey Forge, $10.50@$11; No. 1 Soft, $13@$13.50; No. 2 Soft, $12.50@$13.

Announcement is made that Talladega Furnace, belonging to the Zimmerman Syndicate, will blow out this week on account of the condition of the pig iron markets.

Buffalo. August 15.

(Special Report of Rogers, Brown & Co.)

The gray iron foundries in this district seem to be generally requiring heavier shipments, even though the hot weather has restricted consumption with some. Sales largely, however, are from hand to mouth, with here and there a desire shown to contract further ahead than for some time past. Lake Superior charcoal has been in much better demand. We quote below on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $18.25@$18.75; No. 2, $17.25@$18.50; Southern soft, No. 1, $18.25@$18.75; No. 2, $18.50@$19; Lake Superior charcoal, $21; coke malleable, $18.25.

Cleveland, O. August 15.

(From Our Special Correspondent.)

Iron Ore.—The report just received from Duluth is to the effect that a document has just ben filed in the courts setting forth a transfer of the Stephens mines from John D. Rockefeller to the Carnegie Steel Company. The provision in the document is that the boats of the Bessemer Steamship Company, of which Mr. Rockefeller is the head, shall carry the ore down the lakes at 50c. per ton, the owner of the ore paying the charges for loading and unloading. Coupled with this is a story that Mr. Rockefeller and Mr. Carnegie have entered into an agreement whereby the former confines his operations to the transportation of the various commodities on the Lakes and the latter withdraws as a vessel-owner and becomes a producer and a manufacturer solely. Under the terms of this agreement the Rockefeller mines go to the Carnegie interests and the vessel property of the Pittsburg Steamship Company is turned over to the Bessemer Steamship Company. This is but a rumor, but it appears to have some substantial verification. This has been the only stirring thing in the ore market this week. A contract was made for the transfer of 25,000 tons of ore from Duluth to Ohio ports at 75c. this week, this being a reduction of 15c. More boats were offered on similar terms, but no ore was there to be shipped, this being something of an index to the weakness of the market. No change has been made in the Marquette or the Escanaba rates because there has been no ore to bring down by wild boats from those ports.

Pig Iron.—The only change in the pig iron market from a week ago has been the appearance this week of fresh demands for pig iron for future delivery. The market appears to be picking up in that direction quite a good deal and a large amount of business is in sight. For spot delivery the operations of the sales-agents are confined to the gray iron foundries, the plants making machine castings still being tied up by the strike of the moulders. These sales are a little heavier than they have been, but the price is not changed, $16.50 being quoted on No. 1 and $16 on No. 2 foundry. There is no demand for Bessemer pig, hence no market can be quoted. The movement of contract stuff is even lighter now than it has been.

Finished Materials.—The biggest business in sight now is in plates. J. C. Gilchrist has given a contract to the American Shipbuilding Company for five large steel steamers which will require about 10,000 tons of plates. The order for this will be closed this week, as the work on the ships will be started soon. Plates are now being quoted at 1.10@1.15c. Pittsburg, the price being a little stiffer than it was a week ago. There is a good demand for bars also, and in both of these grades the outlook is bright. Bars are not so strong as plates, the market quotation being about 1.10c., although some contract business was done during the week at 1c. The expected break in the price of beams and channels did not materialize. On the other hand the mills outside of the agreement are now quoting the association price, 1.80c., on angles of sizes over 3 in., and 1.90c. on beams and channels. The price on both rails and billets holds firm, the former being $35 and the latter $18.

Old Iron.—There is a little better market all around than there has been, a good deal of business being done. The biggest demand is for machine cast scrap at $12 and stove cast scrap at $7.

Pittsburg. August 15.

(From Our Special Correspondent.)

New business is not meeting expectations and less is being done this week than last. But little hope is expressed for improved conditions before September. There is nothing doing in Bessemer pig iron outside of a few small orders for immediate delivery. But two of the Bessemer Furnace Association's furnaces in the Valleys are in blast, and no definite time has been set for starting the idle ones. Southern furnaces are not quoting beyond September 1st, and this is taken to mean that a better demand and higher prices are expected after that date. Business is still confined to structural material, sheets, bars and plates, with a fair demand for each, steel bars leading with a good demand and prices stiffer than a week ago. The parties to the structural steel agreement held a meeting the other day at which prices were reaffirmed. To-day, however, it is announced that they have agreed upon a cut on all structural material, averaging $8 a ton. The Pittsburg District is not affected by the unsettled wage scales for the iron mills, as all the concerns here have accepted the Amalgamated Association terms and are in full operation. They are getting new business which formerly went to the combination plants, which have been idle since July 1st and cannot be operated until the wage scale which they have rejected is signed or a more favorable one is agreed to. The Republic Iron and Steel Company, the largest producer of bar iron in the country, seems anxious to start its plants, and at its request the officers of the Amalgamated Association have called the general conference committee together and a meeting with the manufacturers' representatives began in Detroit yesterday. It was in secret session again to-day, and late this afternoon a dispatch was received here announcing that it was found impossible to agree. The manufacturers positively refused to accept the terms of the workers. As a result the question will be referred back to the lodges of the Amalgamated Association for a vote on accepting the best terms offered by the manufacturers or to go on strike for the original demand. Another conference will be held in three weeks. In the meantime all the mills of the industrial combinations that are under the jurisdiction of the Amalgamated Association will remain closed. This will undoubtedly result in a further stiffening of the price of bars. Another conference on the tin-plate wage scale is scheduled to be held in Detroit to-morrow and there seems to be no doubt but that terms will be agreed to and that the majority of the plants of the American Tin

Plate Company will be put in operation late next week or early the following week.

Pig Iron.—Bessemer pig iron is quoted this week at $16@$16.50 Pittsburg, and several sales of 50 and 100 ton lots were sold. No. 2 foundry iron is lower this week and sales of small lots were made at $14.50@$15.

Steel.—There is no change in the price of Bessemer steel billets, and while no sales are recorded for the week it is not believed that less than $18, Pittsburg, can be done. Open-hearth billets are quoted at $20. Tank plates are up a little and cannot be had at less than 1.10@1.15c. Bars are also higher and are quoted at 1.05@1.10c.

Sheets.—The demand for sheets is strong and the American Sheet Steel Company is still naming 3.20c. for No. 28 and 3.10c. for No. 27. Galvanized sheets are 70 and 10% off with 15c. freight allowance. The independent mills are competing with the combination and these prices can be shaded for a good order.

Ferro-manganese.—The leading producer is still quoting 80% domestic at $85@$100. The demand is light.

Philadelphia. August 16.

(From Our Special Correspondent.)

Pig Iron.—No definite statement is yet possible concerning the condition of the middle and eastern Pennsylvania iron trade. There are more mills at work, but fewer furnaces. There are more inquiries for material this week and, in one or two lines, larger sales. There is still a downward tendency in prices, but it does not show itself in quotations. Consumption is not increasing, but a good many buyers feel that it is risky to wait much longer before making contracts for supplies. Pig iron brokers are not crowding iron on the market. Both sides are quietly awaiting developments. Some city foundry buyers bought small lots of high-grade iron this week.

Billets.—The movement of billets has been small, yet selling is reported and to-day an ultimatum was received from a large maker as to price.

Merchant Bar.—The situation has not changed very much. Storekeepers are selling more this week than last. Office men report an occasional large order.

Merchant Steel.—Orders from present inquiry will run up well in September. Some big orders were thought safe last week, but the matter of price still stands in the way.

Plates.—The mill managers have gone over the situation. Eastern makers are not booking all the business offered, as some of it would not pay. Most buyers take the view that plates will go lower.

Structural Material.—The meeting in New York to adjust export freight rates on a lower basis will introduce a new feature into the Eastern structural mill situation. Export agents inform some of our local mill agents that the chief obstacle to a larger volume of export business is high freights.

New York. August 17.

In foreign trade we note shipments of $150,000 worth of manufactured iron, $30,000 worth of railroad material and $11,500 of mining machinery to South Africa; and $51,000 worth of steel rails, $22,000 worth of bridge material and $13,000 worth of metal-working machinery to Japan.

Pig Iron.—The market is still unsettled. The feeling that things are about down to hardpan is growing, but prices show no change. We quote for Northern irons, tidewater delivery: No. 1 X foundry, $17@$17.50; No. 2 X, $16@$16.50; No. 1 plain, $17@$17.50; No. 2 plain, $16@$16.50; gray forge, $15@15.75. For Southern irons on dock, New York: No. 1 foundry, $18.75@$19.25; No. 2, $17.50@$18; No. 3, $16@$16.50; No. 1 soft, $18.75@$19.25; No. 2, $17.50@$18.

Bar Iron and Steel.—The market shows no particular change. We quote common bars at 1.30c. for large lots on dock; refined bars, 1.40c.; soft steel bars, 1.30@1.35c.

Plates.—Demand continues good for this time of the year. Some pretty low quotations have been named by Western mills, but Eastern mills refuse to go below 1.30c., and some do not care to go below 1.35c. There is a feeling that prices are not likely to go lower, but will rise before long. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 1.30@1.35c.; tank, 3/16-in., 1.35@1.45c.; shell, 1.45@1.50c.; flange, 1.60c.; marine, 2.10c.; universals, 1.35c.

Steel Rails.—Some very promising inquiries have been received from abroad. The local market is unchanged. We continue to quote 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.

Structural Material.—Prices are firmly held and demand is fair. We quote in large lots at tidewater: Beams, 2.10c.; channels, 2.10c.; angles, 2c.; tees, 2.15c.; zees, 2.10c.

METAL MARKET.

New York. Aug. 17.

Gold and Silver.

Gold and Silver Exports and Imports

At all United States ports in July and year.

Metal.	July. 1899.	July. 1900.	Year. 1899.	Year. 1900.
GOLD.				
Exports	$2,606,457	$3,269,159	$30,159,781	$33,709,841
Imports	2,895,469	4,944,764	26,283,116	21,570,631
Excess	I. $289,012	I. $1,675,605	E. $3,876,665	E. $12,139,210
SILVER.				
Exports	4,003,472	4,913,658	31,123,420	35,284,144
Imports	2,731,796	3,311,033	17,168,511	22,160,121
Excess	E. $1,271,676	E. $1,602,625	E. $13,954,909	E. $13,124,023

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 August 16th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Period.	Gold. Exports.	Gold. Imports.	Silver. Exports.	Silver. Imports.	Total Excess, Exp. or Imp.
We'k	$8,787,485	$19,359	$581,555	$9,319	E. $9,340,366
1900..	36,338,195	1,673,926	24,366,284	2,862,137	E. 55,168,416
1899..	11,550,543	8,079,784	17,229,556	2,219,056	E. 18,481,259
1898..	4,613,583	71,901,698	21,115,929	1,976,847	I. 52,149,012
1897..	28,056,476	3,209,340	25,088,971	1,333,133	E. 49,602,982

The exports were nearly all to London, while the imports were from Central America and the West Indies.

The United States Assay Office in New York reports the total receipts of silver at 102,000 oz. for the week. Total since January 1st, 3,072,000 oz.

Average Prices of Silver per oz. Troy.

Month.	1900. Lond'n Pence.	1900. N. Y. Cents.	1899. Lond'n Pence.	1899. N. Y. Cents.	1898. Lond'n Pence.	1898. 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.....	27.41	59.59	27.65	60.10	25.95	56.02
May.....	27.56	59.96	28.15	61.23	26.31	56.98
June.....	27.81	60.42	27 77	60.43	27.09	58.61
July.....	28.23	61.25	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	58.29

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. 1900.	COPPER. 1899.	TIN. 1900.	TIN. 1899.	LEAD. 1900.	LEAD. 1899.	SPELTER. 1900.	SPELTER. 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....	16.76	17.13	30.90	24.98	4.675	4.31	4.71	6.67
May.....	16.34	17.20	29.37	25.76	4.181	4.44	4.53	6.88
June.....	15.75	16.89	30.50	25.85	3.901	4.43	4.29	5.98
July.....	15.97	17.10	33.10	29.63	4.030	4.52	4.28	5.82
Augus'..	...	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.; for April, 16.94c.; for May, 16.55c.; for June, 16c.; for July, 16.16c.

Prices of Foreign Coins.

	Bid.	Asked.
Mexican dollars	$ 48¼	$ .49½
Peruvian soles and Chilean pesos	.44	.46½
Victoria sovereigns	4.86½	4.88
Twenty francs	3.87	3.90
Twenty marks	4.74	4.80
Spanish 25 pesetas	4.78	4.82

Financial Notes of the Week.

Business continues rather dull and at present the prospects depend mainly upon crop returns. Gold exports are on a large scale this week, $8,100,000 going out on Wednesday, chiefly as a result of the heavy New York subscriptions to the British war loan.

There is no new feature in silver. The market is very steady and sales are so distributed as not to disturb to any extent the steady price. Owing to the money market futures are commanding 1/16d. premium.

The statement of the United States Treasury on Wednesday, August 15th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last week:

	August 8.	August 15.	Changes.
Gold	$72,178,973	$74,588,276	I. $2,409,303
Silver	15,901,884	15,422,733	D. 479,151
Legal tenders	26,517,450	26,344,453	D. 172,997
Treas. notes, etc.	683,163	652,701	D. 30,462
Totals	$115,281,470	$117,008,163	I. $1,726,693

Treasury deposits with national banks amount-

Imports and Exports of Metals.

Port.	Week, Aug. 15. Expts.	Week, Aug. 15. Impts.	Year 1900. Expts.	Year 1900. Impts.
***New York.**				
Aluminum.....long tons	.....	**3	85	57
Antimony ore... " "	.....	**35	.....	1,871
" regulus.. " "	.....	**45	.....	735
Chrome ore..... " "	.....	.....	.....	1,501
Copper, fine..... " "	1,475	86	69,258	13,802
" matte.. " "	169	.....	2,787	167
" ore..... " "	.....	.....	.....	10,639
" ash..... " "	.....	**7	.....	93
Ferro-Chrome.. " "	.....	.....	.....	31
Ferro-mangan'se " "	.....	.....	.....	382
Iron ore..... " "	.....	.....	.....	17,526
" pig, bar, rod " "	671	**260	8,295	5,223
" pipe..... " "	583	.....	9,771	157
" plates, sheets " "	.....	.....	889	18
Lead..... " "	1,325	750	18,545	43,034
" ore..... " "	.....	.....	.....	9,700
" dross..... " "	.....	.....	.....	24
Manganese, ore. " "	.....	**72	.....	9,286
Metals, old, scrap " "	86	**124	2,356	5,123
Composition... " "	.....	.....	1,082	185
Nails..... " "	649	.....	14,820	.....
Nickel ..... " "	.....	.....	1,384	108
" ore, matte " "	.....	.....	.....	5,393
§Railr'd material " "	1,484	**140	3,343	2,848
Rails, old..... " "	1,020	.....	3,287	518
Spiegeleisen..... " "	.....	**100	.....	1,793
Steel bars, plates " "	1,363	.....	17,263	11,813
" rails..... " "	532	.....	35,208	18
" wire..... " "	330	.....	17,114	23
" not speci'd. " "	622	**52	6,182	1,968
Tin ..... " "	.....	546	5	16,757
" and black plates " "	.....	‖827	.....	23,778
Zinc..... " "	.....	**2	425	274
" dross..... " "	12	.....	510	50
" ashes, skim " "	.....	.....	742	20
" ore..... " "	.....	.....	9,868	.....
†Baltimore.				
Chrome ore.....long tons	.....	.....	.....	3,730
Copper, fine..... " "	252	.....	26,008	2,556
" matte... " "	.....	.....	.....	.....
Ferro-manganese " "	.....	.....	.....	155
Iron pig, bar etc. " "	.....	.....	2,935	20,411
" ore..... " "	.....	11,654	.....	289,667
" pyrites..... " "	.....	.....	.....	25,584
Manganese ore.. " "	.....	1,337	.....	101,349
Metals, old & Rails " "	.....	.....	384	2
Nails ..... " "	.....	.....	1,206	.....
Pipe, iron & steel " "	.....	.....	3,386	.....
Silicon ..... " "	.....	.....	.....	85
Spiegeleisen..... " "	.....	.....	.....	659
Steel, bars, etc.. " "	103	.....	21,430	1,388
" wire ..... " "	.....	5	705	100
" rails..... " "	.....	.....	59,526	.....
Tin..... " "	.....	.....	.....	161
" and blackplates " "	.....	41	.....	1,742
‖Philadelphia.				
Antimony ....long tons	.....	.....	.....	14
Chrome ore..... " "	.....	.....	.....	3,650
Copper, fine..... " "	.....	.....	2,552	.....
" ore..... " "	.....	.....	.....	26,421
Iron, pig..... " "	.....	.....	.....	2,768
" ore..... " "	.....	9,550	.....	156,524
" pyrites..... " "	.....	.....	.....	87,455
Manganese ore.. " "	.....	1,337	.....	71,500
Spiegeleisen..... " "	.....	.....	.....	3,953
Tin..... " "	.....	.....	.....	393
" and black plates " "	.....	1	.....	1,173
Zinc..... " "	.....	.....	67	.....
" ore..... " "	.....	.....	2,507	.....

Total United States.§§

Articles.	June, 1900. Expts.	June, 1900. Impts.	Year, 1900. Expts.	Year, 1900. Impts.
Antimony.....long tons	.....	91	.....	1,064
" ore.... " "	.....	311	.....	1,598
Copper, fine, in all forms " "	‡16,586	§§4,351	90,229	25,744
Iron, pig & bar.. " "	17,309	6,378	58,683	41,967
" ore..... " "	671	105,500	3,632	404,987
Iron & steel plates " "	3,793	511	21,975	5,037
Iron & steel rails " "	41,331	203	185,770	966
" " wire " "	7,883	138	44,963	854
Lead, pigs, bars & old..... " "	23	20	352	709
Lead in ore, etc. " "	7,040	9,056	42,605	44,027
Manganese ore and oxide..... " "	.....	19,050	.....	203,522
Nickel "&matte " "	302	.....	1,227	.....
Nails, cut..... " "	1,475	.....	6,075	.....
" wire..... " "	1,392	.....	17,833	.....
Quicksilver..... " "	17	.....	220	.....
Steel, billets, rods, etc..... " "	15,076	2,579	40,618	18,522
Tin..... " "	7	1,842	223	16,614
" &black plates " "	227	4,721	394	33,309
Zinc ..... " "	3,177	80	13,875	551
" ore ..... " "	4,305	.....	19,179	.....

*New York Metal Exchange returns. †By our Special Correspondent. ‡ Not specified. §§ Monthly returns, Treasury Department. ‖ Report of Mr. John Stanton. ¶ Week August 10th. **Week, August 6th. Exports include domestic and foreign metals.

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.

ed to $97,527,516, showing a decrease of $2,308,623 for the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending August 11th, gives the following totals, comparison being made with the corresponding weeks in 1898 and 1897:

	1898.	1899.	1900.
Loans and discounts.	$659,411,200	$746,685,300	$808,046,200
Deposits	760,754,600	849,918,500	897,409,400
Circulation	14,231,100	13,902,700	27,411,300
Reserve:			
Specie	166,224,400	171,963,600	177,029,800
Legal tenders	57,076,100	54,911,400	75,448,500
Total reserve	$223,300,500	$226,875,000	$252,478,300
Legal requirements.	190,188,650	212,479,625	224,352,350
Balance, surplus	$33,111,850	$14,395,375	$28,125,950

Changes for the week this year were increases of $4,348,300 in loans and discounts, $2,926,900 in deposits, $765,600 in circulation and $443,400 in specie; decreases were $730,600 in legal tenders, and $1,018,925 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:

	1899.		1900.	
Banks.	Gold.	Silver.	Gold.	Silver.
N.Y. Ass'd..	$171,963,600	.....	$177,029,800	.....
England....	167,589,499	.....	152,144,525	.....
France.. ...	384,523,940	$240,319,175	446,446,340	$227,518,045
Germany...	137,038,000	70,615,000	141,945,000	73,125,000
Spain..	64,800,000	67,845,000	68,445,000	84,115,000
Aus.-Hun ..	152,390,000	53,045,000	188 640,000	49,425,000
Neth'l'ds...	13,715,000	30,260,000	24,350,000	29,510,000
Belgium....	15,325,000	7,665,000	14,700,000	7,350,000
Italy	77,665,000	8,830,000	77,315,000	8,155,000
Russia	477,100,000	27,215,000	397,175,000	38,060,000

The returns of the Associated Banks of New York are of date August 11th and the others are of date August 10th, 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.

Shipments of silver from London to the East for the year up to August 2d, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
India	£2,967,100	£3,456,787	I. £489,687
China	829,453	1,405,266	I. 575,813
The Straits	92,146	310,903	I. 218,757
Totals	£3,888,699	£5,172,956	I. £1,284,257

Arrivals for the week, this year, were £203,000 in bar silver from New York, and £7,000 from Chile; total, £210,000. Shipments were £79,000 in bar silver to Bombay, and £72,000 to China; total, £151,000.

Indian exchange is again slightly weaker, and the Council bills offered in London sold at an average of 15.91d. per rupee. Some gold has been sent to India from London, but the buying of silver for India has stopped for the present.

Specie exports from San Francisco by water in July included $149,399 gold and $1,394,196 silver. For the seven months ending July 31st the shipments were as follows:

	Gold.	Silver.	Totals.
Hongkong	$45,210	$5,245,984	$5,291.194
Shanghai	.....	1,297,031	1,297,031
Japan	15,863	63,530	79,393
Samoa	1,180	.....	1,180
Fanning Island	.....	1,000	1,000
Tahiti	.....	4,000	4,000
Central America	15 175	6,450	21,625
Total foreign	$77,428	$6,617,995	$6.695,423
Honolulu	258,000	53,800	311,800
New York	3,319.035	248,090	3,567,125
Totals	$3,654,463	$6,919,885	$10,574,348
Totals, 1899	9,935,339	3.123,862	13,059.201

The silver shipments this year included $968,983 in Mexican dollars in July, and $3,785,973 in those coins for the seven months; which compares with $276,494 and $658,334, respectively, last year.

Exports of merchandise from the United States in July were valued at $100,413,501, which is $8,238,456 less than in June, but $5,487,331 more than in July, 1899. For the seven months ending July 31st the statement of the Bureau of Statistics of the Treasury Department is as follows:

	1899.	1900.
Exports	$687,944,803	$812,446,645
Imports	448.546,623	502,954,673
Excess, exports	$239,398,180	$309,491,972
Add excess of exports, gold		12.139.210
Add excess of exports, silver		13,124,023
Total apparent balance		$334,755,205

The gold and silver movement in detail is shown in the usual table, at the head of this column.

Other Metals.

Daily Prices of Metals in New York.

August.	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.
11	4.87¾	60⅞	28	16½	16¼	....	31⅞	4.20 @4.25	4.17½	4.02½
13	4.87¾	61	28 1/16	16½	16¼	74⅜	31¾	4.20 @ .25	4.17½	4.02½
14	4.87½	61½	28⅛	16⅛	16¼ @16⅜	74	31⅝	4.20 @4.25	4.15	4.00
15	4.87½	61	28 1/16	16⅛ @16⅜	16⅜	74½	31½	4.20 @4.25	4.15	4.00
16	4.87½	61	28 1/16	16⅛ @16⅜	16⅜ @16½	73⅞	31⅛	4.20 @4.25	4.15	4.00
17	4.87⅛	61	28 1/16	16⅜	16½	73⅝	31½	4.20 @4.25	4.15	4.00

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

Copper.—During the week just ended the market has again ruled very firm. Demand for cable, electrical and ammunition purposes continues large both here and abroad. Spot copper is very scarce and we understand that on account of the extremely hot weather most of the refining works experience the greatest difficulties in meeting the urgent dmands of their customers. We quote Lake copper at 16½@16⅝c.; electrolytic in cakes, wirebars and ingots, at 16⅜@16½c.; in cathodes, at 16⅛@16¼c.; casting copper nominal at 16⅜c. We understand that sales have been made for delivery up to December at somewhat above the current quotations.

The market for standard copper in London opened on Monday at £74 7s. 6d., declined the following day to £74, and has remained steady thereat ever since, notwithstanding the fact that the statistics for the first half of the month show an increase in the visible supplies of 3,500 tons. Standard copper for three months' delivery, which, until recently, had been selling at a discount sometimes larger, sometimes smaller, has of late been commanding a premium which, within the last few days, has been as large as 10s.@12s. 6d. This would indicate that there is less pressure to sell the market short and greater belief that present values will be maintained, at least for some time to come. Closing quotations are £73 12s 6d.@£73 15s. for spot, and 10s. higher for three months.

Refined and manufactured sorts we quote: English tough, £76 10s.@£77 10s.; best selected, £77 10s.@£78 10s.; strong sheets, £83 10s.@£84; India sheets, £81 10s.@£82; yellow metal, 6⅞d.

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

	July. 1899.	July. 1900.	7 months 1899.	7 months 1900.
U. S., reporting mines	18,533	19,612	130,520	133,789
U. S., outside sources,	2,800	3,400	15,300	23,800
Total, U. S.	21.333	23,012	145,820	157,589
Foreign, reporting mines	7,390	7,443	51,0 9	51,496
Totals	28,723	30,455	196,839	209.085
Exports, U. S.	7,160	11,636	63,722	101,865

The United States production for the seven months shows an increase of 11,769 tons, or 8.1%, of which 3,269 tons came from the reporting mines and 8,500 tons from the outside sources. The increase in the output of the foreign reporting mines was only 477 tons, or 0.9%. United States exports were very large for the month, and for the seven months they show an increase of 38,143 tons, or 59.9%. The exports this year were 64.6% of the United States production; and nearly double the output of the European reporting mines.

Tin has fluctuated considerably throughout the week, but the demand on the part of consumers just at present seems to be quite satisfactory. At the close spot metal is selling at 31½; August delivery at 31⅜; September delivery at 31c.

The foreign market opened on Monday at £144, declined to £141 15s., but rallied again, and the closing quotations are cabled as £141 5s.@£141 7s. 6d. for spot, and £5 5s. lower for three months.

Lead has ruled quiet but steady. Demand is fair, but there is no news of special interest. Prices remain unchanged at 4.20@4.25c. New York, 4.15@4.20c. St. Louis.

The European market is firm. Spanish lead being quoted at £17 17s. 6d., English lead at £18.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is quiet at 4.20c. for both Missouri and argentiferous brands. The demand is reasonably liberal at this rate.

Spanish Lead Market.—Messrs. Barrington & Holt write from Cartagena, Spain, as follows: The average price of silver during the past month has been 14.25 reales per ounce. The average price of lead has been 91.62 reals per quintal, equivalent to £16 3s. 1d. per ton of 2,240 lbs. f. o. b. Cartagena, on an average exchange of 31.82 pesetas to £1 sterling. Exports of pig lead in July were: 1,185,342 kgs. to Marseilles; 360,865 kgs. to Coueron; 152,124 kgs. to Antwerp; 500,000 kgs. to London; total for the month, 2,198,331 kgs. Exports of silver included 2,549 kgs. bars to Marseilles.

Spelter has been dull and uninteresting, only a very limited amount of business going through. Prices have again been shaded, and we quote St. Louis at 4c., New York at 4.15c.

The foreign market is firm at £19 7s. 6d.@£19 10s. for good ordinaries; 5s. higher for specials.

Messrs. Barrington & Holt write from Cartagena, Spain, that exports of zinc ore in July included 400,000 kgs. calamine to Hamburg and 658,000 kgs. blende to Antwerp.

Antimony.—The metal is steady, with no change in prices, which are 10½c. for Cookson's; 9½c. for Hallett's; 9½c. for U. S. Star.

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

Platinum.—Consumption is good and prices are strong. 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 72c. per gram, showing an increase of 1½c.

Quicksilver.—The New York quotation is unchanged at $51 per flask for large lots; for small orders $52.50@$54 is asked. San Francisco quotations are $51.50@$52 for local deliveries, and $46.50@$47 for export. The London price is £9 5s. per flask, with the same figure quoted from second hands.

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

Aluminum.	Per lb.		Per lb
No. 1, 99% ingots	33@37c.	Ferro Titanium (23%)	$1.00
No. 2, 90% ingots	31@34c.	Ferro-tungsten (37%)	35c
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	$2.25	Mangan's Cop (30% Mn)	.38c.
Chromium (over 99%)	1.00	Molybdenum (Best)	$1.45
Copper red oxide	55c.	Phosphorus	45@47½c.
Ferro-Molyb'um (50%)	$1.00	American	70c.
Ferro-Titanium (10%)	90c.	Tungsten (Best)	.92c.

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

LATE NEWS.

A dispatch from Seattle, Wash., August 16th, says: "A decision just delivered by United States Commissioner Stevens holds that the 60-ft. roadway along the shore of Bering Sea does not exist, and that, if it ever did exist, it was done away with by Section 26 of the new Alaska code adopted by Congress last June. A test was made by Frank Sieger, who refused to move his rocker and quit work when ordered to vacate a location made on the beach at Cape Nome by George W. Beardsley and S. B. Caldron, and known as the Ophir Beach claim. A criminal complaint was made against Sieger, and the decision quoted is the result. Sieger has been bound over for appearance at the next term of court. The effect of the decision is to give to several large corporations land which has been worked by poor miners. Feeling among the miners is running high over the loss of the beach and every legal effort, it is said, will be made to reverse the decision."

(From Our Special Correspondent.)

Pittsburg, Pa., August 16th.—The announcement to-day that the Structural Steel Association, known as the "beam pool," had cut prices $8 a ton caused considerable surprise. It was entirely unexpected, as at a recent meeting, called for the purpose of considering prices, nothing was done, which was taken as an indication that prices had been reaffirmed and would not be disturbed for some time at least. It was quietly hinted that the reduction had been decided upon at the recent meeting, but that it was kept quiet for the purpose of permitting some of the members to close several important contracts. The extent of the orders placed within the past two days is not now known. The cause of the present cut, it is reported here, is the fact that independent concerns were shading the pool prices. The members have about all the business they can take care of this season and it is believed that it was thought better to make a reduction now than to wait until fall, when new business is desired. A cut later in the year, it is contended, would disturb the market and delay buying. The new prices, which are said to be bottom figures, are as follows: Beams and channels up to 15-in., $1.50 per 100 lbs., and over that size, $1.60; angles from 3 to 6 in., $1.40; over 6 in., $1.50; zees, $1.50; tees, $1.55.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 210.)

New York. August 17.

Heavy Chemicals.—Second-hand offerings of domestic caustic soda have softened the market, and sales are reported at $1.80@$1.85 per 100 lbs. f. o. b. works for high test. Alkali is in better request, as the glass works will blow in next month. Importers report that the amalgamation of the Castner-Kellner Alkali Company and the Aluminum Company of Great Britain has been effected, the former to pay $650,000 in its shares and $450,000 in debenture stock for the assets and business of the latter, exclusive of 66,000 shares of the Castner-Kellner Company which it already holds. It is said also that the Aluminum Company's works at Oldbury, Eng., will be removed to the Castner-Kellner works at Weston Point, where sodium can be produced at less cost.

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	90@95
" 48%.	85@90	$1.00@$1.05	$1.00@1.05
Caustic Soda, high test	$1.85@$1.90	2.12½@2.25	2.50@2.55
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
"conc.	1.45@1.75	...	1.75
Bicarb. Soda.	1.25@1.37½	...	2.25
" " extra	3.25@3.50	...	...
Bleach Pdr., Eng. prime.	...	...	1.75@1.80
other br'nds.	...	...	1.45@1.60
Chl. Pot cryst	...	8.75@9.00	10.00@10.25
" powd.	...	...	10.25@10.50

Acids.—Hand-to-mouth demand exists only for most acids. Blue vitriol is firm.

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	4.87½@5.00	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	5.75@5.87½
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		

Brimstone.—Firmer, owing to higher freight rates. A charter of 3,000 tons from Sicily to the United States was taken recently at 12s., which is about $1.25 per ton more than exporters are accustomed to pay. Best unmixed seconds on spot are quoted at $23@$24 per ton, and shipments at $21.75@$22. Best thirds are about $2.50 less. We imported 500 tons at New York this week.

The monthly average prices of best unmixed seconds as quoted by importers are as follows, per long ton of 2,240 tons:

	Spot.	Shipments.
January	$21.78	$20.65
February	21.57	21.19
March	21.88	21.31
April	21.38	21.25
May	21.43	21.10
June	20.90	20.65
July	21.16	20.67
Average, 7 months..	$21.50	$20.98

Best unmixed thirds during this period were worth about $2 per ton less.

Pyrites.—Brisk demand. The Pennsylvania Salt Manufacturing Company imported this week at New York 3,963 metric tons cupreous pyrites from Huelva, Spain. The Virginia producers ask an advance of ½c. per unit for their "fines," and 25c. per ton more for their lump ore. We quote: Mineral City, Va., lump ore, $5 per long ton (basis 42%), and fines $4.40. Charlemont, Mass., lump, $5.50, and fines, $5. Spanish pyrites, 13@15c. per unit, according to percentage of sulphur contents, delivery ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46%@51% of sulphur; American, 42%@44%.

Fertilizing Chemicals.—Quiet. The Virginia-Carolina Chemical Company in its annual statement recently issued shows that 8% was paid on its preferred stock, and 4% on its common, leaving $717,582 to be placed to undivided profit account. The value of materials and manufactured goods on hand for next season's business is $2,685,696.

Sulphate of ammonia, foreign gas liquor is held at $2.85@$2.87½ per 100 lbs., while domestic can be had at $2.82½ f. o. b. works, Everett, Mass. Other quotations are: High grade Western blood, $2 per unit, f. o. b. Chicago, tankage, 1.80 and 10c. per unit, f. o. b. Chicago; Calcutta bonemeal, $23@$25 per ton; domestic steamed ground bone, $21@$22; dried fish scrap, $22.50@$23 per ton f. o. b. factory; acid phosphate, 14@16%, 65@67½c. per unit; bone-black, spent, $15@$16 per ton; azotine, $1.90@$2 per unit.

Nitrate of Soda.—Trade is very dull as consumers are holding for lower prices. Importers, however, are firm in their views, asking $1.75@$1.77½ per 100 lbs. for spot, and about the same for futures. The "Oceana" arrived with 5,200 tons at this port this week.

Concerning the Chilean market we are advised by Messrs. Jackson Brothers of Valparaiso, under date of June 30th that although no large transactions have taken place, exporters have in a few instances paid sellers former pretentions for 95% in spite of higher quotations of freight for season loadings. At the same time advices have been received that considerable quantities of nitrate have been disposed of in Europe by the English companies at comparatively higher prices than those asked for on the coast. We quote 95%, July 5s. 1d, August 5s. 2½d., September-December 5s. 3d., and 96% July 5s. 2½d., August-December 5s. 3½d., all ordinary terms, sellers. The price of 5s. 1d. with an all-round freight of 35s. stands in 7s. 4¾d. per cwt. nett cost and freight without purchasing commission. Sales reported during the fortnight ending June 30th were 473,000 qtls.

Phosphates.—Occasionally a large order is heard of, but on the whole trade is quiet. Florida miners are filling the orders on their books. In South Carolina miners are active, and in Tennessee prospects of an increased demand are good. The situation in Tennessee is unlike last year, owing to the excessive wet weather, especially in the last two months. In Maury County many miners have left for the agricultural districts of the South where they can get steadier work and higher wages. An estimate is made that only about 40,000 tons of Tennessee rock are above ground, which is already sold for delivery some months ahead. In addition to this miners are said to have orders on their books for over 200,000 tons more for future delivery. On the other hand production this year will show a large decrease, it is believed. In July the exports from Pensacola amounted to 3,983 tons, making 75,615 tons for the seven months, as against 68,984 tons last year, showing an increase of 6,631 tons in 1900.

We note an importation at New York of 950 tons phosphate rock from Connetable Island by the International Phosphate Company.

We quote, per ton, as below:

Phosphates	Per Ton F. o. b.	C. i. f. Un'd Kingdom or European Ports.	
		Unit.	Long ton.
*Fla. hard rock (77@80%)	$7.50@8.00	8¼@8½d	$12.85@13.26
*Fla. land pebble (68@73%)	4.35	7@7¼d	9 80@10.15
*Fla. Peace River (58@63%)	3.00@3.50	7@7¼d	8.40@8.70
†Tenn. rock 78%, export.	4.00@4.50	7½@7¾d	11.70@12.00
†Tenn. 78% domestic.	3.30@3 50	...	...
†Tenn. 75% "	3.00@3.25	...	...
†Tenn. 72% "	2.65@2.75	...	...
‡So. Car. rock, crude	4.00	...	...
§So. Car. rock, dried	4.50	6½d	7.80
Algerian, rock (63@70%)	...	6¾@7½d	9 05@9.71
Algerian, rock (58@63%)	...	6½@7d	7.80@8.40
...	...	...	...
...	...	...	...

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

Liverpool. August 7.

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

Since our last report there is no fresh feature to report as regards the position of chemicals.

Soda ash is quiet but prices are well maintained. We quote spot range for tierces about as follows: Leblanc ash, 48%, £4 15s.@£5; 58%, £5 5s.@£5 10s. 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 in fair demand 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 firmly held and a fair amount of trade passing. We quote spot range as follows: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s. @£10 17s. 6d.; 76%, £11 5s.@£11 10s. per ton net cash.

Bleaching powder is without improvement and £6@£6 10s. per ton net cash is about nominal spot range for hardwood packages.

Chlorate of potash is in light request and quoted at 4d. per lb. net cash.

Bicarb. soda is meeting with a fair amount of attention from buyers and is quoted at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages, also special quotations for certain export markets.

Sulphate of ammonia is quiet, but firm at £11 7s. 6d. @£11 10s. per ton, less 2½% for good gray 24@25% in double bags f. o. b. here.

Nitrate of soda is steady at £8 10s.@£8 15s. per ton, less 2½% for double bags f. o. b. here, as to quality.

MINING STOCKS.

Complete quotations will be found on pages 207 and 208 of mining stocks listed and dealt in at:

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

New York. Aug. 17.

The local market has improved a little, though purchases are still limited. Professional trading is centered in the copper group. Amalgamated gained ¼ at $89¼ on sales; Anaconda, 2¾ at $47⅛, and Union of North Carolina ⅛ at $2⅛. The Gold Hill Copper Company, of North Carolina, in which the promoters of Union were interested, has been put into the hands of a receiver by order of the United States Court at Salisbury, N. C. British Columbia Copper brought $11½@$11⅞.

A lot of 20 shares of Homestake, of South Dakota, was sold at $75 per share—the first transaction in some months. Father de Smet also sold at 45c.

Kingston & Pembroke, of Ontario, brought 20c., and Horn Silver, of Utah, $1.20.

Brunswick, of California, changed hands at 12½c.

In the Colorado section trading was not active. Argentum-Juniata brought 26c., Isabella, $1.25; Pharmacist, 15c.; Creede & Cripple Creek, 14c., and Little Chief, 17c.

Of the Comstocks, Consolidated California & Virginia made sales at $1.45@$1.37; Ophir, 62c.; Yellow Jacket, 30c., and Best & Belcher at 25c.

Auction sales were $2,000 mortgage bonds, due 1915, with scrip coupons of the Chateaugay Ore and Iron Company at 30c., and 126 shares Central Mining Company, of Michigan, at $2.70 per share.

Baltimore men, it is said, have taken a controlling interest in the Arizona, Eastern & Montana Smelting Company, notes of which concern have appeared in this paper. Among the directors named as present at a meeting in Baltimore are: Henry F. New, Paul A. Seeger, Eldridge Packham, Jr., William Kennedy Boone, A. F. Bannister, Newark, N. J.; Theodore W. Myers, Charles Reed, of Naugatuck, Conn. Eldridge Packham, of Baltimore, was elected treasurer of the company, and Morris Willis, of New York, secretary.

The most valuable property of the company is the Lone Pine Mine in Arizona.

Boston. August 15.

(From Our Special Correspondent.)

The Exchange was quiet and dull during the first part of the week, but to-day there was very much more activity and broader market than we have been accustomed to see. The trading, however, was very largely professional still. The game is being very skillfully played, as I noted a week ago, and everything is being carefully prepared for a September boom. Whether all this preliminary work will result in success remains to be seen. The average Boston stockholder can accept a great deal; but the losses of last winter shook him out of the market and he is not yet ready to start in on the Exchange again. It is to be noted that the trading this week was largely in the blind pool stocks.

There is not much news of any kind outside the regular routine of sales.

Among prices noted are $204½ for Tamarack; Quincy, $136; British Columbia Copper, $11.50@$12; Tri-Mountain, $8½. There was some inquiry for the smaller coppers, with light fluctuations. The gold stocks were neglected and little business is reported. The outside list was stronger and more dealings were reported.

At the meeting held to-day the stockholders of the Calumet & Hecla Company voted to extend the organization for 30 years from date. This was a formal action merely, the present company expiring shortly under the time-limit established by the Michigan law.

At the meeting but 16 stockholders were in attendance; 71,143 shares of stock were represented in person and by proxy. All of these shares voted to re-elect former directors, and to continue the corporate existence of the company 30 years from April 13th, 1901. President Agassiz said: "During the last of May a serious fire broke out in No. 2 shaft at 29th level, which lasted for about 3 weeks. We were fortunately able to confine the fire. It gave us an oportunity of testing the value of the system of fire doors. If the fire had happened 12 years ago we should have had a much more serious conflagration. The Red Jacket shaft we were unable to use. It is true that we were enabled to resume work much more quickly, but as a security against fire the shaft did not prove a success.

"We have been at work repairing the No. 2 shaft and at the last accounts we were down 11 levels from the surface, leaving only 9 levels more to the point where the fire originated. The shaft ought to be completely repaired by the beginning of the year. Of course, since the No. 2 Hecla shaft is out of commission the production will be somewhat curtailed, from 10% to 15%."

Colorado Springs. August 11.
(From Our Special Correspondent.)

The stock market this week did not quite keep up to the record established last week, and a number of the leaders show a decline. The market, however, shows a marked improvement over a month ago. Trading this week was confined entirely to the filling of orders, and there was absolutely no speculative spirit. The stocks on the dividend list and shipping mines showed greater activity than did any other department of the market. Isabella stock dropped during the week from $1.33¾ to $1.22, and the officials refuse to give any report as to the decline. Rumor has it, however, that the company is considering the reduction of its dividend, although this cannot be taken as authentic. Elkton gained, advancing from $1.60¾ to $1.65½ and dropping back to $1.63½. Argentum Juniata, a silver proposition of Aspen, declined this week, losing from 31¼ to 25¾c., closing stronger to-day at 27⅛c. on a report of a ton shipment from the recent find in the 700-ft. level of that mine.

Independence Town and Mining has dropped to the rear, and all interest in the recent settlement of litigation has died out. The threatened contest to annul the consolidation deal has fallen through.

In the prospect department, Pharmacist was the feature of the week, selling up to 15c. upon reports of the finding in this mine of the well-defined and extensive ore bodies which are being worked to advantage in adjoining properties. Acacia was also active for the same reason.

The Gold Belt Mines Investment Company today paid a dividend of 9c. a share, amounting to $112,500, from the proceeds of the sale of the St. Patrick lode claim at Victor to the St. Patrick Gold Mines Syndicate of Scotland. The property adjoins the great Gold Coin Mine.

Salt Lake City. August 11.
(From Our Special Correspondent.)

Life has so far gone out of all legitimate trading that brokers do not dare to recommend purchases, even at prevailing prices. It is impossible to unload holdings in the speculative and outside of the few reliable producers no one appears to have faith in anything.

Bullion-Beck holds strong. Ore shipments are on the increase and if the ownership of the Beck shares was settled there would be a marked improvement. Centennial-Eureka has done no recent business; while local holders will not part with their shares, they are not inclined to add to them. Daisy seemingly is higher and stronger. Dalton & Lark does not reflect the assurance that the option is to be exercised. Daly-West has softened below $18, in keeping with the market trend. The orders of last week apparently are all filled and there are no others. Dexter has lost its gain of the latter part of July. Geyser-Marion knocked down 100,000 shares for the assessment and the forecast is not cheery. Joe Bowers, Joe Bowers Extension and Little Pittsburg may be had in assorted lots at buyers' figures. Lower Mammoth, though off a few points, is in good form.

Mercur did business around $5.50. The final dividend is not announced and naturally there are some incidentals which will tend to cut it down. The new Consolidated Mercur shares will not be issued for some days, not until after the affairs of the old company are adjusted for good and all. Present market status indicates that the new shares will start off below $4, unless they are pegged higher. Locally, a more unpropitious period could not be selected for offering them. Sacramento has put on strength in view of soon starting up the roasting annex. Silver King paid the regular $75,000 dividend today. Star Consolidated is higher and in good form. Swansea paid the usual dividend to-day and the shares are very firm. Valeo is very slumpy. The fact that the former superintendent has taken a lease to continue exploration should lend confidence.

President Broughton was taken through the Utah Consolidated Mine yesterday by Superintendent Channing. There is no question that the ore reserves are ample to supply the increased tonnage required by the enlarged smeltery.

At no mid-summer period has the ore supply been more liberal than in the first half of August and the forecast is bright for a continuation of this favorable condition. At the Germania and Mingo plants of the American Smelting and Refining Company all the stocks in commission are amply well provided for and 2,000 to 2,500 tons of ore per week are sent to outside smelters. The improved lead market is stimulating the production of these ores.

San Francisco. August 11.
(From Our Special Correspondent.)

The market continues on its regular course, with light trading and realization on small turns. The news from the Comstock does not amount to anything and insiders keep up the game entirely.

Quite a crop of assessments are being called for by the smaller Comstock companies. They are the regular thing, nothing special about them, the money being needed to keep the companies going. The persistence with which these assessments are paid is a wonder.

Some quotations noted are: Consolidated California & Virginia, $1.50; Silver Hill, 60c.; Sierra Nevada, 39c.; Yellow Jacket, 30@31c.; Challenge, 24@25c.; Best & Belcher, 20c.; Mexican, 17c.; Crown Point, 16c.

Business on the Oil Exchange was active, and there was quite a demand for the stocks both of producing companies and prospects. Some quotations noted are: Blue Goose, $15; San Joaquin, $4.25@$4.35; Yukon, 60c.; Independence, 14c. Many new companies are being organized.

The Pennsylvania Gold Mining Company has begun suit against the Grass Valley Exploration Company in Nevada County for $600,000 for ore alleged to have been taken from the Pennsylvania Mine through the W. Y. O. D., which adjoins, and which is owned by the Grass Valley Exploration Company. The plaintiffs allege that defendants have been taking the ore for the past 2 years, and in that time have taken 30,000 tons. The plaintiffs ask that an injunction be granted preventing any more work being done until the suit has been settled, and in case the decision is granted in their favor that the Pennsylvania Company be permanently restrained from further removing ore from the property. The Grass Valley Exploration Company has filed a cross suit on practically the same grounds.

The Reward Gold Mining Company has levied an assessment of 2c. per share. Electric power is to be installed and arrangements are being made to purchase the plant.

The Tadpole Consolidated Gold Mining Company has been incorporated with a capital stock of $20,000 to develop a gravel property comprising 260 acres located about 4 miles east from Westville. The officers and directors are: J. F. Brown, president; F. Eckhardt, vice-president; W. H. Cass, secretary; T. W. James, treasurer; E. Rath, J. L. Sparhawk and E. M. Fox. A force of men is now at work.

The 9th monthly report of Receiver Isaac Trumbo of the Golden Cross Mining Company, filed in the Superior Court of San Diego county, shows that the clean-up of the stamp mill on May 31st was $7,636, and from the cyanide plant $16,759; total receipts, $26,475; expenses, $25,850.

London. August 4.
(From Our Special Correspondent.)

The Indian gold mining shares have lately been in demand among people who buy mining shares to hold. An interesting item of news in connection with Indian gold mines is the announcement that the Hyderabad Deccan Company has parted with its gold claims to the firm of A. Goerz & Company. The company has never been very successful from a gold mining point of view, although it has developed its coal properties to some profit. The firm of A. Goerz & Company is essentially a German investment company, and has hitherto been interested solely in South African mining. Its incursion into Indian affairs is therefore a matter of novelty.

Though mining promotions are not very brisk at present, investors have had no lack of opportunity of new openings for their spare capital during the last few weeks. It is not the place here to mention such companies as the Bleachers' Association, which has been formed to consolidate various interests in the cotton districts of Lancashire, or other similar companies. Other companies are Guest, Keen & Company, which has been formed to take over the Dowlais Iron Works near Cardiff, and the Patent Nut and Bolt Company at Birmingham, details of which were given in the "Engineering and Mining Journal" a few weeks ago; and the Normanby Iron Works Company, which is a company organized by the Pease family to take over the works of that name at Middlesbrough. Both these companies are attractive to investors and are built on solid basis, and there is little doubt that they will prove acceptable to the public.

Paris. August 5.
(From Our Special Correspondent.)

The midsummer season is still further depressing the mining stock market, which has already suffered from the uncertainty resulting from the Chinese business and the financial troubles into which the various auxiliary companies of the Exposition have fallen. These companies, of course, have no direct connection with mining stocks, but they have involved a multitude of small investors who are put entirely out of the market for the time.

The Transvaal gold stocks are dead for the present, since we are inclined to look for a long postponement of the resumption of work. The guerilla war in South Africa shows no sign of coming to an end.

The metallurgical shares are still uncertain. While the companies are all very busy, it is argued that the high prices of raw materials and fuel are consuming a large share of their profits; we hear also some complaints that new orders are coming in more slowly. The Russian group continues to recover slowly from its recent depression, however.

Copper stocks continue strong and there are no signs of depression in the metal. The fact is that stocks in Europe had been allowed to fall very low, and we are now under the necessity of buying, no matter what the price is. The holding back by our buyers did not enforce the fall in prices for which they hoped, and they are now paying for their mistake.

The zinc and lead shares are quiet, the former suffering somewhat on account of the reports which come to us of heavy shipments of American metal.

A concern calling itself the International Zinc Company, which has been, I understand, selling stock in London, has established an office in Paris, and is trying to sell its shares. Its methods of pushing them do not accord with our customs, and I think very few people here have bought. It is the general impression that if the stock was valuable there would be no need to send it abroad.

The Ethiopian Railways Company has issued a circular to announce the opening of the first section of the Jibouti to Harrar in Abyssina line, from the first-named place to Daouenla, a distance of 102 km. Pending the completion of the line, the company undertakes the transport of passengers and merchandise by steamer, rail and caravan between Aden, Jibouti, Zeila and Harrar at rates specified.

For the six months ending June 30th the imports of iron ore into France—chiefly from Luxemburg and Germany—were 1,050,040 metric tons, an increase of 97,323 tons, or 10.2%, over 1899. The exports—chiefly to Belgium—were 186,945 tons, an increase of 45,826 tons, 32.5% over last year.

Our main hope at present is in a revival of interest in business and a rush of visitors to the Exposition, which ought to come with the cooler weather of September. Azote.

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Am. Sm & Ref..	. ....	Sept. 12.	Jersey City, N. J.
International....	Colo	Aug. 20.	Colo. Springs, Colo.
Gold City	Colo ...	Sept. 6.	Colo. Springs, Colo.
Republic I. & S..	....	Sept. 12.	Jersey City, N. J.
*West End.....	Utah ...	Aug. 30.	Park City, Utah.. ...
....	...	.....	.....

*Special meeting.

DIVIDENDS.

Name of Company.	Latest Dividend. Date	Per share.	Total.	Total to date.
		$	$	$
§American Coal. Md..	Sept 1	1 00	60,000	982,000
†Am. Steel&Wire,com.	Oct. 2	1 75	.....	.....
Andover Iron, Pa .	Sept. 1	5.00	...	....
Arizona Copper, ord..	Sept. 30	.84	132,943	...
*Bald Butte, Mont .	Aug. 9	.06	15, 00	837,118
Bethlehem Steel	Sept. 1	.50	.....	
†Bost. & Mont.....	Aug. 20	10.00	1,500,000	18,700,0 0
Buffalo Hump, Ida.	Sept. 1	.10	30,000	215,000
*Central Lead, Mo....	Aug. 15	.50	5,000	182,000
Colo. Fuel & Iron. ..	Sept. 5	.80	160,000	.....
*Consoli'd Gold Mines	Aug. 25	.01	10,000	80,000
*Daly-West, Utah....	Aug. 15	.25	37,500	457,500
*Doe Run Lead, Mo.	Aug. 15	.50	2,500	110,000
Gold Belt, Colo.....	Aug. 11	.09	112,500	112,500
*Gold Coin, Colo	Aug. 25	.02	20,000	520,000
*Homestake, S. Dak..	Aug. 25	.50	1 5,000	8,983,750
*La Fortuna, Ariz....	Aug. 6	.10	25,000	750,000
*Modoc, Colo.....	Aug. 15	.01	5,000	185,000
*N.Y.& Hond. Rosario	Aug. 18	.20	30,000	1,297,000
Pr. St'l Car. Pa., com.	Aug. 20	1.50	.....	.....
Pressed Steel Car., pf	Aug. 27	1.75	.....	.....
*Smuggler, Colo.	Aug. 15	.03	30,000	1,575,000
Standard Co ., Cal....	Aug. 23	.10	20,000	959,226
†Standard Oil.	Sept. 15	8.00	7,800,000	.....
*Yellow Aster. Cal ..	Aug. 11	.10	10,000	429,416

* Monthly † Quarterly. §Semi-Annual.

ASSESSMENTS.

Name of Company.	Location.	No	Delinq	Sale.	Amt.
Alaska.	Utah	...	Aug. 4	Aug. 25	.02
Andes.....	Nev.,	51	Aug. 6	Aug. 27	.05
Ben Butler	Utah	5	Sept 10	Oct. 2	.00¼
Best & Belcher	Nev.,	71	Sept. 7	Sept.28	.15
Blue Gravel	Cal..	...	Aug. 24	....	.05
Brunswick Con.....	Cal..	14	Aug. 20	Sept.13	.07
Challenge Con .	Nev.,	29	Aug 21	Sept.12	. 5
Christmas.....	Utah	6	Aug. 9	Aug. 30	.00½
Chollar.....	Nev.,	52	Sept. 6	Sept.27	.10
Clarissa	Utah	2	Oct. 1	Nov. 10	0 ½
Con Imperial	Nev.,	45	Aug. 1	Aug.22	.01
El Rey.....	Utah	1	Aug. 30	Sept.17	.05
Exchange.....	Utah	1	Sept 1	Sept.17	.01
Gold Hill	Cal..	...	Aug 31	.....	.25
Golden Channel	Cal..	...	Aug. 20		.01¼
Hale & Norcross	Nev.,	5	Sept. 4	Sept.25	.10
Home.....	Cal..	...	Aug 30	.....	.05
Independence.....	Utah	3	Sept. 1	Sept.17	.01
Julia Con	Nev.,	30	Sept. 7	Sept.28	.03
Little Chief.....	Utah	4	Aug. 25	Sept.15	.01
Mammoth Garfield .	Cal..	...	Aug. 4	Oct. 2	.17½
Mariposa Com'l & Mg.	Cal..	.	Aug. 14	.....	10.00
Mexican.....	Nev.	64	Aug. 14	Sept. 5	.15
Occidental Con.	Nev.	35	Aug. 17	Sept.11	.05
Old Susan.....	Utah	1	Aug. 2	Aug. 21	.00¾
Overman	Nev.,	5	Sept 6	Sept.27	.05
Potosi	Nev.,	56	Aug. 23	Sept.12	.10
Reward	Cal..	.	Sept. 3	..	.02
Rich Bar Gravel	Cal..	1	July 30	Aug. 22	.06
Sailor Con.....	Cal..	5	Aug 27	Sept.15	.01
Sheep Rock	Utah	..	Aug. 10	Aug. 27	.10
Sierra Nevada	Nev.,	19	Aug 14	Sept 3	.15
Silver Bow	Utah	...	Aug. 13	Aug. 31	.00½
Snowflake	Utah	17	Aug. 13	Sept. 1	.01
Sweet Vengeance.....	Cal..	13	Aug. 16	Sept. 6	.10
Tetro.....	Utah	14	Aug. 25	Sept 15	.01
Yellow Jacket.....	Nev.	4	July 26	Aug. 31	.10
Young America. ..	Utah	...	Sept. 8	.....	.08

STOCK QUOTATIONS.

NEW YORK.

Name of Company.	Location.	Par val.	Aug. 10. H.	Aug. 10. L.	Aug. 11. H.	Aug. 11. L.	Aug. 13. H.	Aug. 13. L.	Aug. 14. H.	Aug. 14. L.	Aug. 15. H.	Aug. 15. L.	Aug. 16. H.	Aug. 16. L.	Sales.
Alamo	Colo.	1	.14												1,000
Amalgamated C.	Mont.	10	88.5	87.75	88.50	87.75	88.75	88.25	89.50	89.25	89.00	88.00	89.50	88.50	500
Anaconda, c	Mont.	25	44.25	43.75	44.00		45.50	45.00	46.50	46.00	47.13	46.50	46.50		7,280
Anaconda Gold.	Colo.	5	.5		.5										800
Argentum-Jun.	Colo.	2					.27		.26		.26				1,200
Best & Belcher	Nev.	3									.25				300
Breece	Colo.	25													
British Col. Cop.	B. C.	10	11.25	11.13	11.25	11.13	11.25	11.13	11.25	11.13	11.38	11.63	12.00	11.75	500
Brunswick	Cal.	1							12½						1,000
Chollar	Nev.	3													
Chrysolite	Colo.	50			.04		.08								800
Comstock T.	Nev.	100													
" bonds	Nev.	100													
Con. Cal. & Va.	Nev.	2½	1.50		1.50				1.45		1.37				900
Creede & C. C.	Colo.	1							.14						500
Cripple Cr. Con.	Colo.		.14				.14								2,000
Crown Point	Nev.														
Deadwood Terra	S. Dak	25													
Dunkin	Colo.		.16												400
Elkton	Colo.	1	1.60												200
Father De Smet	S. Dak	100			.45				.45		.45				400
Golden Age	Colo.	1			.03		.03½								4,000
Golden Fleece	Colo.	1													
Gould & Curry	Nev.	3													
Hale & Norcross	Nev.	3													
Homestake	S. Dak	100					75.00								20
Horn Silver	Utah.	20					1.20								50
Iron Silver	Colo.	20													
Isabella	Colo.	1	1.28	1.30	1.29	1.28	1.25				1.25				2,300
Jack Pot	Colo.	1			.5										200
King & Pemb.	Ont.	10			.25				.20						1,200
Lacrosse	Colo.	10													
Leadville	Colo.	10													
Little Chief	Colo.	1	.17						.17		.17				1,000
Mexican	Nev.	3													
Mollie Gibson	Colo.	5			.26										1,300
Ontario	Utah.	100			7.25										30
Ophir	Nev.	3	.72								.62				500
Pharmacist	Colo.	1	.14½						.15		.15				4,000
Phoenix	Ariz.	1													
Plymouth	Cal.	10													
Portland	Colo.	1													
Potosi	Nev.	3													
Quicksilver	Cal.	100													
Savage	Nev.	2½													
Sierra Nevada	Nev.														
Small Hopes	Colo.	20													
Standard Conn.	Cal.	10													
Syndicate	Cal.	1													
Tenn. Copper	Tenn.	25	16.00	14.00	16.00	14.00	16.00	14.00	16.00	15.00	16.00	15.00	15.00	14.00	
Union Copper	N. C.	10													
Work	Colo.	1													
Yellow Jacket	Nev.	3							.30						500

COAL AND INDUSTRIAL STOCKS.

Am. Sm. & Ref.		$100	36⅝	36	35¼		36⅞		37⅜		37⅜	36¾	37½		2,600
" " " " pf		100			88		88½				89½	88½	89½		1,425
Am. S. & W. Con		100	33¾	33¼	34	33⅝	34⅝	34	36	35½	35¾	34½	34⅞		24,480
" " " pf'r n		100			74½	73½	74⅞	74½	76¼	75¼			75½		3,485
Col. Fuel & I.	Colo.	100					36⅛	35½	35⅞	35⅛	36½	36	35½		4,260
Col. & H. C. & I.	"	100							15½	15	14¾		15¾		820
Federal Steel		100	33½	33¼	34	33⅝	34⅛	33⅞	35⅝	35¼	35½	34	34½		25,274
" " pf.		100	66¾	65⅜			66½	66¼	67¾	66½	67½	66⅜	66⅞		4,313
Fleming'n C. & C	W. Va.	100	25	23	25	23	25	23	25	23	25	23	26	23	
National Lead		100	18¼	17¼	17	15⅞	17	16¼	18¾	18¼	17⅞	16⅞	18⅛		5,130
" " pf.		100	94	90¼	90	83	90	89½	93		90		90⅞		1,750
National Salt		100	41	39	41	39	41	40	43	41	43	41	43	41	
" " pf.		100	65½	64	65½	64	66	64	67	66	66	64½	68	66	
National Tube		100	46¾	46¼	46¾	46½	47	46½	47¾	47	47¼	46⅞	46⅜		15,460
" " pf.		100	91¼	91	91¼	91	91¾	91½	92⅜	92	92	91¾	92⅜		6,507
Republic I. & S.		100	10⅝	10¼	10¾		11	10¼	12	11⅞	11¼	10¾	11⅞		4,411
" " pf.		100			53		53¼	53	54	53½	53½		53½		1,565
Sloss-Shef.		100											197		100
" " pf.		100					65¾		66½	66			66½		455
Stan. Oil of N. J.		100	535	534	535	534	537	535	539	537	539	537	534	531	
Tenn C., I. & R.R.		100	70¾	70½	70½		72	70½	72¼	71½	72½	71½	70½		9,570
Va. Coal & C.		100	6	5	6	5	7	6	6	5	6	5			

Total sales, 144,985.

PHILADELPHIA, PA.§

Name of Company.	L'cation.	Par Val.	Aug. 9. H.	Aug. 9. L.	Aug. 10. H.	Aug. 10. L.	Aug. 11. H.	Aug. 11. L.	Aug. 13. H.	Aug. 13. L.	Aug. 14. H.	Aug. 14. L.	Aug. 15. H.	Aug. 15. L.	Sales
Am. Alkali		$50	2.00		2.00	1.88	1.88		1.88	1.75	1.88		2.00	1.75	10,178
Am. Cement		10													
Bethlehem Iron	Pa.	50			57.00		57.00	56.75					57.00		148
Bethlehem Steel	"	50					15.00						15.00		385
Cambria Iron	"	50									45.00				4
Cambria Steel	"	50	16.50	16.38			16.50		16.50	16.38	16.75	16.50	16.38	16.75	1,300
Susq. I. & S.	"	10	2.25		2.38				2.38		2.50		2.50		1,090
United Gas I.	"	50	114½		114				114	113½	114		114½	114	555

Total shares sold, 13,640. § Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia.

SAN FRANCISCO, CAL.

Name of Company.	Location.	Par value.	Aug. 9.	Aug. 10.	Aug. 11.	Aug. 13.	Aug. 14.	Aug. 15.
Belcher	Nev.	$3.00	.16	.13	.14	.14	.16	.16
Best & Belcher	"	3.00	.19	.19	.19	.19	.20	.20
Caledonia	"	3.00	.71	.70	.72	.65	.65	.65
Challenge Con	"	3.00	.23	.21	.19	.22	.25	.25
Chollar	"	3.00	.14	.14	.14	.13	.13	.19
Confidence	"	3.00	.95	.90	.85	.84	.83	.82
Con. California & Virginia	"	2.50	1.45	1.40	1.40	1.35	1.40	1.35
Crown Point	"	3.00	.14	.14	.14	.15	.17	.16
Gould & Curry	"	3.00	.15	.16	.16	.16	.16	.16
Hale & Norcross	"	3.00	.23	.23	.22	.22	.21	.22
Justice	"	2.00	.06	.06	.06	.06	.06	.06
Mexican	"	3.00	.28	.27	.30	.28	.28	.28
Occidental Con	"	3.00	.07	.07	.06	.06	.11	.12
Ophir	"	3.00	.68	.64	.64	.60	.58	.57
Potosi	"	3.00	.13	.14	.13	.13	.13	.14
Savage	"	2.50	.13	.12	.12	.11	.11	.12
Sierra Nevada	"	3.00	.39	.38	.38	.38	.35	.37
Standard Con	Cal.	10.00	4.45	4.25	4.00	4.10	4.10	4.50
Union Con	Nev.	2.50	.20	.21	.21	.22	.20	.22
Utah Con	"	1.00	.08	.08	.08	.07	.07	.06
Yellow Jacket	"	3.00	.28	.25	.24	.27	.31	.33

CALIFORNIA OIL STOCKS.*

Name of Company.	No. of shares.	Par Val.	July 26. H.	July 26. L.	July 27. H.	July 27. L.	July 28. H.	July 28. L.	July 30. H.	July 30. L.	July 31. H.	July 31. L.	Aug. 1. H.	Aug. 1. L.	Sales.
Blue Goose	5,000	$100	15.50		16.50	14.50			15.50		15.50		15.50		
Buckhorn	16,000	10.00	4.00		4.00				4.00	3.90	4.00	3.90			
Home	100,000	1.00	4.75	4.70	4.75	4.70			4.80	4.65	4.80	4.65	4.80	4.70	525
Homestake	10,000		14.50	13.25	15.00										100
San Joaquin	100,000	1.00	4.40	4.15	4.05				4.05		4.50	4.10	4.30	4.05	50
Yukon	100,000	2.50	.75	.65	.75	.60			.68	.60	.65	.60	.65	.60	

* California and Producers Oil Exchanges. Total sales, 675 shares.

BOSTON, MASS.†

Name of Company.	Par val.	No. of shares.	Aug. 9. H.	Aug. 9. L.	Aug. 10. H.	Aug. 10. L.	Aug. 11. H.	Aug. 11. L.	Aug. 13. H.	Aug. 13. L.	Aug. 14. H.	Aug. 14. L.	Aug. 15. H.	Aug. 15. L.	Sales
Adventure Cons.	$25	100,000									8.25	3.00	3.00		75
Aetna Cons.	5	100,000	1.25												100
Allouez	25	80,000											1.50		175
Amal. Copper	100	750,000			88.50	88.00	88.00		88.75	88.50	89.50	89.00	90.00	89.00	387
Am. Z., L. & S.	25	60,000	10.00												15
Anaconda	25	1,200,000							45.25		46.00				75
Arcadian, c	25	150,000	20.00				20.00		20.25		21.25	20.75	21.50	21.00	670
Atlantic, c	25	40,000	23.00				23.00								100
Baltic, c	25	100,000					22.50		22.50	22.25	22.00		22.00		575
Bingham, c, g	10	190,000	10.25	10.00	10.38	10.25			10.38	10.25	10.50		10.75	10.63	1,070
Bos. & Mon., Tr. R	25	150,000	307½	306			308	306	309		312	309	316	312	595
British Col.	5	200,000	11.50										11.63		300
Butte & Bost., c	10	200,000	63.00	62.00					63.00	61.50	62.00		63.50	62.50	970
Cal. & Hecla, c	25	100,000	740		744½	742					745		750		58
Centennial, c	25	90,000									17.50		19.00	17.75	2,401
Cent'l-Eureka	25	200,000	22.63	22.50	23.00										290
Cochiti, g	25	60,050					8.25		8.38		8.00		8.25	8.00	785
Copper Range	10	110,000	20.75	20.00	20.75						20.13		20.50		1,200
Dominion Coal	25	100,000							42.00				42.00	41 50	170
do. rights			.02	.01											1,983
do. pref.	100	150,000			110½	110	111						111	110	76
Elm River	100	20,000	3.38												50
Franklin, c	100	532,610							14.00				14.25	14.00	115
I. Royal Con., c	25	100,000	28.00		28.00		28.00		28.50	28.25	29.00	28.75	29.75	29.13	1,578
Mass Con	25	100,000							6.50	6.00	6.00				155
Merced	15	100,000			5.00										100
Michigan	25	100,000							3.13						85
Mohawk, c	25	300,000									17.75	17.25	18.00	17.75	197
Mont. C. & C.	25	200,000	6.50												50
N. E. Gas & L.			14.63		15.00								15.00		210
Old Colony	25	100,000											3.00		100
Old Dominion, c	25	150,000									19.00	18.50	19.50	19.00	610
Osceola, c	25	93,000	67.50	67.25					67.50	67.25	68.00	67.75	69.50	68.38	1,128
Parrott, s c	10	229,850	40.75	40.25	41.00	40.50	40.63		41.00	40.63	42.00	41.13	43.00	42.50	7,444
Quincy, c	25	100,000			135				135		135½	135	136		17
Rhode Island	25	100,000	2.75						2.50						95
Santa Fe, g. c	10	250,000	4.75										5.00	4.63	850
Tamarack, c	25	60,000	200		200		195½		200	199	203	202	204½		112
Tri Mountain	25	100,000	8.25	8.00					8.50	8.38			8.50		635
United States	25	250,000											9.00		100
Utah Cons., g. c.	5	300,000	29.75	29.25	29.50				29.50	29.25	30.75	30.00	32.63	31.00	5,175
Victor, g	5	200,000									1.00				50
Victoria	25	100,000							2.25						10
White Knob		13.00									13.00				200
Winona, c	25	100,000	3.25												200
Wolverine, c	25	60,000	40.00								40.75	40.00	41.88	41.00	1,275
Wyandotte	25	100,000									1.25				35

† Official quotations Boston Stock Exchange. Total sales, 32,096.

SALT LAKE CITY, UTAH.

Aug. 11

Stocks.	Shares.	Par val.	Bid.	Asked.
Ajax	300,000	$10	$0.42½	$0.43
Alice	400,000	25	.30	1.00
Bullion-Beck & Ch.	100,000	10	3.50	4.00
Centennial Eureka	200,000	25	22.00	
Chloride Point	500,000	1	.05	.07
Daisy	500,000	3	.02	.02½
Dalton	500,000	5		
Dalton & Lark	2,500,000	1	.04	.06¾
Daly	150,000	20	1.25	
Daly-West	150,000	20	17.72	17.95
Dexter	200,000	5	.50	1.00
Eagle	250,000	1		
Eagle & Blue Bell	250,000	1	.75¼	.80
Four Aces	250,000	1		.01
Galena	100,000	10	.05	.10
Geyser-Marion	300,000	5	.03	.04
Golden Eagle	400,000	1	.01	.01½
Grand Central	250,000	1	5.75	5.83
Homestake				.08
Horn Silver	400,000	$25	$1.10	
Joe Bowers	400,000	1	0.01¾	$0.02
Joe Bowers Ext	700,000	¼	.00¾	
Little Pittsburg	400,000	5	.00¾	.00¾
Lower Mammoth	150,000	1	.47¾	.48½
Mammoth	400,000	5	2.14	2.19
May Day	400,000	⅛	.61¾	.62
Mercur	200,000	25	5.57½	5.65
Northern Light	400,000	5	.02	.02½
Ontario	150,000	100	5.60	
Richmond-An.	500,000	1		
Sacramento	1,000,000	5	.27¾	.28
Silver King	150,000	20	50.00	51.50
Star Consolidated	500,000	1	.30	.40
Sunbeam	250,000	1	.08	.13
Swansea	100,000	5	3.95	4.02½
South Swansea	150,000	1	1.15	1.17½
Utah	100,000	1	.56	.90
Valeo	200,000	10	.07	.13

TORONTO, ONT.

Name of Company.	Par Val.	Aug. 4. B.	Aug. 4. A.	Aug. 6. B.	Aug. 6. A.	Aug. 7. B.	Aug. 7. A.	Aug. 8. B.	Aug. 8. A.	Aug. 9. B.	Aug. 9. A.	Aug. 10. B.	Aug. 10. A.	Sales.
Ontario:														
Golden Star	1							.08¼	.08¾			.07½	.07½	7,500
Ham Reef	1							.07¼	.07½	.06¼	.06½	.06	.06½	7,000
Olive	1							.07	.13	.05½	.11½	.05	.11	500
British Col.:														
Athabaska	1							.28	.31	.28	.30	.28	.31	1,000
Big Three	1							.01¾	.02¼	.01¾	.02½	.01¾	.02¼	
Cariboo M'L	1							.76	.78½	.76	.78	.75	.80	2 000
Crow's N. C.	25							35.00	38.00	36.00	38.00	35.00	38.00	
Dardanelles	1							.02¼	.03	.02	.03	.02	.03	
Deer Trail	1							.04½	.05	.04⅝	.04¾	.04½	.05	6,000
Eve Star	1							.08	.09¼	.08	.09	.08¼	.09	1,000
Fairview	1							.02¼	.02⅝	.02⅜	.03	.02½	.04	8,000
Iron Mask	1							.26	.32	.26	.32	.26	.32	
Jim Blaine	1							.08	.14	.05	.14	.07	.12	
Knob Hill	1							.53	.56	.54½	.58	.57	.65	1,000
Mont Cristo	1							.03¼	.03¾	.03	.03½	.03¼	.03¾	4,000
Mont & Lon	0.24							.19	.20½	.19	.19½	.18½	.20	
North Star	1							.90	.97	.85	.97	.89	.95	
Payne	1							.90	.95	.94	.98	.85	.95	
Princess M	1							.02	.04			.02	.03½	
Rambler	1							.21½	.24	.22	.24	.21	.24	1,500
Republic	1							.80	.88	.86	.89	.85	.88	2,000
Van Anda	1							.02	.02½	.02	.02½	.02	.02¼	
Virtue	1							.58¼	.60½	.58	.63			
War Eagle	1							1.48	1.54	1.48	1.52	1.49	1.52	
Waterloo	0.10							.02	.03¼	.01	.02½	.01¾	.03	
White Bear	1									.01¾	.01¾			1,000
Winnipeg	1							.07½	.09½	.07½	.08⅞	.04	.09	
Develop Co.:														
B.C.G. Field	1											.02¾		5,500
Can. G. F. S.	0.10							.07	.08	.07	.07¾	.07	.08	

Total shares sold, 48,000.

SPOKANE, WASH.

Name of Company.	Par val.	Week Aug. 9. B.	Week Aug. 9. A.	Week Aug. 9. Sales.
Crystal		.03	.06	
Deer Trail Con	$1	.04	.05	1,000
Evening Star	1	.07	.08½	
Gold Ledge		.01	.02	
Jim Blaine	1	.10	.12	
Lone Pine Surp. Con	1	.08¾	.10	5,000
Morning Glory	0.10	.03	.03½	
Mountain Lion		.58	.76	
Princess Maud	0.10	.01½	.02¾	
Quilp	1	.15	.24	
Rambler Cariboo	0.25	.22	.24½	
Reservation		.07½	.10	2,500
Sullivan		.12½	.13½	3,500
Tom Thumb	1	.19	.22	

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.‡

Name of Company.	Par val.	Aug. 4. B.	Aug. 4. A.	Aug. 6. B.	Aug. 6. A.	Aug. 7. B.	Aug. 7. A.	Aug. 8. B.	Aug. 8. A.	Aug. 9. B.	Aug. 9. A.	Aug. 10. B.	Aug. 10. A.	Sales.
Acacia	$1	.....	.....	.45¼	.45½	.45¼	.45⅜	.44½	.44½	.43	.43¼	.42⅜	.43	94,250
Alamo	1	.....	.....	.13⅜	.13¾	.13¼	.14	.12⅞	.14	.12⅝	.13	.12½	.13	3,500
Am. Con	1	.....	.....	.09	.09¼	.09	.09¼	.08⅞	.09⅛	.08⅞	.09⅛	.08⅞	.09	28,000
Anaconda	1	.....	.....	.49	.50	.49	.50	.49¼	.50	.49	.50	.48½	.49½	21,500
Anchor	1	.....	.....	.03½	.03¾	.....	.....	.....	.03¼	.03¼	.....	.....	.....	.....
Anchoria L	1	.....	.....	.80	1.00	.80	1.00	.80	1.00	.80	1.00	.80	1.00	.....
Antelope	1	.....	.....	.02¾	.02⅞	.02½	.03	.03	.03	.03	.03	.03	.03	1,000
Aola	1	.....	.....	.06	.06½	.06½	.06¼	.06⅜	.06½	.06¾	.06½	.06¾	.06⅞	19,750
Arcadian	1	.....	.....	.04⅞	.05	.....	.05½	.04¾	.05½	.04⅞	.....	.04¾	.05½	6,000
Arg'ntum J	1	.....	.....	.31¼	.....	.30¼	.30¾	.28	.28½	.25¾	.26¾	.26¾	.26¾	52,500
Banner	1	.....	.....	.04¼	.04½	.04	.....	.04½	.04½	.04¼	.04½	.04¼	.04½	1,000
Battle Mt.C	1	.....	.....	.29½	.29½	.29¼	.29½	.29¼	.29⅜	.29⅜	.29¾	.29¼	.29⅝	5,000
Ben Hur	1	.....	.....	.07¼	.....	.07¼	.....	.....	.....	.07¼	.....	.07¼	.....	.....
Black Bell	1	.....	.....	.11⅝	.12	.....	.11⅝	.12	.....	.13	.11⅞	.12	.....	1,000
Blue Bell	1	.....	.....	.12	.12¼	.11⅞	.12¼	.11½	.12	.11⅝	.11¾	.11⅜	.11½	22,500
Bob Lee	1	.....	.....	.05⅞	.06	.06	.06¼	.06	.06¼	.06	.06⅛	.06	.06⅛	35,000
Buckhorn	1	.....	.....	.....	.07¾	.07⅝	.07⅞	.....	.08	.07¾	.07⅝	.....	.08	15,000
Cadillac	1	.....	.....	.02½	.02¾	.02¼	.02⅝	.02½	.02⅝	.02⅝	.02¾	.02⅜	.02⅝	6,000
Central C'n	1	.....	.....	.09½	.09⅞	.09¾	.09½	.09⅜	.09⅝	.09⅛	.09⅝	.09⅜	.09½	72,000
Champion	1	.....	.....	.08⅝	.08⅞	.08⅝	.08¾	.08½	.08¾	.08½	.08⅞	.08½	.08⅞	3,000
Chicolo	1	.....	.....	.02⅞	.03¼	.02⅞	.03	.02⅞	.03	.02⅝	.03	.02⅞	.03	.....
C. K. & N	1	.....	.....	.02⅝	.02¾	.02⅝	.02¾	.02⅝	.....	.02⅝	.02¾	.02⅝	.02¾	6,000
C. C.Col'hia	1	.....	.....	.03½	.03¾	.03¼	.03½	.03¼	.03½	.03¼	.03¾	.03¼	.03⅜	6,000
C. C. G. Ext	1	.....	.....	.16½	.17	.16½	.16¾	.15	.16⅝	.14½	.16	.14⅞	.15¼	10,500
C. C. & Man	1	.....	.....	.13	.13¼	.12⅝	.12⅞	.12½	.13	.12⅝	.12¾	.12⅝	.12¾	19,000
Copper Mt.	1	.....	.....	.04¾	.04⅞	.04¾	.04¾	.04⅝	.04⅞	.04⅝	.04¾	.04⅝	.04¾	53,000
Creede& CC	1	.....	.....	.15	.15½	.15	.15½	.....	.15½	.14¾	.15½	.14⅞	.15	.....
C. C. Con	1	.....	.....	.13⅝	.14	.....	.13⅞	.13⅝	.13⅞	.13½	.13¾	.13⅜	.13⅝	9,000
Dante	1	.....	.....	.12⅞	.13	.12⅝	.12¾	.12⅝	.12¾	.12⅝	13	.11¾	.11⅞	5,000
Des Moines	1	.....	.....	.07	.07¼	.07	.07¼	.07	.07⅛	.06⅞	.07¼	.06⅞	.07⅛	2,000
Eclipse	1	.....	.....	.09⅜	.09½	.09⅜	.09⅝	.07⅝	.08	.09⅜	.09½	.08¼	.09⅛	5,000
Elkton Con	1	.....	.....	1.63	1.63½	1.64½	1.65½	1.63	1.64½	1.62½	1.63¼	1.62	1.64	36,758
El Paso G	1	.....	.....	.45	.45¼	.45	.45½	.45¼	.45⅝	.44½	.45¼	.44½	.44⅝	30,400
Enterprise	1	.....	.....	.21½	.22	.21	.22	.21	.22	.21	.21¾	.20½	.21¼	6,000
F.Rawlings	1	.....	.....	.30½	.35	.30	.33	.30	.32	.31	.35	.30	.32½	7,500
Findley	1	.....	.....	.13	.....	.13¼	.14	.13¼	.13½	.13⅜	.13½	.13⅜	.13¾	15,000
Garf. Conn.	1	.....	.....	.06	.....	.05½	.....	.06	.....	.07	.....	.08	.08½	5,000
Golden Fl	1	.....	.....	.....	.35	.....	.35	.....	.35	.....	.30	.....	.30	25
Gold Hill	1	.....	.....	.04½	.04¾	.04⅝	.04¾	.04¾	.04⅞	.04¾	.04⅞	.04½	.04⅞	136,000
Gold Sov'n	1	.....	.....	.10	.10¼	.10	.10¼	.10	.10½	.09⅞	.09⅞	.09⅞	.10½	9,000
Hayden	1	.....	.....	.02	.02½	.02	.02½	.02	.02½	.02	.02½	.02	.02½	5,000
Ida May	1	.....	.....	.32¼	.33	.32	.32½	.32	.32½	.32	.32½	.32	.32½	17,000
Indep'ndce	1	.....	.....	.....	.....	.42	.42¾	.43¾	.43½	.43	.44	.....	.....	43,500
Ing. Con	½	.....	.....	.20	.21	.20½	.20¾	.20	.20¾	.19	.19⅝	.19½	.20	11,000
Isabella	1	.....	.....	1.82	1.82⅝	1.80	1.80½	1.80½	1.80⅞	1.29	1.80	1.24⅞	1.25	91,100
Jack Pot	1	.....	.....	.51	.52	.50	.50⅝	.50	.50½	.50	.50½	.50½	.51	2,100
Key West	1	.....	.....	.04	.04½	.04½	.04¼	.04½	.04¼	.....	.....	.04½	.04¼	11,000
Lexington	1	.....	.....	.17⅛	.18	.17½	.17⅝	.17⅝	.17¾	.17½	.17¾	.17½	.17⅜	15,000
Magnet R.	1	.....	.....	.04½	.04¾	.04⅝	.....	.04⅝	.04⅞	.04⅝	.04⅞	.....	.04¾	11,000
Margaret	1	.....	.....	.02⅞	.03	.02⅝	.03	.02¾	.03½	.02⅝	.03	.02¾	.03	8,000
Margery	1	.....	.....	.....	.03⅝	.....	.03⅞	.....	.04	.03	.04	.04¼	.04½	.....
Matos	1	.....	.....	.35	.38	.36½	.37	.36½	.37	.36½	.37½	.....	.....	3,000
Midway	1	.....	.....	.06¼	.06⅜	.06	.06⅛	.06	.06¼	.06	.06⅛	.06½	.....	12,000
M. J. T.	1	.....	.....	.03¾	.04	.03¾	.04	.03¾	.04	.03½	.04	.04	.04½	2,000
Mobile	1	.....	.....	.....	.04	.03¾	.04	.03½	.04	.03½	.04	.03⅝	.04	.....
Moll.Dwyer	1	.....	.....	.06¾	.06⅞	.06¾	.06⅞	.06¾	.06⅞	.06¾	.06⅞	.06⅞	.07	37,000
Mollie Gib.	1	.....	.....	.26	.29	.24	.28½	.27	.29	.27½	.28½	.25	.29	2,500
Montreal	1	.....	.....	.06⅞	.08	.....	.....	.07¼	.07¾	.....	.07⅜	.....	.....	.....
Moon-A'c'r	1	.....	.....	.55	.58	.....	.57	.....	.57	.....	.57	.....	.....	5,500
Morning S	1	.....	.....	.04¼	.04⅜	.04	.04⅛	.04	.04⅛	.04	.04⅛	.04	.04¼	13,000
Mt. Rosa	1	.....	.....	.....	.75	.....	.75	.....	.70	.....	.70	.....	.....	.....
National	1	.....	.....	.10⅜	.10½	.10	.10¼	.10⅜	.10½	.10⅜	.10½	.10⅜	.10⅝	20,000
Nellie V	1	.....	.....	.....	.....	.12¾	.12¾	.....	.12¾	.11¾	.12	.11⅝	.12	1,000
New Haven	1	.....	.....	.08½	.08⅝	.08¾	.09	.09¼	.09⅜	.09	.09¼	.09½	.....	65,000
Olive B'nch	1	.....	.....	.06½	.06⅝	.06½	.06¾	.06⅝	.06¾	.06½	.07	.06½	.06¾	4,000
Oriole	1	.....	.....	.05½	.05¾	.05⅝	.05⅞	.05½	.05⅝	.05⅝	.05¾	.....	.....	6,000
Orphan	1	.....	.....	.21½	.22¼	.21	.21½	.20	.21	.....	.....	.19¾	.20	17,000
Pelican	1	.....	.....	.03	.03¼	.03	.03¼	.02⅞	.03	.02¾	.03	.02¾	.03	5,000
Pharmicist	1	.....	.....	.14	.14⅜	.14¾	.15	.14⅞	.15	.15½	.15¼	.14¾	.15	116,000
Pilgrim	1	.....	.....	.13	.13½	.13	.13½	.13	.13½	.13¾	.13½	.13	.13⅝	4,000
Pinnacle	1	.....	.....	.20	.....	.20	.21	.20⅜	.21	.20	.21	.20	.21	.....
Portland	1	.....	.....	3.42	3.50	3.41	3.50	3.30	.....	3.30	3.40	3.30	3.35	2,600
Prince Alb.	1	.....	.....	.04⅝	.04¾	.04⅝	.04¾	.04¼	.04⅝	.04¼	.....	.04¼	.04⅝	11,000
Princess	1	.....	.....	.06⅜	.06⅝	.06¼	.06⅜	.06¼	.06½	.06¼	.06½	.06¼	.....	4,500
Progress	1	.....	.....	.06	.06¼	.06	.06⅛	.06	.06½	.06¼	.06⅜	.....	.....	15,000
Pythias	1	.....	.....	.06½	.06¼	.06½	.06¼	.06⅜	.06¼	.06	.06¼	.06	.06¼	6,000
Republic	1	.....	.....	.06½	.06¼	.06⅝	.....	.06¼	.06½	.06¼	.06⅜	.06¼	.06⅝	5,000
Rob't Burns	1	.....	.....	.06½	.06⅝	.06⅝	.06⅝	.06¼	.06½	.06¼	.06½	.06¼	.06¼	64,500
Rose Maud	1	.....	.....	.09¼	.10	.09½	.09⅝	.09½	.09¾	.09½	.09¾	.09½	.09⅝	7,000
Rose Nicol	1	.....	.....	.12⅜	.13	.12⅜	.13	.12⅜	.13	.13	.14	.13	.13¼	13,000
Silver Gold	1	.....	.....	.01⅞	.02	.01¾	.03	.01½	.02	.01⅞	.02	.01⅞	.02	9,000
Specimen	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Theresa	1	.....	.....	.07¼	.....	.07¼	.....	.07¼	.07⅝	.07¼	.07⅝	.07¼	.07½	.....
Trachyte	1	.....	.....	.07⅛	.07¼	.07⅛	.07⅝	.07¼	.07½	.07¼	.07⅝	.07¼	.07½	14,000
Uncle Sam	1	.....	.....	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝	.04⅜	.04⅝	.04⅜	.04⅝	18,000
Union	1	.....	.....	.....	.....	.....	.....	.....	.....	.41	.40	.....	.....	60,649
Va. M	1	.....	.....	.10⅝	.10⅝	.10⅝	.10¾	.10⅝	.10¾	.10⅝	.10⅝	.10⅝	.10⅝	9,502
Vindicator	1	.....	.....	1.45	1.46	1.43	1.45	1.42½	1.45	.....	1.45	1.39	1.45	5,300
Work	1	.....	.....	.23⅝	.23¾	.23½	.30	.29½	.30	.29	.29⅞	.23½	.29½	35,000
Zenobia	1	.....	.....	.14	.14⅞	.....	.15	.....	.15	.....	.13	.13	.15	2,000

‡ Colorado Springs Mining Stock Exchange. Total sales, 1,558,929 shares.

DENVER COLO‡

Name of Company.	Par val.	Aug. 4. B.	Aug. 4. A.	Aug. 6. B.	Aug. 6. A.	Aug. 7. B.	Aug. 7. A.	Aug. 8. B.	Aug. 8. A.	Aug. 9. B.	Aug. 9. A.	Aug. 10. B.	Aug. 10. A.	Sales.
Alamo	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Anaconda	1	.47	.50	.48	.50	.49¾	.51	.49	.50½	.....	.50	.44	.49½	1,200
Arg. J	5	.30	.30½	.30½	.31½	.30	.....	.....	.30	.....	.....	.26¾	.....	1,100
Dictator	1	.02⅝	.02¾	.02½	.03	.02½	.02⅞	.02½	.....	.03¼	.02¾	.....	.02¾	1,000
Findley	1	.....	.14	.....	.....	.....	.....	.....	.....	.13¾	.13⅞	.....	.....	1,000
Indepen'ce	1	.....	.....	.42½	.43	.42½	.43	.42¾	.44	.....	.43	.43	.....	500
Iron Clad	1	.06	.06¼	.06	.06¼	.....	.....	.....	.....	.05¾	.06¼	.....	.....	4,500
Isabella	1	1.33½	1.33¾	1.33	1.33¾	1.30½	1.30½	1.31½	.....	1.29	1.30	1.25	1.27	5,000
Magnet R'k	1	.04½	.05	.04¾	.04¾	.....	.....	.....	.....	.....	.04⅞	.....	.....	.....
New Haven	1	.08¼	.08¼	.08¼	.08⅞	.08½	.....	.....	.....	.08¾	.09¼	.....	.....	2,000
New Zeal'd.	1	.50	.75	.....	.65	.60	.61½	.....	.....	.55	.65	.....	.60	.....
Old Gold	1	.01¾	.....	.01⅝	.....	.01⅜	.02	.01¾	.01⅞	.....	.....	.....	.....	.....
Puritan	1	.01¼	.01⅜	.01¼	.01⅜	.01¼	.01⅜	.01⅛	.01¼	.01⅛	.01⅜	.01⅛	.01⅜	23,000
Union	1	.....	.....	.....	.....	.....	.....	.39¾	.42	.....	.41	.....	.....	.....

‡ Official Quotations Denver Stock Exchange. Total sales, 39,300 shares.

PARIS.

July 27.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening.	Prices. Closing.
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs	27,000,000	2,000	75.00	1,860.00	1,838.00
" " Firminy	"	" "	3,000,000	500	125.00	3,502.00	3,500.00
" " Fives-Lille	"	" "	12,000,000	500	35.00	510.00	505.00
" " Huta-Bank	Russia	Iron & steel	.....	500	.....	4,400.00	4,250.00
" " la Marine	France	Steel mfrs	20,000,000	500	50.00	1,652.00	1,645.00
Anzin	"	Coal	.....	.....	220.00	6,475.00	6,520.00
Boleo	Lower Cal	Copper	.....	500	176.00	2,660.00	2,599.00
Brianski	Russia	Coal & Iron	.....	500	.....	822.50	830.00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	37.00	36.00
Courrieres	France	Coal	600,000	300	70.00	2,890.00	2,890.00
Dombrowa	Russia	"	.....	500	12.50	1,020.00	1,020.00
Donetz	"	Steel	.....	.....	.....	890.00	880.00
Dynamite Centrale	France	Explosives	.....	500	20.00	430.00	425.00
Escombrera-Bleyberg	Spain	Lead	.....	500	35.00	1,178.00	1,170.00
Fraser River	Brit. Col'mb.	Gold	250,000	25	.....	8.00	9.00
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	139.00	144.50
Laurium	Greece	Zinc & lead	16,800,000	500	30.00	500.00	560.00
Malfidano	Italy	Zinc	12,500,000	500	50.00	1,160.00	1,138.00
Metaux, Cie. Fran. de	France	Metal d'lers	25,000,000	500	30.00	465.00	470.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	40.00	1,145.00	1,125.00
Napthe Baku	Russia	Petroleum	.....	.....	.....	777.00	780.00
Napthe, Le	"	"	.....	.....	.....	1,295.00	1,295.00
Napthe Nobel	"	"	.....	.....	.....	650.00	610.00
" " parts	"	"	.....	.....	.....	13,012.00	12,550.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	10.00	472.00	525.00
Penarroya	Spain	Coal, etc	.....	500	95.00	2,500.00	2,500.00
Rebecca	Colo'do,U.S.	Gold	5,000,000	25	.....	3.75	3.50
Salines de l'Est	France	Salt	.....	500	6.50	230.00	220.00
Salines du Midi	"	"	.....	500	25.00	925.00	900.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	36.00	780.00	720.00

LONDON

Aug. 3.

Name of Company.	Country.	Author-ized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
			£ s. d.	s.d.		£ s. d.	£ s. d.
Alaska Goldfields	Alaska	£300,000	1 0 0	2 1	Mar., 1899	12 6	17 6
Alaska-Mexican, g	"	200,000	1 0 0	0 4.8	July, 1900	15 0	1 0 0
Alaska-Treadwell, g	"	1,000,000	5 0 0	1 6	" "	4 17 6	5 2 6
Anaconda, c., s	Montana	6,000,000	5 0 0	8 2	Apr., 1900	9 5 0	9 6 3
De Lamar, g., s	Idaho	400,000	1 0 0	0 6	May, 1900	3 0	4 0
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	12 6	15 0
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	6 7 6	6 10 0
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 1900	18 9	16 3
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	3 0	4 0
Mountain Copper	California	1,250,000	5 0 0	11 0	Apr., 1900	5 7 6	5 12 6
Newfoundland, c	Newfoundland	250,000	1 0 0	.....	.....	2 6	7 6
Palmarejo & Mexican, g	Mexico	700,000	1 0 0	.....	.....	.....	3
Stratton's Independence	Colorado	1,100,000	1 0 0	2 0	June, 1900	2 12 6	2 15 0
Copiapo, c	Chile	200,000	2 0 0	4 0	July, 1900	4 0 0	4 5 0
Frontino & Bolivia, g	Colombia	140,000	1 0 0	1 6	Oct., 1899	1 12 6	1 15 0
St. John del Rey, g	Brazil	600,000	1 0 0	rts.	July, 1900	1 5 0	1 6 3
Utah Con.,g.(Highl'nd Boy)	Utah	300,000	1 0 0	rts.	Mar., 1898	5 12 6	5 17 6
Velvet, g	British Col'mbia	100,000	1 0 0	.....	.....	18 9	1 1 3
Ymir, g	"	200,000	1 0 0	1 0	Nov., 1899	1 7 6	1 10 0
British Am. Corp	"	1,500,000	1 0 0	2 0	Mar., 1900	14 6	15 0
Linares, l	Spain	45,000	3 0 0	15 0	" "	9 0 0	10 0 0
Mason & Barry, c., sul	Portugal	420,000	2 0 0	10 0	May, 1900	3 17 6	4 2 6
Rio Tinto, c	Spain	1,625,000	5 0 0	45 0	" "	56 10 0	56 12 6
" " pref	"	1,625,000	5 0 0	2 6	" "	6 2 6	6 5 0
Tharsis, c	"	1,250,000	2 0 0	15 0	Apr., 1900	8 10 0	9 0 0
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	3 8 9	3 11 3
*Broken Hill Prop., s	N. S. Wales	384,000	8	0 4 6	Aug., 1900	2 7 0	2 8 0
Great Boulder Prop	W. Australia	175,000	2	0 6	Apr., 1900	1 12 0	1 13 0
Hannan's Brownhill, g	"	140,000	1 0	0 7 6	May, 1900	8 12 6	8 15 0
*Ivanhoe Gold Corp	"	1,000,000	5 0	0 5 0	July, 1900	11 0 0	11 2 6
Kalgurlie, g	"	120,000	1 0	0 rts.	Oct., 1899	6 2 6	6 7 6
Lake View Consols, g	"	250,000	1 0	0 5 0	Aug., 1900	14 5 0	14 7 6
*Mt. Lyell M. & R., l., c	Tasmania	90',000	3 0	0 5 0	July, 1900	8 2 6	8 7 6
Mt. Morgan, g	Queensland	1,0 0,000	1 0	0 7	Aug., 1900	5 0 0	5 10 0
Waihi, g	New Zealand	320,000	1 0	0 2 6	June, 1900	9 16 3	9 18 9
Champion Reef, g	Colar Fields	220,000	10	0 4 0	Sept., 1900	5 12 6	5 15 0
Mysore Gold, g	"	250,000	10	0 4 0	July, 1900	6 0 0	6 2 6
*Nundyroog, g	"	242,000	1 0	0 2 0	" "	3 5 0	3 7 6
Ooregum, g	"	145,000	1 0	0 3 6	Aug., 1900	3 16 3	3 18 9
" pref. g	"	120,000	1 0	0 3 6	" "	5 0 0	5 2 6
British S. Africa, chartered	So. Africa	5,000,000	1 0	0 rts.	May, 1899	3 3 9	3 5 0
Cape Copper, c	"	600,000	1 0	0 5 0	July, 1900	6 5 0	6 10 0
" " pref	"	150,000	2 0	0 5 0	" "	5 0 0	5 5 0
City & Suburban (New), g	Transvaal	1,360,000	4 0	0 8 0	Aug., 1899	5 10 0	5 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	15 15 0	16 0 0
De Beers Con., d	Cape Colony	3,950,000	5 0	0 £1	Sept., 1899	28 0 0	28 2 6
Ferreira, g	Transvaal	90,000	1 0	0 30 0	Aug., 1899	21 15 0	22 5 0
Geldenhuis Deep, g	"	350,000	1 0	0 8 0	" "	10 5 0	10 10 0
Geldenhuis Est., g	"	200,000	1 0	0 10 0	" "	6 15 0	7 0 0
Henry Nourse, g	"	125,000	1 0	0 10 0	Apr., 1900	8 17 6	9 2 6
Jagersfontein, d	Orange Fr. St	1,000,000	5 0	0 6 0	Nov., 1899	16 0 0	16 10 0
Johannesburg Con. Invet	So. Africa	2,750,000	1 0	0 2 0	Aug., 1899	1 18 9	2 1 3
Jubilee, g	Transvaal	50,000	1 0	0 5 0	Sept., 1899	6 0 0	6 5 0
Langlaagte Estate, g	"	470,000	1 0	0 3 0	Aug., 1899	3 5 0	3 10 0
May Con., g	"	280,000	1 0	0 6 0	July, 1899	4 8 9	4 11 3
Meyer & Charlton, g	"	100,000	1 0	0 8 0	June, 1899	5 2 6	5 7 6
Namaqua, c	Cape Colony	200,000	2 0	0 12 0	Aug., 1899	4 16 3	4 18 9
Primrose (New), g	Transvaal	300,000	1 0	0 6 0	" "	4 0 0	4 5 0
Rand Mines, g	So. Africa	490,000	1 6	0 15 0	" "	40 2 6	40 5 0
Robinson, g	Transvaal	2,750,000	5 0	0 8 0	.....	9 5 0	9 10 0
Sheba, g	"	1,100,000	1 0	0 0 6	July, 1898	1 0 0	1 2 6
Sim. & Jack Prop., g	"	5,000,000	5 0	0 4 0	July, 1899	6 12 6	6 15 0
Wolhuter, g	"	850,000	4 0	0 2 0	Feb., 1899	4 10 0	4 15 0

* Ex-dividend.

MONTREAL, CANADA.*

Name of Company.	Par val.	Week, Aug. 9. H.	Week, Aug. 9. L.	Sales.	Name of Company.	Par val.	Week, Aug. 9. H.	Week, Aug. 9. L.	Sales.
Big Three	$1	.02¼	.01⅝	1,000	Monte Christo	$1	.04½	.03¼	3,000
California	1	.10	.06½	.....	Montreal G. F	1	.05	.03	.....
Can. Gold Fields	0.10	.07¾	.06½	1,000	†Montreal-London	0.24	.21	.18	4,750
Decca	1	.05	.03½	.....	Oregon	1	.16¾	.....	500
Deer Trail Con	1	.05	.03½	750	Payne	1	.97	.92	.....
Giant	1	.....	.....	.....	Rambler-Cariboo	1	.26	.15	.....
Golden Star	1	.10	.07	8,000	Republic Con	1	.90	.82½	.....
Gold Hills Dev	1	.03	.02	.....	Slocan-Sovereign	1	.20½	.16½	.....
Knob Hill	1	.60	.44	2,000	Virtue	1	.62½	.59	100
Majestic	1	.....	.....	.....	War Eagle	1	1.55	1.45	.....

* Montreal Stock Exchange. Total sales, 21,100 shares.

MEXICO.

Aug. 4.

Name of Company.	No. of shares.	Last div'd.	Prices. Op'g.	Prices. Cl'g.	Name of Company.	No. of shares.	Last div'd	Prices. Op'g.	Prices. Cl'g.
Durango:					Hidalgo:				
Barradon y Cab	2,400	.....	$40	$30	Real del Monte	2,554	10.00	550	600
Candelaria de Pan	1,200	.....	20	20	San Francisco Hc.	6,000	3.00	145	100
Capuzaya Guan	2,400	.....	15	12	Soledad	960	5.00	270	250
Restauradora	10,000	.....	10	20	Sorpresa	960	7.50	280	260
Guanajuato:					Union Hacienda	2,000	5.00	250	220
Angustias	2,400	5.00	140	135	Mexico:				
Clac y Senores y An	2,000	15.00	275	260	Coronas	500	.....	75	75
Guadalupe Hacie'a	10,000	2.00	200	205	Esperanza y An	3,000	10.00	1,280	1,200
Trinidad, aviadora	2,000	.....	6	6	Michoacan:				
do. aviada	400	.....	10	10	Luz de Borda ava	4,000	.....	18	12
Zona Minera de Poz	2,400	.....	6	8	S. Luis Potosi:				
Hidalgo:					Concep. y An	2,400	.....	275	260
Amistad y Concord	9,600	1.47	18	19	Zacatecas:				
Arevalo	720	.....	300	260	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	250	200	C'delar de Pinos	2,500	.....	270	265
Luz Ca Maravillas	800	.....	120	100	Palma de Somb	2,400	.....	50	40
Pabellon	800	27.89	30	30	.....	.....	.....	.....	.....

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Author-ized Capital Stock.	Shares Issu'd No.	Shares Issu'd Par Val	Dividends. Paid, 1900.	Dividends. Total to Date.	Dividends. Latest. Date.	Dividends. Latest. Amt
1	Acacia, g.	Colo..	$1,500,000	1,500,000	1	$15,000	$15,000	June. 1900	.01
2	Ætna Con., q.	Cal ..	500.000	100,000	$5	80,000	225.000	April 1900	.15
3	Alabama Coal & Iron, pf	Ala...	2,500,000	25,000	100	87,500	87,500	May.. 1900	1.75
4	Alaska-Mexican, g.	Alask	1,000.000	180.000	5	36,000	465,031	April. 1900	.10
5	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	150,000	4,370,000	April. 1900	.37½
6	Alice, g. s.	Mont.	10,000,000	400,000	25	.....	1,075,000	April. 1898	.05
7	Alliance, g.	Colo..	500,000	450,000	1	.....	31,500	Dec.. 1899	.07
8	Amalgamated, c.	Mont.	75,000,000	750,000	100	4,500,000	6,000,000	July.. 1900	2.00
9	Amanda, g.	Colo..	1,000,000	1,000,000	1	10,000	10,000	June. 1900	.01
10	Amazon, g.	Colo..	600,000	600,000	1	102,000	121,882	May.. 1900	.10
11	American Coal	Md. ..	1,500,000	60,000	25	195,000	922,000	June. 1900	2.00
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	1,832,650	2,401,425	July.. 1900	1.75
14	Am. Steel & Wire, pf.	U. S..	40,000,000	400,000	100	2,100,000	4,900,000	July.. 1900	1.75
15	Am. Steel & Wire, com.	U. S..	50,000,000	500,000	100	1,750,000	1,750,000	July.. 1900	1.75
16	Am. Zinc, Lead & Sm.	Mo...	2,500,000	60,000	25	60,000	180,000	Jan.. 1900	1.00
17	Anaconda Copper	Mont.	30,000,000	1,200,000	25	2,400,000	14,550,000	April. 1900	2.00
18	Anchoria-Leland, g.	Colo..	600,000	600,000	1	.....	198,000	April. 1899	.03
19	Anglo-Mexican, g.	Mex..	2,001,625	400,230	5	.....	1,825,048	Dec.. 1899	.24
20	Apollo Con., g	Alask	1,000,000	100,000	10	70,000	210,000	Jan.. 1900	.07
21	Appie Ellen, g.	Colo.	600,000	600,000	1	.....	25,000	Aug.. 1898	.01
22	April Fool, g.	Nev..	500,000	500,000	1	.....	16,000	Oct... 1899	.01
23	Argentum-Juniata, g.	Colo..	1,300,000	650,000	2	.....	156,000	Oct... 1895	.03
24	Argonaut, g.	Cal...	2,000,000	200,000	10	70,000	490,000	May.. 1900	.05
25	Arizona Copper	Ariz..	3,190,550	.....	.....	443,486	1,331,905	May.. 1900	.70
26	Associated, g.	Colo..	1,250,000	1,250,000	1	.....	84,000	Feb.. 1899	.01
27	Atlantic, c.	Mich.	1,000,000	40,000	25	80,000	860,000	Feb.. 1900	2.00
28	Bald Butte, g. s.	Mont.	250,000	250,000	1	.....	769,648	Dec.. 1899	.03
29	Bankok Cora Belle, s.	Colo..	600,000	600,000	1	.....	107,510	July.. 1896	.01
30	Battle Mtn. Con., g.	Colo..	2,500,000	2,500,000	1	.....	.....	.....	.....
31	Big Seven, g.	Cal ..	100,000	100,000	1	.....	6,000	April 1898	.03
32	Big Six, g. s.	Colo..	500.000	500.000	1	.....	15,000	May.. 1898	.00½
33	Boston-Aurora, pref.	Mo...	800,000	32,000	25	37,120	66,160	May.. 1900	.50
34	Boston & California	Cal ..	600,000	600,000	1	.....	72,000	June. 1899	.06
35	Boston & Colo. Smelting	Colo..	750,000	15,000	50	33,750	303,750	July.. 1900	.75
36	Boston Duenweg, z.	Mo...	1,000,000	40,000	10	24,000	56,000	June.. 1900	.10
37	Boston Get There, z.	Mo...	250,000	22,500	10	9,000	20,250	April. 1900	.10
38	Boston-Little Circle, z.	Mo-K.	1,000,000	100,000	10	12,500	87,500	Mar.. 1900	.12½
39	Boston & Mont. Con.	Mont.	3,750,000	150,000	25	2,700,000	17,200,000	May.. 1900	10.00
40	Boston Providence, z., pf	Mo...	150,000	15,000	10	4,500	15,742	June. 1900	.05
41	Boston, q.	Cal...	1,000,000	100,000	10	10,000	20,000	Jan.. 1900	.10
42	Boston Springfield, z.	Mo...	500,000	20,000	25	15,000	15,000	June. 1900	.25
43	Boston Sunflower, z.	Mo...	150,000	15,000	10	.....	4,500	Oct... 1899	.30
44	Breece, l.	Colo..	5,000,000	200,000	25	10,000	80,000	Feb.. 1900	.05
45	Buffalo Hump, g.	Idaho	3,000,000	300,000	10	155,000	155,000	July.. 1900	.10
46	Bullion-Beck & Champ.	Utah.	1,000,000	100,000	10	60,000	2,498,000	June. 1900	.10
47	Bunker Hill & Sullivan.	Idaho	3,000,000	300,000	10	147,000	948,000	July.. 1900	.07
48	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	3,000,000	69,850,000	June.. 1900	10.00
49	Cambria Steel.	Pa...	16,000,000	320,000	50	230,000	1,440,000	May.. 1900	.50
50	Cariboo-McKinney, g.	B.Col	800,000	800,000	1	.....	311,965	June. 1899	.01½
51	Centen'l-Eureka, g.s.l.c.	Utah.	5,000,000	100,000	25	117,700	2,267,700	April. 1900	1.00
52	Center Creek, l. z.	Mo...	1,000,000	100,000	10	10,000	10.000	Feb.. 1900	.10
53	Central Lead, l.	Mo...	1,000,000	10,000	100	30,000	172,000	June. 1900	.50
54	Champion, g. s.	Cal...	340,000	34,000	10	.....	321,700	Nov.. 1899	.25
55	Charleston, p. r.	S. C..	1,000,000	10,000	100	.....	200,000	June. 1899	2.00
56	Cloverdale, z.	Mo...	1,000,000	100,000	10	50,000	50,000	July.. 1900	.20
57	Colonial, l.	Mo...	1,000,000	1,000,000	1	.....	10,000	Aug.. 1899	.01
58	Colorado Smelting	Mont.	1,000,000	100,000	10	.....	1,945,000	Jan.. 1899	1.00
59	Columbia, l.	Mo...	500,000	48,500	10	14,550	14,550	June. 1900	.10
60	Commodore, g.	Colo..	1,200,000	1,200,000	1	.....	432,000	Jan.. 1899	.04
61	Commonwealth, z., pref.	Mo...	500,000	100,000	5	30,000	50,000	June. 1900	.05
62	Consolidated Gold Mines	Colo..	1,000,000	1 000,000	1	50,000	60,000	June. 1900	.01
63	Consolidation Coal	Md...	10,250,000	102,500	100	205,000	5,921,650	Feb.. 1900	2.00
64	Con. Mercer Gold Mines.	Utah.	5,000,000	1,000,000	5	75,000	1,441,000	April. 1900	.12½
65	Cons. Zinc & Lead, pf.	Mo...	400,000	400,000	1	8,000	8,000	Jan.. 1900	.20
66	Continental, z.	Mo...	1,500,000	150,000	10	.....	.....	.....	.....
67	Cordell, z. l.	Mo...	300,000	60,000	5	18,000	21,000	June. 1900	.05
68	Cripple Creek Con., g.	Colo..	2,000,000	2,000,000	1	160,000	160,000	Mar.. 1900	.08
69	Cræsus, g.	Cal...	1,000,000	190,000	5	45,600	93,100	June. 1900	.06
70	Crowned King, g. s. l.	Ariz.	6,000,000	600,000	10	.....	242,760	May.. 1899	.02
71	Dalton & Lark, g. s. l.	Utah.	2,500,000	2,500,000	1	.....	87,500	Mar.. 1896	.00½
72	Daly, g.	Utah.	3,000,000	150,000	20	.....	2,925,000	Mar.. 1897	.25
73	Daly West, g.	Utah.	3,000,000	150,000	20	262,500	382,500	June. 1900	.25
74	Damon, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
75	Deadwood-Terra, g.	S. D..	5,000,000	200,000	25	.....	1,350,000	May.. 1898	.15
76	Deer Trail Con., g.	Wash	3,000,000	3,000,000	1	.....	55,000	Dec.. 1899	.00½
77	De Lamar, g. s.	Idaho	2,000,000	400,000	5	48,000	2,394,000	May . 1900	.12
78	Della S., g.	Colo .	1,000,000	1,000,000	1	.....	60,000	Jan .. 1897	.01
79	Delta, l. z.	Mo...	100,000	100,000	1	5,370	9,470	June. 1900	.01
80	Denver & Cripple C'k, g.	Colo..	1,000,000	1,000,000	1	10,625	10,625	June. 1900	.01½
81	Desloge Con., l.	Mo.	1,000,000	100,000	10	20,000	70,000	May.. 1900	.20
82	Dixie, g.	Utah.	125,000	125,000	1	10,000	10,000	April. 1900	.02
83	Doe Run, l.	Mo...	500,000	5,000	100	15,000	105,000	June. 1900	.50
84	Ducktown, c. i. sul. (ord).	Tenn.	374,000	7,480	50	.....	95,744	Dec.. 1899	9.60
85	Ducktown (founder).	Tenn.	1,000	200	5	.....	41,160	Dec.. 1899	102.00
86	Dutch, g.	Cal ..	1,500,000	130,000	10	.....	39,000	Feb.. 1898	.05
87	Eldorado, g.	Cal...	1,000,000	100,000	10	.....	10,000	July.. 1899	.10
88	Elkhorn, New, s. l.	Colo..	437,500	87,500	5	.....	1,325,000	June. 1898	.48
89	Elkton Con., g.	Colo..	3,000,000	2,500,000	1	158,750	873,961	June. 1900	.03
90	El Paso, g. s.	Colo..	900.000	900.000	1	.....	12,393	Jan.. 1898	.01
91	Empire State-Idaho.	Idaho	1,000,000	98,514	10	206,879	524.917	July.. 1900	.30
92	Enterprise, s. l.	Colo..	500,000	500,000	1	.....	900,000	Sept.. 1898	.05
93	Fanny Rawlings, g. s.	Colo..	1,000,000	1,000,000	1	.....	20,000	Aug.. 1899	.01
94	Favorite, g.	Colo..	1,200,000	1,200,000	1	48,000	48,000	April. 1900	.04
95	Federal Steel, pf.	U. S..	100000,000	532,610	100	4,127,727	5,725,587	July.. 1900	1.75
96	Federal Steel, com.	U. S..	100000,000	464,843	100	1,743,161	1,743,161	Mar.. 1900	2.50
97	Fern, g.	B.Col	200,000	200,000	1	.....	10,000	Jan .. 1898	.05
98	Ferris-Haggarty, c.g.s.	Wyo.	1,000,000	1,000,000	1	.....	5,000	Feb.. 1899	.00½
99	Florence, s.	Mont.	2,500,000	440,000	5	22,000	252.000	April. 1900	.05
100	Frisco Con., l. s.	Idaho	2,500,000	500,000	5	.....	920,000	Nov.. 1899	.25
101	Galena, s. l. g.	Utah.	1,000,000	100,000	10	.....	71,000	Sept. 1897	.05
102	Garfield Con., g.	Colo..	1,200,000	1,200,000	1	.....	34,000	May.. 1899	.01
103	Geyser-Marion, g.	Utah.	1,500,000	300,000	5	.....	96,000	Sept.. 1898	.02
104	Gold Coin of Victor, g.	Colo..	1,000,000	1,000,000	1	120,000	480,000	June. 1900	.02
105	Gold Deposit, g.	Colo..	500,000	500,000	1	10,000	10,000	Mar.. 1900	.02
106	Gold & Globe, g.	Colo .	750,000	750,000	1	.....	51,625	July.. 1898	.00½
107	Gold King, g.	Colo..	1,000,000	1,000,000	1	90,000	180,000	June. 1900	.03
108	Gold Sovereign, g.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....
109	Golden Cycle, g.	Colo..	1,000,000	200,000	5	60,000	318,500	June. 1900	.05
110	Golden Eagle, g.	Colo..	500,000	500,000	1	5,000	25,000	Jnne. 1900	.01
111	Golden Fleece, g. s.	Colo..	600,000	600,000	1	.....	569,480	Feb.. 1897	.01
112	Golden Reward, g.	S. D..	1,000,000	100,000	10	.....	155,000	Feb.. 1898	.15
113	Golden Star, g.	Ont..	1,200,000	1,200,000	1	.....	45,500	July.. 1899	.00½
114	Grafton, g.	Colo..	1,000,000	1,000,000	1	.....	10,000	Oct... 1899	.01
115	Grand Central, g.	Utah.	250,000	250,000	1	.....	666,250	Sept.. 1899	.24
116	Grand Gulch	Ariz..	250,000	240,000	1	9,600	9,600	April. 1900	.01
117	Grass Valley Expl	Cal...	100,000	30,000	2	37,500	67,500	May.. 1900	.25
118	Greater Gold Belt, g.	Colo..	5,000,000	3,800,000	1	76,000	76,000	June. 1900	.02
119	Gwin, g.	Cal .	1,000,000	100,000	10	5,000	91,500	May.. 1900	.25
120	Hall Mines, Ltd.	B.Col	1,500,000	250,000	5	.....	120,000	May.. 1899	.24
121	Hecla Con.	Mont	1,500,000	30,000	50	.....	2,190,000	Dec.. 1898	.50
122	Hidden Treasure, g.	Cal...	$500,000	360,000	$1	.....	$3,600	July.. 1899	.01
123	Holy Terror, g.	S. D..	500,000	500,000	1	$5,000	172,000	Jan.. 1900	.01
124	Home, g.	Colo..	50,000	50,000	1	75,000	75,000	June. 1900	.50
125	Homestake, g.	S. D..	21,000,000	210,000	100	630,000	8,773,750	June. 1900	.50
126	Horn-Silver, g. s. c. sp. l.	Utah.	10,000,000	400,000	25	20,000	5,270,000	June. 1900	.05
127	Idaho, g.	Idaho	1,000,000	1,000,000	1	8,188	8,188	April. 1900	.01
128	Idaho, s. l.	B.Col	500,000	500,000	1	.....	292,000	Jan.. 1899	.05½
129	Independence Town & M	Colo..	1,250,000	1,250,000	1	50.000	50,000	June. 1900	.01
130	International, z.	Mo...	1,000,000	1,000,000	1	26,427	26,427	July.. 1900	.01
131	Iowa, g. s. l.	Colo..	1,666,667	1,666.667	1	39,334	136,834	June. 1900	.00½
132	Iron Mountain, g. s. l. l.	Mont.	5,000,000	500,000	10	.....	507.500	April. 1898	.02
133	Iron Silver, s l.	Colo..	10,000,000	500,000	20	.....	2,500,000	April. 1889	.20
134	Isabella, g.	Colo..	2,250,000	2,250,000	1	135.000	675,000	June. 1900	.03
135	Jack Pot, g.	Colo..	1,250,000	1,250,000	1	.....	75,000	Dec.. 1899	.06
136	Jamison, g.	Cal ..	3,900,000	390,000	10	.....	50,700	April. 1899	.10
137	Keystone, g.	Colo..	1,500,000	1,500,000	1	.....	35,000	Mar.. 1894	.01½
138	Klondike Bonanza, Ltd.	Klond	750,000	52,750	5	.....	12,000	Aug .. 1899	.24
139	Lake Superior Iron.	Mich.	2,100,000	84,000	25	.....	2,132,000	Feb .. 1899	1.00
140	Last Chance, s. l.	B.Col	500,000	500,000	1	.....	45,000	Apr.. 1899	.05
141	Last Dollar, g.	Colo..	1,500,000	1,500,000	1	60,000	90,000	July.. 1900	.02
142	Le Roi, g.	B.Col	5,000,000	200,000	5	.....	1,305,000	Nov.. 1899	1.20
143	Lexington, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
144	Lillie, g.	Colo..	1,250,000	250,000	5	45,117	349,300	April. 1900	.05
145	Little Tiger, g.	Cal...	500,000	500,000	1	15,000	47,500	Feb.. 1900	.01½
146	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	120,000	1,730,000	July.. 1900	.05
147	Marion Con., g.	Colo..	5,000,000	500,000	10	.....	300,000	May.. 1899	.01
148	Mary McKinney, g.	Colo..	1,000,000	1,000,000	1	90,000	120,000	April. 1900	.06
149	Maryland Coal, pf.	Md...	1,885,005	18,850	100	37,700	584,319	June. 1900	2.00
150	Matoa, g.	Colo..	1,000,000	1,000,000	1	.....	25,000	Dec. 1898	.02½
151	Missouri Zinc Fields, pf.	Mo...	400,000	16,000	25	16.573	31,885	April. 1900	.16
152	Modoc, g. s.	Colo..	500,000	500,000	1	30,000	175,000	June 1900	.01
153	Mollie Gibson, s. l.	Colo..	5,000,000	1,000,000	5	.....	4,080,000	Jan.. 1895	.05
154	Monarch, g.	Colo..	1,000,000	1,000,000	1	120,000	120,000	April. 1900	.12
155	Montana Coal & Coke.	Mont.	5,000,000	200,000	25	60,000	60,000	April. 1900	.30
156	Montana, Ltd., g. s.	Mont.	3,300,000	657,128	5	.....	453,700	April. 1899	.12
157	Montana Ore Purchas'g.	Mont.	2,500,000	80,000	25	160,000	1,520,000	May.. 1900	1.00
158	Montreal, g.	Colo..	1,000,000	1,000,000	1	.....	7,500	Nov.. 1898	.00¾
159	Monument, g.	Colo..	300,000	300,000	1	.....	18,124	Nov.. 1899	.01
160	Moon-Anchor Con., g.	Colo..	1,750,000	600,000	1	.....	261,000	Nov.. 1898	.07½
161	Moose, g.	Colo..	600,000	600,000	1	.....	186,000	Feb.. 1896	.01
162	Morning Star Drift, g.	Cal...	240,000	2,400	100	.....	847,200	Nov.. 1899	10.00
163	Morse, g.	Colo..	1,250,000	1,250,000	1	.....	215,650	May.. 1899	.12
164	Mountain Beauty, g	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
165	Mountain Copper.	Cal ..	6,250,000	250,000	25	660,000	1,833,750	April. 1900	2.64
166	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1	.....	75,000	Dec.. 1899	.04
167	Mt. Shasta, g.	Cal...	100,000	20,000	5	.....	6,000	May.. 1899	.30
168	Moulton, g.	Mont.	2,000,000	400,000	5	.....	500,000	Oct... 1899	.05
169	Napa Con., q.	Cal ..	700,000	100,000	7	50,000	1,090,000	July.. 1900	.10
170	National Lead, com.	U. S..	15,000,000	149,054	100	149,054	1,341,486	Mar.. 1900	1.00
171	National Lead, pf.	U. S .	15,000,000	149,040	100	521,640	10,057,640	June. 1900	1.75
172	New Central Coal.	Md...	1,000,000	50,000	20	20.000	490,000	April. 1900	.40
173	New Idria, q.	Cal...	500,000	100,000	5	60,000	230,000	July.. 1900	.20
174	N. J. & Mo., z.	Mo...	250,000	2,500	100	6,000	6,000	May.. 1900	2.00
175	New York, Zinc.	Mo...	700,000	28,000	25	.....	6,500	Oct... 1899	.25
176	N.Y.& Hon Rosario, s.g.	C. A..	1,500,000	150,000	10	90,000	1,252,000	June. 1900	.10
177	North Star Mines.	Cal ..	5,000,000	250,000	10	.....	50,000	Nov.. 1899	.20
178	Nugget, g.	Colo..	625,000	1,250 000	½	.....	35,000	Aug.. 1898	.00½
179	Okanogan, g.	Wash	62,500	1,250,000	5	.....	3,125	Oct... 1899	.00¼
180	Old Colony Zinc & Sm.	Mo...	1,100,000	68,329	10	33,332	33,332	April. 1900	.25
181	Omega, g.	Colo..	1,500,000	1,212,550	1	18,188	18,188	June. 1900	.01½
182	Ontario, s. l.	Utah.	15,000,000	150,000	100	90,000	13.662.500	April. 1900	.30
183	Orphan Belle, g.	Colo..	1,000,000	1,000,000	1	.....	197,899	Dec.. 1899	.09
184	Original Empire, g.	Cal...	5,000,000	50,000	100	.....	530,000	Oct... 1899	1.00
185	Osceola, c.	Mich.	2,500,000	93,000	25	279.000	3,359,500	June. 1900	3.00
186	Parrot, c.	Mont.	2,300,000	229,850	10	1,034,325	4,049,050	July.. 1900	1.50
187	Pennsylvania Coal.	Pa....	5,000,000	100,000	50	.....	4,050,000	May.. 1899	8.00
188	Pennsylvania Con, g.	Cal...	5,150,000	51,500	100	25,750	161,325	May.. 1900	.10
189	Pennsylvania Steel, pf.	Pa. ..	1,500,000	15,000	100	52,500	78,750	July.. 1900	1.75
190	Petro, g.	Utah.	1,000,000	200,000	5	.....	32,000	Oct... 1899	.02½
191	Pharmacist Con., g.	Colo..	1,500,000	1,500,000	1	.....	84,000	Jan.. 1898	.01
192	Pinnacle, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
193	Pioneer, g.	Cal...	1,000,000	100,000	10	.....	62,500	Mar.. 1899	.12½
194	Pittsburg Coal, pf.	Pa. ..	32,000,000	308,000	100	1,078,000	1,078,000	April. 1900	1.75
195	Plumas Eureka, g.	Cal ..	1,406,250	140,625	10	84,375	2,797,544	April. 1900	.60
196	Portland, g.	Colo..	3,000,000	3,000,000	1	390,000	2,947,080	June. 1900	.02
197	Princess, g.	Colo..	1,000,000	1,000,000	1	.....	45,000	May . 1896	.01
198	Prince Albert, g.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....
199	Queen Bess Propr., s. l.	B.Col	500,000	100,000	5	.....	25.000	July.. 1899	.12½
200	Quicksilver, pref.	Cal...	4,300,000	43,000	100	21.500	1,866,911	July.. 1900	.50
201	Quincy, c.	Mich.	2,500,000	100,000	25	500,000	11,570,000	Feb.. 1900	5.00
202	Rambler & Cariboo, s. l.	B.Col	1,250,000	1,250,000	1	33,750	105.000	Mar.. 1900	.01
203	Reco, s. l.	B.Col	1,000,000	1,000,000	1	.....	297,500	Jan... 1898	.10
204	Republic Con., g.	Wash	3,500,000	3,500,000	1	105,000	382,500	Mar.. 1900	.01
205	Republic Iron & Steel, pf	U. S..	25,000,000	212,570	100	743,994	1,587,989	July.. 1900	1.75
206	Reward, g.	Cal ..	1,000,000	100,000	10	.....	20,000	Aug . 1899	.20
207	Russell-Irwin, z.	Mo...	250.000	25,000	10	.....	15,000	Oct... 1859	.10
208	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	138,000	Oct... 1899	.00½
209	St. Joseph, l.	Mo...	3,000,000	300,000	10	75,000	2,972,000	June. 1900	.50
210	Seventy-Six, g. s.	Colo..	1,000,000	200,000	5	.....	2,950	Mar.. 1898	.01
211	Santa Rosalia, g.s.	Cal...	100,000	100,000	1	.....	135,000	Sept.. 1899	.05
212	Silver King, g. s. l.	Utah.	300,000	150,000	20	450,000	2,900,000	June. 1900	.50
213	Small Hopes, s.	Colo..	5,000 000	250,000	20	.....	3,325,000	Feb.. 1899	.10
214	Smuggler, s. l. z.	Colo..	1,000,000	1,000,000	1	336,000	1,515,000	June. 1900	.03
215	South Eureka, g.	Cal ..	1,500,000	300,000	5	.....	12,000	May.. 1898	.04
216	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	165,000	Oct... 1899	.05
217	Specimen, g.	Colo..	1,200,000	1,200,000	1	.....	.....	.....	.....
218	Squaw Mountain, g.	Colo..	2,000,000	2,000,000	1	.....	10,000	Nov.. 1899	.00½
219	Standard Con., g. s.	Cal...	2,000,000	200,000	10	40,000	3,939,226	May.. 1900	.10
220	Standard, g.	Idaho	500,000	500,000	1	.....	1,745,000	April. 1899	.06
221	Stratton's Independ'ce.	Colo..	5,500,000	1,000,000	5	960,000	1,920,000	June. 1900	.48
222	Strong, g.	Colo..	2,500,000	2,500,000	1	150,000	1,000,000	June. 1900	.01
223	Swansea, s. l.	Utah.	500,000	100,000	5	40,000	241,500	June. 1900	.05
224	Tamarack, c.	Mich.	1,500,000	60,000	25	300,000	6,570,000	June. 1900	7.00
225	Tomboy, g.	Colo..	1,500,000	300,000	5	72,000	884,000	June. 1900	.24
226	Touraine, g.	Colo..	1,250,000	1,250,000	1	87,500	87,500	April. 1900	.07
227	Union, g.	Colo..	1,250,000	1,250,000	1	.....	82,744	June. 1896	.01
228	Union Leasing.	Colo..	1,000,000	1,000,000	1	.....	336,000	July.. 1895	.04
229	Union, z. l.	Kas..	500,000	500,000	1	5,000	5,000	June.. 1900	.01
230	United, z. l., pref.	Mo...	6,000,000	240,000	25	12,729	15,395	April. 1900	.50
231	United Verde, c.	Ariz..	3,000,000	300,000	10	975,000	1,837,500	June. 1900	.75
232	Utah, g.	Utah.	1,000,000	100,000	10	.....	179,000	Jan.. 1899	.02
233	Victor, g.	Colo..	1,000,000	200,000	5	.....	1,155,000	Dec. 1898	.50
234	Vindicator, Con., g.	Colo..	1,500,000	1,065,000	1	106,500	411,000	April. 1900	.05
235	War Eagle Con., g. s. c.	B.C..	2,000,000	1,750,000	1	52,500	545,250	Feb.. 1900	.01½
236	What Cheer, z.	Mo...	225,000	22,500	10	9,000	11,250	May.. 1900	.20
237	Wolverine, c.	Mich.	1,500,000	60,000	25	120,000	390,000	April. 1900	2.00
238	Work, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
239	Yellow Aster, g.	Cal...	1,000,000	100,000	10	100,000	419,416	July.. 1900	.20
240	Ymir, g.	B.Col	1,000,000	125,000	5	.....	30,000	Nov,. 1899	.24
241	Zenobia, g.	Colo..	1,000,000	1,000,000	1	.....	10,000	Feb.. 1898	.01

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. Q., Quicksilver. I., Iron. This table is corrected up to July 2d. Correspondents are requested to forward changes or additions.

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

	Cust.	Meas.	Price.
Abrasives—			
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
Crushed Steel, f. o. b. Pittsburg	"		.05½
Emery, Turkish flour, in kegs	"		.03
Grains, in kegs	"		.04½@.05
Naxos flour, in kegs	"		.03
Grains, in kegs	"		.05
Chester flour, in kegs.	"		.03
Grains, in kegs	"		.04½@.05
Peekskill flour, in kegs	"		.01¾
Grains, in kegs.	"		.02½
Crude, ex-ship, N. Y.: Kuluk (Turkey)	lg. ton		22.00@24.00
Abbott (Turkey)	"		26.50@30.00
Naxos (Greek) h. gr.	"		32.00
Pumice Stone, Am. powd.	lb.		.01⅞@.02
Italian, powdered	"		.01½
Lump, per quality	"		.04@.40
Rottenstone, ground	"		.02¼@.03
Lump, per quality	"		.05@.14
Rouge, per quality	"		.10@.30
Steel Emery, f.o.b. Pittsburg	"		.07
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.	"		.11
Powdered	"		.11½
Carbolic, crude, 60%	gal.		.35
Cryst, 37% drums	lb.		.20
Liquid, 95%	gal.		.45
Carbonic, liquid gas	lb.		.12½
Chromic, crude	"		.20
Chem. pure	"		.50
Hydrochloric, ch. pure.	"		.07
Hydrofluoric, 30%	"		.03
48%	"		.05
Best	"		.25
Nitric, chem. pure	"		.09
Sulphuric, chem. pure	"		.07
Sulphurous, liquid anhy.	"		.08
Tartaric, cryst.	"		.32
Powder	"		.32½
Alcohol—Grain	gal.		2.37
Refined wood, 95@97%	"		.75@.80
Purified	"		1.20
Alum—Lump	100 lbs.		1.75
Ground	"		1.85
Powdered	"		3.00
Chrome, com'l	"		2.75@3.00
Aluminum—Nitrate	lb.		1.50
Oxide, com'l, common	"		.06½
Best	"		.20
Pure	"		.80
Hydrated	100 lbs.		2.60
Sulphate, pure	"		1.50@1.75
Com'l	"		1.15@1.30
Ammonia—Aqua, 16°	lb.		.03
18°	"		.03¼
20°	"		.03¾
26°	"		.05½
Ammonium—			
Bromide, pure	"		.52@.55
Carbonate lump	"		.08¼@.08½
Powdered	"		.09¼@.09½
Muriate, gran.	"		.06¼
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	"		.04½
Red	"		.67¼@.07¾
Asphaltum—			
Ventura, Cal.	sh ton		32.00
Cuban	lb.		.01½@.03½
Egyptian, crude	"		.05½@.06
Trinidad, refined.	lg. ton		30.00@35.00
San Valentino	"		15.00
Seyssel (French) mastic.	sh.ton		21.00
Gilsonite, Utah, ordinary	lb.		.03
Select	"		.03¼
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	"		4.25@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	"		03¾@.03⅞

	Cust.	Meas.	Price.
Borax	lb.		$ .07¼@.07½
Bromine—Bulk	"		.45
Cadmium—Metallic	"		1.40
Acetate, pure white	100 lbs.		1.00
Sulphate	"		2.00@2.50
Calcium—Acetate, gray.	"		1.55
" brown	"		1.05
Carbide, ton lots, f. o. b. Niagara Falls, N.	sh. ton		75.00
Carbonate, ppt.	lb.		.05
Chloride, com'l	100 lbs.		.90
Best	"		1.00
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.	"		.95
Sand cement, 400 lbs.	"		1.55@1.95
Slag cement, imported.	"		1.65
Ceresine—			
Orange and Yellow	lb.		.11½
White	"		.13½
Chalk—Lump, bulk	sh. ton		2.15
Ppt. per quality	lb.		.04½@.06½
Chlorine—Liquid	"		.28
Water	"		.15
Chrome Ore—			
(50% chrome) ex ship	lg. ton		23.00
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
Fire Clay, ord.	sh. ton		4.00
Best	"		5.75
Slip Clay	"		4.00
Coal Tar Pitch	gal.		.08
Cobalt—Carbonate	lb.		1.75
Nitrate	"		1.50
Oxide—Black	"		2.26@2.36
Gray	"		2.28@2.40
Smalt, blue ordinary	"		.25
Best	"		.30
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)	"		.16½
(60% nitro-glycerine)	"		.18
(75% nitro-glycerine)	"		.21
Glycerine for nitro (32 2-10° Be.)	"		.13¼
Feldspar—Ground	sh. ton		8.00@9.00
Fluorspar—In bulk.			
Am. lump, 1st grade	"		12.40
2d grade	"		11.90
Gravel & crushed, 1st g	"		11.40
2d grade	"		10.90
Ground, 1st grade	"		15.90
Foreign, lump	"		8.00@12.00
Ground	"		11.50@14.00
Fuller's Earth—Lump.	100 lbs.		.75
Powdered	"		.85
Refined lump	"		1.25
Graphite—			
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.		.01½
Pulverized	"		.01¾@.02
Ceylon, common	"		.04
Pulverized	"		.05@.08
Italian, pulv	"		.01½
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
Iron—Muriate	lb.		.05
Nitrate, com'l	"		.01½
True	"		.03½
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—Com., ab. 250 lbs	bbl.		.60
Finishing	"		.70
Magnesite—			
Crude, lump (95%) Greece	lg. ton		7.00@7.50
Calcined (Greece)	sh. ton		17.50
Bricks (Greece)	M.		170.00
Bricks, Am., f.o.b. Pittsburg	M.		175.00
Magnesium—			
Carbonate, light, fine pd	lb.		.03¾

	Cust.	Meas.	Price.
Magnesium—Carb. Blocks	lb.		$0.06@.09
Chloride, com'l	"		.01¾
Fused	"		.20
Nitrate	"		.60
Sulphate	"		.01@.01¼
Manganese—Crude-pow'd 70@75% binoxide	"		.01¼@.01½
Crude, pow'd 75@85% binoxide	"		.01½@.02½
85@90% binoxide	"		.02½@.03¼
90@95% binoxide	"		.02¾@.05½
Carbonate	"		.16@.20
Chloride	"		.04
Ore, 50%, Foreign	unit		.29
Domestic	"		.30
Marble—Flour	sh. ton		5.50@6.00
Mercury—Bichloride	lb.		.74
Mica—N. Y. gr'nd. coarse	"		.04@.05
Fine	"		.05@.06
Sheets, N. C., 2x4 in	"		.30
3x3 in	"		.80
3x4 in	"		1.50
4x4 in	"		2.00
6x6 in	"		3.00
Scrap, f.o.b., Dillsboro, N. C.	sh. ton.		25.00
Mineral Wool—			
Slag, ordinary	sh. ton		20.00
Selected	"		25.00
Rock, ordinary	"		32.00
Selected	"		40.00
Monazite—92%	"		140.00
Nickel—Oxide, No. 1	lb.		1.00
No. 2	"		.60
Sulphate	"		.20@.21
Oils—Black, reduced 29 gr.: 25@30 cold test	gal.		.09¾@.10¼
15, cold test	"		.10¾@.11¼
Zero	"		.11¾@.12¾
Summer	"		.09¼@.09¾
Cylinder, dark steam ref	"		.08¾@.10¼
Dark filtered	"		.11¾@.16¼
Light filtered	"		.14¾@.17¾
Extra cold test	"		.21¾@.26¾
Gasolene, 86°@90°	"		.16@.21
Naphtha, crude 68@72°	"		9.55
"Stove"	"		.12
Linseed, domestic raw	"		.65@.67
Boiled	"		.69
Calcutta, raw	"		.76
Graphite, lubricating, Am. dry	lb		.10
In oil	"		.12
Axle grease	"		.08½@.10
Wood grease	"		.05@.06
Ozokerite—Foreign	"		.09¼
Paints and Colors—			
Benzine, Sumatra	"		.35
Marbled	"		.27
Chrome green, common	"		.05
Extra	"		.12@.15
Best	"		.37
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		19.00
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	"		.08¾@.08½
Foreign, as to make	"		.09½@.11¼
Paris green, pure, bulk	"		.12
Red lead, American	"		.06½
Foreign	"		.08¾
Shellac, "D. C."	"		.28
Native	"		.15
Turpentine, spirits	gal.		.46@.46½
Ultramarine, best	lb.		.25
Vermilion, Amer. lead	"		10@.11
Quicksilver, bulk	"		.72
Chinese	"		.85
English, imported	"		.80
English, domestic	"		.74
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@.08⅝
Foreign, in oil	"		.10½@.11¾
Potash—Caustic, ord.	"		.04½@.05
Elect. (90%)	"		.06½
Potassium—			
Bicarbonate cryst	"		.07¾
Powdered or gran	"		.12
Bichromate, Am.	"		.08½
Scotch	"		.09½
Carbonate, hydrated	"		.04¼
Calcined	"		.04
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 55
Best strained	"		3.00
Bolting	"		1.75

	Cust.	Meas.	Price.
Salt—			
N.Y com. fine	sh. ton		$2.00
N. Y. agricultural	"		1.50
Saltpeter—Crude	100 lbs.		3.50
Refined	"		4.25
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
Silver—Chloride	oz.		.65
Nitrate	"		.40
Oxide	"		.85@1.10
Slate—Ground, black	sh. ton		7.50@8.75
Ground, red and olive	"		20.00
Sodium—Acetate, com'l	lb.		.04¾
Bicarbonate	"		.06½
Chlorate, com'l	"		.09¼@.09½
Hyposulphite, Am.	100 lbs.		1.70@1.80
German	"		2.10@2.20
Nitrite, 96@98%	lb.		.08
Peroxide	"		.45
Phosphate	"		.02¼
Prussiate	"		.11¼
Silicate, conc com'l	"		.05
	"		.02¼
Sulphate, gran., puri'd.	"		.03
Sulphide	"		.01¾
Sulphite, com'l	"		.02½
Tungstate, com'l	"		.35
Pure	"		.50
Strontium—Nitrate	"		.09
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, best	100 lbs.		1.25
Italian, best	"		1.75
Tin—Bichloride	lb.		.09½@.10
Crystals	"		.20
Muriate, 36°	"		.09
52°	"		.15
Oxide, white, ch. pure	"		.41
Uranium—Oxide	"		2.25@3.00
Zinc—Metallic, ch. pure	"		07¼@.09½
Carbonate	"		.15
Chloride	"		.05
Dust	"		.07¼
Sulphate	"		.02@.02½

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.)	oz.		2.00
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.)	oz.		3.00
Erbium	grm.		3.09
Nitrate (N. Y.)	oz.		3.00
Germanium—Powder	grm.		33.32
Fused	"		35.70
Glucinum—Powder	"		5.95
Crystals	"		9.04
Nitrate (N. Y.)	oz.		2.75
Indium	grm		4.05
Iridium—	"		1.43
Lanthanum—Powder	"		4.28
Electrol, in globules	"		9.04
Nitrate (N Y.)	oz.		2.75
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—Crystals	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.		.65
Strontium—Electrol	grm.		6.19
Tantalium—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.		5.00
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.)	oz.		3.00
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 June 9. 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.