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CONTENTS.

	Page.
German Iron Production	457
Geological Survey of Missouri	457
Canadian Iron Production	457
Improvement of the Danube	457
The Coal Miners' Strike	457
The Idaho Miners' Strike	457
Cripple Creek Mines	458
Electric Carriages	458
Imports and Exports in 1893 and 1894	458
The Movement for International Bimetallism	458
England's Interest in the Silver Question	458
New Publications	459
Books Received	459
Recent Decisions Affecting the Mining Industry	460
*Variations in the Milling of Gold Ores.—T. A. Rickard	460
Goldfields of Western Australia.—A. P. Calvert	461
Mr. Balfour on Bimetallism	463
*German Concentrating Machinery	464
*Engines for Electric Mining Plants	465
Phosphate Discoveries in Algeria	465
Patents	466
Personal, Obituary, Societies, Technical Schools, Industrial	467

Notes: Electric Lighting on the Manchester Ship Canal, 462—Railways in Japan, 463—Roburite in Coal Mines, 463—Russian Petroleum in Germany, 466—Magnetic Properties of Iron at Different Temperatures, 466—Coal Miners' Time in Great Britain, 466—A French Ship Canal Project, 466—Railroads in Belgium, 466—Origin of the Slot Machine, 466—Railroad Accidents in Great Britain, 466.

* Illustrated.

MINING NEWS.
Arizona 468
California 468
Colorado 468
Idaho 469
Maine 469
Michigan 469
Minnesota 469
Montana 469
Nevada 470
New York 470
Pennsylvania 470
South Dakota 470
Utah 470
Wyoming 471

LATEST MINING NEWS 472

FOREIGN NEWS.
Algeria 471
Aus.-Hungary 471
Br. Columbia 471
Chile 471
Colombia 471
India 471
Mexico 471
Nova Scotia 472
South Africa 472
So. Australia 472
Spain 472

MARKETS:
COAL:
New York 473
Buffalo 473
Boston 473
Chicago 473
Pittsburg 474
IRON:
New York 474
Chicago 474
Philadelphia 474
Pittsburg 474
METALS 475

CHEMICALS AND MINERALS 476

MINING STOCKS:
New York 477
Boston 477
San Francisco 477
London 477
Paris 477
Meetings 477
Dividends 477
Assessments 480

STOCK QUOTATIONS:
New York 478
Boston 478
San Francisco 478
Baltimore 478
Denver 478
Salt Lake City 478
London 478
Philadelphia 478
Aspen 4
Colo. Springs 4
Duluth 480
Helena 480
Pittsburg 480
St. Louis 480
Shanghai 480
Paris 480
Coal Stocks 478
Ind. and Trust 478

MINING CO'S 479

CURRENT PRICES:
Chemicals 480
Minerals 480
Rarer Metals 480
ADVT. INDEX 15
ADVT. RATES 33

The production of pig iron in Germany in March was 440,320 (metric) tons, an increase of 20,583 tons, or 4·9%, over March, 1893. For the quarter ending March 31st the total output was 1,270,112 tons, an increase of 98,865 tons, or 8·4%, over last year. Of the March production, 70,153 tons were classed as foundry iron, 125,056 tons as forge iron, 30,249 tons as Bessemer pig, and no less than 214,862 tons, or 48·8% of the whole, as Thomas pig.

In our issue of April 14th we spoke of the action of the Geological Survey Board of Missouri in dismissing Mr. Arthur Winslow, State Geologist, and expressed regret that such action should have been taken. It was understood at the time that the Board was considering the advisability of discontinuing the survey, and we protested against this. We are advised now that such a course was not contemplated, and that the survey will be continued after the publication of data already collected.

The four leading iron-producing countries of the world last year made, in round figures, 21,000,000 tons of pig iron, of which the United States turned out 34 per cent.; Great Britain, 32·5; Germany, 23·6; and France, 9·9 per cent. Last year was not a normal year, however, and a more correct comparison can be made on the output of 1892, which was 22,600,000 tons, the relative proportions being for the United States 40·5; Great Britain, 29·2; Germany, 21·2, and France, 9·1 per cent. Of the four countries Germany has shown the least marked fluctuations and the steadiest through not the most rapid, growth. Its output is now about 70 per cent of that of Great Britain and 55 per cent. of that of the United States in a normal year.

The total consumption of pig iron in Canada last year was 116,541 tons, of which 53,894 tons, or 46·2 per cent., were of domestic manufacture, and 62,647 tons, or 53·8 per cent., were imported. Of the domestic iron 7,920 tons were charcoal iron, nearly all of which (7,422 tons) was made by the Canada Iron Furnace Company, at Radnor Forges, Quebec, from bog iron ores. The remainder was made by the Pictou Iron Company in its furnace at Bridgeville, N. S., which was in blast but a short time and turned out 498 tons. The rest of the Canadian product was coke iron, and was made by two concerns, both in Nova Scotia—the Londonderry Iron Company, whose furnace at Londonderry made 23,474 tons, and the New Glasgow Iron, Coal and Railway Company, which reported 22,500 tons from its furnace at Ferrona. No new furnaces were started up last year, though efforts are being made to establish several at different points.

A great engineering work, of which little notice has been taken here, but which is of the utmost importance to a large part of eastern and central Europe, is the improvement of the lower Danube. It is not a new project by any means, having been under discussion at intervals for nearly 300 years, but it is only within five years past that actual work has been undertaken. The first part of the improvement, on which considerable progress has already been made, is the excavation of a new channel through the rapids known as the "Iron Gate." This is the most difficult portion of the work, and the one which has most taxed the ability of the engineers, but it does not by any means cover the whole plan, which contemplates the deepening and cleaning of a channel which will enable vessels of considerable size to go up the river as far as Vienna. The effect of the opening of this channel on the coal and other mining industries of Hungary and the Danubian States cannot fail to be favorable, and a great impetus to commerce and production may be expected.

The Cleveland conference between the Western bituminous coal operators and the miners seems so far to be unsuccessful, the conference committees having been unable to reach any basis of agreement. The representatives of the miners evidently feel confident of their ability to force a settlement on their own terms. To an observer the time chosen for a general strike did not seem at all favorable; the demand for coal is unusually small, and the men generally are not prepared to live for any considerable time without working. While the suspension of mining has begun to make some trouble for the railroads, and some of the coke furnaces have found it necessary to stop production, there is as yet no general trouble or distress for want of coal, such as the miners relied upon to enforce their demands. On the other hand the men in many districts are already suffering, and apparently cannot hold out much longer. Under these circumstances a compromise seems inevitable, and if the opportunity offered by the Cleveland meeting is lost, it may be less favorable to the strikers than has there been offered.

The De Lamar Mining Company in Idaho has made itself a leader in the readjustment of wages which is inevitable in the mining regions of the far northwest. The reduction proposed by the company has been followed by a strike of its miners, but in the present condition of affairs in Idaho and Montana, it is hardly likely to be successful. The De Lamar is a strong company, and the number of unemployed miners is large, so that the advantages are certainly not on the side of the men. As we have shown on previous occasions, the scale of wages has been maintained at a higher point than the conditions of the mining

industry in Idaho will warrant, and a reduction is inevitable if that industry is to prosper. It must also be said that the cost of living has been reduced considerably in the State, while wages have not fallen correspondingly. Miners' earnings have been much greater there than in other mining districts further east and the development of the mines of Idaho has been checked, capital being diverted to other districts where the cost of work is less. It is not to the interests of the miners of Idaho to strangle the industry there by imposing a rate of wages which it cannot pay and compete with other districts.

Every good mine floats a hundred wildcats. Every good mining camp is made the field for swindling the public in worthless stocks.

We have called attention on many occasions to the great need of care in investing in Cripple Creek, Colo., stocks. There is a vast brood of wildcats growing up there, and the good name of the camp is being industriously used by sharpers in floating any kind of worthless stocks on the public.

The latest abuse that has come to our attention is by a concern bearing the familiar and appropriate title Skinner & Co.'s Stock Exchange, Chicago, Ill. This concern is Skinner himself, a man who has been notorious for about twenty years in getting up stock exchanges in various places and floating worthless stocks which, as he has informed a representative of the "Engineering and Mining Journal" (whom he did not recognize as such), he buys at but little above the cost of paper and printing and sells at from two to fifteen cents a share. He claims to have nearly a million dollars (face value) of such stocks now ready to unload from Chicago as a headquarters. Skinner, under his various company or stock exchange aliases, is well known, and no one should require a second warning against investing in his "trash."

We notice that Messrs. Doubleday, Rope & Co., Stockbrokers, Colorado Springs, Colo., also warn the readers of their circular against this Skinner concern.

On June 7th there will be held in Paris an international competition of automatic carriages, which, it is hoped by the projectors, will do much toward increasing interest in this means of transportation. No restriction as to the number of wheels, seats or the kind of motor has been made, so inventors have an abundance of room in which to exercise their skill. The conditions are that the motor and vehicle shall be safe, easily managed and cheap to propel, and also convenient for the riders. The first trial will be from Paris to Nantes by St. Germaine; Paris to Mantes by Courbevoie; Paris to Magnyen-Vexin; Paris to Corbeil; Paris to Priez-sur-Oise, distances ranging from 47 to 56 kilometers. A speed of 12·5 kilometers per hour will be considered satisfactory. The concluding trials will be from Paris to Rouen and other places, about 126 kilometers. During this the chief points of merit considered will be speed, steadiness, security and economy. The prizes are 5,000 francs, 2,000 francs, 1,500 francs, 1,000 francs and 500 francs. In this country there have been numerous machines of this kind constructed, but our roads are so bad that they have not proved of any practical value. When the much needed improvements in this direction shall have been made there is little doubt but that some form of automatic or, more properly, motor carriages will be found servicable. It is strange they have not yet been adopted in our cities.

IMPORTS AND EXPORTS IN 1893 AND 1894.

The statement of the Bureau of Statistics of the Treasury Department gives the merchandise exports and imports of the United States for the ten months of the fiscal year from July 1st to April 30th as follows:

	1892-93.	1893-94.
Exports	$712,187,199	$773,883,868
Imports	720,751,144	545,880,906
Excess	Imp. $8,563,945	Exp. $228,002,962

The period of ten months this year covers very nearly the period of business depression, and the changes show very clearly the panic conditions and the effect of tariff uncertainty in the heavy decrease in imports and the increase in exports, which together have changed the so-called trade balance from $8,563,945 against us to $228,002,962 in our favor, making a total change of $236,566,907. This statement, it will be understood, covers merchandise only, and not the precious metals.

Surprise is often expressed that with so large an apparent balance on the export side, the rates of exchange should still be so high as to make the export of gold profitable. As we have shown heretofore in these columns, the merchandise does not by any means cover the whole account between this country and Europe. There are many other matters affecting the balance, including, to state them briefly, payments for freight carried in foreign ships, interest on loans and rents of property owned abroad, payments for American securities returned, money sent back by immigrants, and money spent abroad by American travelers. These amount in the aggregate to a very large sum, though from their nature it is very difficult to determine their exact amount. During the past eight or ten months the amount of the American securities sold back to this country has been very large, and although the return has now practically ceased, there are understood to be many loans of considerable amount made last year which are now being withdrawn because more profitable use can be found for the money elsewhere. These drafts have for the time overbalanced the merchandise credits.

Our exports to Europe, and indeed to all the world, heretofore have been chiefly of raw materials—food products, oils, etc.—the most unprofitable form, since very little labor is expended in bringing them to their shipping condition. It is to be hoped that in the near future our exports may be largely increased—in value more than in bulk—by the sale and shipment of a higher class of products; manufactures of various classes, which we are well able to supply to the world, and which we can now place on the world's markets at prices quite as low as most of our competitors, and of quite as good—in many cases of better—quality. If our manufacturers make the proper efforts the present juncture is certainly favorable, and there is no doubt that our export trade can, in the next few years, be extended in a marked degree, with great benefit to all our industries, and especially to mining, which is the basis of so many of them.

THE MOVEMENT FOR INTERNATIONAL BIMETALLISM.

The general interest shown in the recent Bimetallic Conference in London, and the presence and approval given to the proceedings by some gentlemen of prominence in both the commercial and political worlds, have shown an increase of feeling in favor of bimetallism in England which was hardly expected, and which appears to have considerably disturbed the partisans of monometallism, who have hitherto believed themselves to be practically in full possession of the field. There is among them a general disposition to write down the movement and to decry its importance as much as possible. In doing this no new reasons have been brought forward, and the main argument used is that Great Britain cannot enter any international conference because she cannot give up the supposed advantage she holds as a creditor nation in demanding all payments in gold. Of the losses of trade and other disadvantages she incurs we find no mention.

In a curiously contradictory article our usually clear and able contemporary, the London "Statist," admits the great appreciation in value of gold and the consequent fall in prices during recent years, but claims that, upon the whole, the lower prices have benefited more than they injured; nevertheless, in summing up the case it says: "We agree that the demonetization of silver has been injurious, and that the adoption of the single gold standard by so many countries has added greatly to the injury done." This admission, it would seem, is as much as any bimetallist would desire. The "Statist," however, goes on to qualify its admission and to say that, the injury being done, we have now only to look for the benefits.

The remedy proposed by the "Statist" for the present condition of affairs is a somewhat curious one. The rich countries of the first rank—in which it includes Great Britain, France, Germany and the United States—should retain the single gold standard, while the poorer countries, like Italy, Spain, the South American states, with the Asiatic countries generally, should retain the silver standard. To the latter also the "Statist" would refer countries of the intermediate rank, such as Austria-Hungary and Russia. This, and not international agreement, it holds, would be the true policy.

Our contemporary, however, fails entirely to advance any arguments in favor of its position, or to show how such a policy could at all improve the present conditions; or, indeed, whether it would not rather intensify the evils from which we are now suffering. Briefly stated, it believes in international division rather than international agreement, but fails to give reasons for this singular faith.

To us it seems that every reason is in favor of the international agreement in some such form as we have already frequently outlined, which shall have in itself the power of adjustment to changing conditions, and therefore the promise of permanence. The arguments in favor of such an agreement we have summed up so often that their repetition here seems hardly necessary.

ENGLAND'S INTEREST IN THE SILVER QUESTION.

The London "Statist," a very able financial authority and, though a strong gold monometallist advocate, a fairer and more liberal one in its views than some other English and American papers, makes the following important admission: "Whatever view may be taken of bimetallism there is no denying the fact that the movement has made considerable progress, not only in the provinces, but in London, during the last six months. It is now generally thought in political circles that the return of a Salisbury government to power would be followed by another International Monetary Conference. Lord Salisbury, Mr. Balfour and Mr.

Chaplin are militant bimetallists. Mr. Goschen would certainly not oppose an attempt to arrive at an international agreement."

There is, indeed, no denying the fact that the English are beginning to recognize the enormous injury the demonetization of silver has brought and is bringing on them. Now that the United States has stopped carrying the load of maintaining the value of silver and protecting English investments in silver countries, Englishmen are beginning to consider the question of doing themselves what they long counted on us to do for them. The United States is now the most independent and the least affected of all countries in the silver question. We very easily maintain the gold value of our silver money, we have no large transactions with silver countries, and own none of their securities. The English, on the other hand, see their investments in Mexican and South American government bonds, railroad and other industrial securities, fading away, because the depression in the value of silver increases expenses and interest to the point where her debtors cannot meet their obligations. Before long the enlightened English economists and the "Statist" their most able mouthpiece, will recognize that England, is and necessarily will always be, the chief loser when debtor nations are embarrassed. But since it is in her power, by adopting universal bimetallism, to relieve them of their embarrassments, and by increasing their prosperity increase both the value of her own investments and their ability to buy more of her products, it is not surprising that "bimetallism has made considerable progress not only in the provinces but in London in the last six months."

Though we are infinitely less interested than is England in the adoption of international bimetallism, we recognize the enormous benefit it would bring upon the industries and commerce of the world, and the United States is always ready to join in adopting it.

We want no more international monetary conferences with delegates empowered to talk and to listen, and instructed to do nothing—for that is simply child's play, unworthy of practical economists or business men,—but when England is ready to propose a conference *whose members shall be empowered and instructed to settle the question and adopt an international ratio*—(and rules for regulating the same)—at which silver and gold will be interchangable everywhere, we shall gladly co-operate.

Gold will necessarily be the sole standard of value, but silver, the sole money of two-thirds of the people of the world, and half the money of the world in amount, should be interchangeable with gold everywhere at a ratio adopted by the nations. It will be easy to find means of changing the ratio from time to time, if it should be found necessary, without endangering the financial stability of the world, or preventing the development of industry as the present blind and selfish experiments of a few nations with the money question have brought to pass.

NEW PUBLICATIONS.

PROGRESS IN FLYING MACHINES. By O. Chanute, C. E. New York; the "American Engineer and Railroad Journal." Pages 308. Illustrated. Price $2.50.

For many years the flying machine was the subject of ridicule, and to be suspected even of inventing one was enough to label a man permanently as a "crank." Of late years, however, the problem has been taken up by men of high scientific attainments, who believe in the possibility of navigating the air, and who are placing it on a different footing from that which it so long occupied in popular estimation. The author of this book in an engineer whose reputation has long been established beyond all question, and who has for years devoted much time and study to the subject of which he treats.

The advocates of aerial navigation are divided into two classes, aeronauts, or balloonists, and aviators, or those who believe in a general way in using some imitation of the flight of birds. The aeronauts have attained a certain measure of success; they have succeeded in rising in the air, but there they have stopped, and there seems but little reason to expect that they will ever be able to direct the course of their unwieldy vessels so as to make them practically useful. The hope of the future is with the aviators, who are following the lines pointed out by nature. Until recently this has been done in a blind, hap-hazard sort of way, but within the past few years the work done by such men as Mr. Chanute himself and Professor Langley, in this country; Mr. Maxim and Mr. Moy, in England; MM. Mouillard, Drzeweicki and others, in France, and Herr Lilienthal, in Germany, has shown the direction in which success is to be sought, while the progress made in applications of power and the construction of light motors has been of great assistance.

Mr. Chanute has given us a very interesting book, in which he has followed up the history of the many attempts made at traveling through the air by the Aviators of the past and of the present day, has described the recent experiments made in this country and abroad, and has treated briefly of the principles involved in flight and the conditions surrounding the attempt to carry them into practical effect. The author has the faculty—not too common, unfortunately—of clearness in description and explanation, while he is aided by numerous illustrations. He is not only a clear, but also a concise and agreeable, writer, and has managed to give us a book which is the only one on the subject in the English language, and is also a thorough and an exceedingly well written one.

The introduction, giving some account of the general principles, is followed by the history of Aeroplanes, which forms the main part of the book; necessarily so, since the Aeroplane is the instrument with which the Aviator must do his work. What its form and proportions are to be, the amount of motion to be given to it, and the power from which that motion is to be derived are the questions which the successful air navigator must answer.

The concluding portions of the book are an appendix by Thomas Moy, giving the substance of a long series of careful observations on the flight of the albatross, and another appendix giving the result of some remarkable experiments made by Otto Lilienthal, in which a nearer approach was made to practical flight than had ever before been attained. A very full index accompanies the work. The average reader, who has not made the subject a study, will be surprised to learn how much work has been done heretofore, and especially how great is the progress made in the past five years. If he is of an inventive turn of mind, he will learn here what mistakes to avoid and what are the lines to be followed with the greatest hopes for success.

On the true place of aerial navigation, should it become a fact instead of a possibility only, Mr. Chanute has no illusions. He does not believe that it will ever supersede the ordinary methods of travel on land or water, or that aerial vessels can ever be used to transport even light and valuable freight. The commercial results may indeed be small; but for reaching points now inaccessible and for exceedingly rapid travel—for it is almost certain that very high speeds will be the most economical and perhaps the most practicable—the flying machine may develop a "usefulness of its own, differing from and supplementing the existing modes of transportation." It is not improbable that its first use may be in the operations of war, and here, he thinks, the result may be to introduce an element which may add to the uncertainty of military operations, and to the horrors of battle in such a way as to make nations even more unwilling than at present to refer their differences to the "wager of battle," and so in the end the flying machine may prove a promoter of peace. It is in reference to this that he concludes his book with a paragraph so happily expressed that we cannot refrain from quoting it here:

"So may it be; let us hope that the advent of a successful flying machine, now only dimly foreseen and nevertheless thought to be possible, will bring nothing but good into the world; that it will abridge distance, make all parts of the globe accessible, bring men into closer relations with each other, advance civilization, and hasten the promised era in which there shall be nothing but peace and good-will among all men."

To this we can all agree. And we believe that those who will read this book will realize that the problem of aerial navigation, about which men have dreamed for so many thousand years, is at last in the hands of scientific and practical men, and that there is a prospect of its solution before many years have passed, because the attempt is now made, not by mere hazard and guesswork, but by the scientific application of the known laws and forces of nature, the turning of which to practical service is the highest work of the engineer.

BOOKS RECEIVED.

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

Farm Statistics of Michigan. Fifteenth Annual Report of the Secretary of State, 1892-93. Published by the State. Pages, 175. Illustrated.

Annual Report of the South Australian School of Mines and Industries and Technological Museum: 1893. Adelaide, South Australia; Government Printer. Pages 180; illustrated.

Geological Society of America: Proceedings of Sixth Annual Meeting, December, 1893. H. L. Fairchild, Secretary. Rochester, N. Y.; published by the Society. Pages 128.

L'Aluminum, le Manganese, le Baryum, le Strontium, le Calcium et le Magnesium. Par Adolphe Lijeal. L'Introduction par U. Le Verrier. Paris, France; B. Baillière & Fils. Pages 360; illustrated. Price (in Paris) 5 francs.

Handbuch der Metalhuttenkunde: Erster Band. Kupfer, Blei, Silber, Gold. By Dr. Carl Schnabel. Berlin, Germany; Julius Springer. Pages 914; with 571 illustrations. Price (in Berlin), 24 marks.

Launch of a Torpedo Boat for the Navy.—The new torpedo boat "Ericsson," built for the United States Navy by the Iowa Iron Works, at Dubuque, Ia., was launched May 11th. The "Ericsson" is 150 ft. long, 15·5 ft. beam, 10·5 ft. depth and has 120 tons displacement. She will carry one fixed torpedo tube in the bow and two swiveling tubes amidships. She has two quadruple-expansion engines, with cylinders 11½, 16, 21½ and 30 in. diameter and 16 in. stroke. Steam is furnished by tubulous boilers of the Thornycroft pattern. The contract speed is 24 knots an hour. The "Ericsson" is the first vessel for the new navy built on inland waters.

Gold Mining in British Guiana.—According to the "British Guiana Directory for 1894," since the year 1880 prospecting for gold has been vigorously carried on in the district traversed by the Cuyuni, Massaruni, Puruni and Potaro rivers, tributaries of the Essequibo River; and to a small extent also in the Demerara and Berbice rivers. Numerous companies have been formed and prospecting parties sent into the interior, and while nearly all of them have found traces of gold in the creeks and tributary streams of the great rivers mentioned, some have found the precious metal in considerable quantities. The districts from which the largest quantities of gold have as yet been taken and to which most of the expeditions have lately been directed are the Peruni and Potaro, both tributaries of the Essequibo, and the Barima and Barama rivers in the Northwest district. From the Essequibo there has been a large increase, and some of the richest placers yet discovered are on that river or its tributary, the Potaro. In ascending these rivers to the goldfields many cataracts have to be crossed, a work of great danger and in which already a large number of lives have been lost. In 1880 the first ordinance was passed to make provision for gold and silver mining. Under the present regulations, drawn up April 27th, 1892, the Colony is divided into five districts. It is provided that no placer claim should exceed 1,500 ft. in length or 500 ft. in width, and that one person should not hold more than five placer claims in one district. The royalty claimed by the Government, under the ordinance, is 90 cents on each ounce of gold and 4 cents on each ounce of silver

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

SUPREME COURT OF PENNSYLVANIA.

Rights of Devisees in Oil Lease.

Where, during the term of an oil lease of three contigous farms, embracing 600 acres, the lessor dies and devises the farms to different persons, the devisees are entitled to share alike in royalty reserved, though the wells are all on one farm, as through such wells the oil may be drawn from all the farms. Such lease was, in its legal effect, a sale of the oil, for the removal of which the surface and the subsurface were subjected to the necessary servitudes. The subsequent division of the body of land by the lessor could not divide or diminish the privileges of the lessee or change his covenants. The lessee may locate his wells where he pleases, regardless of the interests of the devisees of his lessor. He may distribute them over the 600 acres or ocate them all on one of the divisions. He may crowd the lines of the adjoining divisions so as to enable him to draw the oil from them without drilling upon them, and in this manner deplete, ultimately, the whole territory by operations conducted on the farm of one of the devisees. It is well understood among oil operators that the fluid is found deposited in a porous sand rock at a distance ranging from 500 to 3,000 ft. below the surface. This rock is saturated throughout its extent with oil, and, when the hard stratum overlying it is pierced by the drill, the oil and gas find vent, are forced by the pressure to which they are subject into and through the well to the surface. After this pressure is relieved by the outflow the wells become less active. The movement of the oil in the sand rock grows sluggish, and it becomes necessary to quicken the movement of oil from the surrounding rock, and to lift it from the chamber at the bottom of the well to the surface. An oil or gas well may thus draw its product from an indefinite distance, and in time exhaust a large space. Exact knowledge on this subject is not at present attainable, but the vagrant character of the mineral, and the porous sand rock in which it is found and through which it moves, fully justify the general conclusion we have stated above, and have led to its general adoption by practical operators. For this reason an oil lease partakes of the character of a lease for general tillage, rather than that of a lease for mining or quarrying the solid minerals. In the case of a coal lease, for example, the exact location, with reference to lines on the surface, of every pound of coal taken may be easily determined. The stratum of coal is as fixed and permanent in its character as are the strata of superincumbent rocks and earth. Its ownership, as between several devisees or heirs at law after partition made, is as easily determined as that of the surface. The removal of the coal from one part does not diminish or disturb that which underlies another. The lines that divide the surface divide with absolute fairness to all concerned, and secure to the several owners with certainty the mineral that belongs to each. The rules applicable to coal leases, or leases of land containing any other sold mineral, are therefore not always capable of oil or gas, because of the difference between the solid and the fluid minerals, and because of the deficient conditions under which they are found and brought to the surface.—Wettengel v. Gormley, 28 At. Rep., 934.

VARIATIONS IN THE MILLING OF GOLD ORES.—X. GRASS VALLEY, CALIFORNIA.

(Written for the Engineering and Mining Journal by T. A. Rickard.)

The history of Grass Valley forms one of the most important chapters in the record of gold mining in America. Grass Valley is the mining center of Nevada County, and that county is the leading gold-producing region of California, covering about 20 miles of the length of the main gold belt. To the north it is bounded by the South Yuba and the Bear River, and to the south by the Middle Yuba, names which have become classic in the story of gold discovery.

The pretty town of Grass Valley has a population of 6,500, mostly Cornishmen. It lies among the foothills of the Sierras and is about 150 miles northeast of San Francisco. The earliest settlement took place in the fall of 1849. The placers which were at that time discovered proved to be of great richness. In June, 1850, the first quartz ledge was found, but its value was not realized at that time. In the following October, however, croppings of extraordinary richness were discovered on Gold Hill, and created a sensation which led to the commencement of vigorous prospecting. Several lodes were then uncovered on Masachusetts Hill, Eureka Mountain, Ophir Hill and other localities which have since proved very productive.

The first mill built in the district was erected in January, 1851, on the west bank of Wolf Creek, nearly oposite the site of the present Empire mill. This is said to have been the second stamp mill erected in the State of California, priority being conceded to a plant built in Mariposa County in 1850. The latter consisted of eight round stamps driven by water power. Each stamp occupied a single mortar. Mr. Melville Attwood informed the writer that these stamps revolved and were the originals upon which the typical Californian stamp was subsequently modeled.

From 1851 to 1866 the Grass Valley district is estimated to have yielded gold of a value to exceed $23,000,000. The sum total to date has been calculated to be no less than $100,000,000. The eleventh census (1890) gave the output for that year as $1,715,248, derived from quartz lodes and $203,331 obtained from placers, the total being thus nearly $2,000,000. At that time 58 mines were active and 295 stamps were at work. The mint report gives the yield for 1892 as $1,945,406 as against a reported production for the preceding year of $2,207,887. It is estimated, however, that the output for 1892 was as much as, if not more than, that of 1891, so that we may put down the production at about $2,250,000. At the present time the mining industry of this old district is in a healthy and vigorous condition.

The accompanying comparative table gives the figures which best indicate the main characteristics of the milling practice.

COMPARATIVE TABLE.

Name of mill.	Number of stamps.	Weight of each stamp.	Number of drops per min.	Height of drop.	Depth of discharge.	Crushing capacity per stamp.	Crushing capacity of entire mill.	Description of screen.	Fineness of screen.	Percentage of concentrates.	Value of concentrates per ton.	Retort percentage.	Fineness of bullion.	Consumption of mercury per ton of ore.	Wear of screens.	Consumption of water per stamp per min.
		Lbs.		Inches.	Inches	Tons.	Tons.		Mesh.	%.	$.	%.	Pr 1,000	Dwts.	Days.	Gals.
North Star	40	850	84	7	4	1·6	64	Perf. tin plate.	30	3	60	40	851	11½	24	4
Empire	40	850	93	7	4¼	1·5	60	Perf. tin plate.	30	2¼	80	40	820	9	15	4
Idaho	40	850	95	7	4	2·0	80	Brass wire cloth.	40	1	85	42	840	13	11	3¼
W. Y. O. D.	10	750	90	6	5	1·7	17	Perf. tin plate.	40	2¼	100	38	850	11	14	3

Of the four plants whose names appear on the list, the North Star is the one which will be taken as a type of the stamp mills of Grass Valley. The North Star mine was first worked in 1850. In the following year a party of Frenchmen organized a company known by the name of the "Helvetia & Lafayette." In 1857 the mine obtained the name which it now bears. A 16-stamp mill was erected in 1866. The mine has been closed down and reopened at various intervals. Since 1884, however, work has been continuous. The present mill, which was erected in 1888, contains 40 stamps and its parts are so arranged as to give to a maximum degree an automatic handling of the ore. The mill is often referred to as typical of the best results of Californian experience, and it deserves its high reputation.

A clear idea of the arrangement of the parts of the plant will be best obtained by following the ore in its passage from the entrance at the top of the mill building to its exit as waste at the bottom. The ore arrives from the mine shaft in a car, holding about one ton of ore, and is emptied upon grizzlies or sizing-bars which separate the fine stuff from the large lumps. The former falls through the interspaces, and goes into the lower ore bins for fine ore, while the latter passes into the upper ore bins above the rock-breakers. There are eight sets of grizzlies, inclined at an angle of 45°, each set consisting of 16 bars of iron, 12 ft. long, 2 in. wide and separated by spaces of 2½ in. Recently the spaces have been diminished to 2 in., thereby increasing the fineness of the ore supplied to the stamps.

The upper ore bins are three in number and feed three rockbreakers arranged in a row, one beneath each ore bin. The breakers are all of the Blake pattern, having jaws 15 by 9 in., and they are fed by means of an ordinary iron shoot. The feeding is regulated by the millman who adjusts the gate opening.

The millstuff as it is reduced by the rockbraker falls into the lower or fine ore bins which supply the stamps. The ore is fed to the stamps by means of Hendy challenge feeders, of which machines there are eight, one to each 5-stamp battery.

Each stamp weighs about 850 lbs. The total weight is thus distributed: Shoe, 358; head, 232; tappet, 112; shoe. 152 lbs. The stamps drop from 82 to 85 times per minute through a height of from 6 to 8 in. Each mortar contains 5 stamps, and each such group (called a battery of five heads) crushes about eight tons per 24 hours, being at the rate of 1·6 tons per stamp.

The depth of discharge, the distance from the bottom of the screen to the top of the die, varies from a minimum of 2 in. to a maximum of 6 in. No serious effort is made to maintain anything like a uniform issue. The crushed ore passes through screens made of tinned iron and perforated with holes of such a size and number as make them, it is supposed, equivalent to a 30-mesh wire cloth.

The pulp is discharged upon amalgamating tables, which are subdivided into three consecutive divisions, termed, respectively, the battery, apron and sluice plates. They are all covered with sheets of copper ⅛ in. thick, electroplated with silver at the rate of 1 oz. of silver per square foot of copper.

From the amalgamating tables the pulp passes to the concentrators upon the floor below. The discharge from two batteries passes direct to the concentrators, but that from the other six flows first over Rittinger shaking tables, intended to catch any escaping amalgam. The concentration plant consists of 4 Frue vanners and 12 Triumphs, being in the usual proportion of two concentrators to each battery. The concentrators are run at a speed which gives them from 200 to 230 strokes per minute.

The entire machinery of the mill is propelled by water power. Ninety-three miner's inches (one inch being equal to 1·574 cu. ft., or 11·77 gals., per minute) under a head of 277 ft. and a pressure of 212 to 215 lbs. per sq. in. serve to work a 6-ft. Pelton wheel which drives the stamps. Twenty inches of water propelling a 4-ft. Pelton run the rockbreakers; and 12 in., with a 3 ft. Pelton, work the concentrators. The transmission of power from the waterwheels is effected by manilla ropes, 1½ in. in diameter.

Such is the general arrangement of the plant. The following additional details will prove of interest: The stamps in each battery drop in the order of 1, 4, 2, 5, 3. In watching them I found that a stamp often makes a complete turn in three drops; on the other hand it occasionally falls several times without making an appreciable turn. On an average it requires five drops to make a complete revolution. The tappets are keyed, not screwed, upon the stem. Screw tappets were used long ago, and discarded.

The shoes and dies have the following dimensions: Shoe, 9 in. diame-

ter, 8 in. high, with a tongue 3⅛ in. thick; die, 9 in. diameter, 5 in. high, with a seat 1¼ in. thick. The former is made of chrome steel, obtained from Brooklyn, N. Y.; the latter is of cast iron, from the local foundry. The remnants from wornout shoes are used in Grass Valley, being added to the iron of the dies, so that the latter contains about 20% chrome steel scrap. The steel costs 6c. now, but used formerly to cost 9c., delivered. The cast iron is delivered at the mill for 4½c. per lb. The remnants of both shoes and dies are sold to the local foundry for 1½c. per lb.

The average weight of the shoe is 152 lbs.; when worn out it averages 48 lbs. It gives a service of 143 days and therefore wears at the rate of 7·3 oz. of steel per ton of ore crushed. The average weight of the die is 93 lbs., which is decreased to 45 lbs when it is worn out, that is, after 55 days of service.* It wears therefore at the rate of 8·7 oz. of iron per ton of ore. Cast iron dies, when used in conjunction with steel shoes, are found to produce a more even wearing surface than when steel falls upon steel. The cupping or irregular wear just referred to diminishes the crushing capacity of the stamp.

Dies of 5 and 4 in. depths have both been used. The use of the former as compared with the latter means an economy of the iron, since the portion finally discarded is similar in both cases, but on the other hand it causes a greater variation in the depth of discharge as the die wears down. This objection can, however, be overcome by employing some device, and there are many that will serve, to maintain a constant height of issue.

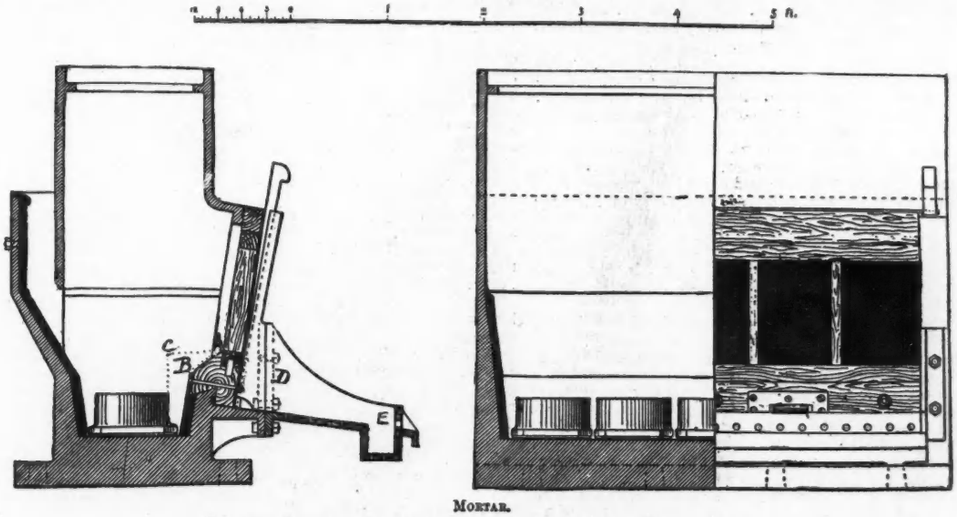
The mortars are of a pattern common in California. The internal dimensions at the level of the discharge are as follws: Inside length, 4 ft. 4½ in.; inside width, 17½ in.; from the screen to the die is 6 in.; from the side of the mortar to the nearest die ¾ in.; from the back of the mortar to the die 2¾ in., and between dies ¾ in. The depth of the mortar below the bottom of the screen is 7 in. The feed-hole comes immediately behind the three middle stamps and gradually widens the upper part of the mortar. The latter is lined with steel plate 1 in. thick.

There is one inside front amalgamating plate. Its use was introduced in 1888. It is of silver-plated copper and is 4 ft. long by 4½ in. wide. It is screwed down to a chuck block, a wedge of wood which fits tightly against the front of the mortar, and slopes toward the interior at an angle of 45°. See accompanying sketch,* Fig. 1, where the distance A B is 4½ in., and A C 6 in.

The screen frame has four partitions which divide the discharge into five parts. Each division is 9 in. wide and 12¾ in. high. Each partition is 1½ in. broad. The frame itself is 4 ft. 4 in. long by 18 in. wide. The partitions referred to (see Fig. 2) serve the purpose of strengthening the screen, but they obstruct the discharge and cause a loss (including the ends) of about one square foot of surface.

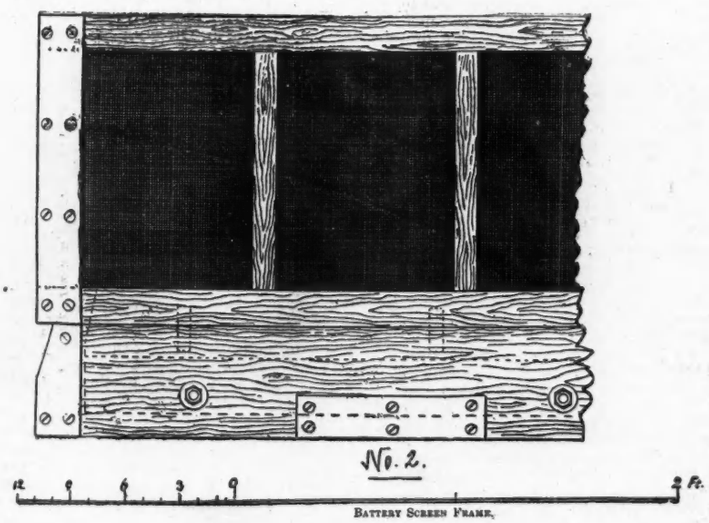
(To be continued.)

* For these figures, as indeed for most of the details given, I am indebted to the courtesy of the manager, Mr. Emile R. Abadie.



MORTAR.

FIG. 1.—MORTAR FOR NORTH STAR MILL, AMADOR COUNTY, CAL.



BATTERY SCREEN FRAME.

FIG. 2.—BATTERY SCREEN FRAME.

THE GOLDFIELDS OF WESTERN AUSTRALIA.

Written for the Engineering and Mining Journal by Albert F. Calvert.

(Continued from page 438.)

In dealing with the several goldfields of Western Australia in detail, I propose in the first place to describe the last proclaimed field of Dundas Hills, which are situated about 120 miles north from Esperance Bay. They are extremely rugged in appearance, and consist of bare rocks, timbered here and there in patches. On the side of the dry salt lake they have a cliff-like aspect, and many rocks stand out from the dry lake bed, through which run several well-defined reefs. These are wide and seem to run regularly, the tract leading into a gulley which extends half a mile into the hills. Colors of gold have been got in these reefs; but, little prospecting has been done as yet. The auriferous country is probably a narrow strip running north and south, and showing on both east and west sides of the hills, which are mainly of ironstone, with occasional glimpses of quartz. Several gullies intersect the hills, but do not exhibit alluvial, nor do the reefs seem rich enough for dollying. The camping ground is at a soak in the gully, surrounded by hills. Here water was

* For this drawing and the Fig. 2, I am indebted to a very valuable article entitled "The Milling of Gold Ores in California," by John Hays Hammond, E. M., which appeared in the eighth annual report of the State Mineralogist, 1888.

forthcoming during several months this summer, sufficient for 30 men and 25 horses; but by last reports it was nearly dry.

The Yilgarn hills consist of a low range about 250 miles east of Perth, on the western side of a series of salt lakes, of which Lake Deborah is the southernmost. They run for the most part north and south, their width ranging from two to three miles. On the eastern side they extend, with gradual declivity, toward the lakes, being separated therefrom by a plain four to six miles wide, consisting of red clay strewn with ironstone and quartz.

The rocks are mica schist, mica slate and flaggy quartzites, with many diorites and quartz veins. They have been tilted up from the west by a large mass of intrusive granite, which forms a rough face on the western side of the northern hills, and is again seen in the southern part, appearing above the plain in huge rounded masses. The quartz reefs follow the strike of the rocks, and show great variety of character, the white quartz being less clearly defined and in smaller masses than the more ferruginous reefs.

"Yilgarn" is the native name for white quartz, and the first discovery of gold in this district was made by Mr. H. E. Anstey, at the end of 1887, at a place called Emun, about 12 miles north of Golden Valley. The next discovery was made at Golden Cross itself, a few months later. Then about the middle of 1888 gold was found some 40 miles south, near the Central mine, in the Southern Cross district. In December, 1888, Mr. Parker, guided by a native, made a further discovery some 40 miles to the southeast, hence the name of Parker's Range.

Generally speaking the stone is rich, often containing 6 oz. of gold to the ton, and trial crushings have shown that a very large mass carries a remunerative proportion. Rich alluvial deposits have likewise been found, but scarcity of water has proved a serious obstacle to progress. Plenty of brackish water, however, is obtainable, which by the use of condensers is rendered available for steam purposes. The conservation of the rainfall by the use of catch dams, however, may yet supply the wants of the mining population for domestic and drinking purposes.

Coolgardie is, I believe, within the proclaimed boundary of Yilgarn; but as it is 120 miles to the southeast of Southern Cross, it may be treated as a separate goldfield. In October, 1892, Mr. Bayley, a miner who was prospecting in this neighborhood, made a rich find. The news of the discovery went to Perth, and in November of last year Mr. Sylvester Browne bought Bayley's Reward claim from its original holder for £6,000 and a one-sixth share in the mine.

Bayley's Reward shows a reef, which consists of a small blow running in a northwesterly direction, and underlying to the northeastward, striking across the line of country which here runs nearly north and south. This reef is about 9 ft. broad in its widest part, but pinches toward either end of the claim. At the north end there is another blow of quartz, which strikes north and south, following the line of the strike of the country. This blow then dips under the alluial flat, but a reef, on exactly the same line, is met with in a shaft in the gully, after which it appears to be lost. In one year the claim yielded half a ton of gold, with no battery.

The Murchison goldfields are situated about 320 miles to the eastward of Geraldton, or about eight days' journey. The road for the first 60 miles is rather bad, the first 30 miles being chiefly sandy hills, where water is scarce, and the second 30 miles crosses a sandy desert quite destitute of water. The remaining distance, however, leads through the bush, and presents no great difficulty, water being obtainable at easy stages.

The territory begins to show auriferous signs within 80 miles of the diggings. Quartz and ironstone in fragments cover the surface, and outcrops of the same are visible in all directions.

The proclaimed area of the goldfields is 32,000 square miles, the principal auriferous belt being situated at the eastern side of the district. It runs in a north and south direction from West Mount Maguet to Austin's Lake, and then in a northeasterly direction to Lake Annean and Yagahong. Other rich patches exist farther east, and a few patches have also been discovered nearer the coast.

These fields were the result of a discovery by John Connelly, near Lake Annean, and his find is now being worked at the Nannine mine. It may be mentioned that at Mulga Mulga and Yuin, in this district, gold had previously been found, but not in paying quantity; hence the search was abandoned for the time.

The geological features are described by the government geologist as "the ruined remains of a vast, high, sandy tableland, presenting to-day a broken surface, consisting of salt marshes or lakes fringed by salt, sand, clay, and gypsum flats, from which rise low rough hills of metamorphic rocks or white cliffs, on the top of which are sandy plains, the remains of ancient tableland. There are no well-defined rivers, but the few creeks discharge themselves into the salt flats, where the water evaporates, except after excessively heavy rains, when they overflow into rivers which run toward the coast. The hills are mostly small and low, consisting of ridges of hard metamorphic rocks, near which the rich finds of gold have been made. These are often capped by the same horizontally bedded formation exposed in the cliffs at the edges of the broken tablelands, which are generally covered with dense thickets of low scrub." As has already been said the most formidable obstacle in the path of the goldseeker is want of water, but the Murchison district is fairly well provided with the necessary of life. Near the salt lakes there is a scarcity, but even there, if the well be sunk a short distance from the edge, the water is found to be fresh.

In most of the mines good water has been struck considerably under 100 ft. down, and in fact it does not appear that scarcity is likely to hinder the development of these fields. The lack of timber is more to be dreaded as an opposing factor, particularly at the south end of the field, where there is nothing but Mulgar.

The river Ashburton, which is about 500 miles in length, has its source in the Gascoyne division of Western Australia, and, flowing in a northeasterly direction, discharges its waters into the Exmouth Gulf, in the Northwest division. Early in 1890 alluvial gold was discovered in this district on a creek running down a gorge about 200 ft. deep, between steep cliffs of clay slate, capped by almost horizontally bedded limestones. The point at which the discovery was made is about 150 miles from the coast, and the Ashburton goldfield was duly proclaimed in December, 1890.

The auriferous belt of country comprised in the Ashburton goldfield extends from the junction of the Hardey River with the Ashburton, a little to the northeast of Mount Clement, following the latter river in a southeastern direction for about 150 miles. It is bounded on the south by the Barlee Range and a flat-topped tableland, which follows the main course of the river at a distance of about 14 miles. To the north it extends across the Ashburton and Hardey rivers to Mount Wall and Mount de Courcy, a distance in a northerly direction from the river of from about 20 to 30 miles; giving an auriferous area of some 1,800 square miles greater than the proclaimed area, i. e., about 10,000 square miles. The rocks, for the most part, consist of clay and chloritic slates, sandstones and quartzite, the slates occasionally showing good cleavage, and are intersected by numerous quartz and ferruginous lodes. I may remark that the rocks are very similar to those found in the auriferous areas of other colonies, but differ from those in other countries.

The Pilbarra goldfield has a proclaimed area of 32,000 square miles, and is situated in the northwest district of the colony. Its general features are alluvial plain, which follows the coast line, broken occasionally by rocky hills and a high tableland to the south and east.

On the northern edge of this plateau several rivers have their sources and cut deep gorges through the upper horizontally bedded rocks, which expose crystalline rocks across the line of their channels. These gorges run toward the north and northwest, first through limestone and quartzite rocks, then through flats bounded by rough sandstone and by deep ravines through broken hills of schists, slates, sandstones, quartzites, conglomerates and amygdaloids, into alluvial plains, from which rise occasionally bold hills and small peaks of quartz, granite and ironstone. These plains stretch to the seacoast, where they are fringed by mangrove swamps, except where trap-rocks form a rugged coast. The amygdaloids in many places split up into rough blocks, which become red or black on the surface, and then present the appearance of a huge heap of stones, without soil or vegetation. They contain numbers of agates, crystals and other inclosures.

The fields are divided and subdivided as claims are taken up. I will endeavor to enumerate and describe the most prominent of these districts and properties.

The Marble Bar field lies in a nest of low sandstone and slate hills to the east of the Coongan River, and is distant from Roebourne about 275 miles. This appears to hold excellent prospects.

The Nullagine district is situated on a creek of the same name, which is a branch of the De Grey River. By road it is some 300 miles to the eastward of Roebourne, and about 120 from the coast.

Alluvial workings of three classes occur: First, the alluvial of existing creeks. Second, the alluvium of older creek beds, but in conjunction with present streams. Third, old alluvium deposits, or deep leads, bearing no relation to existing streams or configuration of the country. All three deposits seem to be rich, and the more recent ones are easily worked.

One of the most noted outcrops in the Pilbarra district is an association of gold and antimony, called the Mallina mine. Nine shafts have been put down in various parts of this reef.

I come now to the last of the great proclaimed areas of Western Australia under the "Goldfields Act, 1886," viz., the Kimberley goldfields.

The Kimberley goldfield is situated in northeastern corner of Western Australia, and its principal workings are near the eastern boundary of the colony, about 200 miles from Wyndham on Cambridge Gulf, and 300 miles from Derby on King's Sound. So far back as 1882 the late Mr. Edward J. Hardman, government geologist, discovered the existence of gold in the Kimberley district. The subject may be said to have slept for three years, when it was revived, and gold prospecting began in earnest.

This country is traversed by the Margaret, Mary, Elvire, Panton and Ord rivers, and comprises an area of at least 2,000 square miles so far as observed, but it doubtless continues over a much greater extent of country. The formation is principally Silurian schists and slates, traversed by an enormous number of quartz reefs. In some localities many of these occur in the space of a few hundred yards, and it is quite usual to notice 25 or 30 large reefs while riding over a mile of ground, without taking into account the smaller reefs or veins. The quartz constituting these reefs is of a very promising character. It is a dull yellowish and gray quartz, very cellular, containing quantities of black and other oxides of iron, together with casts and crystals of iron pyrites. From most of the surface quartz the inclosed minerals have been washed away.

The quartz reefs have a general bearing of northeast. Some run due north and south. A few of them can be traced for several miles. It is probable that these quartziferous rocks are a spur or continuation of the gold-bearing metamorphic rocks of the northern territory of South Australia, now being worked with success.

A comparison between the progress of the Western Australian goldfields and the early results from the South African fields reveals that while 17 years elapsed before South Africa produced £200,000 of gold, the fields of Western Australia exceeded that sum in the seventh year. It also shows that the output for the first seven years of Western Australia has been more than double the African output for the same period. Moreover, Western Australia has exceeded by nearly £70,000 the output for the first 14 years from South Africa. These results have been obtained, notwithstanding the fact that hardly any of the mines in Western Australia have (owing to lack of capital) as yet been efficiently worked, and that a very small portion of the gold-bearing area has been prospected.

Electric Lighting of Ships on the Manchester Ship Canal.—Arrangements have been made to light vessels passing through the canal. At the Eastham Locks end of the canal and the Manchester Docks end, the firm undertaking the work has complete portable electric plants, comprising small engines and dynamos combined, and a search light projector of the Admiralty pattern, with a staff of men for working the apparatus, which is of similar type to that which it has been supplying for the last 12 months, with very good results for lighting vessels through the Suez canal. The search light is of 40,000 to 50,000-candle power, enabling the vessel clearly to distinguish the banks, buoys, locks, etc., three-quarters of a mile ahead, and it also provides powerful electric mast lamps of 8,000-candle power to light up vessels and surroundings when coaling at night, or tying up, entering locks, docks or moorings.

MR. BALFOUR ON BIMETALLISM.

In the "Engineering and Mining Journal" for May 5th we gave a brief account of the International Bimetallic Conference held in London on May 2d and 3d. The mail advices bring us full accounts of the meeting, and from them we take a full abstract of the address made at the conference by Mr. A. J. Balfour. This address is of importance because Mr. Balfour is already leader of his party in the House of Commons, and a strong and rising man politically, and his advocacy of bimetallism will have much weight. Moreover, the fact that a man in his position will advocate the bimetallic principle is in itself a proof of the change in public opinion which is making itself manifest in many ways.

Mr. Balfour said, in substance: It appears to me that there are three questions, and three questions only, which we have got to decide in connection with this great controversy. The first question is this: Is bimetallism, is a double-standard, possible? The second question is, Supposing a double standard to be possible, is it just and is it equitable? And the third question is whether, Supposing it to be both possible and equitable, is it expedient that we should adopt it?

Now, on the first of those questions I think I see signs of a great change in public opinion. There was a period not so very long ago, when any man who had the courage—or, as it was then termed, the audacity—to express an opinion in favor of the double standard was supposed to be guilty of some economic heresy, which if we still sent people to the stake for heresy would deserve the utmost rigor which either the secular or ecclesiastical laws might impose. I think that those days have long gone by. The general consensus of scientific economic opinion has now for many years been thrown with an overwhelming balance of opinion into the scale of the double standard. I am not offering now an opinion as to whether the double standard is just or is expedient—I am only discussing whether it is possible; and I say that on that question there is practically now a consensus of the whole economic scientific opinion which has devoted itself to the elucidation of this problem, and any man who in the face of that opinion now quotes any of the old tags about demand and supply making it impossible to fix a ratio between the two metals, or such doctrines as that the interference of the state to fix prices must necessarily fail—any man who now relies on arguments of that kind to show that the double standard is an impossible expedient does nothing else than write himself down an individual ignorant of the latest scientific developments of political economy. Of course, the percolation of scientific opinion through the general body of the community is slow in this case as it is slow in every other case, but as in every other case you may be quite certain that what scientific and detached or disinterested speculation decides to be true will ultimately come to be the conviction of the great mass of the educated population of the country, so you may be sure that in this case many years will not elapse before a man who should say that a double standard is beyond the power of international agreement will show himself to be entirely outside the general balance and body of educated opinion.

That second question was whether, supposing the double standard to be possible, it was consistent with public morality and public honor that it should be adopted. Now, my friend and colleague, Mr. Goschen—than whom no greater financial authority, I venture to think, exists in this country—has publicly expressed his own descent from the fallacious views which I have just been criticising, and has explained that, so far as he is concerned, he does not agree with the popular current objections to bimetallic theory. But if I rightly understand one of the utterances which he made in the course of a very interesting and important speech on Indian matters, delivered not very long ago, he has not made up his mind that it is consistent with public financial honor that the state should make a change of this kind in the standard which regulates our personal, our national, and our international monetary obligations. But, although I have given much reflection to the subject, I have never been able to see that there was any ground whatever for the particular difficulty with which I am now attempting to deal. While we may admit that it is a most critical thing for any community to touch the standard of obligations which regulates its commercial relations, I do not think it is right to lay down a proposition so wide as that we may not touch that standard for the purpose of improving it, making it more stable and making it a fairer measure of value. I quite grant that it is almost impossible—perhaps quite impossible—to pass any legislation with regard to the monetary standard which shall not have some effect or other upon the relations between debtor and creditor, public or private; but who on that account has ever thought it wrong for a state to reform a debased currency, or for a state to substitute hard coin—I think that is the American expression—for an inconvertible paper currency? Such operations, of course, have some effect upon the relations between debtor and creditor, but so far from thinking them blameworthy, the conscience of civilized mankind has always thought there is no object more worthy of the efforts of a great financier than to place the currency of his country on a permanent and stable basis, and to regulate it as far as he could for all time, so that those monetary obligations shall be governed by a fixed and stable measure of exchange.

But it may be worth while my reminding you that whether or not bimetallism leads to this interference with the legal standard, unquestionably monometallism does lead to it, and that in the most aggravated form. Of course, rightly, from this mixed assembly, party politics are absolutely excluded, and nothing that I shall say will drag them unnecessarily into the field of our debates: but it may not be improper to say that I have listened with astonishment verging on amazement to certain utterances from responsible politicians who have laid down very high doctrines upon the subject of interfering with the currency of a country, but who have made themselves personally and directly responsible for the greatest interference which has probably ever taken place in modern times. I am not going to express any opinion at the present time as to whether the recent Indian legislation, for which we in this country are directly responsible, upon the subject of the currency is wise or is unwise, but two things about it cannot be denied. The one is that it is the most remarkable attempt ever made by any civilized government to manipulate the subject of the currency, and the other is that this attempt is the direct and inevitable outcome of adhering to a monometallic system. I therefore think that I am not unjustified in claiming for bimetallists that, at all events, they shall not be made the subject of this kind of accusation by those who, if there be any fault in the matter at all, are far more open to criticism and are far more proper subjects of blame than any bimetallists can possibly be, even if the scheme be carried out to the full.

Now, having disposed of my first two subjects—namely, the possibility and the morality of adopting the double system—there remains only the third question, as to whether it be expedient to do so; and on this I may perhaps be allowed to say, by way of preface, that I think it will not only be inexpedient, but also impossible, to do unless the government of the day which sets to work to deal with this great problem have behind them the balance of opinion in the financial centers of the world. For any government to attempt to drag this country into an international agreement with the city of London against it would be hopeless and impossible if it were attempted, and, in my opinion, ought not to be attempted. But I think I am not wrong in saying that there are indications of an important change in the feeling among those who lend financial opinion in the great commercial community. Many persons who looked either with active dislike or with suspicion or doubt upon these schemes have now come to the double conclusion that we are menaced at the present moment by grave public danger, and that the way to meet that public danger is again to rehabilitate silver as one of the great instruments of monetary transactions in the world. There is no name which commands greater respect in the city than that of Mr. Lidderdale, the late Governor of the Bank of England, and I believe I am not wrong in expressing his opinion that it is absolutely necessary that the monetary function of silver should be restored if the commerce of the world is to be carried on under healthy conditions and upon a solid and a permanent basis.

I am far from denying, and I think a bimetallist is a very poor friend of his cause who should deny, that there are difficulties—difficulties of detail, but still difficulties—inevitably attaching to the solution of this question. I have only to mention one of those difficulties—the difficulty, namely, of determining what shall be the ratio on which the nations of the world are to agree as that which is to govern the future relations between the gold and the silver halves of the double standard. But those are difficulties which, in my judgment, are difficulties, not of principle, but of detail, and in spite of those difficulties—difficulties not at all, I think, of an overwhelming character—I am most strongly of opinion that if there be a question in this world which is, by its character, fit to be dealt with by international agreement, and which ought to be dealt with by international agreement, that question is the character of the currency by which international commercial business is to be carried on. I believe there are individuals who cherish the dream that currency is a matter for each State to regulate independently, and for itself alone; that with its currency no foreign nation has a right to interfere—that it is a matter simply for the citizens of every community in relation to each other, and that the outside world need not be taken account of at all in coming to a decision upon a question which is one of purely domestic policy. This is a dream, and a dream worthy only of a mediæval dreamer. We have long passed that stage in civilization when each country was a self-contained, or an approximately self-contained, national unit, and when it could afford to disregard the internal commercial relations of another country. While, however, we have no choice but to allow foreign nations to interfere with our currency, what we can say is that they shall interfere with as much regularity and under as carefully prearranged conditions as possible. I think that, for the reasons I have given you, there is a plain answer to be made to each of the three questions which I put at the beginning of my address. I think that bimetallism, or the double standard, is a possible system—the joint standard I ought perhaps to call it; I think, in the second place, that we are morally justified as a nation in adopting it; and I think, in the third place, that every reason of its expediency ought to urge us to come into international relations with the other great commercial peoples of the world, in order to fix upon what is the most stable basis that we can possibly obtain—the measure which is to decide upon all commercial international relations, not now, but for all future time. Holding those opinions and feeling as I do how great has been the loss to the world at large, and to this nation in particular, of having deferred so long coming to a decision on this question—feeling as I do that the solution of the problem was incomparably easier ten years ago than it was five years ago, and five years ago than it is now, and now than it will be five years hence; holding, as I say, those opinions, great is the responsibility which rests upon those who keep England, the country which of all others should take a lead in this matter, in a selfish and, I will add, a stupid isolation by which the settlement of this great international question may be for the present prevented or at least delayed.

Railways in Japan.—Sixty-two applications for new railroad concessions are under consideration by the authorities in Japan, the total length of the projected lines being about 1,400 miles. During the next 20 years the government will build 1,264 miles of road, which, added to the mileage now in operation, will give a total of 1,815 miles. Besides this there are now 1,319 miles of road owned by private capital, the total length of roads now operating being 1,870 miles.

Roburite in Coal Mines.—In his report to the Home Secretary for 1893, the inspector of mines for the North Staffordshire district, England, says: The use of "safety" or so-called "flameless" explosives continues to increase in this district, by displacing gunpowder, those chiefly used being roburite and ammonite; trials being also made of ardeer powder and bellite. The water or gelatinous cartridge also continues in use, with geligenite and tonite. No case has come to knowledge of any injury received from the fumes produced by any of these explosives, and although inquiries have been made of the workmen in several of the pits, no complaint was heard on the subject. The wisdom of adopting those safer explosives (with electrical firing) in dusty or fiery pits is not to be doubted. The substitution of these safer explosives for gunpowder, coupled with the spreading conviction that coal dust is the most important factor in extensive colliery explosions, and that it may be the sole cause of such disasters, will have a marked effect in reducing the loss of life by explosions in coal mines.

GERMAN CONCENTRATING MACHINERY.

The work of concentrating and separating ores in which the metal is contained in fine particles has always been an operation of considerable difficulty, and every improvement made is worth full consideration. The Gruesonwerk, at Magdeburg-Buckau, in Germany, (now owned by the firm of Fried. Krupp,) has lately introduced some new machinery for which some excellent points are claimed. The more important of these machines are shown in the accompanying engravings.

For crushing ores of the class referred to something more is needed than the stamp-mill which has been in such general use on account of its comparative simplicity and cheapness, and its efficiency where too fine a result is not required. For grinding such ores the Grueson ball mill has been used in Germany and elsewhere with very good results.

It is of comparatively simple construction belonging to the class in which pulverizing is effected by the use of balls loose in a rotating cylinder. The arrangement is shown in the engravings, Fig. 1 being a longitudinal and Fig. 2 a transverse section. The degree of fineness to which the ore is reduced is regulated entirely by the mesh of the screen used. These mills also permit the collection of the fine dust which always accompanies close grinding.

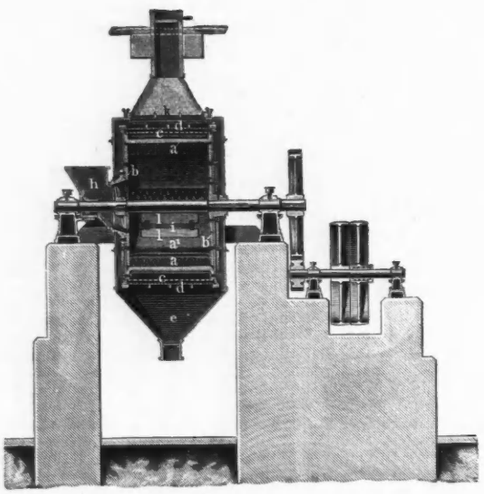


FIG. 1.

FIG. 2.

THE GRUSON IMPROVED BALL MILL.

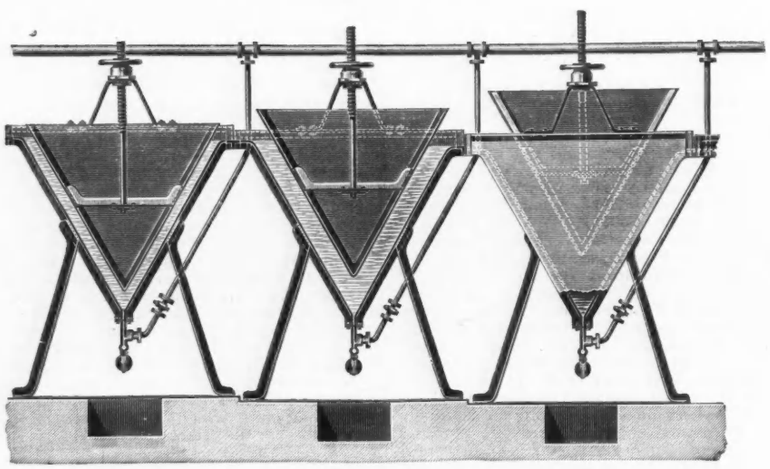


FIG. 3.—THE BILHARZ IMPROVED RITTINGER SIZING MACHINE.

Where water is in abundant supply the concentration is a comparatively simple matter. For the first step, the sizing of the ore as it comes from the crusher, the appliances generally used are the spitzlutte or sizing tables, the construction of which is well known. Fig. 3 shows an improved form of the Rittinger sizing table, recently devised by Oberbergrath O. Bilharz.

For dry concentration many devices have been tried with varying success. One of the latest of these is the Pape-Henneberg separator, which is shown in Fig. 4. The principle upon which this dry concentration process rests is the action of centrifugal force upon particles of unequal weight such as are contained in a finely mineralized ore. The dry pulverized ore is placed on rapidly revolving discs from which it is scattered in all directions. The centrifugal force acts proportionately to the weight of the particles, in such a way that particles of equal weight collect radially at an equal distance round the center, so that when the component particles of the ore are of unequal weights, the particles are of unequal size. When circular collecting troughs or rings are arranged round the discs, the products which collect in each arrange themselves in such a way that a small heavy ore particle would be found with a large particle of waste rock or gangue. It is therefore apparent that this mixture can be easily separated either by simple dry screening or by wet jigging or buddling. In actual practice difficulties occur, although the process appears very simple, and the reason is that in order to properly separate the mineral particles a large proportion of the ore is reduced to fine dust or slime; and in treating this very fine dust the centrifugal force becomes powerless owing to the particles having practically no weight. This dust would therefore become mixed up during the scattering of ore with the various products in the rings, and would hinder the centrifugal action, and in particular the screening operation.

In the Pape-Henneberg process, the center of the centrifugal machine is covered over two meters in diameter, and the disc hangs free. A current of air, formed by exhaustion, plays radially from all sides of the disc in a contrary direction to the ore particles, and carries off the dust down a funnel below the disc. It is possible to regulate this opposing current of air, so that the velocity of the ore particles may be regulated as desired for each case. It must always be remembered, however, that it is of importance not to produce more fine ore than the ore treated calls for, or, in other words, not to produce a unnnecessary amount of dust. The result obtained by the use of centrifugal force is a heavy product in the outside ring, and a light product in the inside ring, with middle products between the two. In treating gold quartz, the outside ring gets the greatest part of the free gold.

All the products in the rings are capable of being screened, as they contain no dust proper. Although every ring product consists of small particles of mineral mixed with large particles of waste rock or gangue, yet every such mixture contains middles obtained by screening, and it is always advisable to separate such middle products, and submit them to a further treatment, which may be, in places where there is a total want of water, a repetition of the above treatment, or, where water is plentiful a treatment on tables. This table treatment is preferred for all products of the process which, owing to their fineness, cannot be screened; that is, for all products obtained from the chambers, where the fine dust and powder settle. The value of this product is, however, with most ores so small that a further treatment, when water is scarce, may be neglected. This is commonly the case with simple ores carrying free gold.

In treating complex ores, however, and especially those in which the different minerals have similar specific gravities, it is absolutely necessary to combine the ordinary wet process with the Pape-Henneberg dry process. The new system of ore-dressing consists therefore: 1. In grinding

the ores containing mineral in fine particles. 2. In scattering the pulverized ore from a rapidly revolving disc, exhausting the dust and regulating the opposing blast. 3. In concentrating the various products in rings by means of screens. 4. In concentrating the products of the screening operation as well as the fine sand or dust from exhaust chambers by a wet process on tables.

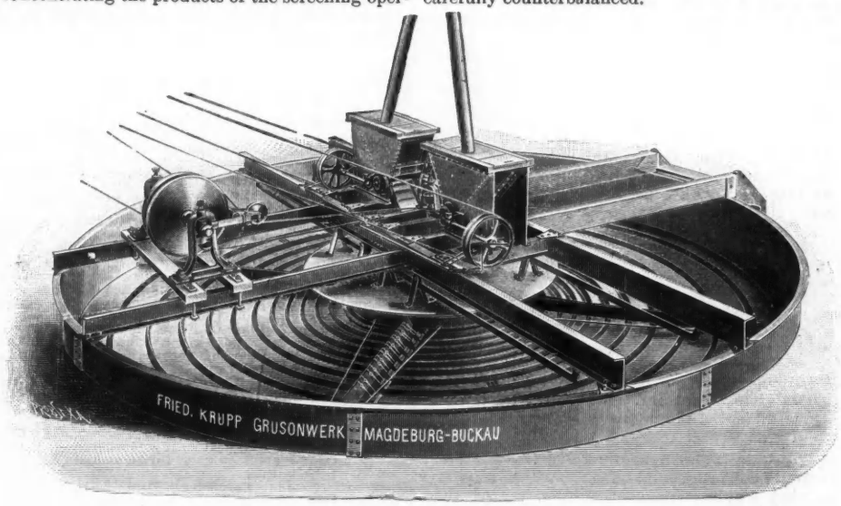


FIG. 4.—THE PAPE-HENNEBERG DRY CONCENTRATOR.

A separator of the size shown in Fig. 4 has a capacity of 1,800 to 2,700 lbs. per hour. The power required is about 3 H. P. for the separator and 2 H. P. for the exhauster, or 5 H. P. in all.

ENGINES FOR ELECTRIC MINING PLANTS.

Engines that give good results under ordinary conditions where the power required is comparatively regular, frequently prove inadequate where the changes are sudden and from one extreme to the other. This variable character of service is encountered by engines used in electric mining plants, and an engine for such a plant should be a remarkably accurate, substantial, and durable machine. It should be so designed and proportioned that when subjected to the severest and most variable loads it will show no signs of distress. The Ball Engine Company, Erie, Pa., which was one of the pioneers in the electric railroad field, has built many engines specially designed for heavy duty, which have been successful. The accompanying cuts represent in Fig. 1 the single cylinder and in Fig. 2 the tandem compound heavy duty engines built by the company.

The first requirement of an engine of this type is a rigid frame, having sufficient metal so distributed as to receive the varying strains and direct thrust of moving parts without deflection or vibration. The frames or beds of these engines possess this quality in a high degree, being made very strong and heavy and internally ribbed, giving the greatest attainable stiffness. It will be seen the engines are self-contained center-crank engines with two outside overhanging wheels, one of which contains the automatic cut-off regulator or governor. The claims made for this governor are almost entire freedom from wear, great quickness of action, economy and cleanliness of oil, simplicity and noiselessness of operation.

Among the special features of these engines is the valve, which by reason of its peculiar construction always remains steam-tight, thereby insuring economy, and through an unlimited period of time. Among other important features of these engines which are worthy of attention are the following: The main bearings are unusually large, with adjustable boxes for both side and vertical wear; the liners are made of babbitt metal carefully scraped and fitted, and are removable. The connecting rod and straps are forged steel, designed for great strength and rigidity. The adjustments are quickly and easily made, and the rod always remains the same length. All steam joints are ground in and all flat wearing surfaces are scraped by hand to surface plates. Oil shields over the crank-discs prevent throwing of oil. All oil and drip from the contained parts run down the cross-web of the frame to the crank end, whence it is drawn off. A flanged lip, or oil trough, cast on the lower end of the bed prevents any outside drip from reaching the floor. The wheels are flanged on both edges, are carefully balanced, run true, and are very heavy. The crank shaft is a solid open-hearth steel forging from end to end, and carefully counterbalanced.

The tandem compound engine is recommended by the builders where economy is desired. In this type the general features of the single-cylinder engine with its distinctive form of frame, shaft and governor have been preserved. The use of these engines for several years under the most trying situations is given as proof of their economy, close regulation, quality of material and workmanship. It may be added that the design is certainly a simple and compact one.

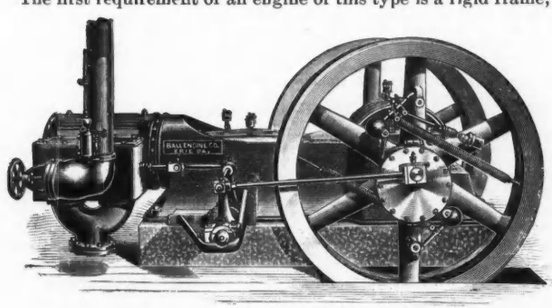


FIG. 1.

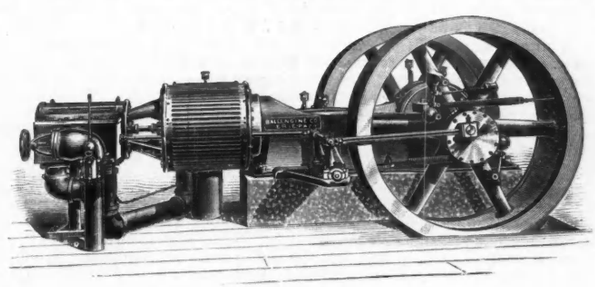


FIG. 2.

ENGINES FOR ELECTRIC MINING PLANTS BY THE BALL ENGINE COMPANY.

PHOSPHATE DISCOVERIES IN ALGERIA.

A recent report of Consul-General Playfair to the British Foreign Office says that within the past two years a new and important industry has sprung up in Algeria, consequent on the discovery of workable beds of phosphates in various parts of the colony. In the department of Oran the most important are at Inkerman (Oued Riou), at Rio Salado, and at Kona, near Mascara. At these three places during 1892 1,514 tons of phosphate of lime were extracted, and 440 tons exported. In 1893 1,957 tons were extracted, and 1,120 tons exported. There are many other deposits which only require capital and enterprise for their development. This, however, is nothing in comparison to what is being done in the department of Constantine by a Glasgow firm, Messrs. Crookstone Brothers. Their quarries are situated in Djebel Dyr, about 15 kilos. northwest of Tebessa, at 1,500 meters altitude. A letter from them says:

"The exportation of phosphates from this province has, up to the present, been comparatively unimportant, amounting in all to about 7,000 tons, all of which came from our mine. We are, however, busily engaged completing a branch railway of over 12 kilometers in length, connecting the mines with the Bône-Guelma line. When this is finished we will be able to turn out between 200 tons and 300 tons daily. The quality is superior, being almost entirely free from iron and alumina, and its conversion into superphosphate has given satisfactory results. The yield of tribasic phosphate of lime is between 60% and 70%; in this respect it is not so rich as some of the phosphates being worked in the province of Oran, which run from 70% to 85%. The latter, however, are of limited extent, occurring principally in pockets, whereas the phosphate deposits of Tebessa occupy a large area, with a continuous thickness of from 2 to 3 meters. If account be taken of seams less rich, say 45% to 50% of tribasic phosphate of lime, these deposits may be said to be inexhaustible, but the lower qualities cannot, at present prices, be worked profitably, and will therefore have to remain dormant for many years until the richer deposits are exhausted."

Another Scotch company, the Constantine Phosphate Company of Leith, has a concession at Djebel Konif, 2,300 hectares in extent, for 36 years, at a yearly rent of 0·30 fr. per ton. These are at 1,000 meters

above the sea level. The phosphate there has been estimated at 40,000,000 tons, averaging 60 per cent. It will be necessary, however, to lay down a railway about 25 kilos. in length, and when that is done 200 tons per diem can be extracted and sent off. It is calculated that the phosphates can be delivered in England at a cost of 27s. per ton, all costs included, which would seem to promise a fair margin of profit, if, as is maintained, it is saleable at 35s. per ton.

The whole of the tableland between Oran and Tunisia seems to abound with phosphates, more or less workable, which are full of bones and sharks' teeth, but owing to their softness it is impossible to pick them out entire.

Russian Petroleum in Germany.—The Amsterdam-Baku Petroleum Tank Company, an organization controlled by the Russian oil-producers' syndicate, is making preparations to build extensive storage tanks for oil at Dusseldorf and Frankfurt in Germany.

Magnetic Properties of Iron at Different Temperatures.—An interesting research on this subject has been carried on by M. Curie, the results of which were recently published in the Comptes Rendus. The author finds that the intensity of magnetization slowly decreases, with rise in temperature, the rate of loss attaining its maximum for soft iron between 740 deg. and 750 deg. There is no definite point for the temperature of transformation of iron. At temperatures above 750 deg. the intensity of magnetization continues to decrease at a continually lessening rate in general; from 950 deg. to 1,280 deg. the coefficient of magnetization is almost constant. Between 755 deg. and 1,365 deg. the coefficient is independent of the intensity of the field.

Coal Miners' Time in Great Britain.—The British "Labor Gazette" recently collected statistics from 617 collieries, employing 279,000 persons, or about 40% of the whole number employed in coal mining, to show the average number of days worked in the months of February and March. The returns show that the average number of days worked throughout the United Kingdom in February was 20¼, or 5·1 days per week. In March the average was 20¾ days, or 4·7 days per week. March, however, included the Easter holidays. If Good Friday and Easter Monday be excluded from the list of working days, the number of days worked in March amounts to about 5 per week, almost exactly the same as in February.

A French Ship Canal Project.—The projected canal between the Bay of Biscay and the Mediterranean continues to attract great attention in France, and it is argued that it will be of the utmost importance, both from a commercial and a political point of view. According to the latest plan, the length of the canal from sea to sea will be 370 nautical miles, with a breadth of 144 ft. to 215 ft., and a depth of 28 ft. to 33 ft. At every eight miles it is proposed to have passing places in order to facilitate traffic as much as possible. The canal will have 22 locks each 650 ft. in length and 80 ft. in breadth. The expenditure is calculated at $109,600,000, to which must be added $12,000,000 for loss of interest during the time of construction.

Railroads in Belgium.—The Belgian State railways had 2,018 miles of line at the end of 1892, equipped with 2,091 locomotives, 1,287 tenders, 2,841 passenger carriages, 577 baggage cars, 43,710 freight cars and 916 stations—a station for every 2¼ miles. The total number of employees of all grades was 42,881, or 20·5 per mile of line. The train movement was equivalent to 9·74 passenger trains and 7·10 freight trains each way daily, with an average of 7·51 passenger coaches and 17·46 goods wagons per train. The gross earnings were $27,403,190, or $13,580 per mile, of which 33% was from passengers. The working expenses were 59·6% of the receipts, and the net earnings $11,065,330, or $5,480 per mile. The net earnings were about 4% on the capital invested, and as the Government has to pay but 3½% on its bonds, and on some only 3%, the railways may be regarded as profitable.

Origin of the "Slot Machine."—The wise man said many years ago that there was nothing new under the sun, and every day we are finding that some of our supposed modern inventions were forestalled by the ancients. Now, a writer in the London "Notes and Queries" says: "It is worth while recording that the 'penny in the slot' automatic machine was known in the time of Hero of Alexandria, who describes in his 'Pneumatics' 'a sacrificial vessel which flows only when money is introduced. When the coin is dropped through the slit is falls on one end of a balanced horizontal lever, which, being depressed, opens a valve suspended from a chain at the other end, and the water begins to flow. When the lever has been depressed to a certain angle the coin falls off, and the valve, being weighted, returns to its seat and cuts off the supply.' Hero's date is a little uncertain, but he is supposed to have lived B. C. 117–81."

Railroad Accidents in Great Britain.—The British Board of Trade returns, just issued, give a summary of accidents and casualties reported to the department during 1893, from which we find that 1,011 persons were killed and 4,109 injured on railways during the year, and these numbers show a decrease of 119 and 376 respectively as compared with 1892. Of those killed 106 were passengers, but only 17 of these were the victims of accidents to trains, rolling stock or permanent way, the remainder having succumbed to accidents from other causes. Of the victims 460 were railway servants, and of these only 10 suffered from mishaps to trains or permanent way. No less than 55 persons, apart from passengers and servants, were killed at the level crossings, and the trespassers and suicides who perished on the railways numbered 360. Other fatal accidents on the railways, but not classified, number 30. Of passengers injured in various ways there were 1,221 during the year; but of companies' or contractors' servants, there were no less than 2,631. The complement of the list of injured is made up of persons passing over level crossings, trespassers and would-be suicides. The list of fatal and other accidents as summarized above, however, is by no means complete, for, in addition, 80 persons were killed, and 4,687 injured upon the premises of the various companies, though not in connection with the movement of vehicles on the railways. These accidents were of great variety, and included kicks from horses, falls of bales or packages of goods, falls from scaffolding, crane or capstan mishaps, etc. Thus the total number of personal accidents reported during the year amounted to 1,091 persons killed and 8,796 injured.

PATENTS.

UNITED STATES.

The following is a list of the patents relating to mining, 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.

TUESDAY, MAY 8TH, 1894.

519,316. Concentrating Machine. Irving Besly, Leadville, Colo. Belt and roller machine for wet concentration.

519,317. Ore Roasting Furnace. Horace F. Brown, Chicago, Ill. Ring, or Annular, furnace with traveling bed moved by cables.

519,325. Method of Promoting Combustion in Furnaces. John B. Davids, Dartmouth, Mass., Assignor to E. M. Chisholm Davids, same place. Combination of perforated air pipes in firebox with auxiliary blast in smokestack.

519,336. Electric Welding Machine. Hermann Lemp and Carl G. Anderson, Lynn, Mass., Assignors to the Thomson Electric Welding Company of Maine. The improvement consists in the combination of transformers and circuit breakers, and in the form of tool holders.

519,339. Hydrocarbon Burner. Truman K. Nickerson, Maquoketa, Ia. The improvement is in the method of feeding and regulating flow of oil.

519,342. Excavator. John Oie, Marshall, Tex. Combination of excavator and carrier for disposing of material.

519,344. Kiln for Baking Bricks, Tiles, Pottery, etc. Thomas Polivka, Chicago, Ill., Assignor to the American Mosaic Brick and Tile Company, same place. Combination of kiln, furnaces and passages arranged to regulate the temperature.

519,373. Gas Burning Furnace for Steam Boilers. George E. Belmor, San Francisco, Cal. Covers a chamber for mixing air with the gases arising from combustion of fuel on grates.

519,383. Air Compressing Apparatus. Matthew Flood, Albany, N. Y. Combination of receivers and pump for super-compressing air.

519,386. Steam Boiler. Thomas A. Marriott, Newberry, Mich. Combination of air and gas chambers and of apparatus for converting oil into gas.

519,391. Method of Utilizing Iron Ore. Jacob Reese, Philadelphia, Pa. In this process it is proposed to separate the iron magnetically from finely crushed ore, the tailings to be utilized by making manures from their phosphorus contents.

519,392. Hydrocarbon Burner. Robert Reid, Philadelphia, Pa. Burner of the spray class.

519,393. Apparatus for Treating Phosphate Rock. Rufus E. Rose, Kissimmee, Fla. Combination of washer, agitator and screen with a conveyor for delivering the washed rock.

519,400. Electrolysis. Henry Blumenburg, Jr., Mount Vernon, N. Y. Combination of electrolytic bath and settling tanks.

519,405. Well-Drilling Apparatus. Stephen A. Horton, Clarksville, Tex. Combination of ribbed drill stock and bit.

519,419. Boiler Furnace and Steam Generator. Arthur Boyce, St. Louis, Mo. Combination of furnace and combustion chambers.

519,439. Apparatus for Storing and Feeding Oil. Luther C. Snell, Detroit, Mich. Combination of oil tank, heating chamber and feed pipe leading to boiler furnace.

519,452. Machine for Rolling Angle Bars. Arnold L. Hammarberg and Algot Bergl'f, Worcester, Mass. Combination of shaping rolls and a reciprocating compressing device for shaping the end of the billet or blank.

519,466. Coal Drill. George H. Bittenbender, Plymouth, Pa. Combination of cutter head with leading and lateral cutters.

519,506. Gold Washer. Harvey W. Murdock, Ogden, Utah, Assignor of two-thirds to Murray R. Stewart and Samuel H. Abbott, same place. Combination of separator sections, pockets and riffles with swinging frame and agitator.

519,527. Machine for Flanging Sheet Metal. John Carroll, Chicago, Ill., Assignor to the Chicago Stamping Company, same place. Combination of holding clamps and bender, or flanger, with frame and carriage.

519,530. Smoke Consuming Furnace. Mahlon Fulton, Philadelphia, Pa. Combustion chamber, in which gases from the fuel are to be mixed with air and ignited by an electric spark.

519,551. Dredge Bucket. Arthur W. Robinson, Milwaukee, Wis. Bucket connected to looped band by pins.

519,566. Stone and Ore Crusher. Caleb G. Collins, Woodsburg, N. Y. This crusher is of the roller type.

519,590. Brick Machine. Edwin G. Rankin, Monongahela City, and John Tempest, Courtney, Pa. Combination of frame, reservoir, mold and reciprocating plunger.

519,595. Electrodeposition of Metals. Hermann Thofehrn, Paris, France. In an electrolytic bath the combination with an anode and a cathode of a reciprocating spraying pipe, by which the electrolyte is showered on the cathode.

519,599. Process of Producing Hydraulic Mortar. Charles Bloemendal, Berlin, Germany. The process consists of slowly saturating the cement with water in a closed vessel and forcing out the air.

519,616. Miner's Lamp. William P. McMasters, Munhall, Pa. A lamp having a perforated wick-tube extending within the lamp body and curving upward.

519,620. Construction of Puddling or Other Furnaces. John L. Smith, West Hartlepool, England. Combination with the fire-chamber of walls having numerous small air passages.

519,627. Apparatus for Making Oxygen. Ferdinand Fants, London, England, Assignor to the Oxygen Producing Syndicate, Limited, same place. Combination of furnace, two sets of retorts and a receiver.

519,636. Stone Saw. Miles Litchford, Columbus, O., Assignor of three-eighths to Frederick A. Litchford, Neil Litchford and Wilber Jones, some place. The saw is corrugated on both sides, furnishing passages for sand and water.

519,651. Oil Well Casing Rig. Cochran C. Stover, McKee's Rocks, Pa. Combination of wrench to hold a section of casing with shaft, crank and pitman, and with pulley and cord for lifting or lowering wrench.

519,677. Brick Kiln. Carl Krahe, Rossville, N. Y., Assignor to the Ceramic Paving Stone Company of New York. The patent consists in the arrangement and combination of fireplace, partition walls and chambers in the kiln.

519,683. Smokeless Furnace and Stoker. John E. Schlieper and John H. Harrison, Pittsburg, Pa.: said Harrison Assignor to Wells Dickson Webb, same place. Combination of inclined grate, automatic feeder, combustion chamber and air supply.

GREAT BRITAIN.

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

WEEK ENDING APRIL 28TH, 1894.

6,751 of 1893. Extraction of Chromium by Electrolysis. E. Placet and J. Bonnet, Paris.

7,264 of 1893. Production of Chlorine and Refined Lead by Electrolysis. F. M. Lyte London.

10,691 of 1893. Props and Girders for Mines. W. Firth, Leeds.

11,040 of 1893. Production of Chlorine. A. Brand, London.

23,417 of 1893. Igniting Blasting Charges. C. Roth, Hennickendorf, Germany.

4,674 of 1894. Miners' Picks. F. J. Hute, Manchester.

PERSONALS.

Hon. W. A. Clarke returned to his home in Butte, Mont., last week, from a trip to England.

Mr. H. V. Croll, of the Overland Machinery Company, of Denver, Colo., has been visiting Montana on business.

Mr. Charles M. Howard has been appointed superintendent of the Mercur mine and mill in Tooele County, Utah.

Mr. R. T. Bayliss, managing director of the Montana Mining Company, left Montana recently on his way to England for a short stay.

Mr. Chas. W. Melcher, of the Chas. W. Melcher Machinery Company, St. Louis, has given up the position of manager of that concern to take full charge of the Chicago branch of the Ingersoll-Sergeant Rock Drill Company, of New York. Mr. Melcher still retains an interest in the St. Louis house and the presidency of the company.

OBITUARY.

W. H. M. Cobb, assistant coiner of the Carson Mint, died at Carson, Nev., on May 9th, aged 42 years.

Abraham Garrison, over 90 years old, one of Pittsburg's best known citizens, died on May 10th in Allegheny, Pa. He was born in Orange, N. Y., and saw the initial trip of Fulton's first steamboat on the Hudson River. In 1830 he went to Pittsburg, Pa., and rose from a foreman in the Pittsburg foundry until he became a proprietor by purchase. He was president of the Garrison Foundry Company.

Alexander P. Thomas died at Hancock, Mich., on May 9th, aged 65 years. He was born in England. In 1860 he went to the Lake Superior Copper region, and for a time he served as clerk of the Boston & Albany mine. Later he filled a similar position in the Huron mine office. In 1867 he was appointed agent of the Copper Falls mine, where he remained until 1872 when he was called to take charge of the Allouez mine, where he remained until 1875. After the organization of the Delaware Mining Company, in 1876, Captain Thomas was engaged as agent and the work of opening up and equipping the mine was prosecuted under his supervision. In the fall of 1881 the company was reorganized under the name of the Conglomerate Mining Company, and Mr. Thomas continued as superintendent. In 1886 he took charge of the Old Dominion mine in Arizona, where he spent several years in active service. After the close of this engagement he was again placed in charge of the property belonging to the Lac La Belle Mining Company, which was the successor to the franchises, real and personal estate, etc., of the Conglomerate Mining Company. In that position he spent the remaining years of his life.

SOCIETIES AND TECHNICAL SCHOOLS.

American Society of Civil Engineers.—At the regular meeting in New York, May 16th, the papers read were: "Reconstruction of a Portion of the Substructure of the Johnsonville Bridge," by Walter A. Gahagan, and "Failure of a Masonry Pier and a Rock Foundation," by William Barclay Parsons. Both were briefly discussed by members present.

Ontario Mining Institute.—The full list of officers elected for this new society is as follows: President, James Conmee, Port Arthur. Vice-presidents, J. J. Kingsmill, Toronto; Archibald Blue, Toronto; Prof. W. L. Goodwin, Kingston; W. Hamilton Merritt, Toronto. Treasurer, J. W. Gibson, Toronto. Secretary, B. T. A. Bell, Ottawa. Council, Professor Coleman, Toronto; Peter McKellar, Fort William; Professor Nichol, Kingston; J. M. Clark, Toronto; William Young, Rat Portage; Ian Cameron, Sudbury; T. D. Ledyard, Toronto; A. W. Carscallen, Marmora; Doctor Ames, Toronto.

Civil Engineers' Society of St. Paul.—The regular meeting was held May 7th. The paper of the evening was by Mr. O. Claussen on the "Requirements of a Municipal Electric Light Plant Installation." He advocated the location of the power-house near a plentiful supply of water that compound condensing engines might be used, yet far enough from the business center to escape excessive cost of real estate and near enough to profit by transportation facilities and to minimize length of pole lines. Tiled floors for engine and dynamo rooms were suggested, rubber mats to be placed where necessary for protective insulation. A traveling crane as a fixture would assist in handling equipment. Machinery foundations to be massive and built of hard burned brick laid in Portland cement. He favored low speed, triple-expansion engines, water tube boilers, extra feed pump capacity, economizers and smoke consumers. Steam pipes to be furnished with magnesia casing and fitted with numerous valves in case of accidents. For arc lighting the general practice seems to demand shafting and belt connections, while direct connection between engine and dynamo is common for incandescent lighting. In St. Paul, with a first-class plant, a system of 1,000 lamps should be operated all night and every night at a total cost of $90 per lamp per annum.

American Society of Mechanical Engineers.—The following is a list of the papers so far promised for the June meeting: A. K. Mansfield, "Notes on the Theory of Shaft Governors"; Albert F. Hall, "Heat Units and the Specifications for Pumping Engines"; W. H. Bristol, "A New Recording Pressure Gage for Extremely High Ranges of Pressure"; Frank Richards, "A Note on Compressed Air"; A. W. Robinson, "The Relation of the Drawing Office to the Shop in Manufacturing"; R. H. Thurston, "The Theory of the Steam Jacket; Current Practice"; D. S. Jacobus, "Results of Experiments with a 50-H. P. Single Non-Condensing Ball & Wood Engine to Determine the Influence of Compression on Water Consumption"; Frank H. Ball, "Cylinder Proportions for Compound Engines, Determined by Their Free Expansion Losses"; F. M. Rites, "A New Method of Compound Steam Distribution"; Jesse M. Smith, "Tests of a Small Electric Railway Plant"; W. S. Aldrich, "Power Losses in the Transmissive Machinery of Central Stations"; M. P. Wood, "Rustless Coatings for Iron and Steel"; Jas. McBride, "Corrosion of Steam Drums"; C. W. Hunt, "A New Mechanical Fluid"; F. R. Hutton, "First Stationary Engines in America"; De Courcy May, "Cost of an Indicated Horse Power"; Jno. R. Freeman, "A New Form of Canal Waste Weir"; G. W. Bissell, "Effect of Varying the Weight of the Regenerator in a Hot-Air Engine"; W. R. Roney, "Mechanical Draft for Boilers"; R. C. Carpenter, "The Saturation Curve as a Reference Line for Indicator Diagrams"; Denton-Jacobus-Rice, "Results of Measurement of the Water Consumption of an Unjacketed 1,600 H. P. Compound Harris-Corliss Engine"; F. B King, "Notes on the Corrosion of a Cast Steel Propeller Blade."

Engineers' Club of Philadelphia.—At the regular meeting, May 5th, it was announced that the Club would join in a reception to the American Institute of Electrical Engineers on the occasion of the annual meeting in Philadelphia. As Mr. Joseph T. Richards was unable to be present, his paper on "Rebuilding the Pennsylvania Railroad After the June Flood, 1889," was postponed, but at the call of the chair there was a discussion on "Rainfall and Floods," in which Messrs. John Birkinbine, Amasa Ely, J. Chester Wilson, James Christie, R. A. Cummings, Max Livingston and Capt. C. B. Dahlgren took part.

The secretary read a paper on the "Electro-Metallurgy of Gold and Silver," prepared by Mr. A. L. Eltonhead. After calling attention to the difficulties to be contended with in using the cyanide process in extracting the gold from the ore, the author explained a small plant that had been erected at the West Side mine of the Tombstone Mill and Mining Company, for working what is known as the electro-chemical process. This, he claimed, overcomes the difficulties encountered in precipitation in the cyanide process, and the resultant precipitate is recovered in the shape of amalgam. After being crushed to proper fineness the ore is placed in leaching vats with false bottoms, for filtration, and a solution of cyanide of potassium is run over the pulp and left to stand a certain number of hours. This is then drawn off and a second solution of less strength is then used in the same way, the pulp being afterward washed in clean water and drained. All the solutions from the leaching vats are saved and passed over a precipitating box of novel construction. For this process many advantages are claimed over other cyanide methods, among which may be mentioned its cleanliness, quickness of action and cheapness. With a plant having a capacity of handling 10,000 tons of pulp per month, the cost of treatment should not exceed $2 per ton, and this may be cheapened by labor-saving devices. This paper was discussed by Capt. C. B. Dahlgren and Dr. H. M. Chance.

Mr. Birkinbine called attention to the necessity for thoroughly examining steam engines after a fire. Mr. Trautwine called attention to a table giving degrees of curve, radius of curve, number of rails on a given curve, etc., in convenient form for field use. It was prepared by Mr. W. A. Pratt, division engineer on the Baltimore & Ohio Railroad.

INDUSTRIAL NOTES.

The McCullough Iron Company has started up its rolling mill at Rowlandsville, Md.

Jones & Laughlin have blown out their No. 2 stack at Pittsburg, for the purpose of relining.

Valentine furnace, at Bellefonte, Pa., has been forced to bank because of inability to procure coke.

The Bethlehem Iron Company started up its steel mill at Bethlehem, Pa., on May 14th, after a stoppage of one month.

The Daniels Steel Tie Company, Youngstown, O., has elected T. Burton president and manager and L. C. Ohl vice-president.

The buildings of the Lima Steel Casting Company at Lima, O., were destroyed by fire last week, and the machinery was badly damaged.

Queen & Co., Philadelphia, have purchased the stock and business of G. S. Woolman, dealer in mathematical instruments and engineers' supplies.

Messrs. McClure & Amsler, Pittsburg, have closed a contract to build a Massick & Crooker hot-blast stove, 18 by 65 ft., at the Juniata furnace, in Pittsburg.

The Tamaqua Manufacturing Company, Tamaqua, Pa., will soon begin work on a new foundry and machine shop, as an addition to its present plant.

The American Tube Works, Boston, Mass., has issued a compact catalogue of sizes and weights of the seamless brass and copper tubes which it manufactures.

The American Tube and Iron Company, Middletown, Pa., has an order for five miles of 8-in. pipe for the Citizens' Gas and Pipe Line Company, of Peru, Ind.

The Lehigh Valley company has ordered from the Pottsville Iron and Steel Company, Pottsville, Pa., the material for its new coal-storage yards at Superior, Wis.

The Wellman Iron and Steel Company, Thurlow, Pa., has re-elected the old board of directors. The board elected S. T. Wellman president and Richard Peters, Jr., secretary.

W. & L. E. Gurley, of Troy, N. Y., have issued a handsomely illustrated catalogue of their surveying instruments, presenting also a number of views of their workrooms.

E. G. Smith, Columbia, Pa., has placed on the market a new form of vernier caliper which has two points placed opposite the inside jaws, affording a convenient means of accurately laying off work.

The Clayton Air Compressor Works, New York, has issued a special pamphlet giving a list of air compressors operated by steam or belt, air governors and air receivers of various forms.

The Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., has an order from the Ohio Steel Company at Youngstown, O., for 14 electric motors, one of 10 H. P. and 13 of 25 H. P. each.

The Pennsylvania Steel Company has its No. 4 furnace, at Steelton, Pa., ready to go into blast, and No. 3 will also be in shape within a week. Both will be lighted as soon as the supply of coke is certain.

The Philadelphia & Reading Coal and Iron Company gives notice that it will extend the payment of the Valley furnace bonds for five years from July 1st next, and will pay 6% interest thereon during the period of extension.

The Lidgerwood Manufacturing Company has published a second edition of its catalogue of hoisting and conveying machinery. The catalogue contains 104 pages and is fully illustrated, showing both details of the machinery and its application for various purposes.

Rights to use the McDowell semi-steel process for making castings have been purchased recently by the Niles Tool Works, at Hamilton, O., and the Farrell Foundry and Machine Company, Ansonia, Conn., from the King & Andrews Company, of Chicago, which controls the patents.

Representative Dunphy has introduced in the House a resolution authorizing the appointment of a joint Congressional committee to investigate the condition and character of all armor plate, bolts and other appurtenances delivered to the Government by the Carnegie Steel Company, Limited, during the entire period of the contract between the company and the Government.

A big strike was started on May 14th in the National Tube Works, McKeesport, Pa. It began in the butt-weld department; the lap-weld department joined the strike. Then the employees in all the departments held a council and all hands, 3,200 in all, declared the strike general. The strikers say that the mill has orders enough to keep it in operation for nine months, and therefore should return to the wages paid before last September, when a general cut was made, averaging 20%. There has been no restoration of wages since. The butt weld boys formerly got $1.40 per day. Now they get $1.10. Welders got $3.50 and now get $2.50 to $2.75. The mill managers express surprise at the men's action and are reticent about the outlook. It is probable that the men in the National rolling mill, which is dependent upon the tube works and controlled by the same company, will join in the strike. The movement has been quietly organizing for several weeks.

MACHINERY AND SUPPLIES WANTED.

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

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

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

GENERAL MINING NEWS.

For the month of April the exports of mineral oils were as follows: Crude, 7,185,677 galls.; naphthas, 813,020 galls.; illuminating, 51,028,240 galls.; lubricating and paraffin, 3,414,854 galls.; residuum, 1,848 galls.: total, 62,443,633 galls.; an increase of 8,853,219 galls, or 16·5% over April, 1893. For the 10 months of the fiscal year from July 1st to April 30th the total exports were 745,625,854 galls.; an increase of 109,819,822 galls., or 14·7%, over the corresponding period last year.

ALABAMA.

Cleburne County.

(From our Special Correspondent.)

Annie Howe Gold Mining Company.—This company, which is owned in New Orleans, owns the property on which occurs the vein known as the Annie Howe, one of the first quartz discoveries in the Arbacoochee district. Work was abandoned on it about three years since, because, while near the surface the vein varied from 4 to 18 in. in thickness, and milled about $20 a ton, without extracting the value from the sulphurets, which form a big percentage of the ore, when sinking to solid rock the ore body pinched out almost entirely. A Huntington mill costing some $7,000 had been erected. This plant, including a Frue vanner concentrator was recently sold for taxes.

Annie Howe Extension Gold Mining Company.—The stock of this concern is owned principally in New Orleans and Birmingham. It is having a shaft, which was sunk to water level in 1877, continued down to intersect a second vein known as the Crutchfield, to distinguish it from the Annie Howe. This Crutchfield being at other points along the line of its strike toward the southwest and within the limits of this particular tract of land shows from 6 to 12 in. thick and mills well. It has been worked out to shallow depths several years since when pipes were sunk at the outcrop to a depth of 10 or 15 ft., but this is the first deep work attempted. The shaft is now down 52 ft., and it is expected that the vein will be exposed within about 20 ft. as its dip is quite flat near the surface. The results of this work will probably prove quite important to the Arbacoochee district, because it is the first work ever carried through or into the hard bed rock in quartz mining. In placer or hydraulic mining the bedrock has never yet been reached.

Anniston Gold Mining Company.—This property comprises the west half of Sec. 6, T. 17, R. 11, adjoining the town of Orbacoochee, which is located on the east half of the same section. This company was formed several years since, the stock being owned in Anniston, Ala., and Rome, Ga. Before the California excitement the property was good paying placer ground; in fact, to-day several quite extensive gold bearing gravel bars occur within its boundaries, which will pay to work by hydraulicking. Some of our native miners are now working hill diggings on it by sluicing, and although they can only obtain water about three hours each day, they are taking out an average of $1 a day to the hand, counting the length of the day during the few hours they get water. Some narrow veins of gold bearing quartz also occur on this property, but such have never been developed to determine either extent, permanency or grade.

Arbacoochee Gold Mining Company.—This company owns Section 5 adjoining the town on the east, and has operated at irregular intervals a hydraulic plant, by lessees. It is desirous of again leasing its plant and ground, consisting of 640 acres. Several quartz veins cross this property, among them the Annie Howe, but no development work has been done and the property is idle at present.

Arbacoochee Mining and Milling Company.—This concern, of Cincinnati, has recently begun developing what is known as the Lee property on the "Black Ore belt," as it is locally known. It is pushing work on the arastra plant, also in the mine. The ore body parallels the Arbacoochee belt on the south. The country rock in a highly crystalline slate carrying a large quantity of garnet. The ore itself is locally known as the "sand rock." It is a garnetiferous quartzite carrying considerable graphite, hence the name "black belt." The property joins the Wise mine on the northwest, and is supposed to be an extension of that ore body, bent by lateral pressure from the normal line of strike. At about 20 ft. deep it shows 3 ft. of pay ore bedded between decomposed slate walls, dipping at an angle of 45° toward the south. The ridge on which this ore body occurs has the same line of strike, and has apparently been bent around or pushed out of the general course of the formation by Turkey Heaven Mountain. The ore body has been prospected by sinking shallow pits for a distance of about 1,200 ft. in length, and its continuity is maintained, though whether it maintains a uniform richness and thickness has not yet been determined. It is expected that in about two weeks the company will have at least one if not two arastras ready to commence treating the ore.

Price Mine.—This is also on the "black ore belt," about 2½ miles to the southwest of the Wise and Lee properties. Here two distinct ore bodies have been exposed lying parallel with their strike northeast and southwest, and divided by a body of granite with the structure of a vein which can be traced for a mile to the southwest of its outcrop near the mine workings where it is lost to view, being covered by the slate country rock. To the northeast there is no exposure of this granite, which is the most northerly on the Alabama gold belts. The upper of these two ore bodies is a white, sugary quartz, plentifully stained with iron. At the outcrop it is about 6 in. thick, but in sinking 18 ft. on its dip, an angle of about 35°, it has increased to about 2 ft. By pan tests it prospects from $5 to $10 a ton in free gold. The lower body has the same characteristics as the ore on the "black belt," and prospects about the same average probably $5 a ton by mill test. This was sunk on with an incline shaft about 30 ft. when water interfered, and as considerable depth could be gained by a tunnel run in to crosscut the ore, by which means the mill would also be drained, such work was commenced, but the ore body has not been crosscut, either having pinched out at the contact with the hard formation, or else having its dip changed to a flatter incline, and in this way has run into the hill above the present level of the tunnel. In the incline shaft the ore body is about 4 ft. in thickness.

ARIZONA.

Cochise County.

Advices from Dos Cabezas report a bright mining outlook for that camp. The lessees of the Philadelphia mine are working their ore with good results. The ore continues to increase in richness, and 10 stamps are working. At the Silver Cave mine two Crawford mills are rapidly being placed in position to begin active operations.

Yuma County.

Harquahala Gold Mining Company, Limited.—The superintendent reports as follows: The mill started on March 1st again on a producing basis and worked steadily until March 31st, when it was shut down for the clean-up. The following figures represent the month's operations: Ore crushed, 2,926 tons; amalgam cleaned up (estimated), $37,000; working expenses, revenue account, $10,400; estimated profit for the month, $26,600. To this is added $1,472, the net yield from amalgam and coarse gold from bar No. 4, November account, and $3,000 from profits from general store for six months ending March 31st. The average loss in tailings was $2 69 per ton.

CALIFORNIA.

Inyo County.

Encouraging reports are received from the mines in the southern end of this county. The Sorba mine continues to ship a large quantity of good ore. A large ore body has recently been opened up in the Defiance mine. The Modock mine is reported to be looking well, as is also the Minnietta.

Kern County.

Whitney View Mining Company.—This company is opening a promising gold mine in one of the spurs of Piute Mountain, near the headwaters of Clear Creek, says the Bakersfield "Californian." The vein averages 15 in. in width and the quartz prospects about $40 a ton in gold. A four-stamp mill has been bought and is now nearly ready to run. Eight men are now at work upon this property. At Rich Bar, on Kern River, two different companies are mining and taking out placer gold in paying quantities. The river is quite low and this gives them a good chance to wingdam and turn the channel.

Mono County.

Bodie Consolidated Mining Company.—The latest weekly official letter says: The west crosscut of the 200 level was extended 7 ft. East crosscut from the Burgess winze 50 ft. below the 200 level was extended 6 ft. South drift from above winze was extended 6 ft.; there is about 18 in. of fair-grade ore in face. North drift from west crosscut 2,300 level, was extended 5 ft. The ore in the drift has opened out to 5 ft. wide, and is of high grade.

Bulwer Consolidated Mining Company.—The latest weekly official letter says: Upraise No. 6 was extended 7 ft. Started a crosscut east from above upraise. Upraise from south drift No. 7, 150 level, was extended 17 ft. We are getting some good ore from a small seam above the south drift, 200 level.

Hope Mining Company.—A strike is reported at this mine. In the 200-ft. cross-cut from the shaft a ledge of rich quartz was struck, the ore from which shows well in free gold and is heavily charged with high-grade sulphurets, says the Grass Valley "Tidings." It is believed that the old original Home ledge has been struck. About a year ago the present company erected a hoisting and pumping plant. The width of the ledge is not known, as it has not been cut entirely through yet, but it is a fair-sized ledge. As soon as it is possible to work more men the force will be increased.

Nevada County.

California.—This mine, in Eureka District, has struck good ore.

Centennial Gravel Gold Mining Company.—The annual meeting of this company was held in Gold Hill, Nev., last week, and the following board of trustees was elected for the ensuing year: H. M. Gorham, president; Alf Doten, vice-president; W. S. James, secretary; James S. Daley, D. Borsini. The active washing of the gravel developed, especially during the last summer and fall, is to be commenced for the first time, as soon as the requisite sluices can be constructed are placed. Mr. Andrew Nicholls will superintend the work.

Eagle Bird.—A strike is reported in the south drift of this mine at Maybert.

Granite Hill.—Gauthier's mill, at Grass Valley, is crushing 100 loads of rock from the Granite Hill mine. A contract has been let to sink the shaft at this mine 100 ft. from the 400-ft. level.

Odin.—A good strike is reported in this drift gravel mine, in Nevada City District. The strike was made in the north drift, and at a depth from the surface vertically of about 175 ft.

West Harmony Mining Company.—The miners in this drift gravel mine, says the Nevada City "Transcript," cut into a quartz ledge that, as far as uncovered, is from 8 in. to 12 in. wide. The quartz is heavily sulphureted and would pay to work, but the company will leave it for the present. Whether this is a shoot from the ledge struck some time ago, or an independent ledge, has not been determined. The ore from the former showed considerable free gold, and the general character of the quartz was different.

Placer County.

Mayflower Gravel Mining Company. — Another bullion shipment, valued at $3,000, has been received at the San Francisco office of this company.

San Bernardino County.

(From our Special Correspondent.)

Waterloo Mining Company.—The prolonged and bitter litigation in the courts between this corporation and the Silver King Mining Company has at last been terminated by a compromise. Details of the suit have already appeared in the "Engineering and Mining Journal." The Singer & Doe interests in the two companies have been consolidated and the suits pending have been dismissed, after costing the contending companies in attorneys' fees and court costs over $200,000. The mines at Calico will again be opened up, and one of the first moves will be to build a narrow gauge road from Daggett to the Camp.

San Diego County.

Escondido District.—According to the Escondido "Advocate" there is considerable activity in this district. The location of the Golden Eagle mine in Crescent Valley by Messrs. Frizell, Rhodes and Gorman has excited several others to take up mining locations in the near neighborhood. S. P. Abell has located the Vulture mining claim adjoining the Golden Eagle. The assays of rock from the Golden Eagle are said to show considerable free gold.

Julian District.—There is more activity of late in mining properties around Julian. The "Sentinel" reports that H. Malone and D. McPherson have taken a lease on the South Hubbard mine and are actively at work, with fair prospects. The Cable mine, owned by Cowles Brothers, of San Diego, has been leased to San Diego parties, and will be started up in a few days.

Siskiyou County.

Quartz prospectors are going to the head of Bark-House Creek, in Siskiyou County, as the ledges, although low grade, are quite easily found and very easy to work, says the Yreka "Journal." The quartz is what miners call "sugar quartz," while the country rock generally is soft, dark granite, seldom requiring the use of powder. The veins or lodes usually have granite walls with quartz, slate and porphyry in the vein proper.

Gold placer diggings have been discovered at Elliott Creek, on Siskiyou Mountain, near the Oregon line.

The rich find at Horse Creek, a tributary of Klamath River, near Oak Bar, has created some excitement, and according to the local papers the vicinity is full of prospectors, who have been staking out numerous claims.

Trinity County.

Silver Gray.—The new owners of this mine at Canyon Creek have put a force of men on the mine and will erect a mill as soon as machinery can be hauled there. The mine is said to be looking well.

COLORADO.

Custer County.

Geyser Mining Company.—This company has struck a 10-in. of high grade ore in the 2,000 ft. level. It is principally brittle and ruby silver. There is also some good ore in the Winze in the 1,850-ft. level. Superintendent Johnson has gone to Denver to purchase machinery.

Dolores County.

Following is a correct list of the ore, bullion and matte shipped from Rico for the month of April, published by the Rico "Sun": Rico-Aspen, ore, 58 cars; Black Hawk, ore, 14 cars; Enterprise, ore, 3 cars; Chicago mine, ore, 3 cars; Rico Consolidated Mining and Mineral Company, bullion, 4 cars; Union-Carbonate, ore, 3 cars; Iron mine, ore, 6 cars; W. W. Parshall, ore, 1 car; W. W. Parshall, bullion, 4 cars; San Bernardo, ore, 1 car; G. Percival, ore, 1 car; E. J. Wilson, ore, 1 car; Swansea, ore, 1 car.

The light shipments of the Enterprise mine and Iron mine, says the "Sun," are due to the fact that most of the product of those mines is now treated at the smelter.

Gilpin County.

During April 214 car-loads of ore and tailings, aggregating 6,206,000 lbs., were shipped from Black Hawk to the Denver and Argo smelters. This is an increase of 45 cars over the corresponding period of last year. There was a like increase in the amount of milling ores handled at the stamp

mills. Many properties are being opened up, with prospects of good returns. The Fontinac, which has been undergoing extensive development work, will soon begin shipments, and the management expects to produce about 100 tons of smelting ore per day. The ore crevice is from 5 to 8 ft. wide.

Lake County.

Aladdin Gold Mining Company.—This company has filed articles of incorporation. The company is capitalized at $1,000,000, divided into 1,000,000 shares. The incorporators are: George E. Ross-Lewin, John Harvey and F. M. Roudebush, who with H. A. McIntyre and Calvin H. Morse are the directors for the first year.

Golden Fleece.—During the past few months this mine has been paying monthly dividend of $12,000. Thus far it has paid $60,000 in this way.

Leadville Smelters.—Advices from Leadville report the smelter situation in the camp as being most encouraging at present. There are four plants in blast, the Arkansas, Bimetallic, Union and Elgin. On May 7th the Bimetallic blew in its last remaining idle stack and is now handling over 350 tons of ore daily. The Union management has commenced improvements that will cost over $50,000. These improvements will include two additional furnaces and excellent sampling works. The Arkansas Valley smelter is now running three lead stacks, the matte furnace being closed down temporarily. There are 360 employees at this smelter alone. The Elgin smelter is only running one stack, but there is talk of additional work there.

Louisville.—This mine, which has been idle since the crash, has been leased to John Calloway, and preparations are making to resume active development work. The shaft is 850 ft. deep, and while lying idle the water has filled up the shaft 50 ft. above the pump station, 700 ft. from the surface.

Mahala.—The Mahala mine has nearly 100 men at work and considerable new prospecting is being done, while regular shipments are made daily of 75 tons of sulphide ore. Important development work is being prosecuted, and the new shaft is down nearly 160 ft. The ore in this shaft was found at a depth of 100 ft. in a drift run to the north. This ore so far has been found in streaks, all of which are rich.

Smuggler.—A new shaft was recently started on the Smuggler property, on Iron Hill, which is at present in the limestone at a distance of 350 ft. from the surface. It is proposed to push this shaft down into the quartzite and explore the contact. The new shaft is being sunk on a small stringer of ore, which assays fairly in gold.

Yak Mining Company.—This company, whose incorporation we noted some weeks ago, has secured a long term lease of the Silver Cord properties with rights of driving a tunnel, and has commenced operations to drive a tunnel ahead into Breece Hill, at present at least to the Mike and Starr ground. This will drain numerous properties of this hill, and will be in the nature of a custom tunnel, by which ores of the large and rich district can be taken to the surface at a small cost. The ores of Breece Hill will be landed at Silver Cord switch in California gulch, there being practically but one transfer between the time the ore is loaded into the car from the breast of the slope until it is on the railroad car. Under the present system there are three and sometimes four separate handlings. The Yak company also intends rebuilding the Silver Cord mill, which was burned last fall. The tunneling enterprise is under the management of L. S. Noble.

(From our Special Correspondent.)

Modoc Gold Mining Company.—This company has filed articles of incorporation. The capital stock of the company is $1,250,000, stock to be non-assessable. The incorporators are: F. C. Waye, C. T. Smith and M. H. Anderson. These men and C. B. Nicholson and F. W. Cammann are the directors who are to manage affairs.

Sulphide Mining Company.—This company has just purchased from L. G. Dyes a one-half interest in the Denver City, Shamus O'Brien and Quadrilateral lodes, and also an interest in leases on the Kennebec, Fitzhugh and Ward Consolidated Mining companies' properties. Dyes received $500,000.

Pitkin County.

According to the Aspen papers what is promised to be a rival of the Deep Shaft on Aspen Mountain has been started on the Williams ranch, on Smuggler Mountain, by a company of capitalists, of which D. R. Brown is president. The intention is to endeavor to cut the rich Smuggler and Mollie Gibson ore chutes. As these chutes stand at an angle of between 60° and 70°, considerable depth will have to be reached before there is any possibility of cutting the vein. For this reason a plant of sufficient capacity to sink 1,500 ft. will, it is said, be put on the property. The shaft will be 10 by 6 and will have three compartments.

The county commissioners have notified all owners of mining claims that from this time on they would be required to keep all mining shafts and prospect holes covered, and have instructed the district attorney to proceed against all persons failing to comply with the order.

Argentum-Juniata.—It is reported in Aspen that this property will shortly resume operations.

Aspen Lixiviation Works.—There have been no new developments regarding the starting of the lixiviation plant, but negotiations are still in progress which may result in something being done soon. The Smuggler, Della S. and Mineral Farm have promised to furnish from 75 to 120 tons of ore a day to the works if they should be started.

Cowenhoven Tunnel.—Three shifts are now driving the Cowenhoven tunnel. Much trouble is experienced in working in the breast, owing to foul air.

San Miguel County.

Smuggler-Union Mining Company.—The Smuggler-Union mill at Pandora has started up. Barring unavoidable accidents it will not be shut down except for necessary repairs throughout the summer. It employs 45 men.

Warner Group.—This group of gold claims, lying on the west side of the Bear Creek gulch, has been bonded by Pierce & Lee, of Denver. The group comprises seven lode claims, purchased of Cyrille Cromer, a portion of the Union placer, taking in the mouth of Bear Creek and receiving a water power sufficient for 50 or more stamps. The Jones & Weller mill, on Bear Creek, has been leased from the San Miguel Consolidated. A force of men is at work taking out ore. A lot of about 200 tons, taken out last summer, is being packed down to the Allegheny mill for treatment, and as soon as that is out of the way the Jones & Weller mill will be put in operation.

IDAHO.

Alturas County.

Big Annie.—A mill has been bought for this mine on Camp Creek, and will be put in operation as soon as it can be hauled to the mine and set up.

Logan County.

Snake River Placers.—Root Brothers & Dunbar, of Chicago, says the Shoshone "Journal," are making extensive preparations to mine the bars in the bed of Snake River, between Shoshone Falls and the Blue Lakes. The bars are from 3 to 6 ft. under the water and the dirt will be raised with centrifugal pumps. The machinery, consisting of boiler, engine and pumps, has arrived here from Chicago. A flatboat 50 ft. long will be anchored in the middle of the stream, over the bar, and on this the machinery will be placed, and the dirt and gravel will be raised from the upper end of the boat and run over the gold-saving machine, then the waste will be dumped in the river at the lower end of the boat.

Shoshone County.

Clearwater Placers.—Locations have been made on about four miles of the South Fork of the Clearwater by parties who propose to work the gravel from the river bed by dredging and washing. The dredge is the invention of a Mr. Walker, and one of the same pattern has been tested on the Feather River in California.

MAINE.

Kennebec County.

Hallowell Granite Company.—This company, at Hallowell, is very busy and the payroll includes the names of 350 hands.

Knox County.

Fox Island Granite Company.—This company, at Vinalhaven, has lately got out a stone that is said to be one of the largest ever detached in New England. It is 130 ft. long, 40 ft. wide and runs from 5 to 7 ft. in thickness, of the best quality and free from knots.

Hurricane Island Granite Company.—This company will soon increase its force, having taken several large contracts. The company has started its polishing mill on a number of large columns for the Pennsylvania Railroad station at Philadelphia, running it day and night until the job is completed.

Piscataquis County.

Brownville Slate Company.—This company, at Brownville, intends to double the present working force soon, and is getting ready to put up two more large derricks with all the latest improvements.

Sagadahoc County.

Trenton Flint and Spar Company.—This company, at Topsham, is making large shipments of ground feldspar to Trenton, N. J.

Washington County.

Pleasant River Granite Company.—This company, which has quarries at Addison, proposes to put up a large finishing plant at Portland.

MICHIGAN.

Iron—Menominee Range.

Pewabic Mine.—This mine is now shipping about 2,000 tons of iron ore a day. At present about 950 tons a day come from the mine direct, the rest being taken from the stock pile.

MINNESOTA.

Iron—Mesaba Range.

(From our Special Correspondent.)

The strikes on the Mesaba range are all over and the men have returned to work at the Franklin at a 50% advance over the former scale. A statement from the Franklin Mining Company that it would shut down rather than pay more than the 20 cent scale, was the bluff that ended the strike.

About 6,000 tons daily are being shipped off this range. The Biwabik is not yet started nor are preperations begun for mining there.

Iron—Vermilion Range.

Minnesota Iron Company.—This company is shipping about 400 carloads of ore daily to docks. On Friday last 1,100 cars or 25,000 tons were loaded out of docks into 11 vessels, the largest day's record yet made. Unless the coal strike in the East is over soon, however, it is feared that ore shipping, and consequently mining, must be largely stopped.

Pioneer.—This mine, which has been closed down for a year, is starting up and the pumps will be at work this week. It has a three-compartment shaft down to the Chandler vein and will ship this year.

St. Louis County.

(From our Special Correspondent.)

All routes to the Rainy Lake gold region are now open and travel is very considerable. The townsite boom has largely effervesced and may be said to be a thing of the past.

MONTANA.

Deer Lodge County.

Clipper Mine.—Walter Mackay and others have leased this mine from the Anaconda company, and are working with a small force.

Jefferson County.

Alta Mine.—On this mine, near Wickes, says the Butte "Miner," there are eight tunnels, and the best of the ore has long since been stoped to the surface. The eighth tunnel is the one which they are now using and it as low as the company can comfortably get to work the mine. A large hoisting apparatus is situated in the tunnel, 1,500 ft. from the mouth, operated by electric power. The depth from the bottom of the shaft to the apex or discovery, is over 1,500 ft., and an air shaft is kept alongside of the main one as it increases in depth. The ore body continues regular, and it is said that in depth it contains a little more iron than it did lead nearer the surface, and with the iron is gold, which makes the vein grow richer as they go deeper. The company has a narrow-gauge road from the mine to the concentrator, and the cars are hauled by two engines of 12 and 17 tons respectively. In the mine the cars are hauled into the tunnel and loaded from the chutes and again hauled out by mules and placed for the trains to couple on and pull out for the concentrator. About 150 men are employed in and about the mine, and five cars of concentrates are shipped every week to the East Helena smelter, though formerly the company has shipped as much as three cars every 24 hours. The concentrator is of 200 tons capacity and 50 men are on the payroll. The ore from the mine will average about $16 per ton.

Lewis & Clarke County.

Notices of location of the following placer and quartz claims have been filed, says the Marysville "Mountaineer":

By D. J. Hubbard: The Wetmore, Apex, Simons, Upton and Dolphin quartz claims, in Gould gulch, and 60 acres of placer ground in the Fool Hen district.

By William Brown, the Alice and Sallie placers, Stemple district.

By J. T. McClain, the Rocky Gulch placer in the Stemple district.

By J. G. Crator, 12 acres of placer ground in the Greenhorn district.

By D. J. Fallant and others, the St. Peter lode, Little Creek district.

A deed to Patrick H. Shannon of the Sanford lode has also been recorded.

Bald Butte Mining Company.—In April this company increased its dividend to 10c. per share. It has been paying 5c. monthly for some time past.

Golden Rod.—On this claim in Friday gulch a strike was made recently. The vein found is well defined and the ore shows well in gold.

Interstate Mining Company.—This company has been organized to work mines in the Tousley district. The incorporators are H. H. Davis, Wm. Muth, M. Brandegee, of Helena, and C. E. Dudley, of Marysville.

Mayflower Mine.—At this mine, near the Boulder River, a tunnel has been driven in more than 100 ft., cutting the veins at a right angle, but it will have to be run 300 ft. before they meet the other two leads. Rich streaks of ore are being constantly cut which assay in lead, copper and gold. The mine is within a stone's throw of both railroads. The owner of this property is Robert McGowan. It was bonded three weeks ago to Daniel P. Wortman in the sum of $?0,000 for six months, with the privilege of taking out ore, shipping it and paying a royalty to McGowan. One of the conditions of the bond is that an extension of six months can be had by placing the bond at $25,000. A force of men is now at work and the ground is getting very hard.

Winnemucca.—In this mine, which adjoins the Winnemucca, the owners, L. A. Matthews and Peter Wilde, struck a pocket of rich ore recently. It carries free gold, but its extent is not yet known.

Meagher County.

Cornucopia.—This mine has been leased by A. Nelson and D. McDonald, who have already taken out considerable ore.

Grand Prize.—This mine and the Enterprise claim adjoining have been leased and bonded by James Garner and Wm. Rutkins. This property is located at the head of Rock Creek and belongs to J. L. Neihart and Wm. Crandall. Rich float was found all over these claims and two veins of good ore dis-

covered. A tunnel 350 ft. in length has been run on one of these veins and a depth of 125 ft. gained. The ore in this vein is not very high grade, but it is hoped to find something better either farther on in this vein or on the other, which has not been opened up to any extent. The lease and bond run for a year and the price stated in the latter is $52,000.

Mountain Side.—At this mine, near Barker, H. H. Chandler has a small force, chiefly on development work, though some ore has been taken out and is ready to ship.

Running Wolf.—Work has been going on in a small way on this mine all winter.

Silver Bow County.

Argenta.—This mine, near Melrose, has been leased to Wheeler, Carpenter & Co., who are driving a 500-ft. tunnel, and are finding some good silver-lead ore.

Calumet.—On this lode, which F. A. Heinze recently leased and bonded, work has been begun on a tunnel 820 ft. long.

Southern Cross Mining Company.—A meeting of the stockholders was held recently in Butte to consider a proposition from J. Henry Longmaid to lease and bond all the properties owned by the company. Nothing was done. A judgment of nearly $10,000 has been obtained against the Southern Cross properties and they were to be sold on May 15th to satisfy the judgment. A proposition has been submitted to lease and bond the properties for a term of three years, agreeing to operate the mine continually and to pay off the outstanding indebtedness, besides paying a royalty in case a bond was not given. In case it should be decided not to lease the mine it was the intention to introduce a proposition to make the stock assessable so as to pay off the indebtedness. The law requires, however, that three-fourths of the stock shall be represented, and that two-thirds of it shall be voted in favor of a proposition to either lease the property of a corporation or make the stock assessable, and there was not sufficient stock represented to transact any business.

Western Mine Enterprise Company.—This company has filed articles of incorporation to do a general mining business. It is capitalized with $500,000, the par value of the shares being $1 each. Its corporate existence is limited to 40 years. The trustees for the first three months are George W. Irvine, J. E. Rickards, Frank E. Corbett, A. J. Davis, H. C. Carney, C. H. Hand, A. J. Huneke. The principal office and place of business will be in Butte, and its operations will be carried on throughout the United States and Canada.

NEVADA.

Storey County—Comstock Lode.

Alpha Consolidated Mining Company.—The directors of this company have ordered work to be resumed in that property, which has been practically shut down for a long period. It is intended to run some west crosscuts from the old shaft.

Hale & Norcross Mining Company.—This mine has shipped to the Brunswick mill all of the ore accumulated in the bins, amounting to 680 tons. The average assay of the railroad car samples was $29.13 per ton.

Justice Mining Company.—At the annual meeting of the stockholders of this company held in San Francisco last week 93,245 shares were represented and the following officers were elected for the ensuing year: Aug. Waterman, president; H. Zadig, vice-president, and P. Amiraux, E. P. Barrett and S. Jacobs directors. R. E. Kelly was re-elected secretary and R. P. Keating superintendent. The superintendent's report showed the mine to be in good condition. A grade of ore is being extracted which runs 75% in gold and 25% in silver. A test run of about 250 tons of ore which has been extracted from the various openings at present is being made at the Taylor mill and with satisfactory results.

Following are extracts of the latest weekly official letters of superintendents of Comstock mines:

Alta Mining Company.—The intermediate winze in the 725 level is down 19 ft., and the bottom is in low grade ore, showing a little improvement over the last four or five feet passed through. The south raise continues to look well, showing from 1 ft. to 20 in. of good ore; total height 57 ft. The north drift from top of north raise was extended 21 ft., and shows no improvement. Started in the mill on May 2d, on low grade ore taken from the 1,560 level two years ago, of which there were about 140 tons in the bin. Everything is working well.

Belcher Mining Company.—On the 850 ft. level we have cleaned out and retimbered 65 ft. of the main north drift, making its total length 500 ft. from the shaft. We are now in to the edge of the quartz with this drift and will be ready in a few days for active explorations at this point. This drift will be carried through to meet a drift coming south from the Crown Point mine for air purposes, but this will not retard prospecting work. From the old stopes on the upper levels we have taken out during the week 36 tons of fair-grade ore.

Consolidated California & Virginia Mining Company.—The south lateral drift, which encountered the ore body at a point 120 ft. south of the winze, 14 ft. below the sill floor of the 1,650 level, has been extended during the week 11½ ft. in solid, compact ore of high-grade quality. This extension makes the total length of the drift in ore 18 ft., and the face of the drift is in fine ore. No crosscutting has been done from this drift. The ore extracted during the week from the drift, together with some ore of lower grade extracted from the vicinity of the winze, 52 ft. down, amounted to about 122 tons, the average assay value of which, per car samples, is $86.81 per ton. In the 1,000 level, the Rule drift, the upraise on the east side of the main drift at a point 585 ft. south from the shaft station, has been carried up 37 ft.; top in porphyry, clay and quartz of some value. A west crosscut started from the main drift at a point 635 ft. from the shaft station has been advanced 20 ft. in a porphyry formation. More than ordinary repairing has been done during the week throughout the main drift.

Crown Point Mining Company.—The south drift on the 600-ft. level from the top of the 700-ft. level raise is in 104 ft. The face is in hard porphyry. The south drift on the 500 ft. level from the shaft station is out 101 ft. The face is in porphyry with seams of low-grade quartz though it. On the 800-ft. level we have cleaned out and repaired 130 ft. of the main south drift, with the intention of running from it to connect with the 850 level of the Belcher mine and to explore the intermediate ground. To expedite this work a night shift has been put on.

Savage Mining Company.—On the 1,050 level the east cross-cut, No. 1, in the north drift at a point 45 ft. from the station, was advanced to a total length of 37 ft.; the face is in ledge matter. The upraise in the north drift was advanced 20 ft.; total height 32 ft.; top is in a fine-looking body of quartz giving low assays. On the tenth floor we are stoping some ore of fair grade. On the 1,100 level, east cross-cut 2, started from the face of the north drift was advanced to a total length of 24 ft.; face is in quartz and porphyry. We are repairing and retimbering the north drift on this level. During the week we hoisted 45 cars of ore from the 1,050 level; car samples, $28.64.

Segregated Belcher & Mides Mining Company.—The east crosscut from the north drift on the 1,150 level is now out 17 ft. The face is in vein material, composed of porphyry and streaks of quartz. We continue to save a few tons of fair-grade ore per week from the south raise on this level.

West Consolidated Virginia & California Mining Company.—During the week we have been engaged in easing timbers. The west crosscut on the 1,100 level run from a point 320 ft. north of the shaft station is now in a total distance of 758 ft. The face is in hard quartzite. The flow of water is unchanged since last report.

(From our Special Correspondent.)

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

Mines.	Ore H'st'd	Car S'mple Assay.	Ore Mil'd	Av. Bat'ry Assay.	Bullion for Week.	Total.
Alta	40[1]					
Belcher	36[2]					
Con. Cal. & Va.	125[3]	$86.81				
Justice	100					
Hale & Norcross	680	29.13				
Oceid	8[4]	41.00				
Savage	45[5]	28.64				
Seg. Belcher	[6]					

[1] Low grade. [2] Fair grade. [3] and [5] Tons of ore. [4] In April 110 tons and sluices worked which produced bullion valued at $1,384. [6] Few tons per week fair grade.

NEW YORK.

Warren County.

Glen Mining Company.—This company has been organized with $30,000 capital stock, to mine and prepare mineral paints in the town of Johnsburg. The directors are: D. Marces, Johnsburg; Foster E. Harvey, Sandy Hill; Charles L. Marshall, Glens Falls.

PENNSYLVANIA.

Locust Gap Colliery.—At this colliery, belonging to the Reading Coal and Iron Company, an explosion of powder occurred on May 14th by which two men were killed and one seriously injured.

By an explosion of gas at the East Bear Ridge mine, at Mahanoy Plane, on May 14th, one man was killed and several were injured.

Anthracite Coal.

The employees of the Royal Oak colliery, at Shamokin, went out on strike on May 14th rather than submit to a reduction of 20% in wages. About 50 men are affected.

Lehigh Valley Coal Company.—Reports from Shenandoah state that all the collieries of this company started work on a schedule of 10 hours a day, 6 days a week. For over a year past these collieries have worked but three days a week of 9 hours each. The resumption of full time affects about 4,000 men and boys.

Pettebone.—Arrangements are making for pumping out the Pettebone mine, and work will be resumed as soon as possible. This mine will give employment to some 300 men and boys. Several months ago a fire broke out in the mine, and before it could be extinguished it had to be flooded. The works have been shut down since, and many of the workmen formerly employed there were put to work in Woodward Colliery. The mine will be cleared in about one month.

Richardson.—There was a big cave-in of the surface above the workings of the Richardson colliery, near Minersville, on May 11th. The surface is cracked for a radius of several hundred yards and all the miners' cottages in the vicinity are being moved out.

Union Coal Company.—This company's Hickory Ridge colliery, which has been idle during the past three months, resumed operations on May 17th, giving employment to 500 men and boys. All of the Reading mines in the Shamokin district continued operations all week, but the other collieries operated by this company shut down on May 16th for the remainder of the week.

Oil.

Forest fires have been raging in the vicinity of Russell City, Elk County, for the past few days. On May 13th, the flames reached the oil lease of Barnsdale & McDermott and rig No. 3 on lot 2,025 was destroyed.

The Interstate Commerce Commission will take proof at Titusville next week of the amount of the claims of the Independent Refiners against a number of railroads, for reparation arising from overcharges in the transportation of oil eastward in barrel packages as compared with tank shipments or the shipment of oil in bulk in tank cars. The defendants are the Western New York & Pennsylvania Railroad Company, the Lehigh Valley Railroad Company, the New York, Lake Erie & Western Railroad Company, the Delaware & Hudson Canal Company, the Fitchburg Railroad Company and the Boston & Maine Railroad Company. The action was brought by the Independent Refiners' Association of Oil City and Titusville, comprising about 16 concerns. The Standard Oil Company was not one of the complainants. The Interstate Commerce Commission went to Titusville May 15th, 1889, and the cases were given hearing. M. J. Heywang and the late Franklin B. Gowan represented the plaintiffs, and J. D. Hancock, J. A. Buchanan, Francis I. Gowen, J. A. Logan and F. H. Janiver appeared as attorneys for the plaintiffs. The hearing resulted in a victory for the Independent Refiners. The commission in due season decided that there had been discrimination, ordered it to be discontinued and directed that reparation should be made by the railroad companies to the plaintiffs. The defendants have not refunded the discriminating overcharges, and the purpose of the forthcoming meeting of the commission is to define the specific amounts which they are required to pay to each of the plaintiffs. The aggregate amount of these claims is in the neigborhood of $200,000.

United States Pipe Line Company.—Unknown miscreants on May 13th punched holes into the pipes of this company, 7 miles from Athens, and set the spurting oil on fire. One of the lines is a 5-in. through which refined oil is pumped, and the other a 4-in. through which is pumped crude oil. The oil is pumped from Bradford. The loss is not yet known.

SOUTH DAKOTA.

Lawrence County.

In the United States court at Deadwood on May 11th, the case of George E. Brettell vs. J. B. Haggin, commenced 14 years ago, had its first trial. Though entered for trial in the Territorial district Court and afterward in the State Circuit Court, it was by mutual consent transferred to the United States Circuit Court, and has finally come to trial. The evidence is very voluminous and has been taken before referees, as well as by depositions, witnesses being scattered all over the country. There are three cases involved in the suits, viz.: conflicts between the Lincoln lode, the Sunrise lode and the Greenback lode, George E. Brettell being the locator and claimant of the latter lode and James B. Haggin of the two former ones. The Greenback lode and some others are now the property of the Rochester Milling and Mining Company, of Rochester, N. Y., George E. Brettell being the resident agent and manager.

Esmeralda.—The result of an eight-days run on ore from this mine was a gold retort weighing 77 oz., worth $1,400. The property was at one time owned by an Eastern company who erected a 60-stamp mill on it. Expensive and inexperienced management, however, caused it to collapse, says the Deadwood "Times," and the company went out of existence. The mill was sold to the Uncle Sam Mining Company, and removed to its mine on Elk Creek. The Esmeralda mine was then abandoned, and was finally relocated by the present owners. It is now being worked under lease by Messrs. Weir & Co., with satisfactory results.

Homestake Mining Company.—The Homestake shaft is now down 815 ft., says the Deadwood "Pioneer," and a force of men are at work cutting out a station on the 800 ft. level. When the station is completed, work of sinking the shaft will be continued.

UTAH.

Salt Lake County.

The shipments of ore and bullion from Salt Lake City during the past week were: Bullion, 638,499 lbs., silver and lead ores, 1,093,690 lbs. The receipts of ore and bullion in Salt Lake City for the week ending May 9th were to the aggregate of $94,450, of which $56,400 was in bullion and $38,050 was in ore.

Salt Lake Copper Manufacturing Company.—The Salt Lake "Herald" says that, with the exception of the roasting building, all of the structures at the copper plant have been completed, and within the present month the management expects to set the

furnaces in operation. The boilers have been set and the engine which is to furnish the greater portion of the motive power for the works is nearly ready for the trial run. The blast furnaces are only lacking a few connections which are expected daily. The ore bins are rapidly filling with ore from the various properties controlled by the company. The company is receiving on an average 5 cars of ore daily, and by the time the works are ready for operation Mr. Singer expects to have 5,000 tons of ore in the bins. There is now a little over one-third of that number on hand.

San Pete County.

Sterling Coal and Coke Company.—The San Pete Valley Railway Company has purchased the Thomes coal mine in Six-Mile Canyon, south of Manti. It is understood that a company will be organized for the purpose of developing the coalfields, to be composed of the stockholders of the railway company, and will be known as the Sterling Coal and Coke Company. A meeting of the stockholders of the railway company will be held on May 28th at Nephi, when the articles of incorporation will be amended, says the Salt Lake "Tribune," for the purpose of extending the road south from Manti and north from Nephi. The first work will be done at Manti in extending the line south to Sterling, from which point a branch line will be built to the coal mines. This company now owns all of the coal lands in Six-Mile Canyon excepting a small claim known as the Edmonds mine. This property is more thoroughly developed than the other claims, and shows an 8-ft. vein of good coal. An offer of $10,000 in cash has been made for the claim. The railway company retains an option for $40,000 on the mine. This option expires on June 1st.

WYOMING.

Natrona County.

Wyoming Pipe Line Company.—This company has filed articles of incorporation. The purpose is to construct a pipe line from the Salt Creek oil wells near Casper to connect with the Union Pacific, Denver & Gulf Railroad at Orin Junction. The capital stock of the company is $200,000. The trustees are P. M. Shannon, Pittsburg, Pa.; Frank H. Murdock, St. Louis, Mo.; George B. McCalmont, Casper.

FOREIGN MINING NEWS.

ALGERIA.

Exports of ores from Algeria for the year 1893 included 271,004 (metric) tons iron ore; 47·5 tons copper ore; 6,764 tons lead ore and 27,214 tons zinc ore. The imports included 138,784 tons coal and 5,787,164 kilos. mineral oil.

AUSTRIA-HUNGARY.

A cablegram from Vienna says that the Ostrau strike is still spreading. The miners in the pits owned by the Rothschilds and Count Larisch went out on May 11, and the men in other mines will go out. All the mines are guarded by troops.

BRITISH COLUMBIA.

(From our Special Correspondent.)

In the Provincial Parliament a special amendment has been passed, suspending all assessment work on both placer and quartz claims until July 31st, 1895, on account of the hard times and general business depression.

It is now provided that all records over transfers, bonds, mortgages or bills of sale shall be made within 90 days of the date of their being drawn. The actual working of all such records to date from the date of record.

Considerable indignation is felt here of the renewal of the old clause in the Dominion Tariff Act, relating to the admission of mining machinery. This provides that all machinery, not made in Canada, is to be admitted free for three years. As, however, when a miner attempts to buy machinery in the States or elsewhere, some manufacturer in the Eastern Provinces, claims he can make the article, the duty has to be paid; consequently there is either a heavy duty to pay or a long wait for an inferior article, as there is no house in Canada which deals exclusively in mining machinery. Thus, while apparently aiding the mines, the clause in practice does him absolutely no good.

A resolution was lately adopted by the Provincial Parliament regarding a bounty on pig lead, as follows: Whereas, by the Dominion Tariff Laws a bounty of $2 per ton is allowed on pig iron; and, whereas, there is a large quantity of lead ore in this Province which ought to be mined and become a valuable industry and source of profit; Therefore, be it resolved, that the Dominion government be urged to make a similar regulation in the tariff and allow a bounty on lead.

During the discussion it appeared that most of the members approved the resolution. One member wanted the resolution to go further and include copper. However, the original resolution alone was carried.

Caribou District.—John Hobson, consulting engineer to the Horsefly & Caribon Hydraulic Mining Company, has returned from California. He has now all the steel piping for the company's works on the ground. The company will erect a saw-mill and cut out timber for flumes, etc. Several miles of ditching will also be constructed as soon as the snow melts.

Frazer River District.—Work has been started on the properties of the Finch Gold Mining Company and the Kanaka Bar Gold Dredging Co.

Nelson District.—The Hall mines again have increased their force and now employ 40 men. A large consignment of machinery is expected soon for this property.

Considerable interest is being shown in placer ground in this district and several applications for leases have been made for ground on Hall and Forty-nine Creeks.

CHILE.

Panulcillo Copper Company.—This English company, working properties in Chile, is to be reconstructed under the name of the Central Chile Copper company, the necessary consent of the shareholders and creditors having been obtained. The new company's capital will be £280,000, in shares of £1 each; the first 30,000 shares are to have 6% priority and the remaining 250,000 will be ordinary shares. Of the priority shares 14,062 will be offered for subscription to the shareholders of the old company at the rate of one for every Panulcillo share and the remainder will go to the creditors of the Panulcillo Company on payment of their claims against the company.

COLOMBIA.

Colombia Gold Mines, Limited.—The report of the official receiver in bankruptcy on the case of this British Company, now in liquidation, shows how the English public trust to picked samples of ore, and believe that they represent the average of the stuff excavated and treated. This company was a reconstruction of another, and was formed in 1889. The shareholders and directors were shown concentrates containing 21 oz. to the ton, and they engaged Mr. W. F. Rickard to go out to the mines in Colombia to treat and utilise them by a special process rendered necessary by their nature. When Mr. Rickard got to Colombia, he could not find any concentrates resembling the sample. No accounts were ever issued by the company, and in November last a wind-up order was made on the petition of a creditor.

INDIA.

Balaghat-Mysore Gold Mining Company.—In April this company reports 360 tons ore crushed from which 443 oz. gold were obtained. For the four months to April 30th the output was 1,504 oz., against 3,402 oz. for the corresponding period in 1893; a decrease of 1,898 oz., or 55.8%, this year.

Champion Reef Gold Mining Company.—The production of this company in April was 3.294 oz. gold, and for the four months ending April 30th 12,700 oz., against 8,203 oz. for the corresponding period last year, an increase of 4,497 oz., or 54·8%; of the production this year 12,183 oz were obtained from milling 8,324 tons of ore, and 517 oz. from reworking tailings.

Ooregum Gold Mining Company.—This company's report for April shows a production of 6,008 oz. gold. For the four months ending April 30th the report shows 21,913 oz. obtained from milling 12,866 tons of ore, and 2,991 oz. from reworking tailings; a total of 24,904 oz., as compared with 23,452 oz. for the corresponding period last year, showing an increase of 1,452 oz., or 6·2%, this year.

MEXICO.

United Mexican Mining Company.—A general meeting of this company was held in London on May 4th. The annual report showed that the profits for the year amounted to £7,336, which, being deducted from the debit balance of £9,305 brought forward, left £1,968 to be charged to the next account. The president's report stated that he was sorry they were still without a dividend, and that was due in great part to the very low price of silver, because it took now half as much again to be remitted from Mexico to pay their debenture interests and cancel debentures as it did when they were paying dividends before. The results from the Cubo property were satisfactory; but the company had other mines on its hands which were not so satisfactory.

Aguas Calientes.

It is announced that the well-known smelting firm of M. Guggenheim & Company have purchased the copper mines at Tepezala. J. L. Rathbone, according to the San Francisco, Cal., papers, received $100,000 for his interest. According to the Denver "Times," Mr. A. H. Danforth, of New York, who acted as agent for the purchasers, says that the Guggenheims will erect another smelter at Aguas Calientes to treat that ore and a railroad will be built to connect the mines with the smelter. They will also build a large copper and lead refinery in New Jersey. A line of steamers will be run by the company from Tepezala to Perth Amboy, N. J. The new mines will turn out 50 tons of copper a day.

Chihuahua.

The Batopilas Mining Company, of Chihuahua, Mexico, has ordered four iron buildings and four bridges from the Berlin Iron Bridge Company, of East Berlin, Conn. The buildings are to be shipped by steamer to Galveston, Tex., and from there by rail to the interior of Mexico, where they will be carted a distance of 100 miles on muleback up into the mountains.

Palmarejo Mining Company.—The advisory committee appointed by the shareholders of this company some eight months ago to inquire into the management of the company recently issued a report. Briefly the verdict is that the company has a good mine, but is overburdened with capital and financial obligations. That under present circumstances it is impossible for ordinary shareholders ever to receive any dividend. It will be remembered that this committee commissioned Mr. Hooper, of the firm of Bewick Moreing & Co., to go to the property and report on it. This report has been presented, but the details are not forthcoming. However, the committee's report being based upon it, gives as much information as can be desired. The committee commence by saying that the report cannot fail to be disappointing to shareholders, as it clearly negatives the statements which have been issued at various times, notably in 1890, regarding the richness of the ore. The property has not had a chance of proving itself yet, partly on account of the financial difficulties and partly on account of the management and the directorate. The committee strongly advise that the present directors should resign in a body, because they do not hold the confidence of the share and debenture holders. The shareholders should have the election of new directors in their hands, and it is inexpedient that any director of the Mexican Mineral Railway Company should hold a similar position on the Palmarejo board. So much for the purely personal matters. As regards the financial overburdenment, the committee find that the board of directors has committed the company to the following yearly preferential charges for interest, rent, etc.: To the Mexican Mineral Railway, average £19,280; interest, £95,000 first debentures 7%, £6,550; Mexican Explorations Company for guaranteeing first debentures, £3,000; second and third debentures net £4,400; London office expenses, £2,500; sinking fund for first debentures, £11,880; total £47,710. In addition to this there is a bonus of 12% or £2,400 on the second debentures to be paid when the bonds mature in September next. It would be difficult for the best of mines to meet such obligations, and with the most hopeful prospects of this property itis quite impossible to conduct affairs on the present basis. The committee have deliberated at great length as to the best policy to pursue in the future, and have recommended the following six items: (1) Amalgamation with the Mexican Mineral Railway Co.; (2) the reduction of the first debenture interest from 7% to 5%; (3) the withdrawal of the 3% guarantee by the Mexican Explorations Company; (4) the reduction of the second and third debenture interest from 12% to 6%, the foregoing of the bonus and the extension of the time of repayment for three years; (5) the reduction of the sinking fund; (6) the reduction of the London office expenses to £2 000. All these alterations cannot be carried out, but if they are carried out as far as they possibly can, the advantage is that the yearly preferential charges will be reduced from £47,760 to £25,730, an amount which should be easily met if Mr. Hooper's reports are to be relied on. Some of the recommendations were hotly contested by the parties interested, and modifications had to be made before the committee's report was presented. For instance: Item 1, the amalgamation with the Mexican Mineral RailwayCompany had to be abandoned; but the agreement come to is that if the income of the company is £22,000 a year, the railway company is to receive £8,880 out of it, and should the income reach £25,000 a further £3,000 a year is to be paid, and afterward the railway company is to have one-fourth of the income until any arrears of the sum due to it under the lease is paid. The first debenture holders being guaranteed by the Explorations company and having a first charge on the property, declined to reduce their interest, but the Explorations Company have agreed to forego the guarantee of £3,000, which is to take the place of the present sinking fund. The second and third debenture holders, with the exception of a small minority, have agreed to the committee's suggestion. The trustees of the first debenture holders have reduced the sinking fund from one-fourth to £3,000 a year, as above stated, provided the income does not exceed £25,000 a year, and a fourth of any income in excess of that sum. As regards the reduction of the London office expenses, no difficulty is raised there. This is the proposition which is to be submitted to the shareholders, and it must be said that even this proposition takes a decidedly rosy view of the future of the mine.

Later news is that the directors of the company have announced their agreement to the propositions of the advisory committee, as noted above. They are willing that the Board of Directors shall be reconstructed, and will support the election of Mr. T. Southcott, chairman of the advisory committee, to the board. As far as the mine is concerned, the directors say that after reading Mr. Hooper's report they feel that steps must be taken to increase the output and diminish the expenditure per ton of ore treated at the works. It is also felt that there should be an improvement in the communications in and around the mine, and in the storage of ore, so that the expense of getting ore and transporting it to the railroad may be lessened. The directors recommend the reduction of the gradient on one section of the railroad. The improvements here detailed are estimated to cost 64,675 Mexican dollars. The directors also recommend that something should be done to cheapen the cost of treating the ore. They have before them a new electrical process, the details and nature of which are not divulged, but which they say is particularly adapted to their ore. Though the directors give no information about the process,

it is evident to all that this is Mr. G. J. Atkins' process, for Mr. Applegarth has been the backer of it, pretty much in the way that he has been the moving spirit in Palmarejos, and no doubt he expects to make, by its means, another haul out of Palmarejo shareholders. The directors give a glowing account of the process and estimate that the net saving per ton of ore after payment of royalty will be quite $5. One good point is that the patentees are willing to deliver two of the machines at their own expense and to agree that the company shall not pay unless their working is satisfactory. Mr. Atkins is no doubt willing, for he believes in his own invention, but if the reconstruction is successful on the promise of this new process, it will put new life in Palmarejo and be so much the better for its backer, Mr. Applegarth. The directors conclude by referring to the increased profit on the output during the last few months, and state that new discoveries may be confidently looked for.

Lower California.

A discovery of gold is reported made a few days ago in the old mining camp of Real del Castillo, on a little side hill going down to the San Nicolas, and lying on the same lead as that famous mine. The rock is said to go $30 per ton, and the ledge seems to be several feet wide and strongly defined. Several locations have been made in the same neighborhood.

The Accidente mine, in that camp, is showing up good quartz. The Zaragoza and Jacalitos districts, in the same mineral belt, are being prospected under the direction of San Francisco capitalists. One or two San Diego men are also interested.

Sonora.

During the first quarter of the current calendar year 3,010,154 lbs. of ore were exported from Sonora, via Nogales, for treatment in the American smelters.

Tamaulipas.

The exports of silver-lead ores during April, through the port of Tampico, amounted to $975,129.

NOVA SCOTIA.

Mr. J. J. Saltery, a mining engineer of Boston, has recently been examining some gold mines in the neighborhood of Musquodoboit Harbor, Nova Scotia, in the interests of New England capitalists. There are three mines in this neighborhood working. The mines are well laid out and efficiently managed, but each is separately owned and has to maintain a mill of its own. There are in all three 10-stamp mills, and the expert's opinion is that if an amalgamation of interests could be effected, one mill running night and day would handle all the ore, and make the concern a profitable investment for the owners.

There is just now in the Maritime Provinces a strong feeling of antagonism to the duty at present placed upon coal oil. The Canadian oil is inferior to that of Pennsylvania, and the industry is unfortunately so far situated from eastern Canada that any tax put upon American oil in Nova Scotia is looked upon as an injustice. Mr. Foster, in his proposed new tariff bill, has taken 1½c. off the gallon, making it now 6c.

The production and sales of coal for the quarter ending March 31st are reported as follows, in tons of 2,240 lbs.:

	Coal mined.	Coal sold.
Pictou County	91,080	75,280
Cumberland County	138,157	124,185
Cape Breton	95,773	30,493
Total	325,010	230,258

The total coal mined shows a decrease of 80,763 tons, or 19·9%, and the coal sold a decrease of 15,695 tons, or 6·8%, from the corresponding quarter of 1893.

SOUTH AFRICA.

Transvaal.

Crown Reef Gold Mining Company.—This company has declared an additional dividend of 25%, making 50% on the stock paid for the year.

SOUTH AUSTRALIA.

(From our Own Correspondent.)

ADELAIDE, March 15.

We are continuing to make progress in the search for gold in this colony. An increased amount of interest is manifested in the subject, and as the "unemployed question" is engrossing a large amount of attention, a suggestion from Sir John Downer has been acted upon, to send out a number of prospecting parties into known auriferous country. A number of wealthy and benevolent persons have subscribed funds sufficient to equip several parties of from 12 to 20 men and pay them wages for a limited time. The men are allowed to keep all the gold they get, and the small wages and short time for payment are supposed to act as deterrents from loafing, while the prospect of getting whatever gold they may find is an inducement for them to work with a will. The prospecting parties are under proper supervision, and the scheme seems about the best that has yet been tried. There is plenty of country where men can make "tucker" and the chances are that discoveries of something better may result. Fresh ground is being broken on the old diggings, in some cases with very satisfactory prospects. I paid a visit yesterday to the Mount Pleasant diggings, 35 miles east of Adelaide, where a good discovery has lately been made. About 18 years ago an alluvial deposit was worked for some time, and supported a good number of men. The reef recently found crosses the head of the alluvial gully, and is traceable for about half a mile in a north and south course underlying east.

The lode-stuff is peculiar, consisting of a reddish ironstone largely mixed with small flakes of mica. There is also some decomposed granitic or gneissic rock in which moderately fine particles of gold are thickly disseminated. The reef is not being worked in a very scientific manner; two or three small shafts or trial pits have been sunk, and in one place where very rich gangue was met with, a large, irregular kind of open trench has been cut. From this, at a depth from surface of about 12 ft., two men have got out an average for the week of 20 oz. of gold per day from the footwall side of the lode about 2 ft. in thickness. The lode is from 3 ft. to 3 ft. 6 in. wide. On one day 28 oz. was roughly "dollied" out from the friable gangue, and the smallest day's return was about 9 oz. The neighborhood for miles is highly auriferous, and at different times has yielded thousands of pounds' worth of gold.

Western Australia continues to produce rich gold in places, but the country is in a terrible state from want of water, which in some places sells for $1.25 per gallon!

SPAIN.

Rio Tinto Company, Limited.—At the annual meering in London, April 27th, Henry Doetsch was reelected a director, and William Buchanan Jardine was elected to the board to succeed John M. Macdonald. Messrs. Turquand, Youngs & Co. were re-elected auditors.

LATEST MINING NEWS.

On the Calumet mine, near Butte, Mont., work has been resumed with the intention of pushing development through the summer.

The United States Supreme Court has refused a rehearing in the Amy-Silversmith case, thus finally closing this celebrated Montana case.

The Pioneer Iron mine on the Vermilion Range in Minnesota resumed work this week with a considerable force, which is to be gradually increased till the mine is fully at work.

On the Golden Sunlight group of mines near Whiteball, Mont., about 30 men are now employed. The force will be increased, and a contract has been let for an Ingersoll-Sergeant air-compressor and six rock drills.

The Aurora mine on the Gogebic iron range near Ironwood, Mich., caught fire May 14th in some unexplained way. Some of the men were in danger, but all finally escaped. Up to the last accounts the extent of the damage to the mine had not been ascertained.

The Frisco mine in the Cœur d'Alene district in Idaho has lost portions of the flume which supplies it with water, 2,320 ft. in all having been carried away by slides. The mill has been started up, however, the damage to the flume having been repaired in a short time in spite of many difficulties.

The Boston & Montana Mining Company has declared a dividend of $1 per share, the first since the reconstruction of the works was begun three years ago. This resumption has been expected for some time, as the company has reported a surplus with its new plant in full operation. The dividend is payable June 28th.

The Colorado Company, whose plant at Butte, Mont., was destroyed last week by fire, has decided to build a temporary smelter without delay, repairing the damaged furnaces. It is thought in two weeks' time this company will be smelting ore again. Meantime the plans for the proposed new smelter will be perfected and it will be constructed around the old plant.

The men at the mines of the De Lamar Gold Mining Company in Idaho are on a strike, the company having reduced wages from $3.50 to $3 per day. The company has announced its determination to adhere to the reduction, claiming that it is absolutely necessary and that it only follows the course in all branches of trade. It is said that many of the old hands are willing to accept the cut, but are held back for the present by the Miners' Union.

The election of directors of the Colorado Mining-Stock Exchange, Denver, Colo., took place on April 28th. The following directors were elected: George O. Keeler, D. I. Ezekial, C. F. Schmidt, F. G. Pettingell, Colorado Springs; W. G. Doubleday, Colorado Springs; F. J. Medina, S. P. Keithly, Walter Dunning, F. R. Miller, J. M. O'Neill, C. W. Buck, L. F. Parsons, W. J. F. Kendrick. The Colorado Springs members of the Exchange sent a delegation to look after their interests and they succeeded in having their two representatives elected on the board.

The property of the Basic City Mining, Manufacturing and Land Company, of Basic City, Va., has been sold to a syndicate headed by E. F. Zinns, of Milwaukee, Wis. It is understood that Mr. Zinns and his associates assume the whole floating and bonded indebtedness of the Basic City Company and pay each assenting shareholder $5 per share for his stock. All the Basic City Company's lands and buildings are sold under the agreement, which has been ratified by 1,650 shares and a payment of $12,000 earnest money has been made. This syndicate has bought the Brandon Hotel. Mr. Zinns purchased some months ago the Bear ore beds, contiguous to Basic City.

The new converter plant of the Anaconda company in Montana was put in operation this week. It has a working capacity of 10,000,000 lbs. of pure copper per month. The structure is built entirely of iron. It stands 380 ft. long and 124 ft. wide, contains 24 converters, and gives employment to 124 men. It is equipped with all the latest improvements, including such new features as electric traveling cranes, hydraulic cylinders for blowing engines, and in fact everything that goes to make the finest plant, installed with the very newest inventions and improvements, that has ever been built. The foundations are all built of rock. The machinery also stands on solid masonry that has exceptionally deep foundations. The machinery was furnished by Fraser & Chalmers, of Chicago. The Berlin Iron Bridge Company had charge of the entire construction of the ironwork including girders, trusses, braces and outside covering. The plans for everything, including the machinery, were made by H. W. Hixon, of Anaconda, and J. A. Dyblie.

(From an Occasional Correspondent.)

Advices from Cripple Creek state that the time is close at hand when the mine owners will assert their rights. It is said that several hundred men are being put in training, every one of whom has had experience in the police force or as sheriffs; and all, as the saying is, have "smelt powder." These men are to be employed in the closed down mines of Cripple Creek to reopen them in the face of the strikers. The manager of one mine states that recently one of his men was cutting wood at $2 25 per day, and was notified, as was also his foreman, that they could not work at less than $3 per day or the mine would be closed. He also said that in one of his tunnels the ventilation was such that it took an hour for the smoke to clear from the breast of the tunnel after firing, and the men wished to lay off for this time, which he allowed them to do. The Union notified them that they must only be at the mine eight hours per day, and that they were not allowed to be laid off for ventilating, or the mine would be closed. Before many weeks there will be a crisis in the Cripple Creek region, and the mine owners will win. The terms of the strikers are unreasonable, being $3 for seven and a half hours' work—they call it eight hours, with one-half hour off for lunch. The mines of Cripple Creek are dry and shallow, with no lead; while in many of the old districts of the State the mines are wet, deep and more or less dangerous, some of them carrying lead, with the danger of lead poisoning, and at them the wages are $2.50 to $3 per day for 10 hours' work.

(From our Special Correspondent, May 14.)

There is no change in the zinc ore market over the previous weeks. Most of the ore buyers were in the market and ready to take almost everything offered at from $14 to $16 per ton, or an average of $15.50. The operators accepted the terms and heavy sales were made at Webb City and Carterville. It is a general belief that there will be no immediate advance in the price of zinc ore. The coal strike that is now on has already reached the mines at Nevada and Rich Hill, and should this continue some of the smelters will be compelled to close down. It was reported here Saturday that the Illinois Zinc Company located at Peru is now short on coal and if a change did not soon come that it would be compelled to close its works. Lead ore still remains firm at $18 per thousand, and the miners are all prospecting for it. Following are the sales of ore from the different camps: Joplin, 1,426,210 lbs. of zinc ore and 508,370 lead, value $20,200; Webb City, 401,090 lbs. zinc ore and 151,430 lead, value $5,554; Carterville, 1,349,160 lbs. of zinc ore and 263,280 lead, value $14,858; Zincite, 34,140 lbs. of zinc ore and 16,610 lead, value $574; Oronogo, 65,830 lbs. of lead, value $1,086; Alba, 84,000 lbs. of zinc ore, value $892; Galena, Kan., 1,144,000 lbs. of zinc ore and 233,570 lead, value $12,984. District's total value, $55,948. Newton County, 213,540 lbs. of zinc ore and 53,600 lead, value $2,460; Peoria, I. T., 33,340 lbs. of lead ore, value $600; Aurora, 756,000 lbs. of zinc ore and 205,100 lead, value $8,024; Springfield 42,000 lbs. zinc ore, value $336. Lead and zinc belt's total value $67,368. During the dull times caused by the general depression of this zinc mining industry, the operators have plenty of time to devise ways and means and lay plans for a systematic method of working their mines. In the future, it is believed that many of them will be able to produce ore at a less cost than heretofore. One of the operators said on Saturday, after settling up for a large sale of ore, that after he had paid the landowners' royalty of 20%, paid his miners and laborers and general mining expenses, he had nothing left in the way of a dividend. This operator has not less than $20,000 invested in his concentrating plant, hoisting machinery and improvements, and at the present price of ore is compelled to wear out his machinery, put in his time, and come out loser at the end of the month.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, May 18.

Statement of shipments of anthracite coal (approximated) for week ending May 12th, 1894, compared with the corresponding period last year:

	1894. Tons.	1893. Tons.	Difference.
Wyoming region	456,655	450,725	Inc. 5,930
Lehigh region	147,474	137,466	" 10,008
Schuylkill region	233,605	177,255	" 56,350
Totals	837,734	765,446	Inc. 72,288
Total for year to date.	11,655,540	14,700,359	Dec. 3,044,819

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending May 12th and year from January 1st:

Shipped East and North:	1894. Week.	1894. Year.	1893. Year.
Phila. & Erie R. R.	44	23,523	42,146
Cumberland, Md.	42,391	1,229,017	1,344,674
Barclay, Pa.	217	8,951	24,638
Broad Top, Pa.	548	122,059	274,306
Clearfield, Pa.	899	1,120,475	1,507,293
Allegheny, Pa.	312	472,381	473,550
Beech Creek, Pa.	†15,073	834,159	642,427
Pocahontas Flat Top	*65,221	857,172	1,004,557
Kanawha, W. Va.	184,575	878,408	1,098,596
Totals	209,280	5,546,145	6,412,187

* Week ending May 5th. † Estimated week ending April 30. ‡ Week ending April 30th.

Shipped West:	1894. Week.	1894. Year.	1893 Year.
Pittsburg, Pa.	10,880	472,805	458,821
Westmoreland, Pa.	6,492	501,472	732,745
Monongahela, Pa.	397	163,166	227,243
Totals	17,769	1,137,443	1,418,809
Grand totals.	227,019	6,683,588	7,830,996

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending May 12th, 1894, and year from January 1st, in tons of 2,000 lbs.: Week, 13,388 tons: year, 1,101,957 tons; to corresponding date in 1892, 2,067,547 tons.

Anthracite.

In its main features the anthracite coal trade shows but little change from last week. The market is quiet, no improvement in the demand having taken place. The bituminous coal strike has not as yet had a direct effect on the anthracite trade. Were the labor troubles ended to day it could truthfully be said that they had not affected anthracite at all. On the other hand, if the strike is prolonged even another week it will drive some bituminous consumers, notably the railroads, to the use of hard coal.

Egg and broken have been in slightly better demand. Pea and buckwheat are scarce, but no scarcer than they have been all along this year. Operators continue to assert that stocks are not accumulating, but if the entire tonnage is being disposed of the consumption must be greater than there is any reason to believe it is. The movement of anthracite is chiefly toward interior points, and consists of sales for daily consumption there.

There is some talk of an advance in prices to be announced after the next meeting of the sales agents. The agents of one of the largest producing companies said: "Officially I know nothing about the probable actions of the sales agents at the next meeting. Personally I believe that an advance, even if it is only on paper, will be decided upon, in order to stimulate trade. None of the companies is selling coal at present prices for delivery later than next month." The Reading company will not sell for delivery later than June 1st, and the other companies not later than June 30th, unless at "prices current at the time of delivery."

Sales agents assert that prices are being maintained and that whatever "cutting" there is, is of the kind which has never been absent from the trade and is, therefore, devoid of significance. On the other hand it is admitted that the advance will not bring bona fide higher prices. It is not the first time that inconsistency has been displayed by the sellers in the matter of prices. We do not believe that the condition of the trade justifies an advance, even if it has for an object the justifiable desire to stimulate business.

Buyers are not so eager to commence to lay in supplies yet. There is no fear of any scarcity or of inability on the part of the companies to handle a much greater tonnage when the proper time comes. And in regard to prices it is felt that consumers expect lower rates this year than last, but then anthracite producers have never been accused of paying much heed to the requests of the public for lower prices.

The production for the year up to date shows a decrease of about 3,000,000 tons as compared with the corresponding period of 1893. It has not been a good year with the anthracite coal trade so far, and, although business will doubtless improve later on, the second half of 1894 will scarcely be characterized by such an activity as to realize the hopes of the producers. It would be well to bear this in mind.

The Reading railroad reports that its coal shipment (estimated) for last week, ending May 12th, was 200,000 tons, of which 15,000 tons were sent to Port Richmond and 25,000 tons to New York waters.

The New York, Susquehanna & Western Railroad Company has completed its tunnel through Bergen Hill, opposite New York. This tunnel is 5,078 ft. long and has cost over $2,000,000; it will give the company access to its own shipping docks at Weehawken. Heretofore its coal shipments have been made from the Delaware, Lackawanna & Western docks at Hoboken.

The Bureau of Anthracite Coal Statistics makes the following statement of shipments for April and the four months to April 30th, from the returns furnished by the producers:

	April. 1893.	April. 1894.	Four months. 1893.	Four months. 1894.
Wyoming region	1,688,284	1,451,461	7,415,364	5,490,840
Lehigh region	606,199	499,666	2,061,498	1,736,904
Schuylkill region	990,176	815,179	3,723,277	3,087,932
Total	3,284,659	2,757,306	13,200,139	10,245,676

The decrease for the month was 527,353 tons, or 16% ; for the four months it was 2,954,463 tons, or 22·4%. The stock of coal at tidewater shipping points April 30th was 849,207 tons, showing a decrease of 85,156 tons during the month.

Bituminous.

There is very little, if any, change in the soft coal to market. The situation remains practically as we reported it in our last week's review of the trade, only that some of the features which we noted then have become rather more accentuated.

There is practically no market and prices are merely nominal. All producers are providing for customers as best they can from the stocks on hand and by means of outside help. Available cargoes in Southern ports have been taken up. English and Nova Scotia coal has been ordered by those sellers whose contracts had no "strike clause," and some anthracite coal is being used where possible. Soft coal is quoted all the way from $4 to $6 per ton. Consumers are becoming accustomed to the situation and are doing as best they can without their regular fuel. The railroads have seized all the coal on their lines and now have stocks on hand which, it is estimated, will last them about six weeks.

In the vessel market rates are weak, with an abundant supply of vessels. We quote ocean freight rates as follows from Philadelphia: To Boston, Salem, Portland, Portsmouth, Bath, Gardiner and Bangor, 60c.; Providence, New Bedford, New Haven, Bridgeport and Allyn's Point, 55c.; Wareham, 75c.; Lynn and Newburyport, 65@70c; Dover, $1 and towages; Saco, 75c. and towages.

The strike situation is but little changed. The only region not affected by it is the Pocahontas. In the George's Creek, only two mines are working, the Hoffman and the Eckhart. The Pocahontas region is working on full capacity. Over 60,000 tons of vessels are now waiting for coal to arrive. In the other regions the operators are simply waiting for the better judgment of the strikers to assert itself. In those regions where the men had no especial grievances, and struck at the instigation of outsiders the owners feel very bitter, and are contemplating the installation of more mining machinery, so that the number of men to be controlled in the future be decreased. Eastern operators are determined not to grant the men's demands. The margin of profit on the prices ruling previous to the strike was so made that an advance in wages would wipe it out. The strike does not hurt producers so very much after all, since they are protected by the convenient "strike clause," and besides, since all affected alike one cannot profit at the expense of another in the matter of getting new trade.

Considerable comment has been aroused by the action of the Berwind-White Coal Mining Company in ordering coal from Cardiff, Wales, and from Nova Scotia, in all about 25,000 tons. The company did this to protect its steamer trade, although only morally obliged to do so, since, despite the fact that those contracts contain no strike clause, it is not bound to supply something which cannot be had. Other concerns are to a lesser extent following the example set by the Berwind-White company. This coal costs about $5.50 in New York, but since they get only their contract price for it, it represents a loss of about $2.50 per ton. Not all the steamers, especially the big passenger and mail liners, can take enough coal in England to last them for the round trip.

NOTES OF THE WEEK.

A conference between the bituminous operators and the miners was held in Cleveland, O., this week. It opened on May 15th and adjourned on May 18th. There were present 195 miners and 150 operators. Illinois was not represented. The convention refused to receive the delegation from Pittsburg, which brought credentials stating that the operators would not be bound by action of the conference. The joint committee failed to reach an agreement. The operators presented a scale of wages, agreeing to pay Ohio miners 56c. a ton and those in Pennsylvania 65c. The men refused to accept the proposition, and the operators decided to make no further concession.

An emergency rate on coal to Chicago, of $2 per ton net, has been agreed upon by Western roads terminating in Duluth, Ashland and West Superior, to terminate May 31st next. This rate is made to enable companies having stocks on Lake Superior to supply the Chicago demand, thus averting a prospective coal famine.

Boston.

May 17.

(From our Special Correspondent.)

The coal markets of New England are still excited over the soft coal strike and the consequent shortage. This has been more noticeable this week than last, but only among the smaller manufacturers. The larger ones seem to have all the coal they need for a few weeks yet, and the same might be said of the railroads. It is safe to say that both have from three to six weeks' supply on hand.

What is likely to happen if the soft coal strike continues for any length of time is hard to guess, but we probably will hear of high prices. Pocahontas has been asking $4.50 per ton on cars here, but has not been able to sell much at that figure, as their regular contract customers have been clamoring for coal since the labor troubles commenced. The only way outside lots are obtainable is to split cargoes.

In hard coal the effect of the strike has been only lightly felt so far. Some of the anthracite coal companies have tried to force chestnut and have offered it at $3.50 per ton, or 25c. off circular price.

Their efforts as yet have been futile, as the trade does not take kindly to the size or price. If in the near future companies run out of soft coal, they may be compelled to resort to chestnut, anthracite or almost anything else. One thing is quite certain, the consumers of this district will stick to bituminous as long as there is any in sight, even though prices be high. Freight rates are somewhat easier than they were a week ago, but without quotable change. Retail trade is but moderate.

On May 5th 33 members of the Boston Coal Club left on the steamer "Gloucester" for Norfolk, Va. From here the party went to Newport News, where the shipyard and docks were visited, and also took a trip over to Old Point Comfort to see Fortress Monroe. Upon returning to Newport News a banquet was given them by the Chesapeake & Ohio Railroad, and on the following day the party started in a special car for Richmond. Arriving there, the various points of interest were visited. Washington was the next stopping place, and from there the party went to Baltimore, where they were given a warm reception by the Coal Trade Association of that city. The trip concluded with a brief visit to Philadelphia and New York, the party arriving in Boston on Saturday. Those who participated in the trip thoroughly enjoyed the outing and the kind reception accorded them everywhere. Among the party were the following: H. G. Jordan, P. W. Sprague, Frederick Parker, A. C. Betteley, E. C. Packard, B. F. Dodge, Frank Jeffries, J. O. Wiley, C. F. Grant, C. D. Jordan, J. E. A. Millikin, S. E. Buck, H. A. Frost, H. W. Pike, J. A. Bradford, E. A. Remmick, C. H. Converse, Lott Clark, N. E. Fitz, N. F. Tufts, J. H. Tighe, Cyrus Patch, C. M. Freddick, A. E. Dennis, G. E. Phillips, D. Proudfoot, Arthur Gay, F. W. Easterbrook, A. Eaton, F. T. Barron, E. E. Piper, A. W. Johnson, E. H. Baker.

Buffalo.

May 17.

(From our Special Correspondent.)

Trade in anthracite coal may be reported as brisk, for the reasons that the low price has induced housekeepers to begin to lay in their next winter's stocks; that anthracite is being substituted for bituminous by many small factories, and a feeling among consumers that quotations may be advanced on or about June 1st. The movement of anthracite by lake seems to be improving in volume, and indications are that increased shipments may be the rule before many days are over.

Bituminous Coal is almost exhausted at this port. Prices of what little is sold keep high. Factories and others are pleased to get it at any figures rather than go to the expense of changing their grates, etc. The result of the conference of miners and operators now in session at Cleveland is anxiously looked for. The shipments of coal from Buffalo by lake from May 6th to 12th, both days inclusive, aggregated 47,260 net tons, distributed as follows: 28,210 tons to Chicago, 6,800 to Milwaukee, 7,350 to Superior, 900 to Sault Ste. Marie, 1,000 to Racine, 1,000 to Manitowoc, 700 to Detroit, 1,000 to Gladstone and 300 to Hamilton, Can. The rates of freight were: 35c. to Chicago and Milwaukee, 15c. to Lake Superior ports, 25c. to Toledo and Detroit, 35c. to Racine, Sault Ste. Marie and Manitowoc. Closing to-day steady, with fair activity.

June 30th is the date fixed for the completion of the Canadian Sault Ste. Marie Canal. The first stone was laid September 15th, 1892. The lock is to be 900 by 60 ft.; depth of water, 20 ft. 3 in.

The returns of the traffic through the Sault Ste. Marie Canal during April included 27,328 net tons of anthracite and 31,052 net tons of bituminous coal.

The Canadian Government is firm in opposing the deepening of the canals of the Dominion so as to allow vessels drawing 20 ft. of water to pass through them. To complete the proposed work between Montreal and Lake Ontario it would cost over $60,000,000, and then it would be necessary to deepen every harbor from Kingston to the Welland Canal to the same depth!

Wood and oil are being used by some of the railroad companies as a partial substitute for soft coal, so as to reduce the consumption of their stock of bituminous fuel.

The Ohio Coal Company's dock at Duluth is being lengthened 300 ft.; it is now 1,500 ft. long.

There is a fair amount of anthracite coal being sold at all lake ports and at interior points to supply the temporary wants of consumers of bituminous.

Chicago.

May 16.

(From our Special Correspondent.)

Anthracite coal in Chicago is not in as great demand as predictions would have made it by this time on account of the soft coal scarcity. Dealers are well supplied, and, in fact, a number wish they had less of it. Hard coal can be bought in any quantity at $5 for grate and $5.25 for egg, stove and chestnut.

Bituminous.—Chicago, like the rest of the country, has its eyes on the Cleveland conference, and the outcome is looked forward to with much interest. The supply of soft coal here remains fairly good, and dealers are apparently finding enough to supply customers, though in limited quantities. We have three sources of supply as yet, the West Virginia, the coal from the docks, and the much-abused Kentucky coal.

The latter has not been much of a factor in the market, but since the strike it has been much sought after. The supply of coal on the docks is yet quite large, but that will soon disappear should the strike be prolonged. Railroads have yet a good supply, one of them having so much on hand that it has sold considerable during the week. Prices are weaker and soft coal can be had for from 35 to 50c. lower per ton, which is in itself a sign that there is no real scarcity in Chicago.

Coke from the Connellsville region is a rarity here. The source of supply now being from the West Virginia ovens, and that is in limited quantities. Price on the West Virginia coke is $5.

The Newell Coal Company of Chicago and Peoria, Ill., has increased its capital stock to $100,000. The company now has offices in the Ellsworth Building, Chicago, and the Woolver Building, Peoria. It is the general sales agent of the Lost Run, Hocking and other coals. The officers are F. B. Newell, president and general manager, R. S. Jones, acting secretary, and R. A. Culter, treasurer.

Pittsburg. May 17.

(From our Special Correspondent.)

Coal.—At this writing we are all in the dark as regards the outcome of the Cleveland Convention. There is one thing you can rely on—the scale as presented will never be signed by the Monongahela coal men, and other points are equally determined.

A dispatch from Brazil, Ind., says: Block coal operators will never submit to McBryde. At a meeting held it was informally decided that under no circumstances would they submit to any scale except what they themselves arranged with their own men, and if this cannot be done, they agree to close the mines for two years. The coal proprietors of the Monongahela are in a good shape for a long strike. The markets from Cincinnati to New Orleans have the largest stocks on hand they ever had. The longer the strike the better for them. They decline to let President McBryde manage their business. The Ohio River is down to low water mark; but we may have a June rise, though possibly there will be no rise till fall. Coal is better in the banks than in boats unless there is water to send it away. Matters at present are considerably mixed.

Connellsville Coke.—To obtain anything like a correct idea of what is going on in the coke regions it is natural to read the reports from different places and strike a balance. A Connellsville correspondent says, "The strikers are slowly but surely tightening sheir grip on the coke region." Another says: "While the operators are taking the strike coolly, and awaiting developments, the strikers cannot view the fight so calmly. They are in bad shape, and every day the strike lasts the gloomier it looks for them." Possibly both reports should be discounted somewhat; the victory, whichever way it may go, may not be so near at hand for either side as both represent—the struggle may be protracted for weeks. The O'Neil Coal Company has placed three machines in its Fayette City mine. They are run by compressed air and, according to the superintendent, will not take the place of the regular men being used to mine coal in places where it is too dangerous for the men to work. At present it seems out of the question to get anything like a correct account of the business of the region; it seems to be all guesswork.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, May 18, 1894.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending May 12, 1893.		Week ending May 11, 1894.		From Jan., '93.	From Jan., '94.
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	69	33,450	34	17,430	665,267	318,979
Coke.....	147	142,230	71	85,670	2,897,537	1,831,876
Charcoal...	37	8,580	19	4,235	185,085	79,698
Totals....	253	184,260	124	107,335	3,547,889	2,230,563

Pig Iron.—The coal and coke strike has affected the iron market here to the extent of driving some consumers to the use of anthracite again. The demand, or rather the lack of it, has not been effected. Supplies of foundry irons are abundant and prices are unchanged. Bessemer pig is scarcer and higher, but that is a grade which does not come into this market much. Some of the soft grades of Southern irons are scarcer and spot lots are hard to obtain. More Southern furnaces are banked or blown out, and they have been unable to fill some orders for prompt delivery. Consumers here have been buying from hand-to-mouth for many months back; they do not order until their stocks are nearly exhausted, and when they do need iron they want it for immediate delivery.

It was reported in the trade that the Thomas Iron Company has made a reduction in the price of its iron to $12.50 for No. 1 X, $11.50 for No. 2 X, and $11 for No. 2 plain. Mr. W. R. Thomas said to a representative of the "Engineering and Mining Journal": "We have made no public reduction. Our quotable price remains at $13 and $12 for No. 1 X and 2 X, respectively." Quotations at tidewater are as follows: Northern brands, No 1, $12 50@$13; No. 2, $11.50@$12.50; gray forge, $10.50@$11. Southern irons, No. 1, $12@$13, No. 2, $11@$11.50; No. 1 soft F., $11@$11.50; No. 2 soft F., $10 50@$11.25. Scotch irons are quoted: Coltness, $21.50@$22; Eglinton, $19.50@$20; Summerlee, $20.50@$21.50.

Billets and Rods.—Little business is reported in billets and rods. Prices are firmer owing to the coke strike. Quotations this week are: Domestic billets $18@$18 50; wire rods, domestic, $27@$27.50; foreign rods, $39@$40.

Manufactured Iron and Steel.—Sales this week have been few and small. Prices are unchanged, and we quote: Angles, 1·20@1·40; axles, scrap, 1·40@1·60c. delivered; steel, 1·40@1·55c.; bars, common, 1·15@1·30c.; refined, 1·25@1·40c. on dock; beams, up to 15 in., 1·35@1·50c; channels, 1·35@1·50c. on dock; steel hoops, 1·45@1·75c., delivered; links and pins, 1·40@1·65c.; plates, flange, 1·60c.@1·80c.; fire-box, 1·80@2·10c; marine, 2·45@2·70c.; sheared, 1·80c.; shell, 1·40@1·60c.; tank, 1·25@1·35c.; universal mill, 1·20@1·50c.; tees, 1·40@1 60c., all on dock.

Merchant Steel.—Very little business reported in this market. Quotations continue as follows: Tool steel, 5·75@6 25c.; tire steel, 1·60@1·75c.; toe calk, 1·70@1·90c.; Bessemer machinery, 1·25@1·50c.; open hearth machinery, 1·90@2c.; open hearth carriage spring, 1·90@2c.; crucible spring, 3·50@3·75c.

Old Material.—A slight inquiry is reported for old material. A few sales have been made at unchanged prices. We quote nominally as follows: Old steel rails, $9@$9.75; old iron tees, $10.50@$11.50 per ton New York railroad scrap, $11.50@$12 per ton delivered at mill, and yard scrap at $10; wrought turnings, delivered at mill, $8 50@$9; No. 1 wrought scrap at $9.50@$10.50 from yard, and machinery cast scrap $9@$10; old wrought tubes and pipe, $6.50@$7; old car wheel, $9.50@$10.50 New York; cast borings, $6@$6.50 delivered at mill.

Rail Fastenings.—The market for track material continues exceedingly dull. Quotations are as follows: Fish and angle plates, 1·25@1·35c. at mill; spikes, 1·60@1·90c.; bolts and square nuts, 2@2·25c.; hexagonal nuts, 2·20@2·40c., delivered.

Spiegeleisen and Ferromanganese.—There is very little demand for either spiegel or ferro. Quotations remain nominally: Spiegeleisen, 10@12%, $21@$22; 20% $25@$26. Ferromanganese, $51.50@$53.

Steel Rails.—A few orders for standard sections have been placed during the week. Prices remain $24 at mill or $24 80 tidewater.

Chicago. May 16.

(From our Special Correspondent.)

The iron market for Chicago shows a fairly good business, despite the fact that conditions are looking so unfavorable. The coal and coke strikes have not, as yet, reduced production to any extent, although we hear each day now of concerns closing down for want of fuel. Prices have not increased, excepting billets, which are now selling at $18.50@$19, and the latter quotation will undoubtedly rule within a week. It cannot be said that the outlook here is encouraging, as many view the labor strikes throughout the country with pessimistic eyes, and in consequence prefer to await developments before coming into the market to any extent.

Pig Iron.—Pig iron sales for the week have been numerous, though all are for small lots. Northern iron greatly surpassed Southern in tonnage, because many Southern furnaces are shut down. Bessemer iron is meeting a considerable call here, and the price has advanced from 50 cents to one dollar. But one furnace in this region has closed down from want of coke, that being the Iroquois of South Chicago, and it has merely banked the fires, expecting to start up again this or next week. Prices are, per gross ton f. o. b. Chicago: Southern coke, foundry No. 1, $11@$11.25; No. 2, $10.25@$10.50; No. 3, $9.75@$10.00; Southern coke foundry soft, No. 1, $10.25@$10.50; No. 2, $9.75@$10.00; Southern car-wheel, $17.50@$18; Tennessee charcoal No. 1, $15@$15.50; Southern silveries No. 1, $11.75@$12; No. 2, $11@$11.50; Bessemer, $12.50@$13; Ohio Scotch softeners No. 1, $12 75@$13.50; Lake Superior charcoal, $15@$15.50; Lake Superior coke No. 1, $11.50@$11.75; No. 2, $10.50@10.75; No. 3, $10.00@$10.25; Jackson County silveries, $14.50@$15.

Structural Iron and Steel.—Structural material remains quiet, with but few sales of any class observed. Quotations are, f. o. b. Chicago: Angles, 1·35@1·45c.; tees, 1·55@1·65c.; universal plates, 1·35@1·45c.; beams and channels, 1·35@1 45c.

Plates.—Demand for plates during the week has been small. Prices have increased a trifle. Flange steel is quoted at 1·70@1·80c.; best firebox steel, 3·75@4·25c.; tank steel, 1·35@1·45c.; boiler tubes, 75% discount for larger.

Merchant Steel.—Tool steel has had about all the call for the week and are chiefly for small lots. Quotations are, carload lots: Smooth finished machinery, 1·80@1·90c.; tire steel, 1·70@1·80c.; ordinary Bessemer bars, 1·40@1·50c.; toe calks, 2·05@2·15c.; special brand tool steel, 12@20c., crucible spring, 3·40@3·65c.; tool steel 6½c. and upward.

Galvanized Sheet Iron.—Market remains quiet, with no signs of improvent. Quotations are 75, 10 and 5% on mill shipments and 75% discount on jobbing quantities.

Black Sheet Iron.—There is a noticeable increase in the mount of inquiries, but so far they have not led to much business. Buyers are asking prices for deliveries running through July, August and September, but the mills are not liable to contract ahead until freight rates are settled. Prices are f. o. b. Chicago, No. 27, 2·40c., and No. 27 sheet steel, 2·50c.

Bar Iron.—There is no change in the situation over last report. Sales are very limited. Prices are f. o. b. Chicago, bar iron 1·15c., and soft steel bars 1·25c.

Billets.—A few sales of billets are noted at $18.50. It is expected that within a short time they will bring $19 and over. An official of the Steel company here states that the company will have a sufficient amount of work to carry them through the remainder of the year.

Steel Rails.—Orders continue to come in for rails in quantities of a few hundred to a thousand tons, no sale larger than the latter figure being made. Quotations $25@$27.

Nails.—Wire nails continue in good demand and steel cut have not fallen off any. Prices are per keg, $1.05@$1.15.

Old Rails and Wheels.—A couple of good sized sales of old iron rails are observed at $10@$10.25. Old wheels are quiet at $10@$10 50.

Scrap.—Business remains dull, sales being but few and for small quantities. Prices are: Forge, $8.50@$9. Cast borings, $3.50@$4; wrought turnings, $4.50@$5; axle turnings, $6@$6.50; mixed steel, $5@$5.50; tires, $12.50@$13; iron axles, $13@$14.

Philadelphia. May 18.

(From our Special Correspondent.)

Pig Iron.—To-day's telegrams from Cleveland have given genuine concern to the iron and steel makers and buyers in this market. All cut quotations for pig iron are withdrawn. Bessemer made a sharp advance to $14.50, and by to-morrow will be quoted higher, but deliveries cannot be had at any price. No. 1 foundry is dull at $12.50@$13; No. 2 at $10.75@$11.75; forge, $10.50. No activity. Production is falling off and opinions are all at sea regarding the immediate future.

Steel Billets.—Early delivery quotations are all withdrawn. The market to-day is $20.50 but this means nothing as billets cannot be had.

Merchant Iron.—Prices are hardening. To-day's prices are fully one-tenth over last week's. Mills are busy. Large orders are not solicited. The fuel question controls. Manufacturers propose to make another advance next week. To-day's quotations 1·30@1·40 refined.

Skelp.—Skelp in large quantities is still quoted at April prices, but small lots for early delivery are held at 1·30 for grooved. Large requirements are in sight and mill men are very uneasy over the situation.

Wrought Iron Pipe.—An advance has been made amounting to 10%, and another is likely to follow. Considerable new business is offered, but mill owners are not in a position to give dates of delivery.

Sheet Iron.—The sheet makers report anxiety among users of sheet, especially of galvanized for supplies. Scarcely any consumers have stock on hand. Prices are firm.

Plate and Tank.—It is uncertain whether manufacturers will be able to make certain June deliveries. There is a good deal of work in progress depending on supplies from mills as the material was needed. New orders are to be had, but owing to the fuel question manufacturers are moving very slowly.

Structural Material.—The danger of suspension at mills has been the reason for some buyers hastening into market this week with orders for early delivery. Manufacturers are accepting business prudently and under conditions. Prices have not been advanced, but are perceptibly firmer.

Steel Rails.—Business is in sight for girder rails and manufacturers say large orders will soon be placed. Standard sections, $24.

Old Rails.—There is no sale at present.

The fuel question enters into every branch of the iron trade. Manufacturers are now only beginning to realize the possibilities of a serious condition of things.

Pittsburg. May 17.

(From our Special Correspondent.)

Raw Iron and Steel.—The market since the first of May has been very active. Spot and this month's delivery of Bessemer pig and steel billets were much fancied and readily taken at the highest prices that have ruled for many months. Stocks at furnaces and in first hands are known to be very light. Parties who a short time ago purchased for purely speculative purposes can now sell out at a good profit. We are all in the dark in regard to how long the coal and coke strike will continue, but the strikers are showing signs of weakening at certain points. Many of them say if they are protected they will resume work. Some of the plants

report an increase in the number of men at work. The Mahoning and Shenango valley furnaces are all said to be banked, and will so remain until there is an assurance that they can secure a sufficient amount of fuel to keep them steadily employed.

At present uncertainty continues to be the prevailing feature of the local as well as the general market. At the increased price of Bessemer pig and billets, only a limited business has been done owing to the light stocks to operate with. Buyers have ample faith in prices being maintained and are still on the market for liberal amounts.

The advance in freight rates from Pittsburg is announced to go into effect in the middle of June; this will restrict the competition of the Western plants and thereby indirectly contribute toward the improvement in the eastern part of the State. Steel rail market is steady and still quoted at $24 cash. There is a considerable amount waiting shipment by water in the first rise. Finished iron and steel demand increasing, with sufficient orders booked to last for some time. Stocks of pig-iron at the coke furnaces April 1st, 491,000 tons; May 1st, 448,000 tons; deficiency, 43,000 tons.

Coke Smelted Lake and Native Ore.

Tons.	Cash.
10,000 Bessemer, June, July, August	$11.60
3,000 Bessemer, prompt	$12.60
3,000 Bessemer, June, July	11.75
2,500 Bessemer, prompt	12.50
2,000 Bessemer, spot	13.00
1,500 Bessemer, spot	13.00
1,000 Bessemer, prompt	13.00
800 Bessemer, prompt	13.00
750 Bessemer, prompt	12.90
500 Bessemer, prompt	13.10
1,000 No. 1 Foundry, May, June	11.50
500 Gray Forge	9.50
500 Gray Forge	9 50
250 No. 2 Foundry	10.75
100 No. 3 Foundry	9.75
100 No. 2 Foundry	10.75
100 Bessemer	13.00
100 No. 1 Foundry	12.00

Charcoal.

100 Cold Blast	24.00
100 No. 2 Foundry	16.00
100 Cold Blast	23.50
50 Cold Blast, Extra	27.60
50 No. 1 Foundry	17.00

Blooms, Billets and Slabs.

5,000 Billets, June, July, Aug., at mill	18.00
3,500 Billets, June, July, at mill	17.75
3,000 Billets, June, July, Aug., at mill	17.60
1,000 Billets, prompt, at mill	19 00
1,000 Billets, spot, at mill	18.25
500 Billets, spot, at mill	19.00
250 Billets, spot, at mill	18.00

Skelp Iron.

500 Nar. gr'ved	1.25 4 m.
440 Wide gr'ved	1.25 4 m.
360 Sheared	1.40 4 m.

Skelp Steel.

600 Nar'w gr'v'd	1.10 4 m.
500 Wide gr'ved	1.10 4 m.
380 Sheared	1.25 4 m.

Muck Bar.

250 Neutral delivered..20.00

Spelter.

150 Per 100 lbs.....3.37½

Ferro-Manganese.

175 80% delivered.....53.40

Blooms, Billets, Bar Ends.

1,000 Billets and Bar Ends.....11.06

Steel Wire Rods.

380 5 gauge American..24.60

Old Rails.

400 Steel rails, mixed lenghts	9 75
300 Steel rails	9.00
250 Iron rails	11.50
150 Iron rails	12.00

Scrap Iron.

350 Wrought iron, net	9.00
200 Cast scrap, gross	4.50
150 O. car wheels, gross	9.00
100 Cast scrap, gross	8.00

METAL MARKET.

NEW YORK, Friday Evening, May 18, 1894.

Prices of Silver per Ounce Troy.

May.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.	May.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1
12	4.88½	28⅜	62¾	.485	16	4.88⅛	28⅝	61½	.476
14	4.88½	Hol'd	62¾	.485	17	4.88⅛	28⅛	61⅛	.473
15	4.88½	28⅛	62¼	.482	18	4.88⅛	28⅛	61⅛	.475

We find no material change in the statistical position of silver. The smelting companies have not stimulated their output, and there is no great disposition to place futures. The demand for the past week has not been so keen for the reason that the orders have been more moderate and have not been concentrated in any particular quarter. India, China and Japan have been limited buyers.

The United States Assay Office at New York reports the total receipts of silver for the week to be 97,000 oz.

Gold and Silver Exports and Imports at New York, Week Ending May 12th, 1894, and for Years from January 1st, 1894, 1893, 1892

	Gold.		Silver.		Excess of Ex. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	$6,585,360	$1,351,803	$768,667	$50,718	E $5,951,446
1894	27,900,664	6,872,139	14,809,546	564,715	E 35,273,356
1893	52,246,666	5,630,499	11,325,632	973,273	E 56,968,466
1892	23,532,893	6,017,839	9,106,081	521,384	E 26,099,751

Of the gold exported for the week $706,860 went to Havana, the balance to Europe, chiefly on German orders; the silver went to London. Most of the gold imported was French, Spanish and English coin in transit to the West Indies; the silver came from South America.

During the five days ending May 17th the exports and imports of gold and silver were as follows: Exports, gold, $4,614,950; silver, $589,049. Imports, gold, $941,855; silver, $28,161. Of the gold exported $100,000 was in Spanish coin and went to the West Indies; $639,950 was French coin, $636,950 of which went to the West Indies, and $3,000 to South America. The remainder, $3,875,000, was in American coin, $125,000 of which went to South America, $2,500,000 to London and $1,250,900 to Germany. Of the silver exported $57,131 was Mexican, $3,000 of which went to Germany, $9,381 to France and $29,000 to London. All the rest was in American coin and bullion, and went to London.

The United States exports and imports of gold and silver in April are reported by the Bureau of Statistics, Treasury Department, as follows:

	Gold.		Silver.	
	1893.	1894.	1893.	1894.
Exports.	$19,148,964	$11,723,771	$2,332,896	$4,096,211
Imports.	803,985	2,317,786	906,107	606,258
Excess.	E $18,344,979	E. $9,405,985	E. $1,426,789	E. $3,489,953

The exports and imports for the ten months of the fiscal year from July 1st to April 30th were as follows:

	Gold.		Silver.	
	1893.	1894.	1893.	1894.
Exports.	$89,055,301	$26,291,040	$33,655,435	$43,299,812
Imports.	18,456,142	67,259,153	19,834,910	11,735,282
Excess.	E $70,599,159	I. $40,968,113	E. $13,820,525	E. $31 564,530

The changes in April have been marked and important.

NOTES OF THE WEEK.

For the current week, as for the last, the main features of the situation are the labor troubles and the delay in tariff legislation. As to the last it may be said that while the debate in the Senate drags along slowly, still there seems to be a disposition growing in strength in the majority to force some action. There is also, however, a prospect of a struggle between the House and the Senate over the numerous amendments made to the tariff bill in the latter body. Meantime the business community generally continues to suffer and to hope for action, and is trying to impress the necessity of doing their duty and foregoing "boodle" upon our legislators with some hope of success.

The most prominent feature of the labor troubles at present is the strike of the bituminous coal miners, which is more fully referred to in another column. The effort made to settle this by a general conference does not at present seem likely to be successful. The conditions are not favorable to the miners, but they are not yet disposed to give way. So far the railroads are the chief sufferers, but a continuance of the strike may result in serious embarrassment to manufacturers; it has already forced a considerable reduction in the output of iron and steel.

"The strike is the final development of the panic," says a distinguished French economist. The readjustment of wages following a general depression of industry like that through which we have just passed involves much friction, and the settlement is generally the last obstacle in the way of returning prosperity. The present troubles seem to be no exception to the rule.

The gold shipments from New York by the mid-week steamers amounted to $3,250,000, a large part of them for German account. Substantially, all of this gold was taken from the Sub-treasury in exchange for legal tenders. So far $3,050,000 additional has been taken for Saturday's steamers, bringing the total for the week up to $6,300,000. The shipments are of the same nature as those recorded last week, being transfers from the great surplus collected in our banks to European markets, where there is a little better demand for money, and these transfers are made largely by shipping gold, because exchange continues at a rate high enough to leave a small margin of profit on the shipments. Why this margin should exist is discussed in our editorial columns.

The statement of the New York banks for the week ending May 12th shows increases of $2,323,100 in loans, $368,800 in specie and $431,100 in deposits; decreases of $2,173,575 in surplus, $2,434,660 in legal tenders and $42,700 in circulation. The total reserve was $225,415,900, being $80,634,575 above the legal requirement. The changes for the week may be taken to show some increase in the demand for money and a slight check in the receipts from interior points, the banks at those points apparently beginning to find more use for their funds at home. The increase in specie shows that the gold exported in the past few weeks has not been taken directly from the banks to any considerable extent.

A comparison with the statements for ten years back shows that the total amount of deposits is the largest ever reported; it is $144,259,400 greater than for the corresponding week last year and $48,388,600 above 1892. The loans and discounts were greater in amount by $44,657,500 than those of the corresponding week in 1893, though $24,568,600 less than in 1892. The amounts of specie and legal tenders held compare as follows for three years:

	1892.	1893.	1894.
Specie	$99,105,700	$70,802,900	$100,450,900
Legal tenders	49,350,600	55,708,600	124,965,000
Total	$148,456,300	$126,511,500	$225,415,900

The legal tender holdings reached their highest point—$127,414,100—in the week ending April 28th this year. The specie holdings are the largest reported for any week this year, and in ten years past the amount has been exceeded only once, in 1885.

The statement of the United States Treasury on Thursday, May 17th, showed balances in excess of outstanding certificates amounting to $122,738,825, made up as follows: Gold $89,536,788; silver, $11,887,507; legal tenders, $9,947,110; treasury notes, etc., $11,337,490. Changes during the week were decreases of $3,415,085 in the total balance and of $4,666,293 in the gold balance.

The Bank of England on Thursday, May 17th, reported its gold holdings at £33,009,900, an increase of £9,546,998 over the corresponding date last year. The Bank's surplus continues to accumulate, its proportion of reserve to liabilities this week being 65·96%, a higher point than has been reached for many years.

The Bank of France on Thursday, May 17th, held specie and bullion amounting, in sterling, to £70,594,444 gold and £50,914,043 silver, an increase of £2,106,267 gold and a decrease of £418,546 silver as compared with the corresponding date last year.

The Imperial Bank of Germany reports its specie and bullion holdings on Thursday, May 17th, at £44,485,000, an increase of £952,000 over the corresponding date last year. Gold and silver are not reported separately.

The Bank of Russia reports its specie holdings on April 16th-28th at $281,545,000 gold and $28,205,000 silver, a total of $299,750,000.

In the week ending May 5th the largest sales of India Council bills yet noted this year were made. The amount offered was 60 lakhs of rupees, which was all taken, and 23 lakhs additional were also taken. The price, however, was low, in spite of the demand, being 13 7/16d. per rupee, a decline of 1/16d. from the preceding week. The Indian banks have lowered the discount rate to 7 and 8%, though money still remains scarce owing to the amounts locked up in the local treasuries.

Exports of silver from London to the East up to May 3d are given by Messrs. Pixley & Abell's circular as follows:

	1893.	1894.	Changes.
India	£2,509,780	£2,120,735	D. £389,045
China	141,203	1,284,873	I. 1,143,670
The Straits	790,640	359,600	D. 451,040
Totals	£3,441,623	£3,745,208	I. £303,585

Shipments for the week ending May 3d were £72,400 to India, £161,172 to China and £62,000 to Japan, a total of £295,572. The receipts for the week were £201,000, of which £3,000 came from Australia, £17,000 from the West Indies and £181,000 from New York.

The Austrian Reichsrath has voted the retirement of 200,000,000 florins of notes and silver coins, in exchange for an equal sum of gold crown pieces. This action is in pursuance of the plan of currency reform voted two years ago. The Currency Commission now reports that the Austrian and Hungarian governments have together a stock of 406,000,000 florins in gold, and that the retirement of the notes and silver coin can be carried out as soon as the gold on hand can be coined. No silver coin larger than the one florin piece will be left in circulation.

It has been officially announced that from July 21st Italian small silver, that is to say, pieces of from 20 centimes to 2 fr., will cease to be current in France, and that in the meantime they may be exchanged or will be received in payment at the treasury and offices of receivers of taxes. The amount held in France is estimated at 85,000,000 fr. ($17,000,000), but the withdrawal of that sum from circulation is not expected to cause inconvenience, as the Bank of France has a reserve of a large quantity of French small coin to put in circulation as the Italian is withdrawn. France has, besides, not coined small silver to the limit of her contingent of 6 fr. per head of the population, as fixed by the monetary convention of the Latin Union. She still has a margin of 16,000,000 to 12,000,000 fr., and the Minister of Finance may take advantage of the opportunity to complete the sum and realize a profit, the small silver being only 0·835 fine.

In the seven months ending January 31st the imports of India included 2,100,200 rupees gold and 8,902,200 rupees silver. The exports included 926,900 rupees gold and 1,077,200 rupees silver. Merchandise exports this year showed a small decrease, and im-

ports a large increase. Last year the value of the exports of all kinds during the seven months exceeded that of imports by about 14,100,000 rupees, whereas in the seven months ending January last the excess was only 1,400,000 rupees. And as it is with the excess of her imports that India pays her foreign obligations, the significance of this change is sufficiently obvious.

Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars	$.51½	$.52½
Peruvian soles and Chilean pesos	.50½	.52½
Victoria sovereigns	4.87	4.89
Twenty francs	3.88	3.92
Twenty marks	4.78	4.82
Spanish 25 pesetas	4.82	4.98

Other Metals.

Copper.—We have again to report heavy transactions in copper, both for lake and electrolytic, but at somewhat lower prices. The action of the directors of the Tamarack company in declaring a dividend of $4, and the Boston & Montana a dividend of $1, has created quite a good impression, but this has again been partly offset by lower values in London, where the lowest prices are again recorded for G.M.B's, viz.: £39 2s. 6d. for spot and £39 10s. for three months. We understand that fine copper is being pressed for sale and is obtainable rather cheap. This of course reacts on our market here, where consumers are acting with great caution, and will only continue to buy if slight concessions are made them. At the same time manufacturers have of late received heavy orders, and the demand for conductivity copper wire is better than it has been for some time past. A few sales of lake copper have been made at 9⅝c., but somewhat lower prices are now being talked of. Electrolytic copper is still regular, and must again be quoted at 9@9⅛c.; casting copper at 8·80@8·85c. Exports of copper have recently fallen off considerably, and our cable reports that the statistics in England for the first half of the month show a decrease of 500 tons. We quote: English Tough, £41 5s.@£41 10s.; Best Selected, £42 5s.@£42 10s.; Strong Sheets, £51@£51 5s.; India Sheets, £47 10s.@£47 15s.; Yellow Metal, 4¼d.

The following figures give the production (in tons of 2,240 lbs.) of copper in the United States, and also by the chief foreign mines, and the exports from the United States for April and the four months ending April 30th:

Production, fine copper, long tons:	April.	Four mos.
Reporting mines in the United States	12,475	47,311
Pyrites and outside sources, United States.	1,340	5,360
Reporting foreign mines	7,385	29,669
Total production, long tons	21,200	82,340
Exports from United States, fine copper	6,209	26,653

Production is well maintained, but exports fell off a little in April, being below March and the average for the year thus far.

The exports of copper from the Port of New York during the week ending May 18th, as reported by the New York Metal Exchange, were as follows:

Copper.			
Hamburg—Scandia	Pigs	25	tons
" "	Plates	10	"
Liverpool—Britannic	Pigs	100	"
" "	Ingots	51	"
London—Queen	Pigs	50	"
St. Petersburg—Buffalo	Ingots	165	"
" "	Cakes	73	"
" "	Bars	25	"
Swansea—Jersey City	Pigs	50	"
" "	Bars	200	"
Liverpool—Alaska	Pigs	200	"
Holland—Amsterdam	Ingots	61	"
" "	Plates	52	"
" "	Pigs	50	"
Hamburg—Bohemia	Ingots	30	tons
" "	Bars	10	"
" "	Plates	20	"
" Amalfi	Ingots	18	"
" "	Plates	15	"
Havre—La Champagne	Plates	50	"
London—Mohawk	Ingots	2	"
Liverpool—Umbria	Pigs	50	"
Matte.			
Hamburg—Scandia		73	tons
Hamburg—Amalfi		103	"

Exports of copper from Baltimore for the week ending May 11th are reported by our special correspondent as follows:

May 9, Bremen—Dresden	258 bars,	44,803 lbs.
" 11, Antwerp—Norse King	1,793 bars.	225 347 "

Other metals exported during the week were: 188 barrels and 143 bundles, 34,166 lbs, steel, to Antwerp; 150 bars and 25 cases, 28,342 lbs., steel, and 262 bundles, 68,827 lbs., tin scrap, to Rotterdam.

Tin.—In conjunction with the London market, prices over here are somewhat easier, but a good consumptive demand continues. We quote 20⅞@20 for May and June delivery. Shipments from the East continue light. The London market is rather dull, and lower prices have been accepted, said to be due to the decline in silver. Prices opened this week at £71 10s. for spot, but declined to £70 15s. for spot and £71 7s. 6d. for three months prompt.

Shipments of Straits tin from Singapore and other ports for the first half of May were 1,875 tons, against 1,050 tons for the corresponding period last year.

Lead.—Most refiners are holding for higher prices, but some pressure was brought to bear on the market from certain quarters, and sales are reported at 3·35@3·37½ for desilverized. Missouri soft lead is obtainable at the same figures. Tariff legislation is more and more drawing the attention of the trade, and the duty on white lead has been reduced to 1½c. in the Senate.

In England prices are somewhat firmer, Spanish lead being quoted at £9 2s. 6d. and English at £9 5s.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: "Lead dull and on the down grade. Latest sales are at 3·15c., at which price about 700 tons have been sold in the last few days."

Spelter continues rather irregular, and is pressed for sale. Production is very light, but the coal strikes caused many galvanizers to close down, and the demand for brass manufacturers continues light. We have to quote 3·42½@3·45 delivered.

The London market is dull, and good ordinaries are quoted at £15 12s. 6d. sellers.

Antimony.—Only a retail business is being done. We quote Cookson's 10¼c.; L. X., 9¼c.; Hallett's 8¾: U. S. French Star, 10c.

Quicksilver.—Quotations are: New York, $36; London, £6

The receipts of quicksilver in San Francisco, Cal., for April and for the first four months of the year compare as follows:

	April.	Four months.
1892, flasks	1,856	6,766
1893	1,467	7,390
1894	2,391	9,703

Exports from San Francisco by sea last month included 1,321 flasks to New York, 100 to Central America and 220 to Mexico, the whole valued at $41,424, against 1,083 flasks, valued at $45,084, for the same month last year. Exports for the first four months of the year were as follows:

	Flasks.	Value.
New York	3,000	$92,000
Hongkong	2,000	53,973
New Zealand	10	300
Central America	404	12,020
Mexico	1,435	42,488
British Columbia	38	1,219
Canada	200	5,306
Total	7,087	$207,306
In 1893	7,385	298,291

Shipments overland in March were 400 flasks, and for the first three months of the year 2,577 flasks. Rail returns for April not made public.

Aluminum.—The Pittsburg Reduction Company furnishes the following quotations: No. 1 (guaranteed over 98% pure) in rolling ingots, 75c. per lb. in small lots; 73c. per lb. in 100-lb. lots; 70c. per lb. in ton lots. No. 1 aluminum in ingots for remelting: 65c. per lb. in small lots; 60c. per lb. in 100-lb. lots; 55c. per lb. in ton lots and over. No. 2 grade (guaranteed to be over 94% pure aluminum, with no injurious impurities, for alloying with iron and steel) cast in ingots for remelting: 60c. per lb. in small lots; 55c. per lb. in 100-lb. lots; 50c. per lb. for ton lots and over. Aluminum castings from 90c. per lb. upward, in accordance with the number of castings, their weight, etc. Sheets are quoted 80c.@$4.40 per lb., according to thickness and size. Wire, $1@$2 50 per lb., according to gauge.

Abroad, the Neuhausen Company continues to quote 5 fr. per kilogram for ingots in large lots. No other recent quotations are made. The price given is at works in Switzerland.

Magnesium.—Only one company is at present manufacturing this metal in commercial quantities. That concern, the Aluminum und Magnesium Fabrik, Hemelingen, Germany, quotes prices as follows: Ingots and cubes, $6.48 per kilogram; bars, $6.24; powder, $8.64, ribbon and wire, $9.12 per kilo. These prices are at the works and for orders of over 10 kilos.; for less than 10 kilos. 24c. per kilo. must be added for ingots and bars, and 48c. for powder or wire.

Platinum.—Prices are steady, with no recent changes to report. For chemical ware, Messrs. Eimer & Amend, New York, quote platinum crucibles and dishes, hammered ware, French make, at 45c. per gram for smaller quantities, 43c. per gram for lots of not less than 100 grams, and 41c. for lots of not less than 250 grams. Wire and foil at 42c., 41c. and 40c. respectively for the quantities named. Current retail price for crucibles is 50c. per gram.

Nickel.—Quotations are steady at 43@50c. per lb. according to grade.

Sodium.—The demand is so small that local quotations are hard to find. In Germany and England the metal is quoted at 90c.@$1 per lb. at factory.

Bismuth.—Quotations on the New York Metal Exchange are $2 per lb. for lots of 500 lbs. or over; $2.25@$2.50 per lb. for smaller lots.

Phosphorus.—The latest quotations given are 50@52½c. per lb., f. o. b. New York or Philadelphia.

CHEMICALS AND MINERALS.

New York, Friday Evening, May 18.

Heavy Chemicals.—In every particular the heavy chemical market is unchanged from our last report. It continues quiet and featureless. Very little is doing in alkali; sometime ago there was apparently a prospect of an advance in the price owing to the fact that the United Alkali Company was fully sold up to August, and Brunner, Mond & Co., were not pressing their product on the market. The demand, however, is so light that prices show no greater firmness. Carbonated soda ash is also quiet. Caustic soda is in fair demand, considering the depression in the other chemicals. Bleaching powder continues quiet. Prices are unchanged from last week. We quote: Caustic soda, 60%, 2·82½@2·97½c.; 70%, 2·60@2·70c.; 74%, 2·62½@2·72½c.; 76%, 2·70@2·80c. Carbonated soda ash, 48%, 1·05@1·25c.; 58%, 1·05@1·15c. Alkali, 48%, 1·05@1·15c.; 58%, 1@1 10c.; according package. Sal soda, ·80@·90c. Bleaching powder, 2·05@2·50c.

Acids.—There is nothing of interest to report of the acid market this week, save perhaps the fact that many consumers are suffering from a scarcity of fuel owing to the soft coal miners' strike. Trade in acids continues very quiet. Prices are unchanged. We quote: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, $1.62½@$1 75; muriatic, 18°, 80c.@$1; 20°, 90c.@$1.10; 22°, $1@$1.25; nitric, 40°, $4; 42°, $4.50@$4.75; sulphuric, 75c.@$1; chamber acid, $7.50@$8 per ton. Mixed acids according to mixture, oxalic, $6.40@$7.25 per 100 lbs. Blue vitriol is quoted at $3.75; glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—There is nothing of interest to report of the brimstone market. It continues very dull. Quotations are as follows: Best unmixed seconds, on the spot, $16.75; shipments, $16.25. Best thirds are $1 less.

Fertilizing Chemicals.—The past week has been very quiet in this market. Sales have been few and small. Prices are unchanged from last week. We quote sulphate of ammonia $3.62½@$3.65 for gas liquor and $3.30 for bone. Dried blood, $2.30@$2.35 per unit for high grade and $2.15@$2 20 for low grade. Azotine, $2.25@$2.35. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P_2O_5, 60c. per unit at seller's works in bulk. Dissolved boneblack, 17% to 18% P_2O_5, 95c. per unit. Acidulated fish scrap, $15@$16, and dried scrap nominally $25 f. o. b. fish factory; wet scrap $15 f. o. b. fish factory. Tankage, high grade, $22.50@$23; low grade, $21@$21.50. Bone tankage, $23@$24; bone meal, $24@$25 50.

In lots of 50 tons on contracts we quote: Double manure salts, 48 53% (basis of 48%): New York and Boston, $1.12; Philadelphia, $1.14½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $1.17. High grade manure salts, 90-95% and 96-99% (basis 90%), respectively: New York and Boston, $2.07@$2.11; Philadelphia, $2.09½@$2.13½. Charleston, Savannah, Wilmington, N. C., and New Orleans, $2.12@$2.16.

Phosphates.—Charleston, S. C., quotations are: Acid phosphate 13% available, $6.50@$7 cash in bulk. High grade phosphate rock is $4.75@$5 f. o. b. vessel and cars at mines. Land phosphate rock $4.75 f. o. b. cars or vessels at mines.

Muriate of Potash.—Arrivals this week aggregate 500 tons. In lots of 50 tons, quotations are as follows: 80-85% and minimum 95% basis 80%), respectively: New York and Boston, $1.78 @$1.91; Philadelphia, $1.80½@$1.83½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $1.83½@$1.86.

Kainit.—Prices for kainit (minimum 23%) in cargo lots for 1894 delivery are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, $9@$9.25; Charleston, Savannah, Wilmington, N. C., and New Orleans, $9.75@$10. For sylvinit, 27-35%, prices are as follows per cent. per gross ton, invoice weight: New York, Boston and Philadelphia, 37½c.; Charleston, Savannah, Wilmington, N. C., and New Orleans, 41c. Actual worth, 1c. more per cent.

Nitrate of Soda.—The market is quiet. We quote this week: On the spot, $2.30@$2.25.

Liverpool. May 8.

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

We are still unable to report any improvement in the position of heavy chemicals, nor are there any indications at this moment of any immediate revival. Soda ash is in limited demand for Leblanc makes and quotations are unreliable, the nominal spot range varying, according to export market, about as follows: Caustic ash, 48%, £3 15s. to £4 per ton; 57% and 58%, £4 10s.@£4 15s. per ton. Carbonate ash, 48%, £3 5s.@£3 15s. per ton; 58%, £3 15s.@£4 per ton, net cash. Ammonia ash, 58%, is still quoted at from £3 10s. to £3 15s. per ton, net cash, for tierces and 5s. less for bags, and a moderate business is reported. Soda crystals are weak at £2 13s. 9d.@£2 15s. per ton, less 5%.

Caustic soda is flat, and for some markets prices have been reduced. Quotations vary according to destination and nearest spot range is as follows: 60%, £7 10s.@£8 5s. per ton; 70%, £8 10s.@£9 5s. per ton;

74%. £9 10s.@£10 5s. per ton; 76%, £10 10s.@£11 5s. per ton, net cash. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching powder is inquired for and firm at £7 10s. to £8 5s. per ton net cash for hardwood packages, according to export market.

Chlorate of potash is not wanted and prices are nominal at about 6¼@7d. Second-hand lots are pressed for sale, but there are no buyers.

Bicarb. soda is selling at £6 15s. per ton, less 2½% for one cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is still dropping and nearest spot values are about £13 2s. 6d. to £13 7s. 6d. per ton, less 2½% for good gray 24 and 25% in double bags f. o. b. here, according to quality.

Nitrate of soda with free arrivals has declined to £10 per ton less 2½% for double bags f. o. b. here.

Carb. Ammonia.—Lump, 3¾d. per lb.; powdered, 4d. per lb. less 2½%.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 478 and 480.]

NEW YORK, Friday Evening, May 18.

The Comstock boomlet is dying, the Bodie deal has "petered out," the demand for silver mining shares is nil, and nobody seems to want any particular stock at any price. The mining brokers, patient and long suffering as they have been for years, are now both discouraged and angry—a state of being which is not conducive to longevity.

A statistical genius at the exchange announces that after a most exhaustive series of investigations he has come to the conclusion that if the busiest of all the mining stock brokers should be compelled by law to depend exclusively upon his commissions for subsistence, he could manage to remain upon this mundane sphere exactly seventeen days—unless, indeed, he should possess the fasting capabilities of Dr. Tanner or Signor Succi. Of course we regard this merely as a bit of playful sarcasm. We firmly believe that any of the mining brokers could live on his commissions for a full month, provided he avoided undue excitement.

The Comstocks have been neglected this week. The few sales that are reported were made at lower prices than last week. Comstock Tunnel was the most active, and shows larger transactions than for many months back; of the common stock 10,500 shares changed hands, the price declining from 8 to 6c.; there was also a sale of one $500 bond at 6%. Sierra Nevada declined from $1.45 to $1.20; sales aggregating but 200 shares. There was a single sale of 100 shares of Yellow Jacket at $1.20. Union Consolidated declined from $1.35 to $1, with sales of 300 shares.

The following Comstock companies report having had cash on hand on May 1st: Alpha, $10,773; Alta, $2,747; Belcher, $20,500; Best & Belcher, $4,003; Bullion, $10.557; Caledonia, $6.811; Challenge, £266; Chollar, $18 279; Consolidated Imperial, $296; Confidence, $5,400; Consolidated New York, $1,833; Consolidated California & Virginia, $77,671; Crown Point, $1,888; East Sierra Nevada, $453; Exchequer, $2,210; Gould & Curry, $10,896; Hale & Norcross, $4,540; Julia, $1,343; Justice, $1,885; Kentuck, $882; Lady Washington, $302; Mexican, $9,495; Occidental, $7?5; Ophir, $4,899; Overman, $1,030; Potosi, $18,435; Savage, $16,682; Scorpion, $2,237; Segregated Belcher, $3,093; Silver Hill, $728; Sierra Nevada, $16,176; Union Consolidated, $7,621; Utah, $2,217.

The following Tuscarora mining companies report an indebtedness on May 1st: Belle Isle, $1,651; Del Monte, $29,305; Navajo, $472.13; North Belle Isle, $1.716; North Commonwealth, $1,467.

Of the Bodie stocks 500 shares of Bulwer were sold at 45c, and 300 shares of Mono at 75c. There was only one sale of 100 shares of Standard Consolidated at $1.60. The following Bodie companies report having had cash on hand on May 1st: Bulwer, $1,009; Bodie, $15,419; Mono, $4,165; Standard Consolidated, $41,322.

The Colorado stocks were quiet this week. Leadville Consolidated was stationary at 7c., with total sales of 2,000 shares. Of American Flag 500 shares were sold at 4c.

Boston. May 17.

(From our Special Correspondent.)

The market ruled dull during the early part of the week, the Montana stocks being especially heavy. Boston & Montana declining from $26½ to $25½, and Butte & Boston from $10 to $9. To-day, on the announcement that the Boston & Montana trustees had declared a dividend of $1 per share, payable June 28th, the stock was in quick demand and advanced to $26¾, with a subsequent reaction to $25¾ at the close. This dividend carries the total amount of dividends declared and paid to date to $2,225,000. Butte & Boston, in sympathy with its neighbor, sold up to $10, closing only a fraction lower at $9⅞.

Calumet & Hecla advanced to $282 in the early dealings, but declined to-day to $275 for two shares. The decline to $275 leads to the belief that not over $15 per share will be paid the current year, as the dividend April 20th was the first for four months. Tamarack was quite strong and advanced from $162 to $170, subsequently reached to $164, and closed at $166. The directors have declared a dividend of $4 per share, payable June 20th, to holders of record on May 21st. This makes a total of dividends to date $3,870,000. Osceola continues weak, and every effort to unload takes the price a peg lower. The stock declined on moderate sales from $22¾ to $21½. The impression prevails that the price is quite as high as the situation warrants.

Quincy has been very quiet this week. Sales of 62 shares at $92, a gain of $2 over last week. There were no sales of the Scrip. Franklin sold at $8¾, an advance of $¼. Atlantic declined to $8¼ from $9, a small lot selling at $8. Kearsarge sold at $6¼ @$6, and Centennial at $2¾. Tamarack, Jr., sold at $15, for small lots and Wolverine at $1¾. Allouez sold freely 10c @12¼c.

Mapa Quicksilver sold at $5, a gain of $¼ over last sale.

San Francisco. May 11.

(From our Special Correspondent.)

The week has been one of unwonted activity in the mining stock market. The strong element which makes a systematic practice of bearing the market has made a savage and prolonged attack, until yesterday these efforts were crowned with success. To-day it looks as if the bottom had dropped from out the little "boom." Consolidated California & Virginia sold at $9 in the Pacific Board yesterday morning, but before night had been hammered down to $6 50. To-day a further decline took place, the stock selling for $5.25. The cause for the break to-day is given as an unfavorable report regarding the showing being made in the crosscut 28 ft. below the 1,650 level of the Bonanza mine. The rich ore found above failed to show in any compact form below, and the report was current on the street that the west wall of the lode had been encountered.

Naturally the entire line of Comstock shares have sold weak in sympathy with Consolidated California & Virginia. Ophir sold to-day for $475; Mexican for $210; Sierra Nevada for $140, and Union Consolidated for $100.

In the middle group Best & Belcher sold in quite large lots down to $225; Cholear sold for 86c.; Gould & Curry for $125; Hale & Norcross for 76c.; Potosi for $125, and Savage for 95c. All these prices are below the ruling rates a week ago and much lower than prices during the early part of the present week.

Of the Gold Hill stocks, 1,600 shares of Alta sold for 45c.; 1,000 Crown Point for 90c.; 1,000 Occidental for 12c; 1,200 Overman for 40c., and 2,150 Yellow Jacket at $100. These sales were all made on early call; later in the day the sales became larger. A total of 32,000 shares was sold during the morning session.

Toward the close the market showed a tendency to strengthen, and prices recovered from one to three points.

So far as made public, the assessments falling delinquent during the current month aggregate a total amount of $92,500. This amount is divided as follows: Comstock mines, $77,500: California, $14,000, and Mexico, $1,000.

BY TELEGRAPH.

SAN FRANCISCO, May 18.—The opening quotations to-day are as follows: Best & Belcher, $1.80; Bodie, $1.65; Belle Isle, 10c.; Bulwer, 16c.; Chollar, 70c.; Consolidated California & Virginia, $5.87½; Eureka Consolidated, 25c.; Gould & Curry, $1; Hale & Norcross, 76c.; Mexican, $1.90; Mono, 45c.; Navajo, 10c.; Ophir, $3.65; Savage, 80c.; Sierra Nevada, $1.10; Union Consolidated, 95c.; Yellow Jacket, 85c.

London. May 8

(From our Special Correspondent.)

An instance of English investors losing their money in American mining is to be found in the case of the Ni-Wot & Madeleine Gold Mining Company, Limited, which was formed in the year 1891, to work the Ni-Wot & Madeleine mines in Colorado. The capital of the company was £200,000 in £1 shares. Of these 196,621 were issued and fully paid: 185,000 were allotted to the venders, and £5,000 in cash was also included in the purchase price. Debentures to the amount of £25,750 were also issued, but when some of these matured they could not be paid off, so that the debenture holders took possession of the property. A new company called the Madeleine Consolidated was formed under the American law and shares were issued to the shareholders in the Ni-Wot. These shares are apparently so much rubbish, for nothing has ever been heard of the Madeleine Consolidated since. The shareholders and also the secretary and directors of the old Ni-Wot are all equally in the dark. Perhaps some Colorado reader can supply the desired information.

The recent times of depression on the Stock Exchange have had their effect in disheartening many members, for no fewer than 60 have allowed their membership to lapse at the end of the stock exchange year, March 25th. It may not be generally known that membership of the Stock Exchange only lasts for a year at a time, and that all have to seek re-election each year. This year seven have refrained from either reapplying or sending notice of their intention to resign, and have thus allowed their membership to lapse in silence; 53 others have sent in their notifications of their intention to withdraw. Of course a good many members resign every year in the ordinary way, such as on retiring from business, old age, etc., but this year the abstentions are above the average. At the same time the number of new applicants is smaller than usual. It seems a pity that members should withdraw just now, on the advent of better times.

Paris. May 9.

(From our Special Correspondent.)

The most active speculation this week has been in the metallurgical shares, which have been largely dealt in, though the variations have been small. Acieries de France, Forges et Acieries du Nord, Ateliers et Chantiers de la Loire, have each gained 3 to 10 fr., while Acieries de St. Etienne have gained more and close firm at 1,256 fr.

General mining stocks are not strong on account of the continued low prices of metals. Veille Montagne, however, is firmly held at 457·50, last week's price, while Laurium has gained a little, closing at 555 fr. and Aguilas (lead) has risen to 60 fr., although no dividend has been declared, the surplus for 1893 being only 3,026 fr. Société de Nickel has had a sharp fall of 50 fr. on unfavorable advices, and closes at 460 fr. The copper stocks make no better showing. Rio Tinto rose a little, to 384 fr., it is true, but Tharsis has fallen to 119 fr., Cape Copper to 35 fr., and Jerez-Lanteira heavily, to 15 fr. Huanchaca (silver), on the other hand, shows a sharp rise to 127 fr. The coal stocks are generally heavy, with few sales.

The Transvaal gold stocks have been active, Robinson, Randfontein and Langlaagte especially selling a shade above the London market. In diamonds, De Beers Consolidated shares close firm at 430 fr., in spite of rumors of important discoveries of diamonds in Australia; in which, however, very little faith is put here. Our market looks with singular distrust on London rumors.

The latest act in the tragic comedy (or comic tragedy, if the reader prefers) of the Panama Canal is the action brought by the official liquidator (receiver you call him in America) of the Panama Company to compel M. Oberndoerffer to repay the sum of 3,900,000 fr., which he received when the loan of June, 1888, was floated, and to which it has been decided that he was not entitled. There are still some people here—your correspondent is not among them—who believe that Panama can be resuscitated and the canal finished. There are others, as you all comprehend, who wish that it had died years ago. No such slaughterer of reputations has been known in our time.

After all, countries, like children, have to go through the same epidemics. Just now in France we have a crusade against what we call "marchés a terme," and you "futures." Last year a bill to abolish these was introduced in the Legislature, but laid over at the request of the Minister of Commerce; now a new bill has been introduced, not to prevent such sales absolutely, but to impose upon them a tax so heavy as to be practically a prohibition. Our provincial chambers of commerce are divided in opinion, some having protested against the law, while others favor it. The weight of the agricultural opinion favors the project. AZOTE.

DIVIDENDS.

Boston & Montana Consolidated Copper and Silver Mining Company, dividend of $1 per share, $125,000, payable June 28th at the office of the company in Boston, Mass. Transfer books close May 28th.

Copper Queen Consolidated Mining Company paid a dividend of 25c. per share, $500,000, May 12th, at the office of the company, No. 99 John street, New York City.

Elkton Mining Company paid No. 5 of 1c. per share, $5,000, May 15th, at the office of the company in Colorado Springs, Colo.

Homestake Mining Company, dividend No. 190 of 15c. per share, $18,750, payable May 25th at the office of Messrs. Lounsbery & Co., Mills Building, No. 15 Broad St., New York City. Transfer books close May 19th, and reopen May 26th.

Tamarack Mining Company, dividend of $4 per share, $200,000, payable June 20th at the office of the company in Boston, Mass. Transfer books close May 21st.

MEETINGS.

Good Return Mining Company, at the office of the company, in New York City, May 21st, at 3 p. m

Leadville Consolidated Mining Company, at the office of the company, No. 1 Broadway, New York City, May 21st, at 12 o'clock noon.

Minnesota Iron Company, at the office of the company, Mills Building, No. 15 Broad street, New York City, June 11th, at 11 a. m. Transfer books close May 25th and re-open June 14th.

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	May 12. H.	L.	May 14. H.	L.	May 15. H.	L.	May 16. H.	L.	May 17. H.	L.	May 18. H.	L.	Sales.
Belcher, Nev.													
Belle Isle, Nev.													
Bodie Cons., Cal.													
Bulwer, Cal.	.45												500
Chrysolite, Colo.													
Comstock T. bonds, Nev.									.06				500
" scrip., Nev.													
Cons. Cal. & Va. Nev.													
Crown Point, Nev.													
Deadwood, Dak.													
Eureka Cons., Nev.													
Father de Smet, Dak.													
Gould & Curry, Nev.													
Hale & Norcross, Nev.													
Homestake, Dak.													
Horn-Silver, Utah.													
Kentuck, Nev.													
Leadville Cons., Colo.			.07										2,000
Little Chief, Colo.													
Mono	.75												300
Mt. Diablo, Nev.													
Navajo, Nev.													
N. Belle Isle, Nev.													
Ontario, Utah.													
Ophir, Nev.													
Plymouth, Cal.													
Quicksilver, Pref., Cal.													
" Com., Cal.													
Savage, Nev.													
Sierra Nevada, Nev.			1.45				1.20						200
Silver King, Ariz.													
Standard Cons., Cal.									1.60				100
Yellow Jacket, Nev.	1.20												100

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	May 12. H.	L.	May 14. H.	L.	May 15. H.	L.	May 16. H.	L.	May 17. H.	L.	May 18. H.	L.	Sales.
Am. Flag									.04				5 0
Alpha													
Alta													
Barcelona, Nev.													
Belmont, Cal.													
Best & Belcher, Nev.													
Brunswick, Cal.													
Castle Creek													
Chollar, Nev.													
Comstock T., Nev.	.08						.08		.08		07	.06	10,500
Con. Imperial, Nev.													
El Cristo, Rep. of Col.													
Exchequer, Nev.													
Independence, Nev.													
Julia, Nev.													
Justice, Nev													
King & Pembroke													
Lacrosse, Colo.													
Mexican, Nev.													
Middle Bar, Cal.													
Mono													
Nevada Queen, Nev.													
N. Standard, Cal.													
N. Commonwealth, Nev													
Overman, Nev.													
Oriental & Miller, Nev.													
Phoenix of Ariz.													
Potosi, Nev.													
Scorpion, Nev.													
Seg. Belcher, Nev.													
Union Cons., Nev.	1.35		1 25				1.00						300
Utah, Nev.													

*Ex-dividend. † Dealt in at New York Stock Ex. Unlisted securities. ‡Assessment paid. § Assessment unpaid. Dividend shares sold 3,700. Non-dividend shares sold, 11,300. Total shares sold, 15 000.

BOSTON MINING STOCK QUOTATIONS.

Name of Company.	May 11. H.	L.	May 12. H.	L.	May 14. H.	L.	May 15. H.	L.	May 16. H.	L.	May 17. H.	L.	Sales.
Atlantic, Mich.							8.75	8.00	8.75	8.25			215
Breece, Colo													
Bost. & Mont., Mont.	26.00		26.13				26 00	25.50	25.50	25.13	26.50	25.13	2,017
Bonanza Development													
Calumet & Hecla, Mich.			281		252		280				275		27
Central, Mich.													
Cœur d'Alene, Id.													
Franklin, Mich.	8.75												100
Honorine, Utah.													
Horn Silver, Utah.													
Kearsarge, Mich.									6.25	6.00			200
Lake Superior, Iron.													
Minnesota Iron, Minn.													
Napa, Cal.					5.00								50
Ontario, Utah.													
Osceola, Mich.			22 25				22.25	22.13	22.00	21.50			500
Quincy, Mich.					92.00								62
" script.											30.00		50
Silver King, Ariz.													
Tamarack, Mich.					170	168	168	165½	165	164	167	166	130
Tecumseh, Mich.													

Name of Company.	May 11. H.	L.	May 12. H.	L.	May 14. H.	L.	May 15. H.	L.	May 16. H.	L.	May 17. H.	L.	Sales.
Allouez, Mich.			.10				.10		.12½	.10	.10		1,950
Arnold, Mich.													
Aztec, Mich.													
Brunswick, Cal.													
Butte & Boston, Mont.	10.00		10.00	9 88	10 00	9.75	9 63	9.50	9.38	9.00	10.00	9.18	3,055
Centennial, Mich.					2.75								50
Colchis, N. Mex.													
Copper Falls, Mich.													
Hanover, Mich.													
Humboldt, Mich.													
Huron, Mich.													
Mesnard, Mich.													
National, Mich.													
Native, Mich.													
Oriental & M., Nev.													
Phoenix, Ariz.													
Pontiac, Mich.													
Tamarack, Jr., Mich							15.00						7
Washington, Mich.													
Wolverine, Mich.							1.75						100

Dividend shares sold, 3,351. Non-dividend shares sold, 5,162. Total shares sold, 8,513.

COAL AND COAL RAILROAD STOCKS.

Names of Stocks.	May 12. H.	L.	May 14 H.	L.	May 15. H.	L.	May 16. H.	L.	May 17. H.	L.	May 18. H.	L.	Sales.
Am. Coal			82										35
Balt. & Ohio					73								70
do. pref													
Buff., R. & P.													
do. pref.													
Cambria Iron													
Ches. & Ohio													
do. 1st pref.													
Col. C. & I.													
Col. Coal													
Colorado Fuel					23								10
do. pref.													
Col., H.V.& Tol.	17	16⅝			16¾		16⅝	16½			16¼		550
do. pfd													
Col. & H. Coal									7	6⅝		6½	600
do. pfd.													
Cons. Coal							30½						500
Del. & Hud. C.	140		139⅞		139⅞		139⅝	139	140½	139⅝	139⅝	139	3,287
Del., L. & West.			161¼		160½	160			161¾	161	160½	160⅞	900
Hunt. & B.Top.													
do. pref													
Lake Erie&Wes			15⅜				15⅛						300
do. pref.			68		67½				67⅛				205
Lehigh C. & N.			51½				51½		51¼	51			318
Lehigh Valley			37¼	37⅛			37¼	37	37	36¾			1,216
Maryland Coal													
do. pref													
Morris & Essex			155		156	155½							115
New Cent. Coal							8⅛						100
N. J. Central	109				109⅛	109	109		109		109⅛		855
N. Y., L. & W.			1 3⅞										12
N. Y., L. E.& W	14⅝				14⅝	14⅜	14¼	13⅞	14⅛	13	13¼	12⅝	8,825
do. pref											[illegible]	27	200
N.Y., Susq.& W			15¼	15	15		15		14⅛		14⅛	14⅛	760
do. pref			40		40		40		40	39⅛			560
N. & West.													
do. pref							20¼		20				400
Penn. Coal													
Penn. R. R.	49⅞	49⅝	49⅞	49⅝			49⅝	49⅜	49¼	49⅛			2,310
Phil. & Reading	17¾		17⅝	17⅝	17⅛	16⅞	16⅞	16½	16⅞	15⅝	16⅛	15¾	19,675
Tenn. C. & I.	17¼	17			17¼	17	16⅞		16⅛	16¼	16⅛	16⅛	1,820
do. pref													
Wheel. & L. E.	12⅜		12¼	12⅛	12	11⅝	11⅝	10⅞	11	10¾	10⅛	9¾	1,450
do. pref.	47⅞		48		47¾	46¾	46⅝	45⅝	44¾		44	42	2,370

Total shares sold, 47,053.

INDUSTRIAL AND TRUST STOCKS.

Name of Stocks.	May 12. H.	L.	May 14. H.	L.	May 15. H.	L.	May 16. H.	L.	May 17. H.	L.	May 18. H.	L.	Sales.
Adams Express													
Am. Cotton Oil	29				29	28⅛	28¾	28⅛	28¼		27⅜	27	1,950
do. pref	74¼		75	74½	75¼		70⅛		70⅛				675
Am. Dist. Tel.	40												100
Am. Express	114				114		113						86
Am. Sugar Ref.	106⅞	105⅝	106⅜	104⅜	105	103⅜	104⅛	101¾	104⅛	102⅛	102⅜	98⅝	209,105
do. pref	96		95		94⅛	94	93¼	92⅝	93⅝	92⅜	92⅜	91	4,128
Edison E.Ill.Co.	102½								102	101⅛			58
Edison Gen. El.	36⅛	35⅝	36¾	36	36⅝	36⅛	36¾	36¼	36⅝	35⅛	36¼	35⅝	38,051
Nat. Cord. Co.	24⅞	24⅝	24⅛	24¼	23¼	22⅛	22¾	21⅛	22	21⅛	21¼	20	10,872
do. pref			47	46⅛			44	43					625
Nat.Lead Co.	39⅞	39⅜	39⅛	39⅜	39¼	38⅜	38⅛	36¼	38	36⅛	38⅛	36¾	43,196
do. pref					85		85	84½	86½	85⅛			1,193
Nat.Linseed Oil.													
U. S. Express			54		54	52							31
U. S. Rubber	33¾		38		38⅛	38					36	35	400
do. pref.			91		91								222
Wells, Fargo Ex			127	125			126		124½				151
Western Union.	85	84⅞	84⅞		84⅜	84	84⅛	83⅜	84	83⅜	83⅜	82	41,008

Total shares sold, 351,851.

CALIFORNIA.

San Francisco.

Names of Stocks.	Closing Quotations. May 11.	May 12.	May 14.	May 15	May 16.	May 17.
Alpha						
Alta	.41	.41	.35	.34	.26	.20
Belcher						
Belle Isle			.10			
B. & Belch	2.30	2.35	2.45	2.20	1.75	1.65
Bodie	4.15	2 75	2.30	2.15	.68	1.65
Bulwer	.45	.60	.30	.25	23	.15
Chollar	.48	.93	.98	.85		.70
Com'w'lth			.05			
Con.C.&V.	5.60	6.25	6.60	5.75	5.50	5.56
Con. Pac.						
Crown Pt.	.95	.95	1.00	.94	.80	.72
Del Monte						
E'rekaCon						
G'ld & C'y	1.30	1.25	1.45	1.20	.95	.95
Hale & N.	.90	1 10	1.15	.90	.95	.73
M. White						
Mexican	2.15	2 20	2.35	2.30	1.80	2.60
Mono	.76	.80	.45	.50	.27	.35
Mt. Diablo						
Navajo			.10	.10		.10
Nev. Qu'n.			.10			
N.B'lleIsle						
N. Co'w'th						
Ophir	4.60	4.70	4.90	4.65	3.65	3.45
Potosi	1.20	1.55	1.60	1.25	1.15	1.15
Savage	.91	1.00	1.10	.92	.85	.75
Sierra Nev	1.50	1.45	1.40	1.35	1.10	1.10
Uni'n Con	1.20	1.10	1.15	1.10	1.00	.88
Utah	.20	.16	.16	.12	.09	.09
Yel. Jack.	1.10	1.10	1.05	.98	.85	.82

COLORADO.

Denver.

Prices and sales for four days ending May 11th, 1894.

	High.	Low.	Sales.
Aola	.02¼	.....	10,000
Anaconda	.30	.29	3,700
Bankers	.05¾	.05¼	10,200
Big Six	.03	.....	8,500
Calumet	.02⅝	.02⅛	20,000
Creede & Cr. Cr'k	.01½	.	0,000
Golden D	.00½	.00⅝	32,000
Isabella	.18¼	.17⅛	2,500
Jack Pot	.02¾	.02⅛	17,000
Justice	.01¼	. ...	7,000
Mollie Gibson	1.27½	1.25	1,800
Pharmacist	.10	.....	2,500
Queen B	.25	.....	800
Work	.03⅝	.....	20,600
Total shares sold			142,600

MARYLAND.

Baltimore. May 17.

Company.	Bid.	Asked.
Atlantic Coal.	....	55@60
Balt. & N. C.	....	0.10
Conrad Hill	....	.10
Cons. Coal	$0.30	....
Diamond Tunnel		.03
George's Creek Coal.	1.04	1.07
Howard C. & C	....	1.25
Lake Chrome	.01@.02	....
Silver Valley	.20@.25	.40
Vernon Mining Co.	.20	.40

PENNSYLVANIA.

Philadelphia. May 17.

	Bid.	Asked.
Cambria	....	$16.50
Edison E. Light Co.	$123.00	125.00
Northern Liberties Gas	33.00	33.00
Penn. Salt	95.00	97.00
Penn. Steel	25.00	30.00
Washington, D. C., Gas	45.00	....
Westmoreland C.	51.00	.....

UTAH.

Salt Lake City.

(Special Report by James A. Pollock.) Stock quotations week ending May 12th, 1894:

	Bid.	Asked.
Alliance	....	$0.75
Anchor	$1.35	3.00
Centennial Eureka	....	27.50
Cleveland Con	....	0.50
Crescent	0.02½	0.06
Daly	6.00	7.50
Dalton	....	0.03
Horn Silver	2.25	....
Mammoth	1.20	1.40
Meears	....	0.75
Ontario	8.75	10.00
Silver Spar	....	1.00
Tetro	....	0.25
Utah	....	1.50

FOREIGN.

London Quotations.

May 10, 1894.	Buyer. £ s. d.	Seller. £ s. d.
Alaska Treadwell, Alaska Ter	2 15 0	3 0 0
Almada & Tirito, Mex.	3	9
American Belle, Colo.	1 9	2 3
Bonanaza Gold, Cal.	5 0	6 0
De Lamar, Idaho	18 3	19 3
Elkhorn, Mont	12 0	13 0
Emma, Utah	3	6
Golden Feather, Cal	7 0	7 6
Golden Gate, Cal.	5 6	6 6
Golden Leaf, Mont. & N. M	9	1 3
Harqua Hala, Ariz.	15 0	16 0
Holcomb Valley, Cal.	1 3	1 6
Idaho Exploring	1 3	1 6
Jay Hawk & Lone Pine, Mont.	6 0	7 0
La Yesca, Mex.	1 0	1 6
Mesquital del Oro, Mex., P.	10 0	1 0 0
Mesquital del Oro, Mex., D.	2 6	7 6
New Guston, Colo.	7 0	8 0
New Montana, Mont.	4 9	5 3
Palmarejo, Mex.	1 0	1 6
Pinos Altos, Mex.	6 0	7 0
Plumas Eureka, Cal.	12 6	15 0
Poorman Con. Idaho.	7 0	7 6
Rajah Gold, Can.	1 0	2 0
Richmond Con., Nev.	7 0	9 0
Sierra Buttes, Cal.	8 0	10 0
Springdale Gold, Colo.	2 6	2 6
United Mexican, Mex.	1 0	1 6

DIVIDEND-PAYING MINES.

No.	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total Levied	Date and amount of last.			Dividends. Total paid.	Date & amount of last.		
1	Adams, s. l. c.	Colo.	$1,500,000	150,000	$10	*	...	...	...	$687,500	Jan.	1892	.05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25	...	...	...	...	1,900,000	Apr.	1894	.37½
3	Alice, s.	Mont.	10,000,000	400,000	25	*	...	...	...	975,000	Nov.	1891	.06¼
4	Amador, g.	Cal.	1,250,000	250,000	5	*	...	...	...	81,250	Aug.	1890	.12½
5	American, g.	Colo.	3,000,000	300,000	10	*	...	...	...	225,000	Mar.	1892	.05
6	American Belle, s.g.c	Colo.	2,000,000	400,000	5	*	...	...	...	50,000	April	1891	.12½
7	Americ'n&Nettie, g.s	Colo.	...	300,000		...	...	...	...	175,000	Mar.	1892	.05
8	Atlantic, c.	Mich.	1,000,000	40,000	25	280,000	April	1875	$1.00	700,000	Feb.	1891	.00
9	Argyle, g.	Colo.	1,000,000	1,000,000	1	*	...	...	...	20,000	Mar.	1892	.01
10	Aspen Mg. & S., s. l.	Colo.	2,000,000	200,000	10	*	...	...	...	860,000	Dec.	1893	.10
11	Aurora, i.	Mich.	2,500,000	100,000	25	...	...	...	...	650,000	Feb.	1893	2.00
12	Badger, s	Ont.	250,000	50,000	5	...	...	...	...	37,500	Mar.	1890	.25
13	Bald Butte	Mont.	250,000	250,000	1	*	...	...	...	195,000	May	1894	.10
14	Bates Hunter, s. g.	Colo.	1,000,000	1,000,000	1	...	...	...	...	67,500	Dec.	1891	.00¾
15	Belle Isle, s.	Nev.	10,000,000	100,000	100	280,271	Sept	1893	.10	300,000	Dec.	1879	.25
16	Belcher, s. g.	Nev.	10,400,000	104,000	100	3,262,930	Nov.	1893	.20	15,397,000	April	1876	1.00
17	Bellevue, Idaho, s. l.	Idaho	1,250,000	125,000	10	120,000	Dec.	1889	.25	200,000	Jan.	1890	.10
18	Best Friend	Colo.	1,000,000	1,000,000	1	*	...	...	...	90,000	Feb.	1892	.01
19	Bi-Metallic, s. g.	Mont.	5,000,000	200,000	25	...	...	...	...	1,630,000	June	1893	.10
20	Bodie Con., g. l.	Cal.	10,000,000	100,000	100	714,990	July	1893	.15	1,602,572	April	1885	.50
21	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*	...	...	...	520,000	June	1886	.15
22	Boston & Mont., c. s.	Mont.	3,125,000	125,000	25	*	...	...	...	2,075,000	Nov.	1891	1.00
23	Brotherton, i.	Mich.	2,000,000	80,000	25	*	...	...	...	120,000	Mar.	1893	.50
24	Bulwer, g.	Cal.	10,000,000	100,000	10	155,000	July	1893	.15	190,000	Oct.	1892	.05
25	Bunker Hill & S. s.l.	Idaho	3,000,000	300,000	10	*	...	...	...	150,000	Oct.	1888	.06
26	Caledonia, g.	Dak.	1,000,000	100,000	100	505,000	May	1885	.15	192,000	Oct.	1890	.06¼
27	Calliope, s.	Colo.	1,000,000	1,000,000	..	...	...	...	...	140,000	Jan.	1891	.00
28	Calumet & Hecla c	Mich.	2,500,000	100,000	25	1,200,000	...	...	...	40,350,000	May.	1894	5 00
29	Centen'l-Eureka, s.l.	Utah.	1,500,000	30,000	50	30,000	Mar.	1888	1.00	765,000	Dec.	1893	1 00
30	Central, c.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,970,000	Feb.	1891	1.00
31	Champion, g	Cal.	340,000	34,000	10	150,000	...	...	...	173,700	Apr.	1894	.10
32	Chrysolite, s. l.	Colo.	10,000,000	200,000	50	*	...	...	...	1,650,000	Dec.	1884	.25
33	Clay County, g.	Colo.	200,000	200,000	1	*	...	...	...	56,000	Nov.	1891	.02
34	Clinton Con, g	Cal.	5,000,000	100,000	5	...	...	...	...	90,000	Nov.	1891	.10
35	Coeur D'Alene, s. l.	Idaho	5,000,000	500,000	10	...	...	...	...	310,000	June	1893	.03
36	Colorado Central, s.l.	Colo.	2,750,000	275,000	10	*	...	...	...	502,661	April	1893	.05
37	Commonwealth, s.	Nev.	10,000,000	100,000	100	200,000	Nov.	1893	.10	20,000	Nov.	1890	.20
38	Confidence, s. l.	Nev.	2,496,000	24,960	100	1,589,550	Aug.	1892	.50	199,680	April	1869	1.00
39	‡Cons. Cal. & Va., s. g	Nev.	21,600,000	216,000	100	216,000	Dec.	1892	.50	3,682,800	Aug.	1891	.50
40	Contention, s.	Ariz.	12,500,000	250,000	50	...	...	...	...	2,637,500	Aug.	1892	.20
41	Cook's Peak, s.	N. M.	2,000,000	200,000	10	...	...	...	...	119,532	Nov.	1892	.05
42	‖Cop. Queen Con., c.	Ariz.	2,000,000	200,000	10	...	...	...	...	1,660,000	May.	1894	.25
43	Coptis	Nev.	10,000,000	100,000	100	...	...	...	...	67,000	July.	1892	.12
44	Cortez, s.	Nev.	1,500,000	300,000	05	*	...	...	...	687,000	Mar.	1892	.50
45	Crescent, s. l. g.	Utah.	15,000,000	600,000	25	60,000	Oct	1892	.10	238,000	Oct.	1888	.08
46	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,753,000	June	1893	.25	11,898,000	Jan.	1875	.00
47	Daly, s. l.	Utah.	3,000,000	150,000	20	...	...	...	...	2,850,000	May.	1893	.25
48	†Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*	...	...	...	1,140,000	Sept	1892	.06
49	DeLamar, g s	Idaho	2,000,000	400,000	25	...	...	...	...	1,350,000	April	1894	.50
50	Derbee B. Grav., g.	Cal.	10,000,000	100,000	100	100,000	Sept.	1892	.10	265,000	Mar.	1894	.05
51	Dexter, g. s	Nev.	1,000,000	100,000	10	...	...	...	...	105,000	July	1893	.25
52	Elkhorn, s.	Mont.	1,000,000	200,000	5	*	...	...	...	1,261,000	Mar.	1894	.18
53	Enterprise, s.	Colo.	2,500,000	500,000	5	*	...	...	...	850,000	June	1893	.25
54	Eureka Con., s. l. g.	Nev.	1,000,000	50,000	100	550,000	June	1889	.50	5,112,500	Jan	1892	.25
55	Evening Star, s. l.	Colo.	500,000	50,000	10	...	...	...	...	1,437,500	Dec.	1889	.25
56	Father de Smet, g.	Dak.	10,000,000	100,000	100	200,000	Nov.	1878	1.00	1,125,000	Dec.	1885	.20
57	Franklin, c.	Mich.	1,000,000	40,000	25	220,000	June	1871	...	1,240,000	Dec.	1893	2.00
58	Glengarry	Mont.	1,000,000	100,000	10	...	...	...	...	10,000	June	1891	.10
59	Golden Reward	S.Dak	1,250,000	250,000	5	...	...	...	...	85,000	April	1893	.02
60	Gould & Curry, s. g.	Nev.	10,800,000	108,000	100	4,688,400	Oct.	1893	.10	3,826,800	Oct.	1870	10.00
61	Grand Prize, s.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890	.20	495,000	Mar.	1884	.25
62	Granite Mountain, s.	Mont.	10,000,000	400,000	25	...	...	...	...	12,120,000	July.	1892	.20
63	Great Western, l. q.	Cal.	5,000,000	50,000	100	...	...	...	...	388,366	Nov.	1893	.25
64	Hale & Norcross, g. s.	Nev.	11,200,000	112,000	100	5,646,800	June	1893	.50	1,822,000	Aug	1888	.50
65	Hecla Con., s. g. l. c.	Mont.	1,500,000	30,000	50	...	...	...	...	2,055,000	Sept.	1893	.50
66	Hel'a Mg. & Red, s.l.g.	Mont.	3,315,000	663,000	5	*	...	...	...	197,970	July.	1886	.06
67	Helena & Frisco, s.l.	Idaho	2,500,000	500,000	5	...	...	...	...	170,000	July.	891	.02
68	Helena & Victor	Mont.	1,000,000	200,000	5	...	...	...	...	80,000	May.	1892	.05
69	¶Holmes, s.	Nev.	10,000,000	100,000	100	345,000	Mar.	1890	.25	75,000	Apr.	1892	.25
70	Homestake, g.	Dak.	12,500,000	125,000	100	200,000	July.	1878	1.00	5,156,250	Apr.	1894	.15
71	Hope, s.	Mont.	1,000,000	100,000	10	*	...	...	...	533,250	Mar.	1894	.25
72	Horn-Silver, s. l.	Utah.	10,000,000	400,000	25	*	...	...	...	4,930,000	Mar	1894	.12½
73	Idaho, g.	Cal.	310,000	3,100	100	...	...	...	...	5,489,000	Sept.	1893	2.50
74	Illinois, s.	N. M.	100,000	100,000	1	*	...	...	...	45,000	April	1889	.20
75	Iron Mountain, s.	Mont.	5,000,000	500,000	10	*	...	...	...	265,000	Feb.	1894	.02
76	Iron-Silver, s. l.	Colo.	10,000,000	500,000	20	*	...	...	...	2,500,000	April	1889	.20
77	Jackson, g. s.	Nev.	5,000,000	50,000	100	247,500	Mar.	1893	.20	60,000	Jan.	1891	.10
78	Kearsarge, c.	Mich.	1,000,000	40,000	25	190,000	Oct.	1887	1.00	80,000	Jan.	1890	2.00
79	Kennedy	Cal.	10,000,000	100,000	100	...	...	...	...	1,295,000	Apr.	1894	.45
80	Kentuck, s. g.	Nev.	3,000,000	30,000	100	454,180	Oct.	1891	.15	1,350,000	Dec.	1886	.10
81	Leadville Con., s. l.	Colo.	4,000,000	400,000	10	*	...	...	...	316,000	Feb.	1892	.08
82	Lexington, g. s.	Mont.	4,000,000	40,000	100	*	...	...	...	652,200	July.	1893	.90
83	Little Chief, s. l.	Colo.	10,000,000	200,000	50	*	...	...	...	820,000	Dec.	1890	.06
84	Maid of Erin	Colo.	3,000,000	600,000	5	...	...	...	...	708,900	April	1893	.25
85	Mammoth, s. l. c.	Utah	10,000,000	400,000	.50	110,000	...	1882	.25	1,040,000	Dec.	1891	.10
86	Maxfield	Utah.	3,000,000	300,000	10	...	...	...	...	117,000	April	1892	.08
87	Mayflower, d. gravel	Cal.	1,200,000	60,000	20	...	...	...	...	179,000	Apr.	1894	.10
88	May Mazeppa, s. l.	Colo.	1,000,000	100,000	1	...	...	...	...	205,000	Oct.	1891	.06¾
89	Minas Prietas, g. s.	Mex.	1,000,000	100,000	10	*	...	...	...	350,000	Dec.	1890	.50
90	Minnesota, c.	Mich.	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar	1876	...
91	Minnesota Iron, i.	Minn.	16,500,000	165,000	100	...	...	...	...	2,745,000	April	1893	1.50
92	Mollie Gibson, s.	Colo.	5,000,000	1,000,000	5	*	...	...	...	3,930,000	Dec.	1893	.05
93	Monitor, g.	S.Dak	2,500,000	250,000	10	...	...	...	...	45,000	Oct.	1890	.08
94	Mono, g.	Cal.	5,000,000	50,000	100	797,500	Feb.	1893	.25	12,500	Mar	1886	.25
95	Montana, Lt., g. s.	Mont.	3,300,000	660,000	5	*	...	...	...	2,619,075	June.	1891	.12½
96	Morning Star, s. l.	Colo.	1,000,000	100,000	10	...	...	...	...	1,025,000	Dec.	1891	.25
97	Morning Star Drift, g	Cal.	240,000	2,400	100	...	...	...	...	213,600	Apr.	1894	4.00
98	Moulton, s. g.	Mont.	2,000,000	400,000	5	*	...	...	...	410,000	Nov.	1892	.07½
99	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	187,500	June	1880	2.00	225,000	Nov	1893	.30
100	Napa, q.	Cal.	700,000	100,000	7	...	...	...	...	620,000	April	1894	.10
101	Navajo, g. s.	Nev.	10,000,000	100,000	100	538,714	Sept.	1893	.10	226,111	April	1889	.10
102	New Guston, s.	Colo.	550,000	110,000	5	...	...	...	...	1,877,500	April	1892	.75
103	North Banner Con.	Cal.	1,000,000	100,000	10	...	...	...	...	20,000	July.	1891	.05
104	North Commonw'th	Nev.	10,000,000	100,000	10	90,000	Jan.	1893	.10	25,000	June.	1891	.25
105	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*	...	...	...	30,000	Dec.	1885	.06¼
106	North Belle Isle, s.	Nev.	10,000,000	100,000	100	518,075	April	1893	.10	280,000	May.	1888	.50
107	North Star, g.	Cal.	1,000,000	100,000	10	20,000	...	1885	.02	450,000	June	1890	.50
108	Omaha Cons., g.	Cal.	2,400,000	24,000	100	...	...	...	...	86,400	Apr.	1894	.15
109	Ontario, s. l.	Utah	15,000,000	150,000	100	...	...	...	...	13,175,000	Oct.	1892	.50
110	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,391,040	July.	1893	.25	1,595,800	Jan.	1880	1.00
111	Original, s. c.	Mont.	1,500,000	60,000	25	*	...	...	...	138,000	Jan.	1889	.05
112	Oro, s. l. g.	Colo.	500,000	100,000	5	...	...	...	...	95,000	July.	1890	.20
113	Osceola, c.	Mich.	1,250,000	50,000	25	480,000	April	1876	1.60	1,847,500	Dec.	1892	1.00
115	Pacific Coast, b.	Cal.	1,500,000	15,000	100	...	...	...	...	422,500	July.	1893	1.00
115	Parrot, c.	Mont.	1,800,000	180,000	10	...	...	...	...	1,569,000	June	1893	.10
116	Petro	Utah.	10,000,000	10,025	100	...	...	...	...	17,500	July.	1891	.75
117	Plumas Eureka, g.	Cal.	1,406,250	140,600	10	...	...	...	...	2,696,295	Oct.	1893	.18
118	Plymouth Con., g.	Cal.	5,000,000	100,000	50	*	...	...	...	2,280,000	Feb.	1888	.40
119	Poorman; g. s.	Idaho	375,000	300,000	25	*	...	...	...	68,260	Sept.	1892	...
120	Quicksilver, pref., q.	Cal.	4,300,000	43,000	100	...	...	...	...	1,828,911	June	1891	1.25
121	" com., q.	Cal.	5,700,000	57,000	100	...	...	...	...	643,867	July.	1887	.40
122	Quincy, c.	Mich.	1,250,000	50,000	25	200,000	Dec.	1862	...	6,870,000	Feb.	1894	8.00
123	Red Cloud	Idaho	1,000,000	200,000	5	...	...	...	...	153,000	Dec	1892	.10
124	Reed National, s. g.	Colo.	500,000	500,000	1	*	...	...	...	50,000	Dec.	1890	.01
125	Retriever, l.	S.Dak	1,250,000	250,000	5	...	...	...	...	20,000	Aug.	1891	.08
126	Rialto, g.	Colo.	300,000	300,000	1	*	...	...	...	50,250	April	1892	.01½
127	Richmond, s. l.	Nev.	1,350,000	54,000	25	*	...	...	...	4,359,887	Oct.	1893	.25
128	Rico-Aspen	Colo.	5,000,000	1,000,000	5	...	...	...	...	175,000	May.	1894	.02½
129	Ridge, c.	Mich.	1,250,000	50,000	25	219,939	Mar.	1886	50	99,785	Feb.	1890	.50
130	Robinson Con., s. l.	Colo.	10,000,000	200,000	50	*	...	...	...	585,000	Mar	1886	.05
131	Savage, s.	Nev.	11,200,000	112,000	100	6,966,000	June	1893	.25	4,460,000	June	1869	3.00
132	Sierra Buttes, g.	Cal.	2,225,000	122,500	10	...	...	...	...	1,559,938	Oct.	1893	.12½
133	Sierra Nevada, s. g.	Nev.	10,000,000	100,000	100	6,521,910	Aug	1893	.20	102,000	Jan.	1871	1.00
134	Silver Cord, s. l. g.	Colo.	4,500,000	450,000	10	...	...	...	...	265,000	April	1889	.10
135	Silver King, s.	Ariz.	10,000,000	100,000	100	97,479	Aug.	1892	.25	1,950,000	July	1887	.25
136	Silver Mg. of L.V., s.l.	N. M.	500,009	500,000	1	...	...	...	...	300,000	Dec.	1891	4.05
137	Small Hopes Con., s.	Colo.	5,000,000	250,000	20	*	...	...	...	3,225,000	Oct.	1893	.10
138	Standard, g. s.	Cal.	10,000,000	100,000	100	100,000	June	1890	.50	3,731,159	May.	1894	.10
139	Swansea, g. s.	Colo.	600,000	60,000	10	...	...	...	...	39,000	Sept.	1893	.10
140	Tamarack, c.	Mich.	1,250,000	50,000	25	520,000	April	1885	3.00	3,670,000	Dec.	1893	4.00
141	Tombstone, g. s. l.	Ariz.	12,500,000	300,000	25	*	...	...	...	1,250,000	April	1882	.10
142	Trinity Riv'r Hydr., g	Colo.	500,000	500,000	1	*	...	...	...	37,500	Apr.	1894	.00½
143	United Verde, c.	Ariz.	3,000,000	300,000	10	*	...	...	...	207,500	Jan.	1892	.10
144	Victor, g	Colo.	1,000,000	200,000	5	...	...	...	...	150,000	Feb.	1894	.07½
145	Ward Con., s.	Colo.	2,000,000	200,000	10	...	...	...	...	20,000	Dec.	1889	.05
146	W. Y. O. D.	Cal.	60,000	30,000	2	22,500	May.	1891	.10	69,000	Apr.	1894	.10
147	Yankee Girl, s.	Colo.	1,300,000	260,000	5	...	...	...	...	1,405,000	Sept.	1893	1.50
148	Yellow Jacket, g. s.	Nev.	12,000,000	120,000	100	5,556,000	July.	1893	[illegible]	2,184,000	Aug.	1871	1.50

NON-DIVIDEND-PAYING MINES.

No.	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
1	Alliance, s. g.	Utah.	$100,000	100,000	$1	$120,000	Feb.	1891	.10
2	Allouez, c.	Mich.	2,000,000	80,000	25	1,424,937	Oct.	1891	.10
3	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	209,000	Sept.	1892	.10
4	Alta, s.	Nev.	10,080,000	100,800	100	3,369,880	Jan.	1892	.10
5	American Flag, s.	Colo.	1,250,000	125,000	1	300,000	June	1887	...
6	Anchor, s. l. g.	Utah.	3,000,000	150,000	5	560,000	July.	1893	.3
7	Barcelona, g.	Nev.	5,000,000	200,000	5	*	...	...	...
8	Belmont, g.	Cal.	500,000	500,000	100	*	...	...	...
9	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1886	.10
10	Best & Belcher, s. g.	Nev.	10,080,000	100,800	10	2,405,275	Aug.	1892	.25
11	Black Oak, g.	Cal.	3,000,000	300,000	100	*	...	...	...
12	Brownlow, g.	Colo.	250,000	250,000	5	...	...	...	...
13	Brunswick, g.	Cal.	2,000,000	400,000	2	...	...	...	...
14	Bullion, s. g.	Nev.	10,000,000	100,000	100	2,800,000	Aug.	1892	.25
15	Butte & Boston, c. s.	Mont.	5,000,000	200,000	10	...	...	...	...
16	Butte Queen, g	Cal.	1,000,000	100,000	1	6,000	Jan.	1892	.04
17	Calaveras, g.	Cal.	500,000	500,000	5	...	...	...	...
18	Calaveras Con., g.	Cal.	800,000	160,000	10	...	...	...	...
19	California, g	Cal.	1,000,000	100,000	5	9,000	Mar.	1892	.03
20	California Con. l. q.	Cal.	2,250,000	450,000	10	...	...	...	...
21	Challenge Con., g. s.	Nev.	5,000,000	50,000	10	...	...	...	...
22	Chollar, s. g.	Nev.	11,200,000	112,000	2	1,820,000	May.	1892	.50
23	Colchis, s. g.	N. M.	500,000	150,000	5	...	...	...	...
24	Colorado, s.	Colo.	1,625,000	325,000	1	...	...	...	...
25	Comstock, s.	Utah.	1,250,000	250,000	100	...	...	...	...
26	Comstock Tun.	Nev.	10,000,000	100,000	100	35,000	Mar	1887	.10
27	Con. Imperial, g. s	Nev.	5,000,000	50,000	50	2,062,500	Jan.	1892	.25
28	Con. New York, s. g.	Nev.	5,000,000	100,000	100	110,000	Mar.	1892	.10
29	Con. Pacific, g.	Cal	6,000,000	60,000	10	198,000	June	1890	.10
30	Crescent, s. l.	Colo.	3,000,000	300,000	100	*	...	...	...
31	Crocker, s.	Ariz.	10,000,000	100,000	1	165,000	Aug.	1892	.05
32	Crowell, g.	N. C.	500,000	500,000		...	...	...	...
33	Dahlonega, g	Ga.	250,000	250,000		*	...	...	...
34	Decatur, s	Colo.	1,500,000	300,000		...	...	...	...
35	Denver City s.	Colo.	5,000,000	500,000	11	*	...	...	...
36	Denver Gold, g.	Colo.	900,000	60,000	5	...	...	...	...
37	Dickens-Custer, s.	Idaho	2,100,000	420,000	5	...	...	...	...
38	Durango, g.	Colo.	500,000	500,000	1	*	...	...	...
39	El Dorado, g.	Cal.	1,000,000	250,000	1	*	...	...	...
40	Emma, s	Utah.	625,000	500,000	125	...	...	...	...
41	Emmons, s. l.	Colo.	2,000,000	2,000,000	1	...	...	...	...
42	Empire, s.	Utah.	10,000,000	100,000	100	...	...	...	...
43	Eureka Tunnel, s. l.	Nev.	10,000,000	100,000	100	*	...	...	...
44	Exchequer, s. g.	Nev.	10,000,000	100,000	100	940,000	Jan.	1892	.25
45	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	130,500	Jan.	1892	.50
46	Gogebic I. Syn., i.	Wis.	5,600,000	200,000	25	...	...	...	...
47	Gold Cup, s.	Colo.	500,000	500,000	1	*	...	...	...
48	Golden Era, s.	Mont.	1,000,000	200,000	10	*	...	...	...
49	Gold Flat, g.	Cal.	1,000,000	100,000	10	5,000	Mar.	1892	.05
50	Gold Rock, g.	Cal.	1,000,000	500,000	2	...	...	...	...
51	Golden FeatherC..g	Cal.	900,000	180,000	5	...	...	...	...
52	Goodyear g. s. l	Mont.	1,000,000	200,000	5	13,000	Feb.	1892	.01
53	Grand Duke, s.	Colo.	800,000	80,000	10	...	...	...	...
54	Gregory Con., g.	Mont.	3,000,000	300,000	10	...	...	...	...
55	Harlem M. & M. Co., g.	Cal.	1,000,000	200,000	5	...	...	...	...
56	Hartery Con., g.	Cal.	1,000,000	100,000	10	22,000	Oct.	1890	.05
57	Hartshorn, g s. l.	S.Dak	1,250,000	250,000	5	8,750	Sept.	1891	.00½
58	Head Cent. & Tr., s. g	Ariz.	10,000,000	100,000	100	16,981	Mar.	1892	.03
59	Hector, g.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
60	Himalaya, g. s l.	Utah.	1,800,000	80,000	10	12,800	Oct.	1892	.00½
61	Holywood	Cal.	200,000	100,000	2	...	...	...	...
62	Huron, c.	Mich.	1,000,000	40,000	25	280,000	May	1887	3.00
63	Idaho, g. s	Idaho	1,250,000	250,000	5	...	...	...	...
64	Ingalls, g	Colo.	100,000	20,000	5	...	...	...	...
65	Ironton, i.	Wis.	1,000,000	40,000	25	...	...	...	...
66	Iroquois, c.	Mich.	1,250,000	50,000	25	...	...	...	...
67	Kentuck Con.	Nev.	10,500,000	105,000	00	57,750	July	1892	.10
68	Julia Con., g. s.	Nev.	11,000,000	110,000	100	1,463,000	Jan.	1889	.10
69	Justice, g. s. c.	Colo.	500,000	500,000	1	*	...	...	...
70	Lacrosse, g.	Colo.	1,000,000	100,000	10	*	...	...	...
71	Little Josephine, s.	Colo.	250,000	50,000	5	...	...	...	...
72	Lone Star Cons., g.	Cal.	500,000	500,000	1	10,000	April	1892	.00½
73	Madeleine, g. s. l.	Colo.	750,000	50,000	1	4,500	Feb.	1892	.00½
74	Mammoth Gold, g.	Ariz.	2,500,000	500,000	5	*	...	...	...
75	Mayflower Gravel, g	Cal.	1,000,000	100,000	10	*	...	...	...
76	Mexican, g. s.	Nev.	10,000,000	100,000	100	2,917,560	Oct.	1892	.50
77	Michigan, g s	Mich.	2,500,000	100,000	25	40,000	Mar.	1892	...
78	Mike & Starr, s. c.	Colo.	1,000,000	200,000	5	*	...	...	...
79	Milwaukee, s.	Mont.	500,000	500,000	1	*	...	...	...
80	Modoc Chief, l. s. g.	Idaho	1,000,000	200,000	5	5,000	Jan.	1892	.00½
81	Monitor, g.	Colo.	100,000	100,000	1	12,500	May.	1891	.01
82	Montreal, g. s. l.	Utah.	750,000	150,000	5	4,500	Feb.	1892	.00½
83	Mutual Mg. & Sm.	W'sh	100,000	100,000	1	*	...	...	...
84	Neath, g.	Colo.	1,000,000	100,000	10	...	...	...	...
85	Nelson	Cal.	50,000	10,000	5	...	...	...	...
86	Nevada Queen, s.	Nev.	10,000,000	100,000	100	200,000	Oct.	1889	.25
87	New Gold Hill	N. C.	1,750,000	350,000	5	...	...	...	...
88	New Pittsburg, s. l.	Colo.	2,000,000	200,000	10	*	...	...	...
89	North Standard, g.	Cal.	10,000,000	100,000	100	20,000	Nov.	...	...
90	Occidental Con., g.s	...	10,000,000	100,000	100	245,000	April	1892	.25
91	Oneida Chief, g.	Cal.	500,000	125,000	100	*	...	...	...
92	Oriental & Miller, s.	Nev.	10,000,000	400,000	100	...	...	...	...
93	Original Keystone, s.	Nev.	10,000,000	100,000	100	250,000	Mar.	1892	.10
94	Osceola, g.	Nev.	5,000,000	500,000	10	*	...	...	...
95	Overman, g. s.	Nev.	11,520,000	115,200	100	4,001,840	May.	1892	.10
96	Pay Rock, s.	Colo.	1,000,000	200,000	5	...	...	...	...
97	Peer, s.	Ariz.	10,000,000	100,000	100	190,000	Feb.	1892	.10
98	Peerless, s.	Ariz.	10,000,000	100,000	100	405,000	Oct.	1890	.15
99	Pennsylva'a Cons., g	Cal.	5,150,000	515,000	10	36,050	Feb.	1892	.10
100	Phoenix, g.	Ariz.	500,000	500,000	1	*	...	...	...
101	Phoenix Lead, s. l.	Colo.	100,000	100,000	1	*	...	...	...
102	Pilgrim, g	Cal.	600,000	300,000	2	*	...	...	...
103	Pioche M.&R., s.g.l.	Utah.	20,000,000	000,000	10	...	...	...	...
104	Poorman, Ltd., s. l.	Idaho	250,000	50,000	5	...	...	...	...
105	Potosi, s.	Nev.	11,200,000	112,000	100	1,573,000	Mar.	1890	.50
106	Proustite, s.	Idaho	250,000	250,000	1	*	...	...	...
107	Puritan, s. g.	Colo.	1,500,000	150,000	10	*	...	...	...
108	Quincy, c	Colo.	3,000,000	300,000	10	...	...	...	...
109	Rainbow, g.	S.Dak	1,250,000	250,000	5	4,250	July.	1892	.00½
110	Rappahannock, g. s.	...	250,000	250,000	1	*	...	...	...
111	Red Mountain, s.	Colo.	300,000	60,000	5	...	...	...	...
112	Ropes, g. s.	Mich.	2,000,000	80,000	25	167,200	Feb.	...	.50
113	Ruby & Dun., s. l. g.	Nev.	25,300	506	50	...	...	...	...
114	Russell, g.	N. C.	1,500,000	300,000	5	...	...	...	...
115	Sampson, g. s. l.	Utah.	10,000,000	100,000	100	288,15[illegible]	July.	1888	1.08
116	Silver Age, s. l. g.	Colo.	2,000,000	200,000	10	*	...	...	...
117	Silver Bell, s.	Ariz.	850,000	170,000	5	...	...	...	...
118	Silver King, s.	Cal	2,000,000	400,000	5	...	...	...	...
119	Silver Queen, c.	Ariz	5,000,000	200,000	25	*	...	...	...
120	Silverton, s	Colo.	300,000	60,000	5	...	...	...	...
121	Siskiyou Con., l.	Cal.	2,000,000	200,000	10	13,000	May.	1892	.01½
122	South Bulwer, g	Cal.	10,000,000	100,000	100	100,000	May.	1881	.25
123	South Hite, g.	Cal.	10,000,000	100,000	100	195,000	Jan.	1888	.05
124	Stanislaus, g.	Cal.	2,000,000	200,000	10	...	...	...	...
125	St. Kevin, s. g.	Colo.	100,000	100,000	1	*	...	...	...
126	St. Louis & Mex., s.	Mex.	000,000	500,000	10	*	...	...	...
127	St. Louis & St. Elmo.	Colo.	.000 000	200,000	10	...	...	...	...
128	St. L. & Sonora, g. s.	Ariz.	3,000,000	300,000	10	*	...	...	...
129	Stemwinder, l. s.	Idaho	,500,000	500,000	1	...	...	...	...
130	Sunday Lake, i.	Mich.	250,000	50,000	25	...	...	...	...
131	Sullivan Con., g	Dak.	600,000	200,000	3	*	...	...	...
132	Sylvanite, s.	Colo.	5,000,000	500,000	10	*	...	...	...
133	Taylor-Plumas, g	Cal.	425,000	65,000	5	3,575	Mar.	1892	.01½
134	Telegraph, g. s.	Cal.	325,000	65,000	5	3,575	Mar.	1892	.01½
135	Telegraph, g. s.	Mex.	100,000	100,000	1	70,000	Feb.	1892	.10
136	Teresa, g. s.	Cal.	1,000,000	200,000	5	10,000	Feb.	1888	.10
137	Tioga Con., g.	Nev.	10,000,000	100,000	10	295,000	May	1888	25
138	Tornado Con., g. s.	Nev.	100,000	100,000	1	*	...	...	...
139	Tuscarora, s.	Nev.	10,000,000	500,000	20	385,000	Jan.	1892	25
140	Union Con., g. s.	Nev.	10,000,000	100,000	100	370,000	June	1892	25
141	Utah, s.	Nev.	10,000,000	100,000	100	245,000	Aug.	1890	.25
142	Ute & Ulay, s. l.	Colo.	1,000,000	500,000	2	1,500	Mar.	1892	.001
143	Valley, g.	Cal.	575,000	460,000	125	...	...	...	...
144	Washington, c.	Mich.	1,000,000	40,000	5	...	...	...	...
145	West Argentine, s.	Colo.	750,000	150,000	5	...	...	...	...
146	West Granite Mt., s.	Mont.	500,000	100,000	5	...	...	...	...
147	Whale, s.	Mont.	5,000,000	500,000	10	*	...	...	...
148	Wood River, g.	Idaho	2,000,000	200,000	10	3,000	Aug.	1891	.00½
149	Yuma, c. s. g	Ariz	10,000,000	400,000	2	...	...	...	...

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † The Deadwood previously paid $275,000 in eleven dividends and the Terra $75,000. ‡ Previous to the consolidation in August, 1884, the California had paid $31,320,000 in dividends, and the Cons. Virginia $12,390,000. ‖ Previous to the consolidation of the CopperQueen with the Atlanta, August, 1885, the Copper Queen had paid $1,250,000 in dividends. ¶ Previous to this company's acquiring Northern Belle, that mine paid $2,400,000 in dividends against $425,000 in assessments.

COLORADO.

Aspen. May 10.

	Price.
Argentum-Juniata	$0.52
Aspen Contact	.45
Aspen Deep Mining	....
Best Friend	....
Bi-Metallic	.03
Bushwacker	.09½
Delia S.	....
Gold Valley Placer	....
Little Annie	.04
Mollie Gibson	1.17½
Pontiac	.03
Smuggler	.65
St. Joe & Mineral Farm	.05½
U. S. Paymaster	—

Colorado Springs.

Prices and sales for the week endin May 11th, 1894:

	High.	Low.	Sales.
Cripple Creek (gold):			
Aola	.02½	.02½	196,500
Alamo	.01½	.01¼	12,500
Anaconda Gold	.30	.29	10,600
Anchoria Leland	.09¼	.09	3,000
Antlers-Park-Regt.	.04¼	04	600
Bankers	.06	.05¼	35,000
Blue Bell	.02	.01¾	13,250
Calumet	.02⅛	.02	31,750
Columbine	.01⅛	.01¼	114,325
Cripple Creek Con	.03⅛	.03	12,000
Creede & Cripple C.	.01⅞	.01⅝	10,500
Elkton	.65	.65	33,000
Fannie Rawlings (S. & G.), Leadville	.10	.08	9,000
Golden Dale	4.00	3 00	23,500
Gold King	.11¼	.11	74,500
Goldstone	7.50	7.00	2,000
Gould	.07¼	.07	23,000
Golden Eagle	18.00	17.00	5,200
Gold Standard	.04	.03½	25,000
Granite Hill	9.50	8.50	7,000
Isabella	.17¼	.17	27,000
Jack Pot	.02¼	.02⅛	187,000
Lottie Gibson	.02	.01¾	22,100
Mollie Gibson	1.27⅛	1.22⅛	21,350
Mt. Rosa	.07	.06⅛	74,920
Mutual	.01¾	.01⅛	4,000
Ophir	.05	.04¼	26 475
Pharmacist	.10⅛	.10¼	42,200
Sacremento	.02⅛	.02⅛	17,000
Union	.27	.22	106,500
Virginia M.	.03⅛	.02¾	14,700
Work	.03¾	.03½	13,000
World	.01¾	.01⅛	27,000

Total shares sold 1,225,470

PENNSYLNANIA.

Pittsburg. May 17.

	Bid.	Asked.
Allegheny County Light	80	....
Bridgewater Gas	48	....
Chartiers Valley Gas	12⅛	12⅝
Manufacturers' Gas	33	....
Nat. Gas Co. of W. Va	25	....
Olive Valley Gas	23	....
People's Nat. Gas	25	31
People's Pipeage Co	....	14½
Penn. Gas	10⅛	10⅝
Philadelphia Co	20⅛	20⅝
Pittsburg Gas Co	77	80
Wheeling Gas	19	19⅝
Fisher Oil	....	53
Hazlewood Oil Co	10	....
Tuna Oil	7	....
Chartiers Block Coal	35	....
N. Y. & Cleve. Gas Coal	....	48½
Monongahela Nav. Co	67	....
Monongahela Water	30	30½
Luster Mining Co	10	12
Pittsb. Plate Glass Co	125	145
Stand. Undergr. Cable Co.	93¾	96½
U. S. Glass Co., pref	....	91½
" " common	25¼	26¾
Westinghouse Air Brake	122	123¼
Westingh'se Elect., 1st prf	51	....
" " 2d "	37	38
" " com	23⅛	....

MISSOURI.

St. Louis. May 17.

Closing quotations:	Bid.	Asked.
Adams	$0.40	....
American & Nettie, Colo	.25	$0.30
Bi-Metallic, Mont	2.00	3.00
Elizabeth, Mont	.15	.20
Granite Mountain, Mont	1.25	1.75
Hope	....	2.50
Leo	.01½	.02
Small Hopes	....	.50

MONTANA.

Helena.

(Specially Reported by S. K. Davis.)
Stock quotations week ending May 11.

	Bid	Asked.
Bald Butte (Mont.)	$4.00	$4.50
Benton Group (Neihart), Mont.	...	.25
Combination (Phillipsb'g), Mont	...	.90
Helena & Frisco	...	1.25
Helena & Victor, Mont	.	.25
Iron Mountain (Missoula), Mont	.40	.50
Piegan (Marysville), Mont	.40	.50
Poorman (Cœur d'Alene), Idaho	...	.90
Whitlach Union & MacIntyre	...	.25

MINNESOTA.

Duluth. May 15.

LISTED STOCKS.

	Par.	Bid.	Asked.
Biwabik M. Iron Co	100	$20.00	$21.00
Cincinnati Iron Co	25	.25	.30
Clark Iron Co	100	...	.60
Great Northern Min. Co.	100	2.75	3.50
Kanawha Iron Co	100	.10	.20
Keystone Iron Co		....	.40
Lake Superior Iron Co	25	....	2.50
Lincoln Iron Co		....	.50
Mesaba Moun. Iron Co.	100	14.00	17 00
Minneapolis Iron Co	100	.02	.15
Mountain Iron Co	100	50.00	65.00
Shaw Iron Co	100	2.50	3.00
Security Land & Exp. Co.	10	10.00	15.00

UNLISTED STOCKS.

	Par.	Bid.	Asked.
Adams Iron Co	10	$7.00	$9.00
Ashland Iron Co	25	....	40.00
Buckeye Iron Co	100	....	2.50
Buffalo Land & Exp. Co.	1	...	.50
Chandler Iron Co	25	20.00	26.00
Charleston Iron Co	100	.15	.30
Cleveland Cliffs Iron Co.	100	20.00	40.00
Chicago Iron Co	100	.20	.30
Detroit Iron Co	25	.01	02
Elmira Land & Iron Co.	100	.05	.25
Great Western Mining Co.	100	1.90	2.25
Homestead Iron Co	25	.00½	.02
Internat'l Development	10	....	22.50
Jackson Iron Co	25	....	60.00
Lake Supr. (Marquette)	25	20.00	27.00
McCaskill Mining Co	10	.01	.03
Mesaba C., L. & Ex. Co.	10	....	6.00
Mesaba Chief Iron Co	100	1.75	2.00
Mesaba Iron Co	30	....	.20
Metropolitan L. & L. Co.	25	50.00	70.00
Northern Light Iron Co	100	....	.25
Ohio Mining Co	100	5.00	8.00
Ophir, gold	10	....	1.00
Penn. Iron & Steel Co	100	.04	.10
Pioneer Iron Co	25	....	1.00
Pittsburg & Lake A. Co.	100	110.00	125.00
Putnam Iron Co	100	....	.80

FOREIGN.

Shanghai, China.

April 13, 1894.
(Special Report by J. H. Bisset & Co.).

	Taels.
Sheridan Con., Colo	2.50
Punyom Mining, Ltd	5.29
" Pref	1.46
Jelebu Mg. & Trading, Ltd	4.38
Raub A'lian G. Mg., Ltd	3.72

Paris, France. May 4.

	Francs.
Acieries de France	803.00
" de la Marine	935.00
" de St. Etienne	1,256.25
Aguas Tenidas	546.00
Anzin (coal)	4,400.00
Belmez, Spain	665.00
Callao	27.00
Callas Bis	......
Carmaux	1,260.00
Champ d'Or	26.50
De Beers Consolidated	430.00
Dombrowa	605.00
Firminy	1,340.00
Golden River, Cal	130.00
" " parts	30.00
Huanchaca	127.50
Jerez-Lanteira	15.00
" " parts	8.75
Kebao	595.00
Laurium, Greece	556.00
Lexington, Mont	42.00
" parts	0 90
Malfidano	1,575.00
Mokta-el-Hadid	785.00
Nickel New Caledonia	460.00
Ouro Preto	......
Phosphates de France	412.50
Placero Haute Italie	33.75
Pontgibaud	245.00
Rio Tinto, Spain	384.00
" " oblig	507.50
Soufres Rominas	190 00
Tharsis, Spain	119.00
Transvaal Coal	17.50
Uruguay	27.00
" rights	21.00
Vieille-Montagne, Belgium	457.50

ASSESSMENTS.

Company.	No.	Dlnqt. in office.	Day of sale.	Amt. per sh're
B. & Belch, Nev	56	June 5	June 26	.25
Challenge, Nev	16	May 8	May 29	.05
Clint. Con., Cal.	4	May 14	June 2	.50
Cr'wn Pt., Nev.	61	May 28	June 18	.25
Ea. Sierre, Nev	3	May 18	June 8	.05
Eclipse, Cal	8	May	June 2	.03
El L'poldo, Mex	6	May 10	May 21	.01
Even'g Star, Cal	13	May 3	May 24	.01½
Exchequer, Nev	37	June 14	July 2	.10
Golden Pr., Nev	6	May 26	June 23	.25
Gray Eagle, Cal	36	May 29	June 19	.03
Hale & Norcross, Nev	105	June 5	June 28	.26
Kent'k C., Nev.	9	June 14	July 3	.10
Magnet, Mont.	4	May 5	June 2	.01
Osborn Hill, Cal	2	May 7	May 28	.25
Pine Hill, Cal.	4	May 19	June 9	.05
Silv. K'g, Ariz.	10	June 11	July 9	.20
West. Con. Cal. & Va., Nev	2	May 12	May 31	.25

CURRENT PRICES.

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

Acid—Acetic, chem. pure .17@.19
Commercial, in bbls. and cbys .01¾@.02
Carbonic, liquefied, ꝑ ℔ .18@.25
Chromic, chem. pure, ꝑ ℔ 1.00
for batteries .40
Hyurobromic, dilute, U. S. P .25@.30
Hydrocyanic, U. S. P .45@.50
Hydrofluoric .20@.30
Alcohol—95%, ꝑ gall $2.30@$2.40
Absolute $3.80
Ammoniated $2.80
Alum—Lump, ꝑ cwt $1.75@$1.85
Ground, ꝑ cwt $1.85@$1.90
Powdered, ꝑ ℔ .04½@.05
Lump ꝑ ton, Liverpool £5
Aluminum Chloride—Pure, ꝑ ℔ $1.25
Amalgamating solution, ꝑ ℔ .60
Sulphate, ꝑ cwt $1.90@$2.50
Ammonia—Sal., in bbl. lots, ꝑ ℔ .07½@.08
Carbonate, ꝑ ℔, English and German, .07½@.08
Muriate, white, in bbls., ꝑ ℔ .08½
Aqua Ammonia—(in cbys) 18° ꝑ ℔ .03@.04
20°, ꝑ ℔ .04@.05
26°, ꝑ ℔ .04¾@.05
Antimony—Oxymur, ꝑ ℔ .04@.06
Regulus, ꝑ ℔ .10@.11½
Argols—Red, powdered, ꝑ lb .15
Arsenic—White, powdered ꝑ ℔ .03@.03¾
Red ꝑ ℔ .065@.07
Yellow .08@.09
White at Plymouth, ꝑ ton £12 2 6
Asbestos—Canadian, ꝑ ton $50@$300
Italian, ꝑ ton, c. i. f. L'pool £18@£60
Ashes—Pot, 1st sorts, ꝑ ℔ 4.75@5
Pearl .05¾@.06¼
Asphaltum—
Prime Cuban, ꝑ ℔ .04@.05
Hard Cuban, ꝑ ton $28.00@$30.00
Trinidad, refined, ꝑ ton $30.00@$35.00
Egyptian and Syrian, ꝑ ℔ .05@.07½
Californian, at mine, ꝑ ton $12.00@$26.00
at San Francisco, ꝑ ton $15.00@$29.00
Barium—Carbonate, pure, ꝑ ℔ .45
Carbonate, commercial, ꝑ ℔ .05@.10
Chlorate, crystal, ꝑ ℔ .75
Chloride, commercial, ꝑ ℔ .05@.10
pure, ꝑ ℔ .16
Iodide, ꝑ oz .40
Nitrate, ꝑ ℔ .06½@.07
Sulph., Am. prime white, ꝑ ton $17.50@$19
Sulph., foreign, floated, ꝑ ton $21@$24
Sulph., off color, ꝑ ton $11.50@$15.00
Carb., lump, f. o. b. L'pool, ꝑ ton £6
No. 1, Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " £3 15 0
Bauxite—ꝑ ton $10.00
Bichromate of Potash—Scotch, ꝑ ℔ .11@.12
American, ꝑ ℔ .11@.12
Bichromate of Soda—ꝑ ℔ .09½@.10
Borax—Refined, ꝑ ℔, in car lots .08@.09
San Francisco .08@.08¼
Concentrated, in car lots .07½@.08
Refined. Liverpool ꝑ ton £2
Bromine—ꝑ ℔ .25@.35
Cadmium Minion—ꝑ lb $2.00
Cadmium Iodide—ꝑ lb $5.50
Chalk—ꝑ ton $1.50@$2.25
Precipitated, ꝑ ℔ .04@.06
China Clay—English, ꝑ ton $13@$18.00
Domestic, ꝑ ton $9@$11
Chlorine Water—ꝑ ℔ .10
Chrome Yellow—ꝑ ℔ .10@.25
Chrome Iron Ore—ꝑ ton, San Francisco $10.00
Chromalum—Pure, ꝑ lb .35@.40
Commercial, ꝑ lb .02½
Cobalt—Oxide, ꝑ ℔ $1.60@$1.70
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ꝑ ℔ .03¼@.03¾
" extra .04½
Nitrate, ꝑ ℔ .40
Copperas—Common, ꝑ 100 lbs .85@.95
Best, ꝑ 100 lbs $1.35@$1.50
Liverpool, ꝑ ton, in casks £2@£2 10s.
Corundum—Powdered, ꝑ ℔ .04½@.09
Flour, ꝑ lb .03
Cryolite—Pow., ꝑ ℔, bbl. lots .07@.08
Emery—Grain, ꝑ ℔ (ꝑ kg.) .04½@.05
Flour, ꝑ ℔ .02½@.04
Epsom Salt—ꝑ ℔ .01@.01½
Feldspar—Ground, ꝑ ton $6.00@$10.00
Crude $2.00@$3.00
Fluorspar—Powdrd, No. 1, ꝑ ton $20@$30
Lump, at mine $6@$8
French Chalk—
Fuller's Earth—Lump, ꝑ ton $16@$20
Glauber's Salt—in bbls., ꝑ ℔ .01@.01¼
Glass—Ground, ꝑ ℔ .09@.10
Gold—Chloride, pure, crystals, ꝑ oz. $12.00
pure, 15 gr., c. v., ꝑ doz. $5.40
liquid, 15 gr., g. s. v., ꝑ doz $5.50
Chloride and sodium, ꝑ oz $6.00
15 gr., c. v., ꝑ doz. $2.75
Oxide, ꝑ oz $27.25
Gypsum—Calcined, ꝑ bbl $1.25@$1.50
Land Plaster
Iodine—Resublimed, ꝑ oz .30@.33
Iridium—Oxide ꝑ ℔ $90
Iron—Nitrate, 40°, ꝑ ℔ .01@.01½
47°, ꝑ ℔ .02@.02½
Kaolin—*See China Clay.*
Kieserite—ꝑ ton $9@$10
Lead—Red, American, ꝑ ℔ .06¾@.07½
White, American, in oil, ꝑ ℔ .06½@.07½
White, English, ꝑ ℔, in oil .08½@.08¾
Acetate, or sugar of, white .06@.06½
Granulated
Nitrate .09@.12
Lime Acetate—Am. Brown .90@.95
" Gray $1.75@$1.87½
Litharge—Powdered, ꝑ ℔ .05½@.07½
English flake, ꝑ ℔ .06@.09½
Magnesite—Crude, ꝑ ton of 1,015 kilos $14.75
Calcined, ꝑ ton of 2,240 lbs $22.00
Brick, ꝑ ton of 2,240 lbs $47.50
Manganese—Ore, per unit .23@.28
Oxide, ground, ꝑ ℔ .02½@.06½
Mercuric Chloride—(*Corrosive Sublimate*) ꝑ ℔ .62@.64
Powdered ꝑ q 5
Marble Dust—ꝑ bbl $1.25@$1.50
Metallic Paint—Brown ꝑ ton. $20@$25
Red $20@$25
Mica—In sheets according to size.
1st quality, ꝑ ℔ 25@$6.00
Mineral Wool—Ordinary slag .01½
Ordinary rock .02½
Ground, ꝑ ton
Naphtha—Black
Nitre Cake—ꝑ ton $10.00
Ochre—Rochelle, ꝑ ℔ .01¼@.01¾
Washed Nat Oxf'rd, Lump, ꝑ ℔ .06½@.06¾
Washed Nat Oxf'rd, Powder, ꝑ ℔ .07@.07½
Golden, ꝑ ℔ .03@.05
Domestic, ꝑ ton $12@$20
Oils, Mineral—
Cylinder, light filtered, ꝑ gal .14@.16
Dark filtered, ꝑ gal .10@.13
Extra cold test, ꝑ gal. .20@.24
Dark steam refined, ꝑ gal. .07½@.12
Phosphorus—ꝑ ℔ .50@.55
Precip., red, ꝑ ℔ .80@.85
white, ꝑ ℔ .85@.90
Platinic Chloride—Dry, ꝑ oz $7
Plumbago—Ceylon, ꝑ ℔ .04@.06
American, ꝑ ℔ .05@ 07
Potassium—Cyanide, ꝑ lb., C. P. .52
67%, ꝑ ℔ .40
mining .28@.30
Bromide, domestic, ꝑ lb .28@.32
Chlorate, English, ꝑ lb .18@.18¼
Chlorate, powdered, English, ꝑ ℔ .18½@.19
Carbonate, ꝑ lb., by casks, 82% .04½@.05
Caustic, ꝑ lb., pure slick .05½@.06
Iodide, ꝑ ℔ $2.58@$2.80
Nitrate, refined, ꝑ lb .06@.08
Bichromate, ꝑ lb .10@.11½
Yellow Prussiate, ꝑ ℔ .21½@.22½
Red Prussiate, ꝑ ℔ .39@.45
Pumice Stone—Select lumps, ℔ .03½@.15
Original cks., ꝑ ℔ .01½@.02
Powdered, pure, ꝑ ℔ .01½@.01¾
Pyrites—Non-cupreous, p. units. 10@.11
Quartz—Ground, ꝑ ton $6.00@$10.00
Rotten Stone, Powdered, ꝑ ℔ .03¼@.03½
Lump, ꝑ ℔ .06@.07
Original cks, ꝑ ℔ .04½@.05½
Rubbing stone, ꝑ ℔ .03½@.04
Sal Ammoniac—lump, in bbls., ꝑ ℔ .80½
Salt—Liverpool, ground, ꝑ sack .700
Domestic, fine, ꝑ ton $7@$7.5
Common, fine, ꝑ ton $4.50@$5
Turk's Island, ꝑ bush .26@.28
Salt Cake—ꝑ ton $10.00@$15.00
Saltpeter—Crude, ꝑ ℔ .03½@.04
Soapstone—Ground, ꝑ ton $6@$
Block and slab according to size.
Sodium—Prussiate, ꝑ ℔ .22@.24
Phosphate, ꝑ ℔ .04@.05
Stannate, ꝑ ℔ .08@.12
Tungstate, ꝑ ℔ .30@.35
Hyposulphite, ꝑ cwt., in casks $1.70@$1.80
Strontium—Nitrate, ꝑ ℔ .08½@.08
Sulphur—Roll, ꝑ ℔ .01½@.02¼
Flour, ꝑ ℔ .01¾@.02
Sylvinit, 27@35%, S.O.P., per unit, 3.75
Talc—Ground French, ꝑ ℔ .01¼@.01½
American No. 1, ꝑ ℔ .01¼@.01½
American No. 2 .006
Terra Alba—French, ꝑ ℔ .65@.80
English, ꝑ ℔ .65@.80
American, No. 1, ꝑ ℔ .60@.80
American, No. 2, ꝑ ℔ .40@.50
Tin—Crystals, in kegs or bbls .14@.15
feathered or flossed. .20
Muriate, single .07@.12
Double or strong, 54° B .10@.15
Oxymur, or nitro .19
Vermilion—Imp. English, ꝑ ℔ .80
Am. quicksilver, bulk .57 @.59
Am. quicksilver, bags .58 @ .60
Chinese .85 @$1.00
Trieste .90 @ .95
American .11½@ .12
Zinc White—Am., Dry, ꝑ ℔ .04½@ .05
Antwerp, Red Seal, ꝑ ℔ .06¼@.07
Paris, Red Seal, ꝑ ℔ .07⅝@.08
Muriate solution .06
Sulphate crystals, in bbls., ꝑ ℔ .03@.03¼

THE RARER METALS.

The prices given below are the prices in Germany, and are per gramme except where otherwise stated:

Arsenic (metallic), per kilo $0.25
Barium (ex amalgam) 2.12
" (per electrol.) 7.75
Bismuth (metallic), per kilo 6.25
Cadmium (metallic), " 2.75
Calcium (per electrol.) 5.25
Cerium (pulv.) 2.25
" (fusum in globulis) 5.50
Chromium (fus.) .40
" (cryst.) .75
Cobalt (metallic), per kilo 10.00
" (pure), per kilo 40.00
Didymium (pulv.) 5.50
Erbium-Yttrium (oxydat.) 10.00
Gallium (cryst.) 100.00
Germanium (fus.) 37.50
" (pulv.) 35.00
Glucinum (pulv.) 7.00
" (cryst) 10.75
Indium 5.00
Iridium (fusum) 1.25
Lanthanum (pulv.) 6.00
" (per electrol.) 11.00
Lithium (in glob.) 5.00
" (wire) 6.25
Manganese (fusum) .25
Molybdenum (pulv.) .12½
Niobium (pulv.) 4.25
Osmium 1.00
Palladium (wire) .06
" (pulv.) 1.00
Potassium (metal), per kilo 27.50
Rhodium 1.63
Ruthenium 2.50
Rubidium 6.25
Selenium (cryst.) .50
" (precipitates) .62½
Strontium (per electrol.) 7.25
" (ex amalgam) 3.25
Tantalum 4.75
Tellurium (fusum) .50
" (precipitates) .22½
Thallium .03¾
Titanium 1.15
Tungsten (pure) .05
Uranium 1.05
Vanadium 4.00

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Hunt, C. W. Co. | Thomson - Houston International Co.

Lubricants
Dixon, Jos., Crucible Co

Machine Molded Gearing
Poole, R., & Son Co.

Machinists
Poole, R., & Son Co.

Marine Railways
Poole, R., & Son Co.

Machinery, Dealers in Mining, Milling, and Other Machinery

Ætna Fdy. & Mach. Co. | Overland Mach. Co.
Allis, Edw. P., & Co. | Penn Diamond Drill & Mfg. Co.
Amer. Mining & Milling Machinery Co. | Pierce & Miller Engineering Co
Armstrong Brothers. | Pollock, Wm. B., & Co.
Beckett Foundry & Machine Co. | Poole, Robt. Son & Co.
Bostelman, L. F. | Scaife, W. B., & Sons.
Boston Ore Mach'y Co. | Stedman Fdy. & M. Co.
Buckeye Engine Co. | Sullivan Mach'y Co.
Bullock, M. C., Mfg. Co. | Thomson-Houston International Co
Colorado Iron Works. | Trenton Iron Co.
Exeter Mach. Wks. Co. | Union Iron Works.
Fraser & Chalmers. | Vulcan Iron Works.
Griffith & Wedge Co | Walb'rn-Swens'n Mfg. Co.
Hendrie & Bolthoff Mfg. Co. | Webster, Camp & Lane Mach. Co.
Jeffrey Mfg. Co. | Wright & Adam Co.
McKiernan, S. G. & Co. | Youngsto'n Bridge Co.
Mech'l Gold Extr. Co.
Mecklenburg Ir. Wks.
Moore, Sam. L., & Son.

Metal Dealers
Abbott, Wheelock & Co. | Johnson, Matthey & Co.
American Metal Co. | Lewisohn Bros.
Am. Zinc-Lead Co. | Mathison Sm'lting Co.
Baker & Co. | Orford Copper Co.
Bath, Henry & Son. | Phelps, Dodge & Co.
Eureka Co. | Picher Lead Co
James & Shakspeare. | State Ore Sampling Co.
Victor Chemical Co.

Metallurgical Works and Ore Purchasers' Processes
American Zinc Lead Co.
Baker & Co
Balbach Smelting & Refining Co.
Baltimore Copper Works.
Canadian Copper Co.
Kansas City S. & Ref. Co.
Ledoux & Co.
Mechanical Gold Extractor Co.
Orford Copper Co.
Pennsylvania Salt Mfg. Co.
Ricketts & Banks.
Russell Process Co.
St. Louis Sampling & Testing Works.
State Ore Sampling Co.
Waiburn-Swenson Mfg. Co.

Mine Cars
Sheffield Car Co.

Mining and Land Companies
Atlantic Mg. Co. | Eureka Co.
Boston & Mont. Mg. Co. | Golden R'f Mg. & M. Co.
Butte & Boston Mining Co. | Hicks & Sprague.
Central Mg. Co. | Osceola Con. Mg. Co.
Copper Queen Mg. Co. | Quebrada R. R. L. & C. Co.
Detroit Copper Mg. Co. | Tamarack Mg. Co.

Moulding Sand
Garden City Sand Co.

Nickel
Canadian Copper Co.

Nuts, Lock
Young Lock Nut Co.

Ore Cars
Truax Mfg. Co.

Ore Testing Works
Hunt & Robertson. | Ricketts & Banks.
Ledoux & Co. | State Ore Sampling Co

Packing and Pipe Coverings
Brandt, Randolph. | New York Belting & Packing Co., Ltd.
Jenkins Bros. | Wyckoff & Son, A.
Keasby, Robt
Mineralized Rubber Co.

Patents
Atkins J. L.

Perforated Metals
Aitcheson, R., Perf. Metal Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

Periodicals
Arms and Explosives. | Iron & Coal Trades Review.
Austral'n Mg. Stand'd | Indian Engineering.
El Minero Mexicano. | Jour. of Assoc. of Engineering Societies.
Electrical Plant & Electrical Industry. | Mining Journal.
Financial Times.

Phosphates
Trenholm, Paul C.

Phosphor-Bronze
Phosphor-Bronze Smelting Co.

Pile Drivers
Bucyrus Steam Shovel and Dredge Co.

Pipes
Pollock, Wm. B., & Co. | Wyckoff & Sons, A.

Planed Gearing
Poole, R., & Son Co.

Platinum Johnson Matthey & Co.
Baker & Co.

Plumbago—East India
Obermayer Co.

Powder
Ætna Powder Co.
Laflin & Rand Powder Co.
Lau, J. H., & Co.

Pulleys
Poole, R., & Son Co.

Pumps
Ætna Fdy. & Mach. Co. | Knowles Steam Pump Works.
Allen, Chas. A. | McGowan, John H., & Co.
Blake, Geo. F., Mfg. Co. | Pulsometer Steam Pump Co.
Cameron, A. S., Steam Pump Works. | Stilwell-Bierce & Smith-Vaile Co.
Epping, Carpenter & Co. | Worthington, Henry
Groetzinger, A., & Sons
Jeanesville Iron Wks.

Publications
Allison Coupon Co. | Financial Times.
Arms & Explosives. | Iron & Coal Trades Rev.
Australian Mining Standard. | Jour. of Assoc. of Engineering Societies.
Electrical Plant & Electrical Industry | Mining Journal.

Quarrying Machines
Bostleman, L. F.
Ingersoll-Sergeant Rock Drill Co.
Rand Drill Co.
Sullivan Machinery Co.
Union Wire Rope Tramway Co.

Quicksilver
Eureka Co.

Railroads
C., C., C. & St. L. R. R.

Railroad Supplies and Equipment
Garden City Sand Co. | Robinson & Orr.
Hunt, C. W., Co. | Young Lock Nut Co.
Porter, H. K., & Co
(See Machinery.)

Regulators, Damper, Heat, Etc.
Eddy Valve Co. | Mason Regulator Co.
Lunkenheimer Co.

Rock Drills. (See Air Compressor.)

Rolling Mill Machinery
Poole, R., & Son Co.

Roofing
Berlin Iron Bridge Co. | Phelps, Dodge & Co.
Holton Iron & Steel Roofing Co. | Pittsburg Bridge Co.
Pencoyd Bridge and Const. Co. | Scaife, Wm. B., & Sons
Youngsto'n Bridge Co

Rope Wheels
Poole, R., & Son Co'

Rubber Goods
New York Belting & Packing Co., Ltd

Safety Lamps
Wm. E. Stieren.

Screens
Aitcheson, R., Perf. Metal Co.
Exeter Machine Works Co.
Harrington & King Perforating Co.
Tyler W. S., Wire Works Co.
(See Machinery.)

Screen Plates
Harrington & King Perforating Co.

Separators
Harrison Safety Boiler Works.

Shafting
Poole, R., & Son Co.

Shoes and Dies
Chrome Steel Works. | Crescent Steel Co.

Shovels (Steam)
Bucyrus Steam Shovel & Dredge Co.
Souther & Co.

Smelting and Refining Works
Balbach S. & Ref. Co. | Orford Copper Co.
Baltimore Cop'r Wks. | Penna. Salt Mfg. Co.
Bos. & Colo. Smelt. Co. | Penn Smelting and Refining Works.
Cowles Smelt. & Alu. Co.
Kansas City S. & Ref. Co. | Phosphor-Bronze Smelt. Co.
Mathison Smelting Co.

Steam Fans
Cole, Wm. E.

Steel Rails, Castings, Rolls, Drill Steel
Abbott, Wheelock & Co. | King & Andrews Co.
Bethlehem Iron Co. | Moore, S. L., & Sons Co
Chester Steel Cast. Co. | Roberts, A. & P., & Co.
Chrome Steel Works. | Robinson & Orr.
Crescent Steel Co. | Whitney, A., & Sons.
Exeter Machine W. Co | (See Metal Dealers
Garrison, A., Fdry. Co.

Tanks
Pollock, Wm. B. & Co.
Scaife, Wm. B. & Sons.
Williams Mfg. Co.

Tapping Machine, Gas Main, Etc.
Mueller Mfg. Co.

Telegraph Wires and Cables
Okonite Co., Ltd, The.

Tin Plate Rolling Machinery
Poole, R., & Son Co.

Tools
Pratt & Whitney Co.

Tubes
Pollock, Wm. B., & Co. | Williams Bros.

Tubing-Rubber
New York Belting and Packing Co., Ltd.

Turbines
James Leffel & Co., The.
Poole, Robt. & Son Co.
Stilwell-Bierce & Smith-Vaile Co.

Turbine Water-Wheels
Poole, R., & Son Co.

Valves
Eddy Valve Co. | Lunkenheimer Co.
Jenkins Bros. | Mason Regulator.

Ventilators
Bullock, M. C., Mfg. Co.

Vulcanite Emery Wheels
New York Belting and Packing Co., Ltd.

Washers
Milton Mfg. Co.

Water Pressure Reducers
Mueller Mfg. Co.

Water Pressure Regulators
Mueller, H., Mfg. Co.

Water-Wheels
Poole, R., & Son Co.

Well Drilling Machinery
Bostelmann, L. F.
Penn Diamond Drill & Mfg. Co.
Sullivan Machinery Co.
Williams Bros.

Wheels, Car
Sheffield Car Co.

White Lead Machinery
Poole, R., & Son Co.

Wire Cloth
Aitcheson, R., Perf. Metal Co.
Harrington & King Perforating Co.
Tyler, W. S., Wire Works.

Wire Rope & Wire
Abbott, Wh'lock & Co. | Leschen, A., & Sons Rope Co.
Broderick & Bascom Rope Co. | Phelps, Dodge & Co.
California Wire Wks. | R'bling, J. A. Sons & Co.
Cooper, Hewitt & Co. | Ropeways Synd., Ltd.
Hunt, C. W., Co. | Trenton Iron Co.

Wire Rope Tramway
Brown Hoist. & Convey. Machine Co
California Wire Works.
Colorado Iron Works.
Cooper, Hewitt & Co.
Hunt, C. W., Co.
Roebling, J. A., Sons & Co.
Trenton Iron Co.
Vulcan Iron Works.

FREE ADVERTISING.

Inquiries from employers in want of Superintendents, Engineers, Metallurgists, Chemists, Mine or Furnace Foremen, or other assistance of this character, will be inserted in this column WITHOUT CHARGE, whether subscribers or not.

The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the *exclusive* benefit of *subscribers* to the ENGINEERING AND MINING JOURNAL.

☞ **Applicants should inclose the necessary postage to insure the forwarding of their letters.**

Positions Vacant.

1320 WANTED—AN EXPERT PLACER miner to superintend the installation and operation of hydraulic plant in South America. Address COMPETENT, ENGINEERING AND MINING JOURNAL.

1322 WANTED—AN ENGINEER WHO is familiar with subsoil and spring drainage to report on draining a property near New York City. Address, giving experience and references, SUBSOIL, ENGINEERING AND MINING JOURNAL.

1323 WANTED—A CHEMICAL OR MEchanical engineer capable to erect a bone black and sulphate of ammonia works. Address BONE BLACK, ENGINEERING AND MINING JOURNAL.

1324 WANTED—BRIDGE SALESMAN for each State in the Union, competent to make sales of bridges and superintend erection when necessary. Address, stating age, experience, salary expected, etc, SALESMAN, ENGINEERING AND MINING JOURNAL, lock box 1107, Chicago, Ill.

1325 WANTED—A THOROUGHLY COMpetent master mechanic to take charge of the machinery of a copper mining and smelting concern in the Northwest. Apply, stating age, experience and references. Address letters MONT, ENGINEERING AND MINING JOURNAL.

1326 WANTED—FOREMAN MACHINIST —one who would appreciate an opportunity for advancement; sobriety and ability must be unquestioned; prefer one who has some knowledge of draughting and has had experience in the manufacturing of water-tube boilers; state age, nationality, wages desired and references. Address MACHINIST, ENGINEERING AND MINING JOURNAL.

1327 WANTED—A SALESMAN WELL acquainted with the steel trade, particularly in the Eastern States. Address STEEL TRADE, ENGINEERING AND MINING JOURNAL.

1328 WANTED — AN ANALYTICAL chemist thoroughly versed in the analysis of gold, silver, copper and lead ores. Applicant must be able to purchase at least $500 of the company's stock. A salary of $100 monthly is guaranteed to the right man for the first few months, with great chances for increase. Address COLORADO, ENGINEERING AND MINING JOURNAL.

1329 WANTED—AN ASSISTANT CHEMist and assayer in a shop refining precious metals. Address, stating age, experience, and wages expected, ASSISTANT, ENGINEERING AND MINING JOURNAL.

Situations Wanted.

Advertisements for SITUATIONS WANTED will be Charged only 10 cents a line.

WANTED—SITUATION IN SMELTING OR concentrating works; technical education; several years' experience in treating low grade ores. References given. Address SMELTING AND CONCENTRATING, ENGINEERING AND MINING JOURNAL. No. 16,365, June 9.

A GENERAL MACHINIST WANTS A SITUATION as Foreman. Address STEAM, ENGINEERING AND MINING JOURNAL. No. 16,497, June 30.

MINING ENGINEER DESIRES POSITION, or will examine and report on mining property; 20 years' experience West and Mexico. OHO, ENGINEERING AND MINING JOURNAL. No. 16,506, May 26.

YOUNG MAN DESIRES POSITION AS Analytical Chemist, specialty having been made of iron and steel, pig iron, gold and silver ores. Is graduate of Ann Harbor. Can produce unsurpassed references.
F. J. PECK, 475 Russell avenue, Cleveland, O. May 26.

SITUATION WANTED BY A PRACTICAL man who has been master mechanic, mining engineer and superintendent of large coal mines in the soft coal region of the East. Can give best of references. Address B. E., ENGINEERING AND MINING JOURNAL. No. 16,505, May 26.

CHEMIST DESIROUS OF MAKING A change wants position. Best references. Address H. A. B., ENGINEERING AND MINING JOURNAL. No. 16,504, June 2.

A MECHANICAL DRAUGHTSMAN DESIRES engagement. Address STAFF, ENGINEERING AND MINING JOURNAL. No. 16,503, June 9.

POSITION WANTED BY FIRST-CLASS Machinist as master mechanic, foreman or any position where ability and faithful services will be appreciated. Experience in marine and stationary engines and rolling mill machinery, good draughtsman. Vicinity of New York preferred. Address HUSTLER, ENGINEERING AND MINING JOURNAL. No. 16,502, June 9.

A CERTIFICATED MINE MANAGER AND Mining Engineer desires a position as mine superintendent or mining engineer. Twenty years' experience at extensive mines, including the opening up of new mines, erecting new plants, rope haulage and long wall work. First class references. Address T., ENGINEERING AND MINING JOURNAL. No. 16,483, May 26.

POSITION WANTED AS ASSISTANT TO mine manager or mining engineer, by a recent graduate of the Columbia College School of Mines. Address METAL MINING, ENGINEERING AND MINING JOURNAL. No. 16,500 tf.

A MINING ENGINEER WILL SHORTLY BE open to re-engagement as Manager or Superintendent of Mines and Mills. Has wide experience in gold, silver and copper. Highest references from present and past employers. Address TRANSIT, ENGINEERING AND MINING JOURNAL. No. 16,495, June 23.

METALLURGIST, WITH EXTENSIVE EXperience, and one of the best records as superintendent for several years of one of the largest smelting works of this country, wishes a change and position with a solid concern who appreciates good, practical and cheap running of their works. Address EXPERIENCED METALLURGIST, ENGINEERING AND MINING JOURNAL. No. 16,188, tf, 4 ow.

CHEMIST OF NINE YEARS' EXPERIENCE in metallurgical works is open to engagement. Best of references.
No. 16,482, tf. H. N. YATES, Lockport, N. Y.

Contracts Open.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., May 22d, 1894.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 27th day of June, 1894, and opened immediately thereafter, for all the labor and materials required for the superstructure and completion (except heating apparatus and approaches) of the U. S. Court House and Post Office building at Mankato, Minnesota, in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Superintendent at Mankato, Minnesota. Each bid must be accompanied by a certified check for a sum not less than 2½ of the amount of the proposal. The right is reserved to reject any or all bids or to waive any defect or imformality in any bid should it be deemed in the interest of the Government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked, "Proposal for the Superstructure and Completion (except Heating Apparatus and Approaches) of the U. S. Court House and Post Office Building at Mankato, Minnesota," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

PIPING, CASTINGS, VALVES, ETC.—Proposals are wanted until June 21 for furnishing a quantity of water pipe, special castings, gate valves, fire hydrants, etc. Address E. M. BIGELOW, Director of Department of Public Works, Pittsburg, Pa.

ORDNANCE SUPPLIES. — Benicia Arsenal, Benicia, Cal.—Sealed proposals, in triplicate, will be received until June 4th, 1894, for furnishing leather, coal iron, hardware, lumber, forage, etc., during the fiscal year ending June 30th, 1895. Printed lists of supplies needed, with full instructions, stipulations, etc., can be had on application to Lieut.-Col. L. S. BABBITT, Ordnance Department, U. S. Army, Commanding.

IRON SPANS.—Bids, plans and specifications are solicited for placing two 60-ft. iron spans in place of the present wooden approaches to the drawbridge across the Ocmulgee River in Pulaski County. I will pass upon all bids, etc., that may be sent in until June 13. For further information apply to P. T. McGIFF, Ordinary, Hawkinsville, Ga.

BRIDGES.—The auditor was instructed to advertise for bids for iron, wood and combination bridges to be built during the season, said bids to be sealed and filed with the County Auditor on or before June 4th. J. F. DAUGHERTY, Chairman; JOHN WALLJASPER, County Auditor, Fort Madison, Ia.

STEEL AND IRON WORK.—Treasury Department, Office Supervising Architect, Washington, D. C. —Sealed proposals will be received at this office until the 29th day of May, 1894, for all the labor and materials required to put in place complete the steel and cast iron columns, in 2d, 3d, 4th and 5th stories, steel and iron floor construction of 3d, 4th, 5th and 6th floors, etc., U. S. Post Office Building at Washington, D. C., in accordance with the drawings and specification, copies of which may be had at this office, or the office of the superintendent at Washington, D. C. Each bid must be accompanied by a certified check for a sum not less than 2 per cent. of the amount of the proposal. Proposals must be inclosed in envelopes, sealed and marked "Proposal for the Steel and Cast Iron Columns, Steel and Iron Floor Construction, Etc., for the U. S. Post Office Building at Washington, D. C.," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

BRIDGE.—C. Bauermeister invites bids until June 2d for building a bridge across Fort Creek, New Ulm, Minn.

WATER-WORKS.—Danville, Ky.—Sealed proposals, addressed to the Chairman of the Water Committee, will be received until May 30th, for furnishing materials and labor and constructing a system of waterworks. The work to be done is approximately as follows: 1. A masonry dam about 8 ft. in height and 200 ft. in length, across Dix River. 2. A pumping station and supply conduit. 3. Pumping machinery of an easy capacity of 2,000,000 gallons daily, with boilers and all appurtenances and connections. 4. A filtering plant of about 300,000 gallons daily capacity. 5. A water-tower 16 ft. by 150 ft., with its foundation. 6. Furnishing 80 fire hydrants; also their necessary valves and valve boxes. 7. Furnishing about 1,500 tons cast iron water pipe and about 12 tons of special castings. 8. Laying the pipe and setting valves, valve boxes and fire hydrants. Plans and specifications can be seen on and after May 12th at the office of the Consulting Engineer, C. H. Davis, Chicago, Ill., and at the office of E. W. Smith, Resident Engineer, in Danville, Ky. HENRY E. WOOLFOLK, Chairman.

PIPING, CASTINGS, ETC.—Proposals are wanted until June 21st for furnishing a quantity of water pipe, special castings, gate valves, fire hydrants, etc. Address E. M. BIGELOW, Director of Department of Public Works, Pittsburg, Pa.

BRIDGE.—State of Georgia, County of Pulaski, Court of Ordinary, Hawkinsville, Ga.—Bids, plans and specifications are solicited for placing two (2) 60-ft. iron spans in place of the present wooden approaches to the drawbridge across the Ocmulgee River in said county. I will pass upon all bids, etc., that may be sent in before the 13th day of June, 1894, at my office in Hawkinsville, Ga. The right to reject any and all plans and bids is reserved. For further information apply to P. T. McGIFF, Ordinary, Pulaski County.

FUEL AND OIL.—Depot Quartermaster's Office, Washington, D. C.—Sealed proposals, in triplicate, will be received here until June 2d, 1894, and then opened, for furnishing during fiscal year ending June 30th, 1895, such fuel and mineral lamp oil as may be required. Information required will be furnished on application to this office. Government reserves right to reject any or all proposals. Envelopes containing proposals should be marked "Proposals for Fuel or Mineral Oil," and addressed to Lieut.-Col. GEORGE H. WEEKS, Depot Quartermaster.

IRON PIPE, HARDWARE, ELECTRICAL Supplies, etc.—Sealed proposals will be received by the Board of Commissioners of the Colorado State Penitentiary, at Canyon City, Col., until June 4th, for the following: 24 bars half-round iron ¾-⅛; 12 bars tire iron ¾ × 2¼; 200 lbs. Norway iron ⅜-1½ × 2; 50 lbs. ¾ hoop iron for nails; 1 box tin 3 xxx; 2 pieces galvanized iron No. 22; 6 dozen files, assorted; 2 kegs horseshoes; 2 boxes toe corks; 25 lbs. washers, ¾-⅝-½; 400 bolts ¼ × 1¼-2; 10 dozen hammer handles; 10 dozen heavy pick handles; 1 dozen each ax and hoe handles; also a lot of electrical supplies, iron pipe, steam fittings. Lists to be had on application to the Warden. All bids and supplies should be addressed to "The Board of Commissioners Colorado State Penitentiary, Canyon City, Col.," indorsed "Proposals for Subsistence, Etc." CHARLES BOETTCHER, President.

BRIDGE.—The county supervisors will let contract for Des Moines River bridge June 9th. T. CUNNINGHAM, Auditor, Fort Dodge, Ia.

Continued on page 19.

MACHINERY AND SUPPLIES FOR SALE.

STEEL RAILS,
NEW OR SECOND-HAND.

We can furnish any weight of New Rails. We also have for immediate delivery 400 tons of Second-Hand 60 lb. Steel T Rails, 100 tons 35 lb. Girder and 300 tons 45 lb flat steel; all well fit to relay, and cheap.

ROBINSON & ORR,
No. 419 Wood Street, Pittsburg, Pa.

FOR SALE.

Smelting Plant at Trinidad, Colo.,

all equipped, ready to start up. Situated just outside city limits Trinidad, on a 29½-acre tract of land adjoining a river. Side tracks from two competing railway lines. Description of Smelter Buildings and their contents, also photos of works, may be found at the office of ENGINEERING AND MINING JOURNAL.

For terms apply to **MILWAUKEE AND TRINIDAD SMELTING AND REFINING COMPANY, Milwaukee, Wis.**

THE FOLLOWING MACHINERY IS ALL NEW, and was displayed at the World's Columbian Exposition by the Chicago Iron Works. It is now offered for sale by order of the Superior Court. Full details and prices can be obtained on application to **ROCKWELL KING, Receiver, Estate Chicago Iron Works, Chicago, Ill.**

	Weight.
8″ × 12″ Hoisting Engine—two cylinders, single drum, 42″ × 40″ grooved for holding 500 ft. ⅝″ rope in single coil	8,000 lbs.
10″ × 7 Blake Crusher	7,800 lbs.
33″ × 84″ Galena Silver Furnace—Steel Jackets and Curb, Ball Joint Tuyères, Corner Discharge Boxes, Spouts, Lead-well, Binder, Stack, etc.	20,000 lbs.
2 Collom Jigs, complete.	
1 Slide Motion Jig, 2 compartments.	
1 Brunton Sampler No. 2.	
Rotary Screens—One train of three. Each 36″ diameter, 96″ long, complete with perforated iron coverings and Steel housings	7,500 lbs.
1 Bilharz Concentrator.	
2 Silver and Gold Mortars.	
2 Slag Pots and 1 Scoop Car.	
2 Tulloch Feeder and 2 Bullion Molds.	
1 Sectional 4 × 6′ Dodge Crusher	1,200 lbs.
2 " 10″ × 24″ Retort complete	2,500 lbs.
1 " 14″ × 36″ Corliss Engine	30,000 lbs.
1 " 44″ × 14′ Boilers	22,500 lbs.

LOCOMOTIVE AND RAILS.

SADDLE TANK, standard gauge Locomotive; weight, 10 tons; in use 12 months and in A1 condition, for sale, Cheap, and on Easy Terms.
Also Light and Heavy Section Relaying Rails.

SOUTHERN IRON & EQUIPMENT CO.,
ATLANTA, GA.

LANDS AND MINES FOR SALE.

Grand Opportunity for Investment

FROM 4,000 TO 4,500 ACRES

Coal, timber and farming lands, near railroad in Somerset County, Pennsylvania, accessible to Eastern markets, for sale on most reasonable terms, or might consider income property clear in part payment if location satisfactory. Owners have not time to give attention. Title perfect. Inquire of

W. P. HUMES,
Bellfonte Pa.

Nickel and Gold Mines.

I have a first-class nickel property for sale at less than half its actual value, also some gold claims.

A. McCHARLES, Sudbury, Ont.
No. 16,510, June 16.

FINANCIAL.

Golden Reef Mining and Milling Co.

Capital Stock, 100,000 Shares.
Par Value, $10.
Selling Price, $2.50 per share
Gold and Copper Mines at Norris, Madison County, Montana.

TO INVESTORS.

The Golden Reef Mining and Milling Company, of Chicago, Illinois, offer to investors a limited number of shares of their Treasury Stock. This stock is guaranteed and is absolutely safe. The company's mines have been opened up. Many thousand tons of gold and copper ore of paying quality. All that is required to put the property in a dividend-paying condition is a milling plant. The mill is already built and ready for shipment.

Make all checks, drafts, etc., payable to THOMAS F. THORNE, of the Commercial National Bank, Chicago, Trustee. For prospectus and full information address E. M. TREAKLE, Sec'y, Room 1505, No. 79 Dearborn St., Chicago.

MISCELLANEOUS WANTS.

WANTED—PARTNER OR PARTNERS TO organize a stock company for manufacturing a patented automatic coal, clay and freight conveyor. In demand; $3,000 stock already insured for $1,500, or for the sale of the same. Illustrated catalogue on application.

Address L. BOUDREAU, No. 170 E. Spruce Street, Manchester, N. H.

WANTED

to buy a cheap second-hand ROCK BREAKER.
Address
MYLES & CO.,
No. 16,508. June 16. New Orleans, La.

WE BEG TO ANNOUNCE THAT OUR Mr. Ede, M. E., leaves here early in April to examine mineral properties in NEW MEXICO, UTAH, Colorado, Oregon and South Dakota. He will undertake other work for private parties or companies. Twenty years' experience. Reference exchanged.

EDE & BURWELL, Mining Engineers,
21 QUINCY STREET, CHICAGO.

THE GOLD AND SILVER EXTRACTION COMPANY

(MACARTHUR-FORREST PROCESS)

OF AMERICA, LIMITED.

MacARTHUR-FORREST Process.

CAPITAL, £110,000 Sterling.

TO MINEOWNERS and others having Refractory Gold and Silver ores hitherto untreatable at a profit, the **MacArthur-Forrest** (Patent) **Process** of gold and silver extraction offers a solution of the difficulty.

Advisory Board in the United States: THOMAS W. GOAD, Mgr. / HUGH BUTLER, Atty. / JOHN F. BELL. / P. GEORGE GOW. — DENVER, COLO.

OFFICE:
McPhee Building, - Denver, Colo.

Contracts Open.
Continued from page 18.

FUEL.—Governor's Island, N. Y. H.—Sealed proposals, in triplicate, for furnishing such quantities of fuel as may be required in the Department of the East during the fiscal year commencing July 1, 1894, will be received here, and at offices of Quartermasters at Baltimore, Md.; Boston, Mass.; Buffalo, N. Y.; New Orleans, La.; Fort Niagara, N. Y.; Fort Ontario, N. Y.; Madison Barracks, N. Y.; Plattsburg Barracks, N. Y.; Fort Preble, Me.; Fort Adams, R. I.; Fort Trumbull, Conn.; Fort Monroe, Va.; Newport Barracks Ky.; Fort Thomas, Ky.; Fort McPherson, Ga.; St. Francis Barracks, Fla., and Mount Vernon Barracks, Ala., until June 6, 1894, and then opened. Information furnished on application to this office, or to Quartermasters at posts named above. Envelopes containing proposals will be indorsed "Proposals for Fuel." CHAS. H. TOMPKINS, Asst. Q.-M.-Gen.

Received Too Late for Classification.

1330 WANTED—EXPERIENCED CHEMist for blast furnace. One willing to help in office preferred. Give experience, references, and full particulars. Address IVANHOE, ENGINEERING AND MINING JOURNAL.

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