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The Broken Hill mines in Australia are threatened with a renewal of the labor troubles of several years ago. The rush to West Australia has reduced the supply of miners, and the Union feels strong enough to make demands upon the Broken Hill Proprietary Company which that corporation is not likely to submit to without a struggle. The Labor party is very strong in Australia, and unless some compromise can be made, serious trouble is possible. The company can hardly grant any increase of wages at the present prices of lead and silver, unless it is willing to surrender all its profits; indeed, it seems as if a worse time to demand concessions could hardly have been chosen.

The situation at Leadville, Colo., continues strained, but no move of importance on the part of either the mine-owners or the striking miners is reported this week. So far there has been very little violence or rioting, but there is little doubt that an outbreak would follow any decided action, such as an attempt to bring in men from other points—action which is said to be contemplated by some of the managers. Meantime the great camp is idle and nothing is being done.

It is said that some of the mine-owners will abandon the mines rather than give way. In the Bon Air and Penrose, two of the Smith-Moffat group of mines, the pumps were stopped this week and the mines are filling with water. The outlook at present is not encouraging.

Lead last week reached the lowest quotations on record in this market, selling here in New York for 2-60 cents per pound; and though there has been a slight reaction since, the price is still extremely low. At these figures the small profit which there has been in producing lead must have nearly, if not quite, disappeared, and the closing down of a number of mines may follow, unless demand and prices should increase, which does not seem immediately probable.

The market for the metal has, of course, affected that for ores. At Joplin, Mo., where the ores from Southwest Missouri and Southeast Kansas are sold, lead ores averaged this week \$13.50 per 1,000 pounds; this price comparing with \$16 in the first week in July and \$18 early in January last.

Alabama iron is to be pressed upon the English market, according to our contemporary, the London Iron and Coal Trades Review, which states that pig iron from the Birmingham District has been offered in several cases, the price named by agents being 6d. below that of English pig of equal grade. It is also stated by the same authority that offers have been made to deliver large quantities at 38s. per ton on dock at Liverpool. The grade of the iron in this latter case is not stated. The price, however, is about the current quotation for Cleveland pig, and 8s. below that for Scotch iron. With iron selling at from \$6.25 to \$7 per ton at Birmingham, it could be put down in Liverpool at the price named; but the profit to the furnaceman at such quotations must be so small that there would be little inducement to extend his trade.

The people of Newfoundland are much pleased with what Sir Archibald Geikie, Director General of the British Geological Survey, who has lately been visiting the province, reports, to the British Colonial Secretary, as to its mineral resources. He speaks of the coal and iron deposits as immensely valuable, and advises the appointment of special experts to examine and report upon them. The account which is given in the press despatches says nothing about the copper, gold and other mineral wealth of Newfoundland, but doubtless these were not overlooked. It is a country of large possibilities, not yet developed or even explored to the extent which the actually known occurrences would seem to warrant. There have long been very flattering reports from the province, with a good deal about what ought to be or was going to be done in the way of development, yet so far progress has been slow. Very likely the same amount of attention that has been given to more distant and less favored lands would have resulted in important finds.

The somewhat belated report of the great Mansfeld Copper Company in Germany shows a very great improvement in 1895 over 1894, the total earnings last year having been 5,679,375 marks, and the increase over the preceding year 1,625,047 marks. The change was not due to a great increase in production, but to the advance in prices. In fact, the copper output decreased slightly, having been 15,079 metric tons last year against 15,202 tons in 1894, while the silver production was nearly the same, 75,877 kilograms against 75,496 kilograms. There was a marked increase in the average prices realized, which rose from 860 marks (\$205) per ton for refined and 839 marks (\$199) for electrolytic copper in 1894, to 908 (\$216.10) and 909 marks (\$216.34) per ton, respectively in 1895. It is to be noted that the report shows last year a slightly higher price (1 mark) for electrolytic than for refined copper, though in 1894 the difference was 21 marks the other way. In silver the gain was considerable, the average last year having been 88 marks (\$20.94) per kilogram against 85 marks

Table with 2 columns: Location, Page. Includes sections like Personal, Obituaries, Societies and Technical Schools, Industrial Notes, Trade Catalogues, Machinery and Supplies Wanted, Mining News, United States (Alabama, Alaska, Arizona, California, Colorado, Georgia, Idaho, Kentucky, Michigan, Minnesota, Missouri, Montana, Nevada), New Jersey, New Mexico, Ohio, Pennsylvania, South Dakota, Texas, Vermont, Washington, West Virginia, Wyoming, Foreign (Br. Columbia, Mexico, New So. Wales), Late News, Markets (Coal, Iron), Metals (Pig Iron Production), Iron, Chemicals and Minerals (New York, Liverpool), Meetings, Dividends, Assessments, Mining Stocks (New York, Chicago, Cleveland, Boston), Mining Co's (List of, Advt. Index, Advt. Rates).

(\$20.23) the year before. There was a considerable increase in the output of by-products from the works, which include sulphuric acid, cement, slag-brick and road-metal. Very little is wasted at the Mansfeld Works.

We give up a good deal of valuable space in another part of this week's issue to the extraordinary statements of Dr. Stephen H. Emmens that he has succeeded or hopes to succeed in changing silver into gold. In an early issue we shall refer at some length to the assumptions of Dr. Emmens as to what are the accepted teachings of science and to the discrepancies in his statements of the basal facts in his own work, but since the army of the over-credulous is large and great injury might result from the unfounded and unattainable expectations that would undoubtedly be raised, and are even now circulating by ignorant or designing persons, concerning Dr. Emmens' discovery it appears proper that the *Engineering and Mining Journal* should even now say that so far as our knowledge goes there is nothing yet known that gives any firm ground for a belief in the transmutation of the elements; in fact the tendency of scientific investigation seems to lead to the opposite conclusion. Neither is there anything in Dr. Emmens' statements that would convince any careful investigator that he has succeeded in converting silver into gold.

Paraff claimed some years ago that he could convert copper into gold, yet notwithstanding the undoubted fact that this announcement transmuted much of other people's gold into his gold, the outcome was disastrous to him when the courts of barbarous Peru required him to perform the transmutation in their presence.

But perhaps Dr. Emmens' "discovery" is only for present political purposes.

Reporting Gold Production.

A discussion is going on in the two mining associations of the Transvaal—the Johannesburg Chamber of Mines and the Association of Mines of the South African Republic—over a proposed reform in the manner of making the reports. The reformers want to have all the statements of production made in fine ounces of gold, or, at least, to have them reduced to a uniform degree of fineness. At present the bullion, especially that obtained by the cyanide process, varies very much in value; some, it is stated, being as low as '600 fine, while a small quantity has been reported as high as '995 fine. Some of the companies report the value of their bullion, but most of them the weight only, and it has been the custom, where no value was given, to take mill gold—that is, bullion obtained from amalgam—at £3 10s. per ounce, or '840 fine, and cyanide gold at £3 per ounce, or '720 fine. Taking the returns for a considerable period the Witwatersrand bullion is found to be '816 fine; but this is only an approximation, where exact statements are particularly desirable.

The chief objection offered to the proposed change has been that it would be misleading in making comparisons with the reports of previous years, and that the public might suppose that there had been a decrease in the production when, in fact, there had been a gain. This, however, seems to be of very little real weight. The proposition that a uniform standard be adopted, say '825 or '850 fine, while it would be a slight advance over the present lack of all system, is also open to objection. Its real object seems to be to keep the figures of production nominally at a high rate.

We have always advocated strongly the reporting of the production of gold and silver in fine metal, and we have always used this standard in our own reports wherever possible, and in the *Mineral Industry*. We trust that it will be adopted in the Witwatersrand; and also that it will become the universal practice, so that when an ounce of gold or silver is named we may know what it is without further calculation or inquiry, which is now necessary in so many cases.

The Utilization of Coal Waste.

The rapid increase in coal production in recent years, the consequent sharp competition and low prices have called the attention of operators to the necessity of greater economy in their methods, and have impressed upon them the importance not only of more careful work in mining, but of avoiding waste and of utilizing, as far as possible, the entire product of their mines. Some advances have been made in mining, and many others are possible; but at present it seems that the greater saving can be made by utilizing the fine coal and dust, thus reducing the very large proportion of the coal product which now goes into the waste-heaps. So far as future supply is concerned our reserves of bituminous coal are so large that there is no danger of exhaustion; nevertheless in special fields economy is a pressing question, and in the anthracite regions it is for some of the companies almost a vital one.

In the bituminous coal fields, especially in the West, competition may be said to have increased the percentage of waste. In many of the Western markets it is becoming more and more difficult to sell run-of-

mine coal, and to command customers deliveries must be made of clean lump and sized coal. The necessary screening and preparation, of course, involves the making of greater proportions of dust and culm, which must either be used in or about the mines, or go into the waste-heaps. The margin of profit in coal mining has been for several years very small; and the culm-pile may very easily represent the difference between a balance on the right or the wrong side of the mine operator's ledger.

Part of this waste can be avoided by improved machinery, and greater care in mining and handling the coal. Part of it is unavoidable, and this makes the question of using the waste in some form one of constantly increasing importance.

The solution which naturally presents itself first is the use of devices for burning the dust directly and so utilizing the fine as well as the lump or sized coal. While very little has been done in this direction, except in coke making in the bituminous coal fields of the United States, a good deal of attention has been directed to it in the anthracite regions, where it has long been the custom to use coal dust for steam raising and other fuel purposes. Many devices for the convenient use of this fuel in stationary boilers have been made, and the Wootten and other forms of culm-burning fireboxes for locomotives are well known. The late Eckley B. Coxe devoted much attention to this branch of the subject, and designed several forms of grates and fire-boxes which seem well adapted to the purpose. Moreover, some saving has been effected in the anthracite mines by the closer sizing of coal and the creation of a market for the smaller sizes—such as "pea," "buckwheat" and "rice"—which were formerly considered waste. In many cases, even, the old culm-heaps are being worked over for these sizes.

The direct burning of culm and dust, however, must be confined to the near neighborhood of the mines, since they will not bear the expense of transportation to any considerable distance under present conditions, and many mines have not a near-by market to absorb the combustible waste. These facts will limit the amount of waste which can be disposed of in this way; though there is room for a great deal of work in this direction.

The practice of washing the small coal and dust and converting them into coke is gradually spreading, especially in the South. While this is necessarily limited to the coking coals, and therefore cannot be applied at a great many mines, it can be greatly extended. In this connection also it might be suggested that the use of the coke could be much increased. It is, we believe, possible to create markets for coke, if it can be furnished in sufficient quantities and at moderate prices, as a steam fuel as well as for metallurgical purposes; and as a household fuel also, especially in those sections of the country where it will not come into active competition with anthracite. This use of coal will also be very much assisted by the introduction of various forms of the by-product coke oven, which may make coke production not only possible but profitable at many mines where operators would not heretofore have thought of introducing it.

The manufacture of briquettes, as they are commonly called—that is the formation of the dust or culm into blocks or lumps of convenient size with some agglomerating material—has not yet been successfully introduced on a commercial scale in this country, one or two efforts made to do so having failed for various reasons. In France, Germany and Belgium it is an important industry and briquettes constitute a considerable part of the fuel supply. In France* they are especially in demand for railroad use. In Germany the extent of this manufacture is illustrated by a recent report of the Deutsche Braunkohlen Industrie Verein, which shows that some 30 per cent. of the brown coal mined was made into briquettes at or near the mines. It may be remarked that this brown coal, or lignite, is very friable and makes a large proportion of dust in handling or simply by exposure to the air, and is therefore a wasteful fuel under ordinary conditions. In the Thuringian, Saxon and Brunswick districts there were last year 59 briquette establishments at work, their total output amounting to 2,930,139 tons; and several of the works have made arrangements to increase their production.

An objection which has been made to briquette manufacture is the first cost of the plant, which would make its introduction difficult or impossible at small mines. In many districts this objection might be met by co-operation and the erection of machinery to use the waste from several mines. This would also meet the further objection that a small plant might not be commercially profitable, and that greater economy is possible in working on a larger scale.

Finally, there is the plan which we have suggested in these pages on several occasions during the past 20 years, and which was referred to in a recent lecture before the Franklin Institute in Philadelphia.† This is the use of the coal in large plants at or near the mines, and the transmission of light, heat and power to the points of large consumption in the form of gas or of electricity. There is no doubt that in this way a large proportion of the present waste could be avoided, and a much larger proportion of the fuel value of the coal mined could be utilized than is possible under present conditions. The accomplishment of so radical a

*The machinery and methods used in making them were described in the *Engineering and Mining Journal* for October 12th, 1895, page 347.

†*Engineering and Mining Journal* for August 29th, 1896, page 202.

change, however, will take time, and when this change is begun it will be for a long period confined to the larger towns and cities. There is, therefore, plenty of opportunity for the use of other methods, and coal operators will do well to consider them. In this discussion the *Engineering and Mining Journal* will assist in all possible ways, and especially by keeping its readers informed from time to time of the latest and best appliances and methods and of any progress made toward answering this question.

NEW PUBLICATIONS.

SIBERIA AND THE TRANS-SIBERIAN RAILROAD. By Th. Sabachnikoff and E. D. Levat. Paris, France; *La Vie Scientifique*. Pamphlet, 12 pages; illustrated.

This is a reprint of a paper read before the Société de Géographie in Paris, and gives a graphic account of a trip made by the author across Siberia on the line of the Trans-Siberian Railroad. Incidentally some account is given of the Siberian placers, necessarily brief, since the object has been rather to describe the present condition of the great railroad line and to give a general account of the country through which it passes than to treat of its resources in detail. The two travelers have made a very interesting record of a journey through a country which promises to become soon much better known, and which may become also a factor to be considered in the world's progress.

THE COMMERCIAL YEAR-BOOK; A STATISTICAL AND HISTORICAL RECORD. VOLUME I. New York: *The Journal of Commerce and Commercial Bulletin*. Pages, 430. Price, \$1.

This is a very convenient manual for merchants, both those engaged in foreign trade and those whose operations are confined to this country. It contains a great variety of information useful for reference, such as statistics of production and manufactures, of imports and exports in this and other countries; notes on railroads and internal transportation lines and on steamship lines; summaries of foreign tariffs; and many other items which a merchant needs to know in the course of his daily business transactions. *The Journal of Commerce and Commercial Bulletin* is one of the best-known and most reliable commercial newspapers in this country, and this *Hand Book* has evidently been compiled with as much care as is exercised in the preparation of the paper. It will be found useful in almost all departments of trade.

AMERICAN STEAM AND HOT WATER HEATING PRACTICE. New York; *The Engineering Record*. Pages 320; with 586 illustrations.

This book is a selected reprint of descriptive articles, questions and answers collected for their especial interest, from the large amount of such articles which have appeared in the columns of *The Engineering Record* since 1888. In their descriptions they will be found to include expositions of heating and ventilating design as applied to modern structures of the most extensive type, as well as a discussion of various problems arising in this department of building engineering. The articles have been collated and arranged under proper heads, so that they are readily consulted and form an excellent treatise on the subject. They include many plans and descriptions of the application of heating apparatus to houses and other buildings. They also include many notes on difficulties encountered in practical work and the ways in which they have been overcome; and this is an especially valuable feature of the book. For an architect, engineer or builder it is an excellent manual.

THE MONETARY AND BANKING PROBLEM. By Logan G. McPherson. New York; D. Appleton & Company. Pages, 136.

In this little volume Mr. McPherson considers the monetary question from the beginning, showing in a clear and simple way the origin and gradual development of monetary systems, and the cause of some of the troubles which now afflict us. Whatever one's opinion may be on the present situation, one can find much in this book which will aid in coming to a correct view, and in explaining many difficult points.

In common with some other profound thinkers Mr. McPherson believes that the real tendency of modern civilization is in the direction of the final abandonment of coin or metal of any kind as a standard or basis of values—except that which may be retained as a matter of convenience for small transactions—and the adoption of a standard based upon, as he expresses it, "the value of human effort." Just how this is to be done is not quite apparent as yet; but it is evident that our present systems of money and currency are capable of a great deal of improvement, and the direction pointed out in this book may quite possibly be the correct one. At any rate it is worth studying.

DIE DECKUNG DES ERZBEDARFS DER DEUTSCHEN HOCHOFEN IN DER GEGENWART UND ZUKUNFT. (THE SUPPLY OF THE ORE REQUIREMENTS OF THE GERMAN BLAST FURNACES IN THE PRESENT AND FUTURE). By E. Schrodter, Dusseldorf, Germany; published for the Verein Deutscher Eisenhüttenleute by *Stahl und Eisen*. Pages 38; with maps.

This excellent monograph is a reprint of a paper read before the society named in the title by Herr Schrodter, followed by a brief discussion from the members. It is an exhaustive, though very much condensed, account of the sources from which the German blast furnaces now draw their supplies of ore, both domestic and imported, with a supplement giving some comparisons with the United States and Great Britain. The author has also considered the question of future supplies with especial reference to the probable growth of the German iron trade. The statistics of production, imports and prices are given for a series of years. In considering the supply the author has taken up the various districts in order, showing the local conditions as to ore supply and the way in which they have affected the iron industry. Especial attention is given to the districts of Upper Silesia and Westphalia, and to the minette ores of Luxemburg and Lothringen, which are such an important factor in Germany.

The value of the monograph is increased by the well-executed maps

which accompany it, and which include not only Germany and several of its leading ore districts, but also Great Britain and the United States, showing the location and relative importance of their iron ore and coal mines; and finally a map of the world showing graphically the coal and iron production of all countries. A list of the German blast furnaces is also appended; besides analyses of many of the ores in use. The German ores as a rule are not of high tenor in iron; the highest given are the magnetic ores of Lower Silesia, 58%; the red ores of the Dill-Lahn-Revier District, 53.5%; the brown ores of Upper Hesse, 53%. The minette ores of Luxemburg run from 35 to 40%.

The imported iron ores are not at present so important a factor in the trade as in Great Britain, but they tend to become more so in the future. The question of future ore supply in Germany is an important one, and has been here well considered.

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.

Die Ziele der Technischen Hochschulen. By A. Riedler. Berlin, Germany. Pages, 20.

Railroad Pooling. By Martin A. Knapp. Philadelphia, Pa.; American Academy of Political and Social Science. Paper; pages, 25. Price, 25c.

Schäden an Dampf-Kesseln. Heft II: Schäden an Stabil-Kesseln. Vienna, Austria; Oesterreichischen Ingenieur-und-Architekten-Verein. Pages, 49; with 13 plates and illustrations.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested. Letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

The Minas Prietas Sale.

Sir: I have noticed in your issue of July 18th that the gold mines of the mining camp of Minas Prietas of the State of Sonora, Mexico, have been sold to the Rothschilds.

Please take notice that those mines cannot be sold till the heirs of Messrs. Chamberlain & Price, of the city of Cleveland, O., settle with Mrs. Amparo S. de Johnson for legitimate rights that she represents in those mines.

NOGALES, ARIZ., Aug. 25, 1895.

JOSEPH DE LUSIGNAN.

The Market for Wolfram Ore.

Sir: Upon looking through the columns of your valuable journal, I find under the head of "Correspondence" an inquiry for a reliable market for wolfram. I beg to say that I am buyer of large quantities of wolfram ore, if the same can be supplied of a percentage not below 50% and at a low price and I would be able to offer an intending seller better terms, I believe, than dealers in minerals, as I am a consumer. The approximate value of wolfram with 50% is to-day about \$7 per 100 kg., delivered alongside ship in New York; of 60% ore \$8 and of guaranteed 70% ore \$9. It is difficult to estimate the approximate demand, but if prices are below these figures I think the consumption could be considerably increased. The demand is lasting.

E. DE HAEN.

HANNOVER, Germany, Aug. 14, 1896.

Difficulties With the Cyanide Process.

Sir: The articles I have on the cyanide process speak only of ores containing acid salts and their neutralization and treatment. I am working on tailings that have been exposed to the weather for the last 15 years, and show an alkaline reaction with water and litmus paper. After soaking with water for 12 hours and washing there is still too large a consumption of cyanide while the solution is turned a dark red, and does not precipitate on the shavings as well as it should. I think these tailings contain some oxide of antimony or possibly manganese. There is also some decayed vegetation on them. Can you inform me of some preliminary treatment that may lessen the consumption of cyanide? As the tailings are low-grade it must necessarily be cheap.

C. E. BRYSON.

ATLANTIC CITY, Wyo., Aug. 24, 1896.

Gold in Gypsum in Australia.

Sir: In an issue of the *Journal* last year you recorded the occurrence of gold in gypsum at Lake Austin, Murchison, West Australia, and perhaps a few remarks on the mode of occurrence of the two minerals may be of interest. At The Island, Lake Austin, auriferous quartz reefs occur in a country occupied by highly altered sedimentary rocks probably older Paleozoic, and diorite, the latter occurring in the form of dikes. The reefs are contact ones, generally speaking, formed along the contact zones of the diorite with the altered sediments.

Overlying these rocks and the caps of the reefs are more or less isolated deposits of gypseous breccio-conglomerate. The fragments of the conglomerate consist of particles of the metamorphosed rocks, diorite and quartz, the cementing medium being gypsum and oxide of iron. The gypsum in places is well crystallized, and the crystals themselves vary from minute specimens to larger sizes, and in a few instances the mineral is fibrous. The fragments of the conglomerate are more or less angular and sub-angular, and show no more signs of greater weathering action than particles of the same material on the surface at the present time. In this conglomerate free gold occurs, varying from fine colors up to pieces several pennyweights in weight. The heaviest piece in this particular formation, I have noted, is 28 dwts. The gold does not show any signs of abrasion, presenting a rough jagged appearance.

Immediately over the caps of the reefs the conglomerate is worth work-

ing on a small scale for its gold contents, but decreases in value with increasing distance from the reefs.

The whole deposit shows every indication of being a lacustrine one, the gold itself having been in all probability precipitated from solution divided, in the first instance, from the reefs underlying the conglomerate.

ARCHIBALD S. HAY.

THE ISLAND, LAKE AUSTIN, West Australia, July 10, 1896.

Cost of Wallaroo & Moonta Copper.

Sir: In your issue of May 16th last in an article dealing with the "Cost of Producing Copper Abroad," you express surprise that the cost of mining and smelting such high-grade ores should be what it is stated to be in the Wallaroo & Moonta Company's annual report, and further, that with so high a cost of production the company had been able to pay dividends in view of the prices at which copper had ranged in England during the past few years. Permit me to explain that the 28,579 tons of 20% and 14% ore, given as the produce of the mines, is the concentrated ore sent to the smelters. To obtain this quantity quite 290,000 tons of vein-stone have to be mined and passed through the crusher rolls and jigs. If the cost of smelting is considered high it is to be borne in mind that the whole of the ore is sulphuret and requires calcination. With regard to profits, the copper prices you give are for G. M. Bs., while the price obtained for Wallaroo copper is considerably higher, owing to the well-known purity of the metal and its adaptability for certain classes of work.

I have to thank you for the interest shown in our Australian mining and for the valuable information contained not only in your weekly issue, but also in your yearly volume of *The Mineral Industry*.

D. DAVIDSON,

Secretary Wallaroo & Moonta Mining Company.

ADELAIDE, South Australia, July 14, 1896.

PLATINUM MINING AT FIFIELD, NEW SOUTH WALES.*

By J. B. Jaquet.

For the last two decades it would appear that the country around Fifield has been intermittently prospected for alluvial gold, and a little platinum must from time to time have been obtained, though there is no record of this metal being discovered previous to 1887. In that year Mr. J. F. Connelly, who received aid from the Government to prospect the district, reported having discovered alluvial platinum and presented a sample to the Geological Museum. Nothing appears to have been done in the way of further developing the field until, in 1893, Messrs. Fifield, Rand and party discovered rich alluvial gold near the site of the present township of Fifield. Upon news of the discovery becoming known a rush set in to the district and the lead which is now being worked was found soon afterward.

The Fifield-Platina lead runs in a north and south direction for a little over a mile. It is from 60 to 150 ft. wide. The drift containing the precious metal is overlain by from 60 to 70 ft. of loam with occasional bands of barren quartz drift. The platinum and gold occur in small well water-worn grains, and are practically confined to the crevices in the bed-rock and the dirt within a few inches of the bottom. Occasional nuggets have been obtained which have weighed from a few grams up to 5 dwt.

The washdirt is first of all puddled in machines worked by horses. During this process the soft layer of bedrock which is broken down with the drift is pulverized, and any metal which may be attached to it set free. The clean gravel is afterward washed in ordinary sluice boxes and the gold and platinum obtained. The gold is extracted by amalgamation with mercury, and crude platinum left behind. The latter realizes at the present time upon the field 24s. per oz. It contains about 75% of platinum, the balance being chiefly platinoid metals. An analysis by Mr. J. C. H. Mingaye, analyst and assayer to the Mines Department, was as follows: Platinum, 75.90%; iridium, 1.30; rhodium, 1.30; palladium, traces; osmium, 9.30%; iron, 10.15; copper, 0.41; gold, none; lead, traces; siliceous matter, 1.12%; total, 99.48%.

In treating parcels of dirt from various claims upon the lead, the quantity of platinum per load varied from 5 to 12 dwt., and the quantity of gold from 1 to 3 dwt., while the total value of the precious metals per load varies from \$2.25 to \$9.25.

It was suggested that the platinum might have been derived from a reef or reefs in the vicinity of the field. A consideration of the general mode of occurrence of platinum would perhaps cause one to discredit such a theory, and the ascertained facts here seem to disprove it altogether. The dividing line of the Bogan and Lachlan River watersheds passes through Fifield, and the platinum deposits have been followed up one side of the ridge and down the other. So one or more of the supposititious reefs should be located upon the highest ground; yet, notwithstanding all the sinking and driving that has been carried out, no reefs have been found. Moreover, the grains of metal appear to be uniformly water-worn.

Dry seasons have prevailed since the discovery of the field, and its development has been much retarded in consequence. The washing of dirt has sometimes been completely suspended for many months at a time on account of the shortage of water. At the present time 7,000 loads of washdirt are dumped around the various shafts awaiting treatment.

About 1,200 oz. of crude platinum have already been sent away from the field, and, including the deposits in the immediate vicinity of Fifield, and outside the Fifield-Platina lead proper, the gold won has totaled about 1,800 oz. A few of the parties have already worked out all the pay dirt from their claims, while others have a year or eighteen months' work in sight.

A consideration of the circumstances connected with the origin of the platinum and the fact that it has been found in small quantities over a wide area of country leads to the opinion that other platiniferous leads are to be found in places under the flats in the district. Prospecting for such leads, however, is a very tedious operation since the flats are for the most part of great extent, and there is nothing upon the surface to indicate the path

of the gutters below. Small quantities of drift yielding a payable quantity of platinum associated with gold and tin (cassiterite) have been mined about 10 miles northeast of Fifield, near the village of Burra Burra.

A SINGLE-ENGINE HOISTING PLANT*

By T. F. Cole.

At the Prince of Wales iron mine in the Lake Superior region there was a hoisting plant consisting of a slide valve engine with 18 x 24 in. cylinder, geared to two hoisting drums, each 6 ft. in diameter and 5 ft. face. On the crank-shaft there was a fly-wheel 8 ft. in diameter. The plant was designed to hoist single skips or cages in one or more compartments of the shaft. A new ore body opened up in the mine made it necessary to devise means for hoisting a large quantity and at minimum cost. The approximate weight to be lifted was: Skip, 2,200 lbs.; 450 ft. 1 1/2 in. wire rope, 1,000 lbs.; ore, 4,600 lbs.; total, 7,800 lbs.

Each drum was operated by power transmitted to it from the drum shaft by means of an outside band friction, and it was found that the strains on the engine and frictions were becoming too severe for the good of the machinery or for safety. The only way to secure economy was to run the skips in balance, and it was decided that by adding another eccentric with link and tumbling block we could then make that single engine accomplish what we desired. The work on the engine was quickly done by the Lake Shore Iron Works, of Marquette.

To reduce strains on driving frictions, it was decided to pass a rope over the sheave on the top of the shaft-house with each end fastened to the bail of the skip in either compartment of the shaft and taut enough to take the weight of the skips off the friction. Then the question of getting the men into and out of the mine led to putting cages in both compartments of the shaft and the total weight of the cage, car, ore and rope was then reduced from former load so that the frictions would hold with safety.

This machinery is now hoisting daily 800 tons of ore from 450 ft. in depth, operating the cages in balance. We stop the engine each trip of the cage and find no difficulty from engine centering. Any one having a similar plant can utilize it to hoist in balance and if drum capacity is sufficient, 1,000 tons per day can be raised from a depth of 700 ft. or under, provided the cars are delivered at the bottom of the shaft with fair regularity. This is the first attempt the writer knows of where a single engine has been utilized to hoist cages working in balance.

The economy of the plant is fairly illustrated by the fact that one tubular boiler 5 ft. diameter by 16 ft. long is easily furnishing sufficient steam to operate the engine, heating a one-story building 12 x 36 ft. and a one-story dry building or change house 24 x 160 ft. in size, driving a No. 7 Cameron pump located at the bottom of the shaft above mentioned, that elevates 45 gallons of water per minute 140 ft. to the main pumping plant, and furnishing power to operate the rope-haulage plant that is tramping daily 860 tons of ore an average distance of 680 ft.

Transportation of Petroleum by Water.—Two steel oil tank vessels, built at West Superior for the Standard Oil Company two years ago for lake service, are on their way to the Atlantic, where they are likely to be used in the coastwise trade. They were built as experiments and now their places in lake service will be taken by two of the largest size, with a capacity of 750,000 gals. of oil each. The intention of the Standard Oil Company is to do away with rail transportation of oil from its Indiana works to the Northwest, as far as possible, by sending the oil in barges from Whiting to the head of Lake Superior, where it will be pumped into tanks and barreled for shipment to the company's distributing stations. The capacity of the tanks at Superior, Wis., has been increased.

The Swedish National Exposition.—The Stockholm Exhibition of 1897 will comprise engineering, building industry machinery, implements, transport, ship-building and navigation, electricity, fisheries, military science, sport, traveling, fine arts, education and instruction, hygiene scientific appliances, etc. The machinery hall will be situated at the Saltsjon, and will be built of iron and glass with an area of about 100,000 sq. ft. There will be three large halls for Sweden, Norway and Denmark, and smaller buildings for other countries. The large hall for the industrial section occupies a good position on an elevated terrace, and it is claimed for it that it is one of the largest wooden structures ever built. The building will have a dome 300 ft. high, surrounded by four turrets, of which some, if not all, will be fitted with elevators.

Rewards for Prospectors in Australia.—The Mines Department of New South Wales offers a substantial reward of £500 for the discovery of a payable gold-field, whether reefing or alluvial. The following notification is published in the *Government Gazette* for July: Notice is hereby given that the sums undermentioned will be paid as rewards for discovering, and reporting the discovery of, new reefing or alluvial gold-fields: To any person or persons who shall first discover, and, within a period which shall be deemed to be by the Minister for Mines and Agriculture a reasonable time after such discovery, make known to the said Minister the position of a new reefing or alluvial gold-field, being distant not less than 10 miles from the nearest gold workings in which payable gold has been or is being obtained, the sum of £500. Provided that within six months after the date of discovery not fewer than 300 miners shall be profitably employed in gold mining upon such new reefing or alluvial gold-field. And in the event of such new reefing or alluvial gold-field, at the expiration of 12 months from the date of discovery, providing permanent employment in gold mining for not less than 500 miners, the person or persons discovering and reporting such new reefing or alluvial gold-field as aforesaid shall be entitled to claim a further sum of £500. The Minister shall be the sole judge as to any matter in dispute in regard to an application for reward. In the event of a dispute arising as to the person or persons entitled to claim the reward, the Minister shall decide who is entitled to it."

* Abstract of article in the *Australian Mining Standard*.

* Abstract of paper read before the Lake Superior Mining Institute, August, 1896

THE TRANSMUTATION OF SILVER INTO GOLD.

The announcement made in some New York daily papers (the *New York Press* of August 8th, the *Evening Sun* of August 10th and the *Journal* of August 16th) to the effect that Dr. Stephen H. Emmens had discovered a chemical process by which silver could be transmuted into gold was the occasion of the following correspondence, which is given in full, and to which further reference will be made hereafter.

I. THE INQUIRY.

253, BROADWAY, F. O. Box 1833,
NEW YORK, U. S. A., August 23d, 1896.

DR. S. H. EMMENS:

Dear Sir: Your recent announcement that you have succeeded in making gold out of silver is extremely interesting, and important if you have not been deceived. It is proper that it should be announced in the *Engineering and Mining Journal*, the representative paper of the industry, and I shall be pleased if you will do so and give such specific information as chemists and metallurgists would naturally like to have and which need not interfere with your business interests in your discovery.

How much gold have you or your associates actually produced from pure silver? Did you yourself produce it or was this done by some one else, and were you present when it was done, and did you witness the actual operation?

Who analyzed the silver and other materials used, and is responsible for the integrity of the operation?

Who are the three chemists associated with you, and do they join in your announcements?

The discovery of the possibility of transmuting or manufacturing gold into or from silver would have such immense and far-reaching consequences, and an erroneous announcement of it might be so greatly abused, I have no doubt you will be pleased to have an opportunity to give to the profession, and to the public, through an authoritative medium such information as you, a chemist, would require for your conviction from another chemist who might make so important an announcement.

Yours truly,
R. P. ROTHWELL,
Editor *Engineering and Mining Journal*.

II. THE REPLY.

No. 1 Broadway, New York,
August 25, 1896.

R. P. ROTHWELL, Esq.:

Dear Sir: I am favored with your letter of this date inviting me to contribute to the columns of the *Engineering and Mining Journal* "such specific information as chemists and metallurgists would naturally like to have" respecting the manufacture of gold from silver.

I fully appreciate the honor you do me by such an invitation, and if purely scientific considerations alone were concerned I should not hesitate to accept it. The case, however, is not one that can be viewed from the standpoint of science alone. The commerce and finance of the whole world are involved, in addition to vast individual fortunes. If, to use your own phrase, I were "to give to the profession and to the public through an authoritative medium, such information as I, a chemist, should require, for my conviction, from another chemist," I should necessarily create a general belief in the actuality of gold being manufactured from silver on a commercial scale and under profitable conditions. Would not this belief be a calamity of terrible extent and character?

It seems to me that my duty, not alone to my colleagues and myself, but to the world at large, compels me to delay, for as long a time as possible, the publication of formal evidence and specific information. To bring conviction home to the scientific minds of the day would, to my thinking, be a wholly unjustifiable proceeding. It would be tantamount to notifying the money market of every country that gold was no longer a standard of value.

You may properly ask me why, if such be my views, I allowed any announcement at all to appear. I reply that I believe I am only one of many chemists who are now at work upon the same problem. It is not a case of squaring the circle or devising some system of perpetual motion. It is not a search for the philosopher's stone or for an elixir vitae. It is simply a matter of extending the control which we already possess, to a degree that grows greater and greater every day, over the grouping of atoms and molecules. At any moment, therefore, we may hear of the transmutation of metals having become an accomplished fact in some laboratory of this country or Europe. Accordingly, it has seemed to me to be prudent to enter my "caveat," and thus to protect what I conceive to be my rights. The time for producing my evidence and establishing the validity of my caveat will not arrive until some rival claim shall be put forward. Meanwhile, I am perfectly content to be dubbed a "crank," a "dupe," a "dreamer," a "charlatan," or to receive any other of the pretty names that second-rate scientists are accustomed to employ when faced with what they don't quite understand. The more wide-spread the conviction of the second-raters and the money market that gold cannot be made from silver, the better I shall be pleased.

While thus I beg you to excuse me from dancing to your pipe and tabor, I will add that I have too high a regard for your eminent services to science in general and the cause of gold and silver in particular to completely pass by your request for further information. I can best comply with it by repeating and somewhat expanding what I wrote the other day to Messrs. Von Schulz & Low, the distinguished firm of chemists and assayers of Denver, Colo. These gentlemen had addressed me as follows:

"We have read the recent article in the *New York Journal* wherein it is stated that you have succeeded in changing silver into gold. We are naturally greatly interested in the subject and the remarkable results claimed, which, in the light of modern science, we feel entirely within the bounds of reason. The periodic law and other considerations have long led chemists to anticipate some such results as are now claimed. We nevertheless take the liberty of writing, in order, if possible, to learn positively if the article referred to, is authoritative and correct."

In reply to this I wrote: "I have the pleasure of stating that the *Journal* article to which you refer is substantially correct. The interests involved are, however, by far too important to allow of my entering into details, much as I should like to do so from a purely scientific point of view. Indeed it is hardly to be expected that my associates and I will ever claim to be successful on a practical scale in the large technical establishment we are now organizing. If gold is to remain saleable at the standard price, it must not be allowed to enter the market as a manufactured product. While thus guarding our fortunes I may, I think, without imprudence, concede so much to the cause of science as to say that the essence of my discovery consists in the extension to solid bodies and molecules *per se* of Andrews' doctrine of critical temperatures."

Here, if I mistake not, is "specific information" which will flash, as an electric search-light, into the field of vision of all scientists of the first class, though to the eyes of the second-raters it may appear but as an *ignis fatuus*. When, for example, the number of the *Engineering and Mining Journal* containing this letter shall reach Professor Dewar I expect that

gentleman will forthwith see his way to making such changes in our numbering and classification of the chemical elements as shall cause my poor "argentaureum" to pale its ineffectual fires.

I promised an expansion of the hint given to Messrs. Von Schulz & Low. It is this: Atomic volume is arrived at by considering the relation of molecular weight to specific gravity. Specific gravity, however, depends, not only on space occupied by atoms, but on *unoccupied space* as well. I purposely refrain from pointing out the conclusions that are reached by pursuing this train of thought. Yours faithfully,

(Signed) STEPHEN H. EMMENS.

III. FURTHER INQUIRY.

253 BROADWAY, P. O. Box 1833,
NEW YORK, U. S. A., August 27th, 1896.

DR. S. H. EMMENS:

Dear Sir: I much regret that you are unwilling to give any specific information in reply to my inquiries of yesterday, though assuredly definite answers to my more important questions, and I believe to all of them, could be only advantageous to the legitimate development of a great and beneficent discovery and to the interests of the public.

If you, at any time are disposed to give specific information that will advance the cause of honest and disinterested seekers after truth, without regard to the professional order in which you would place them, the *Engineering and Mining Journal* will be very pleased to receive it. Yours truly,

(Signed) R. P. ROTHWELL,
Editor *Engineering and Mining Journal*.

IV. THE REJOINER.

No. 1 Broadway,
NEW YORK, August 26th, 1896.

R. P. ROTHWELL, Esq.:

Dear Sir: I am favored with your letter dated the 27th inst., a clerical error, I presume.

Your assertion that I am "unwilling to give any specific information in reply to 'your' inquiries of yesterday" is hardly consistent with the facts of the case. In my letter which I sent you yesterday afternoon I gave you some "specific information" of a most important character, and such "a chemists and metallurgists would naturally like to have." I also gave you a copy of my reply to Messrs. Von Schulz & Low. That reply contained the words "I have the pleasure of stating that the *Journal* article to which you refer is substantially correct." If you will turn to the *Journal* article in question you will see that my statement of its being substantially correct is, in effect, a reply to the questions contained in your letter of yesterday, except in so far as the revelation of personal names is concerned.

I do not agree with you in thinking that the interests of the public would be served by proof being given at the present time of the possibility of manufacturing gold. I am of opinion that if such absolute, incontrovertible proof were made public at the present time the effect would be to strike away the foundation of all commerce and thus to cause widespread confusion and ruin to prevail.

I do not regard the discovery of the transmutation of metals as of a beneficent character; and its only legitimate development will, in my judgment, be attained by keeping it in as few hands as possible.

I am cynical enough to doubt the existence of any "disinterested seekers after truth." You, yourself, have the interests of your *Journal* to care for. University professors are not usually regarded as unmindful of their loaves and fishes and popular adulation. The mining expert who reads your pages seeks after truth in order to acquire knowledge which he may sell for a professional guerdon. In short, I feel I may safely challenge you to name any individuals, or classes of individuals, that pursue truth without any impulsion of self-interest.

I do not therefore, feel myself called upon to sacrifice the fortunes of my friends and fellow-men in general at the shrine of a deity whom no one worships.

(Signed) STEPHEN H. EMMENS.

The following statement, covering the general claims referred to in the correspondence given above, was published in the *New York Daily Journal* of August 16th over Mr. Emmens' signature, and its substantial correctness is affirmed by him above. The article is here given in full:

THE TRANSMUTATION OF SILVER INTO GOLD.

Our work, which converts silver into gold, had its origin in the course of certain investigations which I undertook for the purpose of preparing chemically pure nickel. This was in the year 1892.

Commodore Folger, who was then Chief of the Bureau of Ordnance of the United States Navy Department, had forwarded to me for investigation a very remarkable specimen of rustless nickel steel which it was proposed to use as a material for torpedo netting. I found the physical properties of this material to be so extraordinary that I desired to investigate the physical behavior of a similar alloy made with absolutely pure iron and pure nickel.

In attempting to prepare these pure metals a certain product was obtained which seemed to differ from anything recorded in the textbooks. The same product was subsequently found when the investigation was extended to the case of metallic cobalt.

And, finally, those who were associated with me in the investigation agreed with me in considering that the phenomenon observed afforded indications of the existence of some substance common to the whole of the elements in what is known as Series 4 of Group 8 of the Classification of Chemical Elements, now universally adopted by scientists, in accordance with what is known as the "Periodic Law of the Elements." We did not further pursue the particular line of investigation upon which we had set out, because it appeared to us almost self-evident that if we were right in supposing a common substance to be present in any single series of elements, the same would hold good for each group.

And as Group 1 of the classification contains the precious metals—gold and silver—it was obvious that our time and attention should be directed to these metals rather than to any others. It was determined, therefore, to pursue the work in a persistent and methodical manner, each member of the scientific syndicate—and there were four of us—taking up his own branch of the inquiry.

Realizing also the vast pecuniary interests at stake, it seemed desirable that no single one of us should be placed in a position of complete knowledge. We were all to be kept advised of the results obtained by each of us, but we were not to be fully informed as to the details of the methods and apparatus employed.

It may be that as the director of the investigation, I am, perhaps, more familiar with what has been accomplished than is either of my associates. I am, at any rate, in a position to say, now that work on a practical scale is about to be begun, that I see no insuperable difficulties in our way.

It is, of course, out of the question for me to make public the whole of our knowledge in this matter. But I may without danger to our interests give a general explanation of our work which will be satisfactory to the scientific world.

Our starting point, so far as silver and gold were concerned, was afforded by the remarkable discoveries of Mr. Cary Lea with regard to the changes that could, by laboratory methods, be induced in the molecular structure of metallic silver. That gentleman discovered a means of causing silver while still in a metallic condition to enter into aqueous solution.

In other words, he discovered a method of reducing metallic silver to a condition of extremely minute subdivisions. It was found, as might have been expected by anybody familiar with the periodic law of the elements, that this subdivision of metallic silver was attended by very considerable changes in the physical properties of the substance.

The inference was obvious that if such subdivisions could be pushed a stage further, the silver molecules would become dissociated if they were in themselves of composite structure. And as all chemists have long been agreed respecting the reality of such composite structure, we felt absolutely sure of our ground.

Accordingly, when by certain physical methods and by the aid of certain apparatus, we succeeded in bringing about a further subdivision of the silver, we were not surprised to find that the substance obtained differed so far from ordinary silver that it could no longer be regarded as the same elementary substance. It seemed to require a new name and a new chemical symbol.

Inasmuch, therefore, as our theory was that this substance was common to both gold and silver, and in reality was the raw material out of which both gold and silver were constructed by the hand of nature, we named the substance "argentaurum." We also gave it the chemical symbol "Ar."

The next step was to ascertain whether this substance could be so treated as to be grouped into molecules of greater density than those of silver. Here the element of personal danger was introduced into our researches, and the success of our work on a commercial scale has yet to be assured by the construction and safe manipulation of new apparatus, in which vast energy will be employed.

Working upon the necessarily microscopical scale of our experimental researches, we found that the substance called by us argentaurum can be aggregated into molecules having a density considerably superior to that of silver molecules, and, we think, identical with that of ordinary gold molecules. Whether we are right as to this or not, the condensed argentaurum presents the appearance and is endowed with the properties of ordinary metallic gold.

For example, it is green by transmitted light, and yellow by reflected light; properties which, as all chemists know, are possessed by gold alone. Its resistance to the action of either nitric or hydrochloric acid alone, and its solution by a mixture of these acids, are also distinguishing properties of pure gold and of no other yellow metal.

Under the microscope it is indistinguishable from ordinary gold. We feel assured, therefore, that when produced in bulk, it will comply with all the tests of the United States Mint, and will be accepted by the commercial and financial world as being in very fact true gold.

It may be thought that all this work of ours is merely a resuscitation of ancient alchemy, and that we are engaged in what for ages has been considered the hopeless quest of the philosopher's stone. This, however, is by no means the case.

The ancient alchemists believed that some substance might be found by the mere touch of which base metals could be transmuted into silver and gold. Others somewhat less crude in their ideas believed that gold and silver were in reality base metals with the addition of some "informing spirit," and this spirit they held could be added if a suitable "powder of projection" should be thrown into the molten iron or lead or other base metal employed.

Modern chemistry regards the matter from a very different point of view. It believes that the ultimate particles constituting gold, silver, iron, lead, zinc and all other metals are identical in substance, and that the different properties of the several metals depend entirely upon the different ways in which the particles of the common substance are arranged.

The periodic law of the elements is the formal expression of this doctrine. It is called periodic because chemists have found that when all the known elements are arranged in the order of the respective weights of their molecules each displays a remarkable similarity of properties when compared with the element separated by an interval of seven places in the table.

For example, the first element, sodium, in series 3, is succeeded by seven other elements which differ more and more from it in physical properties. But when we come to the ninth, namely, potassium, we suddenly find ourselves in the presence of a substance very similar in many physical and chemical respects to sodium.

This recurrence of properties at given numerical intervals in the table, or this periodicity, as it is termed, goes to show that mere weight—or, rather, density of aggregation—is the determining cause of the properties that distinguish the various elements. This is no mere theory.

If a new element were to be discovered to-morrow, and any chemist were to be told its atomic weight, he, by merely noticing the position such weight would cause the element to occupy in the numerical table I have mentioned, would be able to describe, with considerable accuracy, the appearance and physical and chemical properties of the substance without having seen or examined it. Prof. Mendeljeef, the chief discoverer of the periodic law, found a certain gap in the numbers constituting the table.

He thereupon asserted that an element must exist having such and such properties. Some little time afterward this very element was discovered, and was found to have the atomic weight and properties which Mendeljeef had predicted.

Similar reasoning may be employed to demonstrate the existence of our argentaurum. If Mendeljeef's table be examined it will be seen that a vacant space exists in the sub-group of group 1, and that this vacant space stands immediately between silver and gold.

Our claim, as I have tried to make clear, is that the hitherto missing element in question is our argentaurum, which, in itself, is, therefore,

neither silver nor gold, but which may, by our new physical methods, be converted into gold.

The question of cost is an important factor. Artificial diamonds, for instance, have been made, of a purity and brilliancy which render them marketable at the highest prices. But the cost of their manufacture has hitherto been in excess of their market value.

Thus the discovery has neither enriched those who made it nor affected the diamond trade. If in our case the cost of converting silver into gold is such as to more than swallow up the difference between the price of the raw material (silver) and the value of the manufactured product (gold), it is evident that it would not pay us to send gold into the market.

Our estimates, however, show us that a better fate is in store for us. We do not consume any chemicals and other costly materials in our process.

What we use is mainly energy in some of its various forms, such as heat, electricity, magnetism, gravity, cohesion, chemical affinity, X rays and the like. Energy is cheaply produced nowadays and may be had in any desired form by the combustion of coal.

When it is a question of applying energy to small masses the expense involved is very slight, and as in the case of our work we deal with ounces instead of with tons, it will be obvious that the consumption of energy cannot be very large, although in the course of the process we may have at times to employ vast forces. Our chief source of expense is the time required for bringing about the desired molecular changes. But we hope when our working apparatus shall be constructed on a large scale to reduce the time factor to moderate limits.

No very close estimate of the cost seems to us at the present time to be practicable, but we think that it will not exceed a maximum of \$10 per ounce of silver treated and we think it may very probably be reduced to \$5 per ounce.

We also estimate that the waste of argentaurum will not exceed the equivalent of 25% of the silver treated. In other words, we hold that one ounce of silver will produce three-quarters of an ounce of gold.

The present price of silver is about 68 cents per ounce, and of gold \$20.67. But even if we were to give \$2 per ounce for our silver, our total cost in producing three-quarters of an ounce of gold would not exceed \$12. Thus, as three-quarters of an ounce of fine gold is worth a little more than \$15, it seems to us that we can reckon upon a profit at least of \$3 per ounce upon all the silver we employ.

STEPHEN H. EMMENS.

In addition to this letter a statement was published in the same paper, which we quote below, in which Mr. Emmens positively asserts that he can make gold out of silver, and adds:

"The metal which we have made from silver answers every test to which the United States Government Assay Office subjects the gold offered there for sale. It is, therefore, gold to all intents and purposes. This metal made from pure silver by the process discovered by us could be proved to be gold in a court of law. It not only answers every test of the Government mints, but it also has every quality required by the gold of commerce, having the same color, weight and strength."

Dr. Emmens further says "he has already made 4 oz. gold from about 6 oz. of silver, and that the loss in the process is about 25%." He was asked if he had himself tested his metal by the United States Government tests for gold and he replied most positively that "he had, and that it had responded to every test."

Effect of Heat on Insulating Materials.—Some experiments on the effect of heat on insulating materials, made by Mr. C. E. Skinner, have led to the following conclusions, according to *London Engineering*: 1. The insulation resistance of all ordinary fibrous insulating materials, such as paper, cloth, etc., decreases upon being heated up, and then increases again when the moisture is expelled. 2. Continued heating of 31 hours at 120° C. does not lower the insulation resistance of paper. 3. The insulation resistance of completed apparatus shows the same characteristics as the insulation resistance of materials taken separately. 4. A low insulation resistance is not necessarily an indication of poor insulation, but probably an indication of the condition of the apparatus in regard to moisture. 5. A high electromotive force should not be applied to apparatus when the insulation resistance is low. 6. Material which is badly deteriorated mechanically by heat may still have a high insulation resistance, but very poor insulating qualities.

Study of the Diamantiferous Sands of Brazil.—M. Henri Moissan reports, in a recent number of *Comptes Rendus*, that through the kindness of Professor Lacroix, of the Museum of Natural History, he has been able to examine if the diamantiferous sands of Brazil contain also microscopic diamonds. In his experiments 4,500 g. of the sand were sifted and yielded 1,350 g. of a powder consisting almost entirely of silica. The attack is very tedious, and it is only after a dozen alternate treatments with hydrofluoric acid and boiling sulphuric acid that he arrived at a residue of 2 g. The substance is then treated with melting fluopotassium hydrofluoride, and is then attacked with potassium bisulphate, when he obtained a residue of 2 g. This residue contains portions consisting of small transparent grains, some spangles of native gold and platinum, and of small black brilliant crystals having the aspect of graphite. He separated some of the latter and transformed them into graphitic oxide, which on deflagration yielded pyrographitic oxide. After having characterized the graphite all the residue was treated with methylene iodide. The portion more dense than this liquid was treated anew with fluoria hydrofluoride and then with bisulphate. An attack with aqua regia caused the precious metals to disappear. We have, then, been able to separate some black fragments and transparent fragments which had no action upon polarized light and which burnt completely in oxygen, yielding a white precipitate with baryta water. This residue contains brilliant grains acting upon polarized light, having an elongated form, a corroded surface, and which have been ultimately caused to disappear by successive attacks. This Brazilian diamond contains black diamonds of a shagreened surface, also transparent diamonds of irregular form and, lastly, graphite. There exist, therefore, in nature, both at the Cape and in Brazil, microscopic diamonds, black or transparent, and in both cases accompanied with graphite.

A MECHANICAL COKE-DRAWER.*

By Robert A. Cook.

The accompanying illustrations show a machine for drawing coke from the oven which has been in successful use since 1891. The design is the outcome of several years of experimenting in actual practice and was made by Mr. Thomas Smith, of the Thorncliffe Iron Works, near Shef-

other on the engine shaft. The engine is single-cylinder, with reversible gear, and engine and machine are mounted on a truck, which is propelled along the track in front of the oven by a worm and gear, connected by a clutch to the engine shaft. A 9-H. P. boiler, on a separate truck, is coupled to the machine and gives ample steam both for propelling and operating. In entering the oven the shovel runs under the coke, and as the shovel is withdrawn, the coke, dropping behind the thick end of the wedge, comes with it.

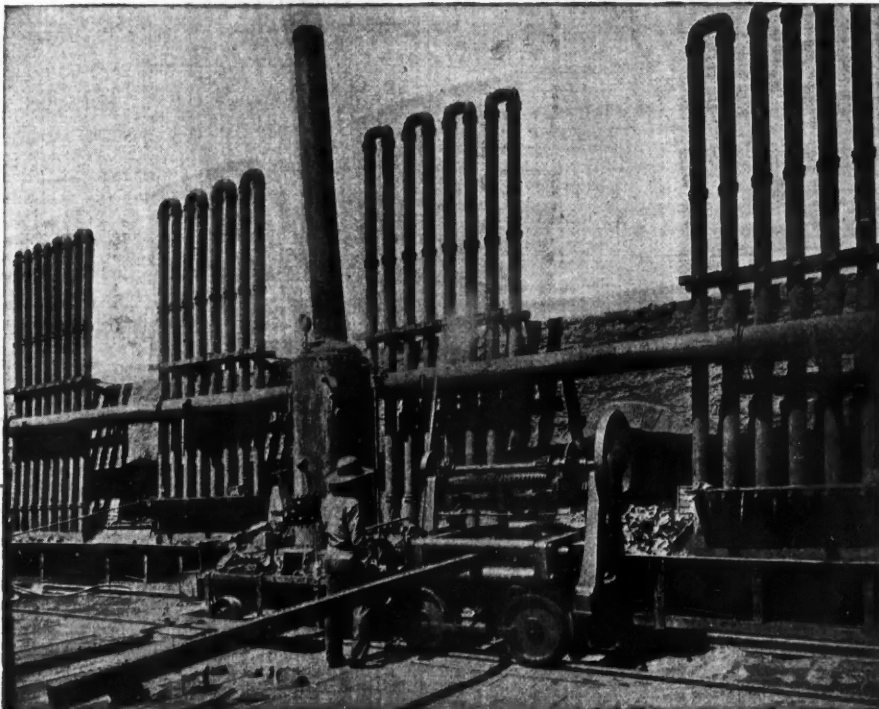


FIG. 1.—MECHANICAL COKE-DRAWER.

field, England, where it was first introduced. A number of them are now at work in England.

The machine, as may be seen from Figs. 1 and 2, consists of a wedge-shaped shovel of proper width and thickness connected to a steel rack of sufficient length to reach the back of the oven. The rack is supported

The first of these machines to work in this country was made from English drawings by Messrs. McLanahan & Stone, Hollidaysburg, Pa., and has been in operation for several months at the plant of the Latrobe Coal Company, Latrobe, Pa. The Latrobe plant, consists of a block of 30 bee-hive ovens. It cannot furnish a full day's work for one drawer, as

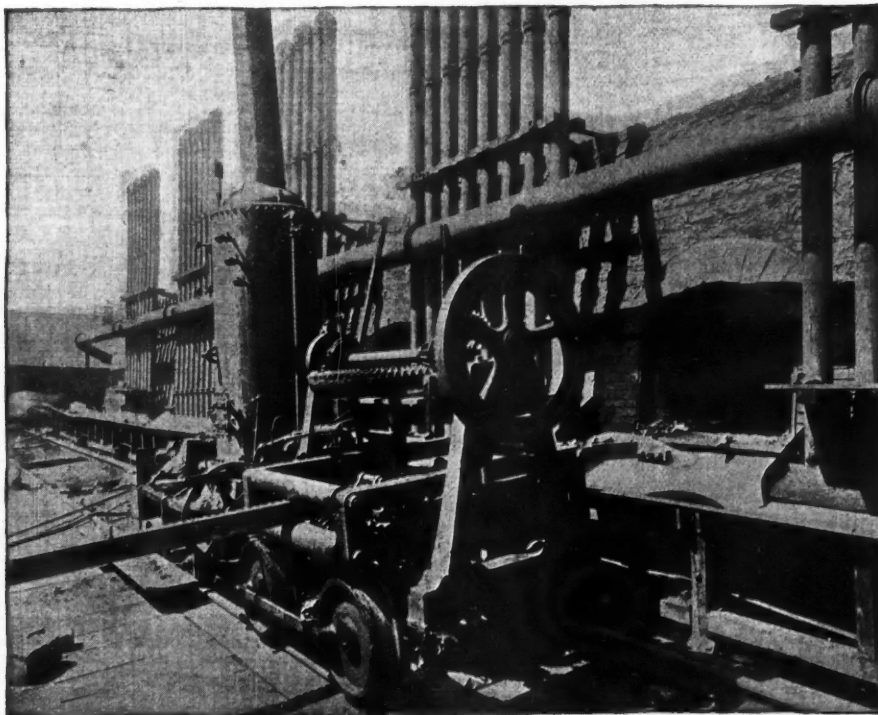


FIG. 2.—MECHANICAL COKE-DRAWER.

by rolls and guided by a device operated by a hand-wheel, which directs the shovel in the oven. The rack is driven by a pinion on a vertical shaft carrying a bevel gear on the upper end, this bevel gear being driven by an-

there are only 15 ovens to be drawn daily, instead of from 30 to 35, which is within the capacity of the machine. A green hand on the extractor is now drawing four 12-ft. ovens per hour. Of course, the machine cannot get around the jamps, and take out the last of the coke. This is done by hand, and takes from five to ten minutes per oven.

In England one boy operates the extractor, one man waters, one man

* Abstract of paper read before the American Institute of Mining Engineers at the Pittsburg meeting, 1896.

levels the ovens and lutes up and one man rakes out after the extractor, for a plant of 60 ovens.

As the ovens of the Latrobe plant are built in double rows, parallel to the railroad, there are two lines of conveyor running to the end of the block, where a cross-conveyor, running at right angles to the other two, rising at an angle of 1 to 4, takes the coke from them and elevates it to a chute, from which it is drawn into the car, after passing over a screen to remove the braize.

As to the effect which the mechanical work produces on the coke, it is found in practice that the extractor does not break it any more than, if as much as, hand-drawing; but there is some breakage in the screen; and in looking at a car of screened coke the fine is seen on the top while the coarse pieces run to the sides. The coke, once on the conveyor, does not move until it reaches the end and drops on to the cross-conveyor.

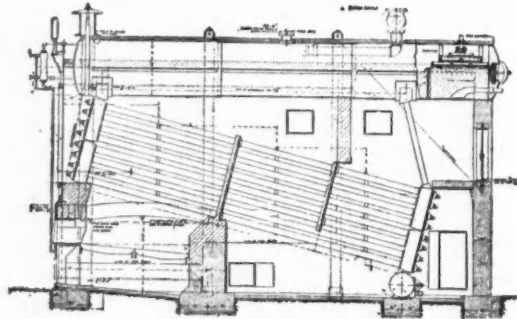
These conveyors on each side of the block are 238 ft. long, and the end-conveyor is 110 ft. They travel at a rate of 50 ft. per minute, and take 12 H. P. to run them when loaded. The extractor can be used without the conveyor, if desired; and the changes to be made in old ovens are simply to widen the oven doors and then to lay a track in front of the ovens.

As regards the expense of operating, the same number of men will operate the extractor and conveyor and draw the ovens, but the cost will vary with the wages of different localities. The following men are required: One man at the conveyor-engine (unless it is run from a central power-plant), who could operate several conveyors and attend to oiling, etc.; one man to water the coke, one man to run the extractor, one man to rake out, and one man to lute up and level. This number of men is employed at several plants now operating in England.

It may be of interest, by way of comparison, to know what wages are paid for drawing ovens in England in the Yorkshire district. For hand-drawing they pay 45c. per oven. This includes watering, leveling, drawing and loading on cars. The wages per day for drawing with the extractor are \$1 for engineer, 62½c. for the extractor-runner and 75c. for the man who waters; 5c. per oven is paid for cleaning out after the extractor and 7c. for leveling, or a total of 19½c. per oven, against 45c. for hand drawing.

STANDARD BOILER FOR MINE USE.

Boiler manufacturers as a rule have not until recently given much thought to mining trade, notwithstanding its importance, but they are now recognizing the fact that the mines are a factor in their business, and many of them are making special efforts to obtain a footing in this direction. The Standard Safety Water Tube Boiler Company, of Chicago,



STANDARD BOILER FOR MINE USE.

has been in the mining field for some time, and a number of its boilers have been installed in the mines in the West. The "Standard" boiler, of which an illustration is given, consists of a series of inclined tubes expanded into iron or wrought steel headers, each boiler having one or two flange-steel drums; headers and drums being connected by circulating tubes. The drums are connected by heavy equalizing pipes with flange on top. At the rear end the headers are connected to a mud-drum, to which the blow-pipe is attached. The whole boiler is hung from steel cross beams and columns, and is free to expand and contract independently of the brick setting, which can be removed or repaired at any time without disturbing the boiler. The front is of wrought iron, with ornamental cast-iron trimmings. Facilities for cleaning are provided by means of doors in the side walls of the setting, so that the outer heating surfaces may be easily kept free from accumulations of soot or ashes, which can be blown off as rapidly as they form by using the steam-jet blower furnished with the boiler. The examination of the interior of the boiler in all parts is provided for. By the removal of one cap from a header an indication of the state of every tube may be obtained in a few minutes. If actual cleaning is desired easy access is had by the removal of the caps with an ordinary wrench. The steam drums are large in diameter and a man can work inside of them with perfect comfort, entrance being had in the rear head by means of "Eclipse" man-heads. Repairs are readily and quickly made. In case a tube leaks, the removal of one cap on the header permits an expander to be introduced and the tube can be rolled in a few minutes. Should it be necessary to remove a tube it can be withdrawn through the header without disturbing any of the others, and a new one introduced in its place. The purifying chamber with which the drums are fitted is large enough to admit of a deposit of most of the scale-forming salts, rendering cleaning much easier than in any other type of boiler. This peculiar device has been specially designed with reference to the Western trade. The large quantities of impurities in the waters throughout the Western States necessitate the use of some simple and effective means for their purification. This purifying chamber is at the rear end of the steam drums, the coolest part of the boiler; the feed-water is sprayed over a series of pans in the steam space, causing a precipitation of the scale-bearing matter into the settling chamber, where the mud can be readily blown off and from which the solid matter can be removed.

A CONTRIBUTION TO THE HISTORY OF THE ELECTROLYSIS OF ALKALINE CHLORIDES.

Written for the Engineering and Mining Journal by George Lunge, Ph. D.

In the *Engineering and Mining Journal*, for June 13th and June 20th last, we find a long paper by the London electrician, Mr. Andreoli, on the "Electrolysis of Chlorides," which offers very many interesting facts, although hardly any which are new to those conversant with this field. It essentially contains a description of the processes of Richardson & Holland, of Castner, and of Hargreaves & Bird. Concerning the former two, practically everything stated by Mr. Andreoli will be found in Vol. III. of my *Sulphuric Acid and Alkali*. We also agree in our criticism concerning the remarkable statements of those interested in the Richardson & Holland process, statements which are at the least grossly exaggerated, but in part decidedly impossible. When referring to Castner's process, Mr. Andreoli expresses his surprise that it should have been found necessary to designate the company "The Castner-Kellner Alkali Company." His explanation for this alleged "mystery" is that among the numerous patents on electrolysis there has been one with which Castner had come into conflict, although undesignedly, and that he had preferred joining his own name with that of that other inventor, Kellner, to entering into any litigation. But whoever is acquainted with the unceasing efforts and the exceedingly numerous patents of Kellner in the domain of electrolysis (and no electrician can ignore these), will hardly believe that in this joint concern Mr. Kellner has contributed only his name, and that all real merit belongs to Mr. Castner.

The process of Hargreaves & Bird is, in the paper in question, described essentially on the strength of the paper read by Hargreaves before the Society of Chemical Industry, and published in the *Journal* of that Society (1895, page 1,011). This number was published late in January, 1896, and reached me when the last sheets of Vol. III. of my *Sulphuric Acid and Alkali* were already in the press, so that I was unable to do more than to refer in a few words to this extremely interesting and suggestive communication on page 669 of that volume. Otherwise I should certainly have given very much more space to that paper. But in no case should I have gone to the same length as Mr. Andreoli, who says: "If we go by what Mr. Hargreaves says, a thing which we can do with perfect security, as he is quite competent in this matter, there is more advantage to be derived, from a commercial point of view, in making electrolytical carbonate of soda than caustic soda." Notwithstanding the great and sincere respect I have, both for the personal character and the inventive genius of Mr. James Hargreaves, I cannot make up my mind to such a blind belief in the infallibility of an inventor talking about his process: in this special case I should require much more evidence of a positive kind before admitting that it is more advantageous to make carbonate than caustic by electrolysis. Still less can I approve the raillery of Mr. Andreoli against Dr. Hurter for adhering to the theory of his alleged countrymen, Kohlrausch and Hittorf (*sic*), on the migration of ions. It is perhaps not very material that the just named, world-renowned physicists are not the countrymen of Dr. Hurter (who is a Swiss, and has spent all his technical life in England), or that the second name ought to have been spelt "Hittorf," but certainly it cannot be contended that Hargreaves has by his practical results furnished any conclusive proof for the assertion that the migration of ions is unilateral, and that in other respects the physical laws are quite different from those which have been laid down by these (and other) scientific observers. Hargreaves himself declares that his views are hardly orthodox, but that they are "plausible explanations of certain results which the orthodox theoretical hypothesis has not been able to indicate beforehand." But Mr. Andreoli goes beyond this in saying, with evident gusto, "The admirers of Kohlrausch and other German theorists must make the most of it and say good-bye to their hypothesis. Hargreaves' idea, which is prolific in results, has made short work of them." I am under the impression that the sleep of Kohlrausch and the other "German theorists," that is of scientific physicists in general will not be greatly disturbed by this alleged discomfiture in their own field through the practical results of an ingenious autodidact. I am, on the contrary, under the impression that the time for cheap jokes at the expense of theorists, whether German or otherwise, is long past, and that such jokes are in no case wider off the mark than precisely in the domain of electricity.

This, by the way, is the only time that we meet in Mr. Andreoli's lengthy paper the word "German," and that only in a somewhat derisory connection. Whoever wishes to inform himself on the rise and the present position of the electrolytical manufacture of alkali and chlorine (and this is the expressed object of Mr. Andreoli's paper), must, according to the impression conveyed by that paper, come to the conclusion that Germany had furnished in that field nothing but some barren or even entirely erroneous theories, while all practical inventions and real progress had come from England and America. Nothing is even left for France: the names of Gall and Montlaur are not as much as mentioned. The altogether one-sided character of Mr. Andreoli's way of presenting the state of the case is best illustrated by citing his last sentences: "It is a good thing for all electro-chemists and electro-metallurgists that these audacious attempts should have been crowned with success, for it is a great encouragement for those who, now that the first step has been taken in England, may expect to get, in those countries where capital is more timid, the support which is usually missing. France is no poorer in talented electro-chemists than England or America."

We here find no mention of Germany and all other cultured nations which are thus treated as negligible quantities. On the most charitable interpretation they must be reckoned among those countries where capital is more timid than in England, and where it waits for the first step to be taken in that country before venturing out of its shell: "talented electro-chemists" would not seem to exist in any considerable numbers outside of England and America, except in France. Is it really possible that a professional electrician like Mr. Andreoli has never heard of Messrs. Siemens and Halske, not to speak of the host of other electrical firms and individuals of the first rank, proceeding from Germany? Is he still an adherent of the more than stupid cry "made in Germany"? Does he wittingly close his eyes, or has he put on spectacles through

which, when looking toward Germany, nothing is visible but a distorted view of "theorists"? This would be entirely unimportant if it were only a question about Mr. Andreoli. But as his statements and views have found their way into one of the most widely circulating American professional journals, and thereby into the world at large, it seems appropriate to show up another side of the picture.

It should be remembered that we are not now talking of theoretical researches, or even of mere attempts at practically realizing electro-chemical reactions, but of actual successes in carrying out the electrolysis of chlorides on a commercial scale. Andreoli contends that as late as 1886 the idea of founding a real electro-chemical manufacture had been looked at as Utopian by otherwise very competent men, and that only during the very last years proof has been furnished, exclusively by the efforts of English and American inventors, that electrolysis can form the basis of commercial enterprises in that line. To this representation we must at once object that even at this moment the part played by electrolytically produced alkali and chlorine in the English commerce is very slight indeed, especially if compared with the state of matters in Germany. But at all events it can be conclusively proved that in the electrolytical manufacture of alkalis and chlorine, both as regards the working out of really commercial processes and of the timidity of the capital employed, England has been quite a number of years behind Germany and even behind France; and this proof I shall now proceed to give.

It is notorious that up to this year the manufacturing plant erected in England for all the three above-named processes, as well as that connected with others, for instance that of La Sueur, had not exceeded the scale of small experimental works. Only this year have large plants for those processes been laid out or in course of construction. Up to this day, as far as is known, no chlorates are made in England by electrolysis. In contrast with these facts, I beg to point out that as long ago as June, 1889, I was in a position (in my quality as juror at the Paris Exhibition of that year) to visit the experimental works at Villers-sur-Hermes, where chlorate of potash was manufactured by the process of Gill and Montlaur, as described by me in the *Zeitschrift für Angewandte Chemie* (1889, page 701). At that time I was enabled to report that this process was going to be worked on a very large scale at Vallorbes, in Switzerland; the splendid factory, erected at that locality, was started in 1891 for work, and has been described over and over again, also in the *Engineering and Mining Journal*. It has been working for some time past with 3,000 H. P., and even larger works are in the course of construction for the same process in Savoy. I can vouch from my personal knowledge for the fact that the Vallorbes factory had been in full work for a considerable time, before the English manufacturers of that article, who had up to this time enjoyed a practical monopoly of it, awoke to the fact that it was worth their while to look a little more closely into that matter, but that even then they were too timid to follow in that path. I am not aware whether they have done so since, as the operations of the United Alkali Company are now covered with an impenetrable veil; but at all events they have been anything but pioneers on that field.

While there is no doubt that in the matter of chlorate of potash France has been the first in the field, it is just as certain that Germany is owing the honor of having first carried out the electrolytical manufacture of alkalis and chlorine in a really workable and commercially successful form. The people to whom this is due have certainly abstained from making a great fuss about it, and publicly cackling over their new-laid eggs in public lectures or printed communications, as has been done with a host of more or less abortive attempts in other quarters. But they have very quietly, but steadily, pursued their aim, with the application of all the resources of science as well as of technical skill, and with anything but timidity in expending capital; they had succeeded in completely working out a practicable method, and bringing it to commercial success, several years before the English attempts in that quarter had emerged from the initial, entirely experimental stage. I have been able to convince myself of this success in an absolutely conclusive manner by a professional visit which I paid to the Griesheim works four years ago, but as this was done in a private and confidential way, I have been hitherto unable to make any mention of it. I am now in a position to make the following authentic statements on the history and the development of that enterprise.

In July, 1894, Mr. C. Hopfner, of Berlin, civil engineer, obtained a German patent (No. 30,222) on "Improvements in the Electrolysis of the Halogen Salts of the Light and Heavy Metals." This patent was bought by a syndicate of three of the foremost German alkali works, Messrs. Mathes & Weber, of Duisburg; Kuhnheim & Company, of Berlin; and the Chemische Fabrik Griesheim, of Frankfort-am-Main. They were later on joined by two other firms, interested in the development on electrolysis, and it was agreed to carry out in common experiments of the electrolytical manufacture of alkalis and chlorine from the alkaline chlorides. The results of the experiments were to be mutually exchanged, and in case practical success was obtained, it was arranged to utilize it by a common enterprise. The first experiments were made by Dr. Fabian, of Duisburg, partner in the firm of Mathes & Weber; when he died, in 1885, the Griesheim Chemical Company took up the experiments on joint account. Hopfner's patent, which had formed the starting point of the joint concern, was very soon left aside, and another process was worked out for the electrolysis of the chlorides of both sodium and potassium, which by the end of 1888 had been carried to such a point that it was possible to proceed to the establishment of a complete factory, with 200 H. P., on the basis of the results obtained. This factory was erected at Griesheim, close to the old alkali works, but entirely distinct from them. It was started for actual work in 1890, and ever since that time it has been in full operation. In 1892 the whole plant was duplicated. I visited the works on September 27th, 1892, and on that and the following days I convinced myself, by the most exact scrutiny of the apparatus, the process and the account books of the concern, that this factory was laid out in a splendid way, that it was and had been for a long time carried on in a perfectly regular manner, without any trouble on the head of diaphragms, anodes, etc., with an extremely moderate voltage, and that it was furnishing most excellent economical results. These conclusions I laid down in detail in a professional report, for which I hold myself completely responsible, but which, of course, was of a confidential character.

The consequence of all this was, that the syndicate proceeded to the erection of works on a very much larger scale. The partners above-mentioned had been in the meantime joined by Mr. J. Stroöf, the general manager of the Griesheim Works, whose name is familiar to every alkali man as one of the most skillful of their profession. He was the life and soul of the enterprise, which then took the style of "Chemische Fabrik Elektron, A. G.," Frankfort-am-Main. Since in the case of electrolytical works the first consideration is that of cheap power, and water power is hardly available in Germany, except on the frontier, where it has to be divided with other states, as Switzerland, it was decided to use steam, and to raise this in the cheapest possible manner by means of the brown coal, found in abundance close to the surface near Bitterfeld, in Prussian Saxony. This lignite, although of very inferior caloric power, costs so little, that by it steam power can be obtained more cheaply than in most other European localities. Here a very large factory was laid out in 1893, which was finished in 1895, and which was duplicated already in the following year. At the same time the original works at Griesheim were again enlarged. Moreover, two other factories in Germany, and two in other countries, have bought the Griesheim process, and these are all in course of erection. By a special arrangement all their make is put into the market through the Griesheim Company; their articles are in great favor, and there is a permanent sale for them.

The initiators had neither the intention, nor did they think it their interest, to make any great noise about their success, as they had no occasion to seek any outside capital for the development of their enterprise. Still a record of priority was created by a short paper, read by Mr. Stroöf in September, 1891, at the International Congress of Electricians at Frankfort, and preserved in the shorthand minutes of the Congress. The products of the factory were exhibited at Chicago in 1893, and are mentioned as the result of electrolysis in the *Official German Guide*, pages 21 and 23. This, together with the evidence afforded by my personal examination in 1892, by which the fullest commercial success and the regular working of the process at Griesheim, on a large scale, was established, and more than sufficient for deciding the question whether the priority of actual success in this field belongs to Germany or to England.

It is, moreover, well known, that at Bitterfeld and in other localities in the Prussian province of Saxony since 1894 several other large works have been erected for the electrolysis of the alkaline chlorides, in which both potassium and sodium chloride are treated.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

DUTY OF LESSEE OF OIL LANDS.—A party leased his lands to another, with a right to oil and gas, for a royalty. The second party was also the lessee of other lands adjoining, and was operating wells thereon. It appeared that from the location and operation of such wells there was danger that the other lands would be drained. It was the duty of such lessee to proceed and open as many new wells as necessary to secure the common advantage of the lessor and lessee, and to prevent the loss of the oil by drainage, and in default of his doing so the lease may be declared forfeited.—*Kleppner vs. Lemon* (35 Atlantic Reporter, 109); Supreme Court of Pennsylvania.

PRINCIPAL AND AGENT IN THE LOCATION OF MINING CLAIMS.—Where a person has entered into a written agreement that he will convey to another a half interest in certain mining claims in consideration of the performance of certain conditions, he cannot, after the conditions have been performed, deny the existence of the claims or the validity of his title to them, and he cannot defeat the rights of such parties by posting notices in the name of some one else, in violation of the confidence reposed in him. Such act is a fraud upon his principals, and a deed from such third party is fraudulent and void against the second party to the original contract.—*Largey vs. Bartlett* (44 Pacific Reporter, 962); Supreme Court of Montana.

WHAT CONSTITUTES DISCOVERY OF MINERAL VEIN.—Under the laws of the United States (Sec. 2,320), providing that no location of a mining claim shall be made until the discovery of a vein or lode within the limits of the claim located, it is the finding of mineral in the rock therein that constitutes the discovery, and it is not necessary that the vein or lode should contain mineral of such nature that a practical miner, if he encountered it, would feel justified in following it up, with the reasonable expectation of finding paying mineral. Nor is it required, under the statute, that the paying mineral necessary to justify the location of the claim should be found at the time and place of discovery, but it is sufficient if the development of the vein showed that paying mineral exists within the limits of the location. It never was intended that the locator of a mining claim should determine all the facts before he would be entitled to a valid location.—*McShane vs. Kenkle* (44 Pacific Reporter, 979); Supreme Court of Montana.

ABANDONMENT OF WATER RIGHTS FOR MINING PURPOSES.—The mere non-user of a water right is not an abandonment. The non-user of water for a long period, and especially a period longer than the statute of limitations, is certainly very potent evidence, if it stood alone, of an intention to abandon. Abandonment is a question of intention. Where some one always has charge of the property and a custodian or watchman was upon the premises for a very large portion, if not all, of the time, it cannot be said that there was an intention to abandon. They did not use the water simply because the mill was not in motion. When it appears that the intention was clearly not to abandon the mill we cannot hold that the fact of temporary or necessary non-user of the appurtenance (that is, the water) was any evidence whatever to abandon that appurtenance. The appurtenance was a necessity to the mill and the intention to abandon that appurtenance must clearly appear.—*Smith vs. Hope Mining Company* (45 Pacific Reporter, 632); Supreme Court of Montana.

A NEW SINKING PUMP.

Mining engineers well understand the importance of a reliable sinking pump in their work. The sinking pump illustrated on this page has new features which are worthy of mention. It is of the duplex type, which insures a constant flow of water, thus doing away with the shock upon the pump and piping caused by the intermittent action of the ordinary single pumps. The objections which have heretofore been raised to the use of the duplex type for a sinking pump have been, it is claimed, entirely overcome in this pump. The valve gear, which might easily be broken by flying rock, is thoroughly protected by a sheet steel hood, securely fastened to the pump on its center line in such a way as to permit of its being quickly and easily opened for oiling and for inspection. The space occupied in the shaft is, for the different sizes, less than that required for other pumps having an equal capacity.

The pump has two double acting plungers, exteriorly packed, working through deep stuffing-boxes having glands fitted with swing-bolts. There are eight round rubber valves in the water end, having no pin through them to wear either the hole or the pin, and the valves can be changed

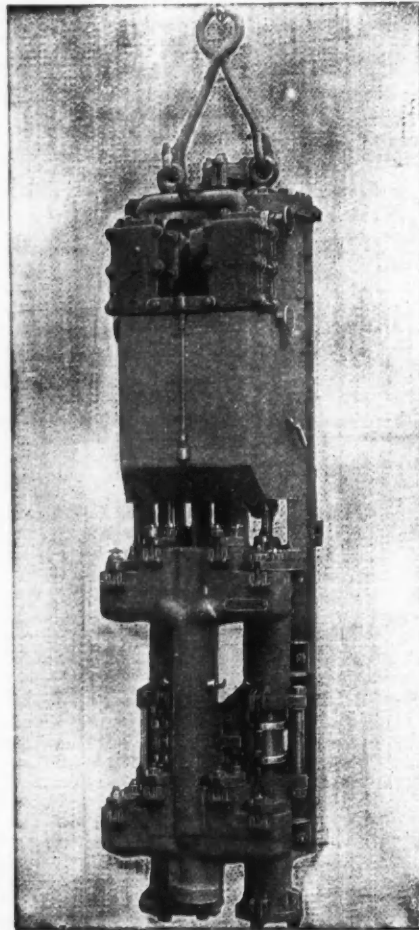


FIG. 1.

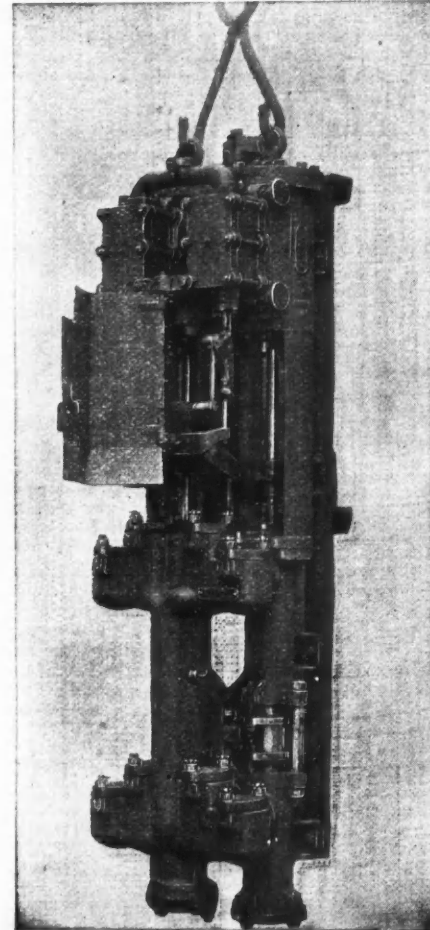


FIG. 2.

A NEW SINKING PUMP FOR MINE USE.

very quickly. Over each valve is a bonnet with recessed joint to prevent slipping of the gasket; should the joint leak it is in plain view, as are all the joints on the water end. This latter is made possible by the arrangement of the suction and discharge passages, which precludes the possibility of an unobserved leak occurring between the two passages. Each bonnet has two swing-bolts, one hole in the bonnet being plain and the other slotted; this permits the bonnet to be swung out of the way when changing valves, and there is no possibility of dropping either a nut, bolt or bonnet down the shaft. All the valves can be renewed in five minutes.

Having a positive valve motion the pump can always be started when under water. There are no pipe connections whatever projecting from the sides of the pump, to occupy space nor interfere with lowering one pump past another, the steam, exhaust and discharge pipes being at the back of the pump and against the side of the shaft. The latter is left clear for better circulation of air, or other purposes. The pump is securely bolted to strong wrought-iron dogs, so that it can be readily attached to the shaft timbers, and it is raised and lowered by means of a bale attached to eyebolts in the steam cylinder heads.

These pumps are manufactured in several sizes by the Snow Steam Pump Works, of Buffalo, N. Y., and the design is due to Mr. James Renshaw, of Denver, Colo. This type of pump has received general approval where it is in service.

The Russian Coal Trade.—Colliery owners in the South Russian District are at present urging forward a scheme for the improvement of the rivers Dnieper, Dniester and Don, in order that the market for Russian coal may be developed by the opening up of trade with the towns on these rivers. It is reported that the Minister of Ways of Communication has favorably received the movement, and that a scheme with that object is at present being drawn up.

PATENTS RELATING TO MINING AND METALLURGY.

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.

WEEK ENDING AUGUST 25TH, 1896.

- 566,363. **PROCESS OF MAKING GAS.** Asa W. Wilkinson, New York, N. Y. The process consists in distilling a charge of wood in a closed retort and pushing back the resulting incandescent carbon to fill the cross area of the retort, then distilling a fresh charge of wood and passing the resulting moist vapors and gases through the incandescent carbon for effecting their decomposition, and then injecting hydrocarbon into contact with the partially distilled charge.
- 566,371. **TUBE WELL.** Delbert L. Barker, Providence, R. I. The process of substituting a bed of gravel or coarser material for a bed of sand or finer material around the bottom of a tubular well in a water-bearing stratum by providing an upward or return passage, independent of the tube, to the surface, forcing a fluid under pressure down the tube to create a high

pressure and force the sand away from the mouth of the tube and along the return passage to the surface, and deposit the gravel in the upper end of the return passage.

- 566,463 and 566,464. **CRUSHING MACHINE.** Robert McCully, Philadelphia, Pa. A shaft for a crushing machine having a conical bearing for a crusher-head, an annular recess below and of less diameter than the base of the bearing, and keyways formed in the face of the bearing and opening freely to their entire depth in the annular recess in combination with a crusher-head adapted to fit on the conical bearing, keys engaged with the head and in the keyways of the bearing, and means for forcing the head and keys down upon the bearing.
- 566,533 and 566,534. **ORE-WASHER AND SEPARATOR.** Charles F. Pike, Philadelphia, Pa. The combination with a vessel containing a body of water, a hopper-shaped chamber open at one end and provided with an inclined bottom arranged in the vessel, superposed movable screens and a movable ruffled plate below the screens within the chamber and immersed in the body of water, the tail end of the screens and ruffled plate projecting from the open end of their chamber, of the conveyor.
- 566,596. **STONE-DRESSING MACHINE.** James M. Malone and James D. Perkins, Marble Hill, Ga. A combination of a reciprocating bed, a tool-carrier carrying a tool and held adjustable above the bed, bearings supported on the bed, spindles in the bearings for supporting the stone, a rack held on the reciprocating bed, mechanism operated from the rack for revolving one of the spindles, and means whereby the rack is held stationary during part of the stroke of the bed.
- 566,607. **CONCENTRATOR.** Patrick H. McGowan, Denver, Colo. Combination of a pan having its bottom composed of a series of annular steps descending toward the center and terminating in a discharge-opening at the center, each step having a standing flange or dam at its inner edge, and a rotary disk provided with depending agitators or teeth operating over the steps of the pan, a conical distributor forming the top for the disk and extended to the outer edges thereof, and a feed-hopper opening upon the conical distributor.
- 566,672. **MACHINE CRUSHING OR PULVERIZING ORES OR OTHER SUBSTANCES.** Robert H. Dundee and Frederick G. Jones, Cornwall, England. Patented in England, February 28th, 1895, No. 4,368. The combination of a rotary cylinder, a hammer-block, a screen secured in the discharge opening of the cylinder and stationary deflectors, having their discharge ends extending toward the screen for directing the pulverized material against the screen.

PERSONAL.

PROF. JOSEPH LE CONTE, the well-known American geologist, took passage on the steamer *St. Louis* for Southampton on September 2d.

CAPT. JAMES CHYNOWETH has recently been appointed agent of the Centennial Copper Mining Company of Michigan, reorganized.

MR. PERCY F. MARKS, special correspondent and director of the London *Financial News*, has been making a tour of Colorado mining camps.

MR. J. B. HASTINGS, mining engineer of Boise, Idaho, has been in the Kootenay District, B. C., to examine and report upon the Noble Five group of claims.

MR. JOHN T. HOYT, a mining man of British Columbia, has left there for New York. From that city he will sail for England to enlist capital in mining enterprises near Rossland.

MR. B. F. BUSH has resigned his position as superintendent of the Oregon Improvement Company to accept the general superintendency of the Northern Pacific Coal Company, of Washington.

DR. JAMES P. KIMBALL, of New York, mining engineer and ex-director of U. S. Mint, has returned from Alaska, where he had been on professional business. He expects to go to British Columbia, to remain a month or more.

MR. M. P. GOSSETT, whose interesting "Story of a Buried Mexican Treasure" in these pages last week is already attracting attention, has gone to Mexico to pursue his search. He can be addressed care of the *Engineering and Mining Journal*.

MR. AUSTIN BROWN, of the Standard smelter at Durango, Colo., has been appointed superintendent of the Tom Boy mine at Telluride, vice D. B. HUNTLEY, resigned. MR. BROWN has gone to Telluride, and will at once assume the duties of his position.

MR. WILLIAM H. DAVIS, of Nesquehoning, Pa., has been recommended for appointment to the position of mine inspector of the Hazleton District, vice JAMES RODERICK, resigned, by the Board of Examiners who recently conducted an examination of aspirants for the position.

MAJOR A. B. DE SAULLES, superintendent of the Lehigh Zinc Company's works, at South Bethlehem, Pa., returned from a European trip on August 31st. He was met at the station by a committee of workmen and in the evening was given a banquet, at which 250 of his employees were present.

MR. JOHN FINLAY, an electrical engineer in the employ of a London firm engaged in the manufacture and sale of electrical machinery and appliances, is making a tour of the principal mining fields of the world. He has visited South Africa and Australia, and recently was in California, Nevada and Colorado.

MR. F. D. WEEKS, long connected with the smelting industry at Leadville and lately superintendent of the Philadelphia smelter at Pueblo, has been appointed to the same position at the Guggenheim smelter at Aguas Calientes, Mex., where he will relieve MR. WILLIAM L. RAHT, who returns to Pueblo, to assume the superintendency of the Philadelphia smelter.

MR. H. H. WEBB, formerly of San Francisco, has been appointed consulting engineer for the Chartered Company at Johannesburg, South Africa, to take up the work of MR. JOHN HAYS HAMMOND, who will remain in London. MR. WEBB, who is a graduate of the School of Mines of the University of California, left California last year for Bulawayo, South Africa, to take charge of some of the company's mines there.

OBITUARY.

JOHN C. ARNOLD, United States surveyor-general for Oregon, died in Portland, Ore., August 24th, aged 53 years.

THOMAS GRANT, owner of one of the largest blue-stone quarries in New York State, died at Bristol Hill, Ulster County, on August 31st, aged 59 years.

F. M. DRAKE, general passenger agent of the "Big Four," dropped dead on the Grand Rapids and Indiana Railroad train at Grand Rapids, Mich., on August 29th.

J. F. HOLLOWAY, of New York City, died at Cuyahoga Falls, O., September 2d. He was a noted hydraulic engineer and former president of the American Association of Mechanical Engineers.

WILLIAM CARPENTER died September 2d, in Baltimore, Md. He was born in England in 1830. For 30 years he had wide notoriety there and in this country from his earnest advocacy of the theory that the earth is of a flat, circular form, revolving on a central axis, with the sun stationary over the center. Professor Carpenter had written much and lectured often on this philosophy, principally in England.

JOHN HOUSTON, of Arlington, N. J., one of the most successful engineers in this country and South America, died August 30th, at the age of 68 years. MR. HOUSTON was one of the charter members of

the American Society of Civil Engineers. He constructed the Caracas and Laguayra Railroad. MR. HOUSTON was chief engineer of the Erie Railroad for 11 years, and was superintendent of the Bergen tunnel during its construction. He was a native of Edinburgh, Scotland, and came to this country in 1859.

PROF. A. D. CHURCHILL died in Chicago, Ill., last month, from heatstroke. He was born in Utica, N. Y., 41 years ago, but lived in Davenport, Ia., most of his life. He was a graduate of Knox College, Galesburg, Ill., and of the Iowa State University, at Iowa City. He also studied at Ann Arbor, Mich., and at the Columbia School of Mines, New York City, being an instructor at the latter place for five years. He then went to Helena, Mont., where he engaged in numerous mining enterprises, engineering many large sales.

CAPT. JOHN W. PLUMMER, manager of the De Lamar (Idaho) mine, died in London, England, August 19th.

Mining has been CAPTAIN PLUMMER'S life work. His early experience was in the copper and silver mines of Lake Superior, having been for some time at the Silver Islet mine and later at the properties of John Taylor & Sons. For many years he lived in Nevada, Idaho, Utah and Montana, always in charge of valuable properties. For three and one half years he was superintendent of the Granite Mountain mine. He took charge of the Elkhorn when that mine was sold to the English company and remained in that capacity until he was promoted to the general management of the Elkhorn and the De Lamar. We purpose in a later issue to publish a fuller account of CAPTAIN PLUMMER'S life work.

SOCIETIES AND TECHNICAL SCHOOLS.

CALIFORNIA MINERS' ASSOCIATION.—The annual convention of this association will be held in San Francisco, beginning November 3d. Hon. Jacob H. Neff, who has been president since the organization of the association, has announced, through friends, that he will decline the honor this time.

SOUTH DAKOTA SCHOOL OF MINES.—Dr. V. T. McGillicuddy, dean of the School of Mines, and F. C. Smith, Professor of Geology and Metallurgy, have gone to Portland, in that state, to begin a geological and topographical survey of the Bald Mountain and Ruby Basin district. They are accompanied by Messrs. Ballinger and Nichols, of the School of Mines, and Bartlett Harrison. They will be joined in about a month by Dr. Torrence, Professor of Metallurgy in the University of Michigan. The geological branch of survey will be in charge of Professor Smith, and the topographical of Dr. McGillicuddy. They will be a week at Portland, and about a month altogether in the Bald Mountain district.

ROSE POLYTECHNIC INSTITUTE.—The fourteenth annual catalogue of this institute at Terre Haute, Ind., has been published, giving the information usually found in such pamphlets, from which we take the following: The institute was founded in 1874 by the late Chauncey Rose, of Terre Haute, and was opened in March, 1883. The work of the institute is the higher education of young men in engineering, instruction being given in mechanical, electrical and civil engineering and in chemistry. The faculty is made up of nine professors, one lecturer and six instructors. There are also six other instructors for practical work in the shops, where instruction is given in machine and woodwork, forging and tempering, foundry practice and in boiler management. Candidates for admission must be at least 16 years old, and are required to pass examinations in English grammar, United States history, geography, arithmetic, algebra through quadratic equations, including radical quantities and plane geometry. During the last collegiate year the attendance of students was: Graduates, 2; seniors, 28; juniors, 29; sophomores, 29; freshmen, 35; total, 123.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—At the meeting at Buffalo, N. Y., on August 28th, the following officers were chosen:

President, Prof. Wolcott Gibbs, Newport, R. I.
Vice-Presidents, who form the chairmen of the various sections—Mathematics and astronomy, W. W. Beman, Ann Arbor, Mich.; physics, Carl Barus, Providence, R. I.; chemistry, W. P. Mason, Troy, N. Y.; mechanical science and engineering, John Galbraith, Toronto, Can.; geology and geography, I. C. White, Morgantown, W. Va.; zoology, G. Brown Goode, Washington, D. C.; botany, George F. Atkinson, Ithaca, N. Y.; anthropology, W. J. McGee, Washington, D. C.; social and economic science, Richard T. Colburn, Elizabeth, N. J.
Permanent Secretary, F. W. Putnam, Cambridge, Mass.

General Secretary, Asaph Hall, Jr., Ann Arbor, Mich.

Secretary of Council, D. S. Kellicott, Columbus, O.

Treasurer, R. S. Woodward, New York.

The next place of meeting was left in the hands of the council for final action.

LAKE SUPERIOR MINING INSTITUTE.—The annual meeting was held at Ishpeming, Mich., beginning Tuesday, August 18th, upon which day the following properties were visited by the members: Cleveland Lake shaft and the Salisbury mines of the Cleveland-Cliffs Iron Company; the

Lake Shaft and Section 16 mines of the Lake Superior Iron Company, and the East End mine of the Pittsburg & Lake Angeline Iron Company. The evening meeting was presided over by Vice-President Per Larssen, in the absence of President John Duncan, of Calumet. Mr. C. T. Mixer, of Ishpeming, read a paper on the "Methods of Sampling Iron Ore"; Mr. J. E. Jopling, mining engineer of the Cleveland-Cliffs Company, read one on the "Underground Electric Haulage at Cleveland Lake Mine." Mr. E. F. Bratt, mining engineer at the Lake Angeline, followed Mr. Jopling with a similar paper on the electric haulage equipment of that mine.

On the morning of the second day the members of the Institute went to Champion, where they inspected the properties of the Champion Iron Company, and later to Republic, where the old workings were seen. In the afternoon a visit was made to Negaunee, where the mine of the same name, also the Buffalo, Queen, Prince of Wales and South Buffalo mines, were inspected. The evening session was held at Marquette, when the election of officers took place with the following result: President, W. G. Mather, Cleveland; vice-presidents, Geo. H. Abeel, Hurley, Wis.; J. F. Armstrong, Hibbing, Minn.; managers; Graham Pope, Houghton, Mich.; Wm. Kelly, Vulcan, Mich.; C. H. Munger, Ironwood, Mich.; secretary, F. W. Denton, Minneapolis; treasurer, George D. Swift, Duluth.

Mr. T. F. Cole, manager of the Buffalo group of mines at Negaunee, then read a description of the hoisting plant at the Prince of Wales mine, which had been inspected in the afternoon by the members. This was followed by a communication by H. B. Sturtevant, superintendent of the Pioneer mine, giving results of an efficiency test of their mine pumping engines.

On the third day the new charcoal furnace plant of the Cleveland-Cliffs Iron Company and its chemical plant for the manufacture of wood-alcohol and acetate of lime were visited at Gladstone.

INDUSTRIAL NOTES.

The Midvale Steel Works, at Nicetown, Pa., will build a two-story shop, 44 x 130 ft. in size.

The St. John Rolling Mills and Bolt Works Company, St. John, N. B., has been incorporated with a capital stock of \$50,000.

The Bethlehem Iron Company's steel rail mill resumed work August 31st. The puddle mill started at the same time on a big order.

The Consolidated Steel and Wire Company, of Joliet, Ill., has leased the Ashley Works, and will start up the plant under a lease.

The Indiana Pipe Line and Refining Company has placed an order of fifty 8,000 gal. tank petroleum cars with the Terre Haute Car Works.

The Stillwell-Bierce & Smith-Vaile Companies, Dayton, O., has been awarded the contract for pumps and boilers for water-works, at Vicksburg, Mich.

The Shelby (O.) Steel Tube Company is just installing new Corliss engines, which will give greater power and increase the capacity to at least 2,000,000 ft. per month.

The Brooks Locomotive Works, of Dunkirk, N. Y., has an order for two narrow-gauge, saddle-tank, standard type locomotives, to be used on the Naawa railroad in Japan.

The Armington & Sims Engine Company, Providence, R. I., at a recent meeting of stockholders, voted to ask for an extension of three years. The company owes \$275,000 and has assets of \$270,000.

The Premier Steel Company, of Indianapolis, Ind., has received an order from the Louisville & Nashville for 10,000 tons of steel rails. This is said to be the initial order of rails received by the company.

The Glenn Driller Company, of New Brighton, manufacturers of traction rigs and oil-drilling machinery, has concluded a deal for a plot of ground in Zelenople, Pa., and will move the works to that place.

The Shenango Mineral Wool Company's plant, at Wheatland, Pa., resumed operations on Monday last, after an idleness of several weeks. The company has enough orders on hand to keep it running steadily for some time.

The Pittsburg Locomotive Works have recently delivered to the Seaboard Air Line 12 10-wheel engines with cylinders 19 x 24 in., and have also completed two 6-wheel connected side-tank engines with cylinders 13 x 20 in. for the Ota Railway of Japan.

The Stanley-Peuchen Chemical Company has been incorporated to operate in Buffalo, N. Y. The capital is \$12,500, and the directors are: Stanley C. Peuchen, Henry S. Strange, Frank C. Ferguson, Edward T. Stevens and Walter G. Smith, of Buffalo.

The Riverside Iron Works, of Wheeling, W. Va., informed their blast-furnace men of a 20% reduction in wages August 31st. The men refused to accept the reduction and quit and the works were shut down. The whole mill, employing 3,000 men, is now idle.

The Attfield Chemical Company recently filed articles of incorporation in Louisville, Ky. The

capital stock is \$10,000. The incorporators are F. A. Henry, S. O. Newman and C. H. Callahan. The headquarters of the concern will be located in Louisville.

The Old Dominion Iron and Nail Works Company, Richmond, Va., recently held the annual meeting of stockholders, when the following officers were elected for the ensuing year: Arthur B. Clark, president; M. F. Montague, vice-president, and R. M. Blankenship, secretary.

The Plumb Rock Drill Company has been incorporated by A. M. Plumb, Lawson Sumner and Charles M. Sumner, with a capital stock of \$200,000, to operate in El Paso County and have offices in Colorado Springs. The company will engage in the manufacture and sale of the Plumb drill, a recent invention.

The Edgar Thomson Steel Works' chemical laboratory, at Braddock, was destroyed by fire a few days ago, causing a loss of \$75,000, which is fully covered by insurance. The fire originated in the basement of the building, and was due to the explosion of chemicals. The laboratory will at once be rebuilt.

The Gates Iron Works, 650 Elston avenue, Chicago, Ill., have just shipped two crushers, with a daily capacity of 200 tons each, to the Coolgardie gold fields of West Australia. The Gates Iron Works have also taken an order for one of their largest crushers, capacity two tons per minute, for shipment to the Basalt Actien Gesellschaft, of Kohn, Germany. The machine will be used for making ballast from basalt rock.

The Totten & Hogg Iron and Steel Foundry Company, of Pittsburg, Pa., manufacturers of rolling mill machinery and engines, has received an order from the Laughlin Nail Company, of Wheeling, W. Va., for some more mills, shears, etc. The company is now also finishing and shipping the machinery for the Connellsville Steel, Iron and Tin Plate Company, Connellsville, Pa. The company reports that orders for rolls are very good.

H. K. Porter & Company, of Pittsburg, recently received orders for engines from foreign companies amounting to between \$30,000 and \$40,000. One of these engines is for a Russian railroad near St. Petersburg, where the engine is to compete with German engines. The engine will have a gauge of but 2 3/4 in. A standard locomotive has also been ordered for San Salvador, Central America, and one is being built to haul asphalt at Trinidad, in the West Indies. A 30-gauge engine is being built for a tramway at Port au Prince, Hayti, and two 40-ton locomotives are being constructed for use in the gold mines in South Africa, near Johannesburg. An experimental engine will also be built for use in Tiflis, in the Caucasus Mountains.

TRADE CATALOGUES.

Messrs. Philip Harris & Company, Limited, of Birmingham, England, have just issued a very complete catalogue of chemical apparatus. It contains full descriptions of their specialties, such as the Orsat-Pryce gas analysis apparatus, their apparatus for testing the flash point of petroleum, etc. Their assay apparatus catalogue describes their special furnace, flattening mills, apparatus for estimating silver, etc. They have also published a very elaborate catalogue of physical apparatus.

Rumsey & Company, Limited, manufacturers and hydraulic engineers, with factory and principal office at Seneca Falls, N. Y., have issued an illustrated catalogue of power pumps and hydraulic and pumping machinery. They manufacture various styles of Rumsey's triplex power pump, rotary pumps, centrifugal pumps, fan pumps, boiler feed pumps, hydraulic rams, etc. They also manufacture and keep on hand a large stock of hand pumps of all types and sizes; also wind-mill pumps, spray pumps, deep-well cylinders and standards. They also furnish hose, fittings and all supplies.

Henion & Hubbell, Chicago, Ill., are manufacturers of power pumps driven by belt, electricity, gas, gasoline or water power, and illustrate and describe the various styles in a newly issued catalogue. The triplex form is the one adopted where the power is obtained as above specified. The following are some of their special kinds and the uses best suited to them: Electric house pumps, for supplying office buildings and apartment buildings and residences; electric elevator pumps, for either gravity or compression tank systems; electric water-works pumps, using direct or alternating current where the power can be had; electric fire pumps, where steam or power is not available the year round; electric pumps for mine service; belt and electric pumps for mill and manufacturing service; pumps for public and private water works where gasoline engines furnish the motive power.

The Baldwin Locomotive Works, Philadelphia, Pa., and the Westinghouse Electrical and Manufacturing Company, Pittsburg Pa., have jointly issued a catalogue on the subject of electric locomotives. This class of locomotive has rapidly come into use, supplanting the steam engines, which in many cases are less economical for mine, city and switching work and less desirable because of certain features that cannot be eliminated. Express locomotives are made for horse-powers ranging

from 100 to 1,600, and to run at any desired speed. Their efficiency has been well demonstrated.

Freight locomotives are more powerful, their horse-power varying from 100 to 2,000. Double locomotives are formed by two short freight locomotives coupled at the center, all the motors being then worked through one controller placed in the cab. Switching locomotives are similar to those used for freight purposes, but less powerful, the truck under each end having a motor varying from 50 to 200 H. P. They may be provided with a crane at one end, which is also driven by an electric motor, making their use possible as wrecking cars, or for the loading or unloading of freight. Suburban and elevated railroad locomotives have two four-wheeled trucks, with two motors on each truck, varying in size from 50 to 200 H. P. In mine locomotives the capacity ranges from 50 to 200 H. P., and the draw-bar pull from 3,000 to 10,000 lbs., or more, according to the weight. The normal maximum speed is 10 miles an hour, but, by changing the gearing between the armature and the axles, the speed may be increased to 25 miles an hour or more. All these locomotives have the driving wheels coupled with parallel rods which prevent loss of power and time, due to slipping of wheels on individual axles. This is an important feature where there is fine coal dust or moisture. Rack locomotives are made for any system of rack and gears, and are adapted to operate upon any practicable incline. The weight of the locomotive is only sufficient to keep the gear-wheels in the rack. The catalogue gives careful detailed explanations of the main parts, as trucks and motors, diagrams of the characteristic curves of motors, with explanation of the use of the curves; a description of the efficiency of electric locomotives; the construction and use of the controller; the brake apparatus and the draw-bar pull. A form of specification for locomotive desired includes (1) general description; (2) general features of construction; (3) physical tests of material; (4) electrical equipment. The whole is concluded with a simple glossary of terms frequently used in electric railroad work.

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.

ALABAMA

GILA COUNTY.

BLACK COPPER GROUP.—Development work on this group is progressing. A shaft has been sunk 100 ft. and in ore nearly all the way. At a depth of 75 ft. the ledge was crosscut 6 ft. and a drill driven in 3 ft. further without reaching the wall, all in ore assaying over 15% copper.

TALLADEGA COUNTY.

HORSE CREEK.—Improvements are being made in the machinery of this gold mine at Munford. It is said that \$2,000 worth of ore is now ready for shipment.

ALASKA.

OIL DISCOVERY.—A dispatch from Seattle, Wash., says that A. H. Eddy, of Hartford, Wash., has returned from Alaska, where he reports having discovered two petroleum wells in the mountains not far back from the coast, and within about 100 miles from Juneau. He brought samples of crude oil, which he proposes to have tested.

BALD EAGLE MINING COMPANY.—This company, of Sum Dum, has placed orders for a second shipment of Springer 6-ft. canvas belt concentrators, and Superintendent Trowbridge says that they are doing first-class work.

ARIZONA.

YUMA COUNTY.

HARQUAHALA GOLD MINING COMPANY.—The following is from the report of Assistant Manager Thomas D. Murphy for the month of June, 1896:

The cyanide department was in operation 26 days, stoppages being made for clean-up and repairs to hoisting engine and tramway.

The amount of pulp treated, 4,118 tons; average assay of pulp, \$3.36 per ton; average assay of tailings, \$1.17 per ton; percentage extracted according to assays, 65%; bullion, estimated to yield \$7,812.71.

In the milling department 10 stamps were run 12 hours per day for 25 1/2 days, on ore on hand and ore extracted from the Bonanza mine by the lessees.

Amount of company ore crushed, 100 tons, average assay of battery, \$15.67 per ton; average assay of tailings, \$4.58 per ton; percentage extracted according to assays, 70%; bullion realized, \$1,088.66; lessees' ore, amount crushed, 145 tons; average assay of battery, \$19.88 per ton; average assay of tailings, \$4.80 per ton; percentage extracted according to assays, 73%; bullion realized, \$2,844.81

The summary of revenue is as follows:

From cyanide plant, \$7,812.71; from company ore, \$1,088.66; from lessees' ore, royalty, etc., \$1,319.13; miscellaneous, general store, and other sources, \$630.71; total revenue, \$10,851.21; operating expenses, \$5,131.51; extraneous expenses, \$1,460.27; total expenses, \$6,591.78; profit, \$4,259.43.

PLANET SATURN GOLD MINING COMPANY.—This company, of Congress, has placed an order with the Colorado Iron Works Company for a set of 54 x 8 in. patent high speed rolls.

CALIFORNIA.

BUTTE COUNTY.

(From Our Special Correspondent.)

GOLD BANK.—This mine is in the Forbestown District, half a mile north of Forbestown. A crosscut tunnel is being run to tap the ledge at a depth of 500 ft. from the surface. The pay streak is 12 ft. wide. The mine is well equipped with the most approved machinery and is being developed by six tunnels and an incline shaft down 360 ft. About 100 men are employed, milling 140 tons per day.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

SOUTH POLOMA.—This mine is near the Gwin. A new hoist has been erected and the sinking on the shaft will continue down to the 600-ft. level before any crosscutting is done.

ELDORADO COUNTY.

UNCLE SAM.—R. D. Waggoner, superintendent of this gravel mine, has struck the main channel after running a tunnel about 500 ft.

MARIPOSA COUNTY.

(From Our Special Correspondent.)

FELICIAN.—This mine, located in the Yosemite Park, is being reopened under a 12 months' bond. Four men are now employed sinking on the 2-ft. vein. Assays show as high as \$88 per ton. The sulphurets are rich.

MONO COUNTY.

Following are extracts from the weekly reports of the mine superintendents:

BODIE CONSOLIDATED MINING COMPANY.—On the 200-ft. level in the Gildea ledge, the raise was advanced 11 ft. through old fillings and 4 ft. is in new ground showing 8 in. of ore, sampling a little over \$120 per ton. This is a pillar left by old workings, and its size cannot be determined. On the 300-ft. level 150 ft. of drift and crosscut leading to the Burgess ledge have been retraced, preparatory to pushing the south drift further, and 4 1/2 tons of \$30 to \$25 rock, found in the breast of this, have been run out to the shaft and hoisted. On the 350-ft. level 26 tons of fillings from the Fortuna vein, south and west of the shaft, have been taken out. On the 400-ft. level in the Fortuna vein, 8 tons of fillings have been extracted, which are of rather low grade. The Mono drift has been run north on the Fortuna from the east crosscut, showing hard quartz and porphyry in the face. On the 550 ft. level work on the Fortuna vein near the Standard line has been discontinued temporarily, pending better facilities for working. On the surface they are cleaning out around the ore chutes and under the pans in the mill, and are running the material in the pans at the Standard mill.

BULWER CONSOLIDATED MINING COMPANY.—On the 200-ft. level, stopes 9 and 10 above crosscut No. 2 south still furnish the bulk of the ore, and the grade is about the same. On the tunnel level raise No. 1 from stope No. 6 shows ore which is narrow but of good grade. In raise No. 2 from stope No. 9 the ore is very small and poor, but they will continue to prospect the ground. The intermediate drift from the raise was advanced 6 ft. through barren quartz and clay, improving to ore of a better grade. Extracted during the week, 13 1/2 tons of ore assaying from \$18 to \$160 per ton; true average, \$38.

NEVADA COUNTY.

EAGLE BIRD.—This property, at Maybert, was sold last week to satisfy judgment held by the men who have liens on the property. There is a 30 stamp mill and a good hoisting plant on the property.

PROVIDENCE.—The reduction works at this mine were burned recently, entailing a loss of \$10,000 on the company with partial insurance.

SISKIYOU COUNTY.

NEBRASKA.—The mill at this mine, on Cherry Creek, commenced crushing \$50 ore lately. The company is also sinking a shaft to work the rich gravel in the bed of the creek.

(From Our Special Correspondent.)

KLAMATH RIVER PLACER.—The Deistlerhorst dredger, which is now in operation in the Klamath River, near Quigley's, employs five men on both shifts, raising 1,440 cu. yds. of gravel every 24 hours. It is estimated that the gravel will pay an average of 10c. per cubic yard, or \$144 per day.

TRINITY COUNTY.

(From Our Special Correspondent.)

VINICIA.—At this mine, near Lewiston, in the Eastman District, a 4-ft. ledge has been struck, which appears to be very rich. Mr. Van Matre holds a lease on the property.

COLORADO.

COLORADO FUEL AND IRON COMPANY.—The coal mines belonging to the Santa Fe Railroad at Starkville, Los Animas County, Canon City, Fremont

County, and New Castle, Garfield County, have been transferred under contract to this company. The Santa Fe Coal Company and the Canon City Coal Company, the corporate names under which the Santa Fe properties were operated, now pass out of existence.

BOULDER COUNTY.

MELVINA.—The first shipment of four tons of ore from this mine, near Ward, made recently, averaged, it is said, \$289 to the ton. The main ore chute of the property has been opened at the 470-ft. level and exploited for a distance of 50 ft. without coming to the end of the chute. The vein will average about 18 in. in width, being 44 in. wide at the widest part. The property is now paying expenses and is getting into shape.

SCOTIA GOLD MINING AND MILLING COMPANY.—This company's new mill, at Summerville, has started up. The method of saving gold is said to be peculiar, because it is a conglomeration of all the recent inventions, including electric tables and vats. The mill has cost a large amount of money, as the machinery is all new and of the best material.

EL PASO COUNTY.

BLAKE FRACTION.—New machinery has been ordered for this claim located just below the Spicer mine, on the south slope of Battle Mountain. The plant is to consist of a 35-H. P. boiler and 25-H. P. engine.

COLORADO FUEL AND IRON COMPANY.—An advance statement of this company for the year ending June 30th last shows net earnings of \$24,275, an increase over last year of \$120,000. Management expenses absorbed \$130,022, against \$157,644 last year, leaving a balance of income account of \$794,252. Out of this, fixed charges absorbed \$459,897, sinking funds \$100,039 and preferred dividends \$160,000. The surplus, therefore, after all charges and dividends, was \$74,313, equal to about 1/2 of 1% on the common stock.

The report states that all floating debt has been paid off, the company has accumulated a large stock of pig iron, etc. Existing business conditions have compelled all new enterprises to be abandoned and have kept the railway companies out of the market for material. Hence the company's stocks on hand are not an immediately available asset, but can be realized on in the near future.

The Colorado Fuel and Iron Company, in order to protect its interests, has secured a receiver for the Colorado Coal and Iron Development Company, whose bonds are guaranteed by the Colorado Fuel and Iron Company. Thus the property will be held together until times improve.

The coal properties of Atchison in Colorado have been leased for a comparatively small fixed rental, with a royalty on each ton of coal. Atchison has been heretofore the company's principal competitor in the coal and coke business. The board of directors have fixed February 20th and August 20th as the dividend dates in future. Payment of arrears of preferred dividends is not considered advisable until business and financial conditions are better.

TAYLOR & BRUNTON SAMPLER.—The machinery for this sampler, recently erected on Battle Mountain, was started for the first time on August 27th. Three cars of Portland ore were handled successfully. The plant is working well, and has a capacity for handling and sampling 25 tons of ore each hour.

EL PASO COUNTY.—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

ANCHORIA-LELAND.—This shaft has been sunk 580 ft., and a station is being excavated at that depth. The returns this month will be the largest yet made in one month. The north drift at the 278-ft. level has been extended under the shaft of the "Old Young" lease and yields good ore. Some good ore is being taken from a cross vein south of the "east vein" from which at present three-quarters of the product of the mine is obtained.

The average of 15 assays taken from the mine in the usual routine of work, August 31st, was \$1,149.30, the highest average ever taken from this property. The north drift at the 278-ft. level at a distance of 350 ft. from the main shaft, or 50 ft. north of the Young shaft, broke into 12 inches of ore which assayed 86 oz. or \$1,720. At the 300-ft. level when driving north and only about 9 ft. from the shaft 3 ft. of vein matter was discovered, which assays for the full 3 ft. from 2 to 9 oz. This is one of the most important discoveries made on Gold Hill. It is the deepest shaft on the hill, and it was the impression of the pessimist, as the lessees found no mineral below the 200-ft. level, that of necessity there was no mineral there—the ore mined was merely a surface pocket. Such discoveries in one day have doubly enhanced the value of the properties.

COPPER MOUNTAIN COMPANY.—This company's Annie C. property, on the north slope of Spring Creek, has been leased and bonded to Mr. Larabee, formerly of Kansas City, who has put on two shafts and is now hoisting the water from the 100-ft. shaft by means of a horse whim. This work is slow as the shaft was sunk on a 45° incline. This is the property which yields galena in veins of from 6 to 10 in. wide in the porphyry.

ELKTON MINING COMPANY.—This company has just received returns from 12 cars of ore which netted \$18,000. There are 10 cars at the smelters and several at the Florence Extraction Works, which have not been heard from. The mine will

shortly be lighted throughout by electricity. The flash signals will be the first adopted in the camp.

GRANITE HILL.—This property, in Poverty Gulch, still attracts considerable attention, as the sub-lessee has sold one ton of ore for \$311.44. The vein is now in place, and the shaft has reached a depth of 20 ft. Lessees and sub-lessees—legion in number—are working on all sides to find the extension, but unsuccessfully to date, as the "wash" or "slide" is very deep in some places. The ore is a mineralized porphyry sometimes carrying free gold in the seams. Three shifts are now employed.

HILLSIDE.—At this mine, on Gold Hill, the new shaft has been sunk to a depth of 30 ft. and already a carload of ore is on the dump. The ore is of medium grade, although rich samples are often taken assaying \$500 and over. A recent test of seven assays averaged \$185, but it is not expected the shipment will average as high.

ORPHAN BELL.—These properties, containing about 25 acres of patented ground on Bull Hill, are being worked on lease. The Munger Lease is a steady shipper, and the ore is being extracted from the 170-ft. level; the Granville lease is not a regular shipper; the shaft is being sunk to the 100-ft. level, and at that point a crosscut will be necessary to intersect the vein. The Wolcott lease has a shaft 250 ft. deep, but at present they are not shipping, although shipments have been made from an upper level. The Maloney lease is being vigorously worked. The shaft has been sunk 120 ft. and sinking will be pushed until the 200-ft. level is reached. The Parrot lease is being worked on the vein, at an incline, the present depth of shaft being nearly 200 ft. The vein is well defined, and about 3 ft. wide, and the pay streak is 10 in. wide.

PHARMACIST.—This mine has shipped 103 tons of good grade ore in August; 11 tons were shipped August 28th, which netted \$98 per ton, or \$1,300. Most of the ore was taken out at the fifth or 250-ft. level. The sinking of the new shaft, as stated last week, is continuing slowly.

ST. PAUL TUNNEL AND MINING COMPANY.—This company, on Spring Creek, has taken out about 250 tons of ore from surface workings on the Maggie Trimble claim. The ore is unique for Cripple Creek; it contains cerussite, galena, iron pyrites, from 2 to 500 oz. Silver and gold from \$5 to \$30 per ton. Recent grab samples gave \$12 to \$17 gold, \$2 to 5 oz. silver, and from 5 to 13% lead. The vein is 4 ft. wide, rather ill-defined, with small pockets in both sides of the formation, which is a coarse grained syenite, free from mica and the feldspar in a state of decomposition. No waste is being taken out from the 40-ft. level. This vein has not been intersected by the tunnel, or if so the vein is badly mixed with the formation.

TRAIL.—This mine, on Bull Hill, is worked by Mr. Perry, of Denver, who has been continuously at work for nearly 12 months. He is likely to be rewarded for his outlay, after employing from 20 to 30 men almost all the time. The mine never looked as well as it does to-day. The shaft has been sunk 280 ft., and a level north is being extended from that point on the vein to strike the ore chute.

VINDICATOR.—This property, on Bull Hill, has a shaft sunk 250 ft. At the third level north a drift has been extended 175 ft. the breast of which shows well. The fourth level north on the old ore chute has been extended 70 ft. The vein is 8 ft. wide, 4 ft. of which is good pay ore. The fourth level south has been extended 10 ft., and the Lillie ore chute was found. Five levels are being advanced, two levels on the "west vein," and three levels on the "east vein," the faces of all being in good ore at present. The average of the ore, both smelting and milling during the past five months has netted \$45 per ton.

GUNNSON COUNTY.

SPENCER MILL.—David Nichols, in connection with the other owners of the Hattie Trice, have leased this mill and are preparing it for active service. It will be in charge of Z. L. Caddon.

LAKE COUNTY.

GOLDBUG CONSOLIDATED MINING AND MILLING COMPANY.—A strike is reported in the Goldbug and Florence lodes, two of the 10 claims incorporated by this company. Samples of the ore are said to show returns of \$63 to \$340 to the ton. The property has produced and shipped ore for a long time, but has never justified the working of a large force, nor the expenditure of any great sums of money. Five short tunnels and three shafts now penetrate the workings of the ground, and work has been commenced to drive a 600-ft. tunnel to cut the newly discovered ore body.

MINERS' STRIKE.—A dispatch from Leadville, under date of August 31st, says that the pumps in the Bon Air and Penrose mines, two of the largest properties in the district, have been stopped and the mines are rapidly filling with water. Moffat & Smith, owners of these and several other mines, announce that they will stop the pumps in all of them. This will cause the flooding of nearly every mine in the richest part of the district, entailing a loss of hundreds of thousands of dollars in damage to the workings. Some of the mines may be abandoned permanently.

SAN MIGUEL COUNTY.

MIKADO MINING COMPANY.—This company has two shifts of men driving a tunnel on one end. The tunnel is worked through the Japan cross-cut from the surface to the vein. The tunnel is being driven

with air-drills, and is now in about 1,400 ft., with something like 300 ft. further to drive to intersect the northwest extension of the Belmont and Tom Boy vein, which is the objective point of the tunnel. It has cut one or more cross-leads which carry gold and silver ore in paying quantities.

PRODIGAL SON.—Dr. Pascoe has leased and bonded this property on Cement Creek to Denver parties and work has been started with J. J. Fitzgerald in charge. A night shift has been put on. While crosscutting the iron ore in the drift from the bottom of the 60-ft. shaft, a 2 ft. streak of ore was found that, it is said, averages \$32 gold and \$6 in silver. This ore is being saved for shipment. The lessees are now preparing to start work on the tunnel below that is to cut the ore at 200 ft. It is already in 60 ft.

GEORGIA.

CARROLL COUNTY.

BOSTON & KENNESAW MINING COMPANY.—This company, with \$300,000 capital, is working a 10-stamp mill on the old Clopton property near Villa Rica. The company employs about 35 hands, and is now treating about 15 tons every 24 hours by chlorination.

HARALSON COUNTY.

ROYAL MINING COMPANY.—This company is operating about three miles from Tallapoosa. The company has C. E. James, of Chattanooga, as its president and Franklin Harris as secretary. Mr. James is a prominent capitalist and large dealer in railway and mining supplies. The stock is controlled entirely by Southern capitalists, who own 800 acres. The mine was formerly known as the Camille and is now being worked night and day with a force of 60 hands. A 20-stamp mill extracts the gold from 40 tons of ore per day. The machinery is of the latest pattern and the entire plant, with buildings represents an outlay of over \$150,000. It is stated that it is to be increased to three times its present capacity and a 60-stamp mill placed in operation. The chlorination process is now being applied to a large quantity of tailings which were thrown away under the method formerly employed here. It is found that these tailings contain from \$5 to \$8 worth of gold per ton, most of which is being saved. The Franklin mine, in Cherokee County, is also being actively worked and about 50 tons per day extracted by chlorination at a net profit of about \$340.

IDAHO.

ALTURUS CITY.

It is reported that John P. Fitzgerald has sold his group of claims in the Florence mining camp, the principal one of which is the Bull Pen, to Clarence Cunningham and George Chapman, of the Cour d'Alenes, for \$20,000. This includes several placer claims with one 7-mile and one 3-mile ditch. They have now 20 men at work on the Homestake and Leland, and are going to have a 10-stamp mill on the property before December 1st.

BOISE COUNTY.

CONFEDERATE.—The new locators of this mine ran a crosscut recently, and in 20 ft. tapped the ledge, which they found to be several feet wide and rich in free gold. They are now extracting ore for milling.

CASSIA COUNTY.

CAMORA GOLD MINING COMPANY.—The Colorado Iron Works Company is building a 5-stamp mill for this company, of Albion.

LENA.—This property is owned by L. F. Cook, Lyons & Maguffey, and bonded by Mr. Higgins, who is developing it by enlarging the lower tunnel to 4 ft. x 6 ft. inside of timbers. He will drive it under the old workings, where a body of ore is uncovered. The tunnel is in about 100 ft. and will be driven at least 100 ft. farther.

LEMHI COUNTY.

BINGHAM PLACER MINING COMPANY.—This company has been incorporated at Salt Lake, Utah, with a capital stock of \$250,000, divided into as many shares of the par value of \$1 each. The property of the company, consisting of 160 acres, was recently acquired by Theodore Bruback and his associates at a cost of \$100,000, and is located at Gibbonsville, in the Dahlonega mining district. The officers named in the company include Theodore Bruback as president; J. W. Young, vice-president; W. S. McCornick, treasurer; S. T. Pearson, secretary, and C. W. Watson, general manager.

MCKILLOP.—George Chrisman, of Salt Lake City, has just consummated the purchase of this mine on Pratt Creek, located about 50 miles north of Nicholia. He immediately let a contract to build a road to the property. A 20-stamp mill will be erected at once. The free-milling ore body is said to be large and to average about \$15 per ton.

OWYHEE COUNTY.

NIAGARA.—Messrs. Sorenson and Nevins have their shaft down about 35 ft., and are still sinking. The pay ore runs from 3 in. to 1 ft. in width, and carries more gold than when nearer the surface. Much of the rock shows free gold, and several black silver nuggets have been extracted.

PAUPER.—Connections with the old shaft will probably be made this month and the property put in shape for immediate production.

SOUTH CENTRAL.—The new 10-H. P. gasoline hoist is now in position in the mine and will be put in operation at once. The winze will be sunk to

greater depth and the mine thoroughly prospected by the men holding bond upon the same.

SHOSHONE COUNTY.

HUNTER.—This mill, at Mullan, is running irregularly, starting up for a day or two with one shift and then closing down for about the same length of time. They have uncovered a fine ore body, but cannot handle any amount of it until the shaft is sunk deeper.

MORNING.—This mill is running steadily on ore from the Morning mine, and occasionally with one side on You Like ore. It is said the mill will not be shut down as long as lead is above 2.50¢ and silver 65 cents.

KENTUCKY.

A dispatch from Middlesborough states that oil has been found in quantities at a point about six miles from that place. A number of wells, it is stated, are to be sunk at once by Messrs. Hull & Company, A. J. Asher and others. It is stated that arrangements have been practically made to lease 75,000 acres in Bell, Clay, Harlan and Leslie counties. One well, which has been bored, it is stated, is producing over 200 bbls. daily.

MICHIGAN.

COPPER.

CALUMET & HECLA MINING COMPANY.—The directors on September 1st declared a dividend of \$5 per share, payable September 25th. This is the fourth dividend this year, previous ones having been paid in March, May and July, and makes a total of \$20 per share for the year. The total amount paid by the company in dividends, including that just declared, sums up \$46,350,000.

IRON—MARQUETTE RANGE.

DEXTER CONSOLIDATED MINING COMPANY.—Captain Jacob Harper, of the Dexter mine, received a letter from Treasurer Gott, of this company, instructing him to suspend operations at once and to begin removing the pumps from the workings. The shut-down will be permanent.

There is about 1,250 tons of ore in stock at the mine. Captain Harper has been instructed to ship this within the next week or 10 days.

MINNESOTA.

(From Our Special Correspondent.)

Iron ore shipments for last week from Two Harbors were on 50 vessels, and were about the largest in the history of the port, notwithstanding the depression and the fears of overcrowded docks at lower lake ports. Ore rates are still the same, and there is no life in the situation anywhere on the lakes. The Duluth, Superior & Western, formerly the Duluth & Winnipeg, has stopped all ore traffic over its line. This company last winter spent about \$150,000 in additions to its ore dock, for ore cars and other equipment, and has carried since then but 170,000 tons of ore. Shipments over the Duluth, Missabe & Northern continue to grow lighter, only the Oliver mine shipping at full capacity. Some of the mines controlled by the Minnesota Iron Company have suspended operations for the season, it is claimed.

The sixth vessel for the Bessemer Steamship Company, the concern that will carry the ore of the Rockefeller Mesabi and Gogebic mines, was launched last week at Chicago. There are yet eight ships of the fleet on the stocks at various lake yards. All will be out before the last of October.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

ADAMS MINING COMPANY.—This company has laid off 50 men, and is curtailing shipments materially.

CINCINNATI ORE COMPANY.—This company has not only closed down, but has pulled its pumps, and sent its manager to Cleveland. It is announced that if McKinley is elected the mine will probably be worked the coming winter.

CLOQUET MINING COMPANY.—Work has begun on an engine house of large size that is to hold the engine now on hand. The mine is closed down, but it is hoped that resumption will occur this season.

EXPLORATION WORK.—Exploring for ore has begun near the town of Missabe, at the east end of the range, by Cole & McDonald, by diamond drill. This is almost the only new exploration work under way on the range.

NORTHERN LUMBER COMPANY.—This company will begin work on a line of standard-gauge road, extending from near Mountain Iron to a point just north of the village of Virginia. It is expected that considerable ore may be shown up along the route.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The output of ore last week was about the same as the week before. The sales of zinc ore were larger than last week. The top price paid for zinc ore last week was \$19.50 per ton, with an average of \$18 per ton. The top price was lower than last week, but the prices of the lower grades were increased. There is very little surplus zinc ore in the district, not over 500 tons. The price of lead ore started in last week at \$13.50 per 1,000 lbs., but on Saturday the miners got a raise of 25¢ per 1,000 lbs. The output of lead in the district last week was about the same as the week before. There is a large amount of lead ore in the bins waiting for an increase in price. The fol-

lowing was turned in from the different camps: Joplin zinc, 1,079,860 lbs.; lead, 155,780 lbs.; value, \$11,900. Webb City zinc, 273,900 lbs.; lead, 40,670 lbs.; value, \$3,975. Cartersville zinc, 1,139,230 lbs.; lead, 296,150 lbs.; value, \$13,197. Galena, Kan., zinc, 2,476,100 lbs.; lead, 350,000 lbs.; value, \$24,835. Oronogo zinc, 136,760 lbs.; lead, 30,190 lbs.; value, \$1,531. Mt. Vernon zinc, 39,970 lbs.; value, \$279. Alba zinc, 54,400 lbs.; value, \$490. Totals for the district: Zinc, 5,179,120 lbs.; lead, 881,790 lbs.; value, \$56,207.

CHICAGO CONSOLIDATED COMPANY AND NICHOLASVILLE COMPANY.—Articles of incorporation were filed last Tuesday in Recorder Sigler's office of the Chicago Consolidated Mining Company, capital stock \$25,000, and of the Nicholasville Mining Company, capital stock \$12,000. Both companies are located about two miles west of Joplin, and both were formed by the following stockholders: Hugh McIndoe, Chicago, Ill.; Robert Allen, Burlington, Ia.; David H. Arnold, Nicholasville, Ky., and Eric Hedburg, E. B. Leonard, J. M. Leonard and Frank Church, of Joplin, Mo. The Chicago Company has a fine steam jig plant and large face of ore at 105 ft., and the Nicholasville Company has a large face of zinc ore at 120 ft., and will put up a steam jig plant at once.

I KNOW COMPANY.—This plant is mining steadily on rich dirt, and is producing over 70 tons of zinc ore every week from dirt hoisted from the 144-ft. level. At night they are at work cutting a drift at 161 ft. to a large body of lead ore that they found in sinking a hole in an old drift.

LITTLE DUTCH COMPANY.—This company has finished its large steam concentrating plant and will start up next week. They are cutting a drift from the Minnie F. shaft at 120 ft. on rich dirt, and are working three 8 hour shifts. When the drift is cut through to the shaft they will hoist the dirt from it.

SOUTH JOPLIN LEAD AND ZINC COMPANY.—On this company's land there are several prospect shafts going down, and in one of them they have opened up a fine body of zinc ore at 65 ft. in timbering ground and no water, as the company keeps the ground drained to 140 ft. The company's plant is mining steadily on rich dirt hoisted from three shafts at 60, 80 and 90 ft., and they are producing about 8 tons of zinc ore and 2,000 lbs. of lead each shift.

WAKE UP COMPANY.—At this company's plant they made their first week's run and turned in 25 tons of high-grade zinc ore. They are drifting at 130 ft. on a 20-ft. face of ore in shooting ground.

MONTANA.

CHOTEAU COUNTY.

HALL.—The Western Iron Works at Butte has received an order from Paul Johnson, superintendent of these mines at Nelson, for a full equipment of machinery for enlarging the smelter. The order consists of a water jacket blast furnace, with a capacity of about 170 tons a day, one reverberatory furnace and one calcining furnace.

GRANITE COUNTY.

PEARL GOLD MINING COMPANY.—Henry Williams, George Tong and Silas F. King, of Butte, together with the lessees of the Pearl mine, have incorporated this company with a capital stock of \$1,000,000, of which 200,000 shares will be treasury stock to be devoted for the purchase of machinery and development work. The Pearl mine is located near Bearmouth. Several carloads of gold ore, which were said to be of high grade, have been shipped. The shaft is now down 200 ft., and in a short time machinery is to be placed on the property and development work will be done.

JEFFERSON COUNTY.

BONANZA CHIEF.—The shaft has reached a depth of 160 ft. and cross-cutting for the ledge has commenced.

EVA MAY.—At this mine about 50 men are employed and a car of concentrates is being shipped to East Helena each day. The shaft will be developed to the 450-ft. level at once and bids for the work are now being advertised for.

KATIE.—The report comes from Basin that work has been commenced on rebuilding the Katie hoist and smelter. The company, however, does not expect to get the plant running this fall, but will have the work so far advanced that it can be completed during the winter.

OVERLAND.—Sinking is now going on in this property and better ore than any heretofore discovered has been found. The 10-stamp mill is kept steadily running on a good quality of gold-bearing quartz, and when not engaged in sinking shipments are regularly made to the smelter at East Helena.

LEWIS & CLARKE COUNTY.

DIAMOND HILL.—Thomas Ewing, mining engineer, and George Ames, of the Union Iron Works of San Francisco, have gone to Montana to superintend the erection of a 140-stamp mill on this property, near Helena.

MADISON COUNTY.

MAYFLOWER.—This group, which has been operated and owned by Messrs. Pruett & Fair, was bonded a short time ago to W. A. Clark for \$150,000. The bond was taken up last week. Prior to the taking up of the bond the parties operating the mine cleared a large sum, it is reported.

MISSOULA COUNTY.

KEYSTONE.—This mine, in the Yakk district, is now

under bond to Messrs. Finch and Clark, of Spokane. It is said the property shows ore on the surface fully 50 ft. wide. A shaft was sunk about 70 ft., but the influx of water prevented further work. The owners are now running a cross-cut tunnel to tap the ledge. In running this tunnel, a 2-ft ledge of ore similar in quality to that of the main ledge was cut. The ledge is said to carry an average value of from \$1 to \$6 a ton.

NEVADA.

LINCOLN COUNTY.

DE LAMAR GOLD MINING COMPANY.—This company is said to be now taking its best ore from a large chute developed in the Lucky Bar ground, and which pitches toward the southeast.

LYON COUNTY.

GOLDEN FLEECE.—Dreyfuss & Lee, who have a lease on this mine in Silver City, have struck quite a bonanza. They have a 2-ft. ledge of ore in the mine that is said to assay from \$50 to \$60 per ton.

STOREY COUNTY.

ALTA.—Superintendent Boyle's annual report shows that much energetic and economical work has been done in the mine during the past year, and two locations of very important mining ground east of the Alta were recently made, and recorded and deeded to the company. Two months ago an east drift was started from the 755 level of the Alta shaft to prospect the Alta vein, which lies about 150-ft. east at that depth.

STOREY COUNTY.—BRUNSWICK LODE.

The following are the latest weekly reports from the mine superintendents:

CONSOLIDATED CALIFORNIA & VIRGINIA, BEST & BELCHER AND GOULD & CURRY.—Shaft No. 2 was sunk 12 ft. on the incline; total depth, 329 ft.; bottom in hard porphyry. 150 level—The main south drift started from east crosscut No. 1 was extended 7 ft.; total length, 136 ft.; face in porphyry and stringers of quartz. Gould & Curry tunnel—The main tunnel has been extended 17 ft., passing through porphyry; total length, 806 ft. The east crosscut started in tunnel, 850 ft. from its mouth, was advanced 17 ft.; total length, 62 ft.; face in porphyry and quartz.

CHOLLAR Shaft No. 1 has been sunk 16 ft. on the incline, passing through porphyry and quartz. Total depth, 582 ft. 200-ft. level—The south drift has been advanced 25 ft. during the week; total distance out from the north line, 371 ft. The face is in porphyry and stringers of quartz. 300-ft. level—At a point 46 ft. south of the north line have started an upraise, which is now up 16 ft. No work has been done in the south drift during the week with the exception of putting in timbers between the face and the up raise.

HALE & NORCROSS.—Shaft No. 1 has been sunk 16 ft. on the incline, passing through porphyry and quartz; total depth, 582 ft. 300-ft. level—North drift has been advanced 13 ft., and the same has been timbered to the Savage Company's south line. The face is in porphyry and stringers of quartz.

STOREY COUNTY.—COMSTOCK LODE.

The following are the latest weekly reports of the superintendents:

CHOLLAR.—In the stope above No. 2 crosscut 450 level they are working south of the raise on the 9th and 10th floors east of the old fillings. The casing carries bunches of good ore. In the south stope they are working on the fifth, sixth and seventh floors. The old fillings and stringers are yielding a fair grade of ore. Have extracted and sent to Nevada mill during the week 122 tons and 800 lbs. of ore, the battery assay of which averaged \$25.79 per ton.

CONSOLIDATED CALIFORNIA & VIRGINIA.—West crosscut No. 2 started at a point in the north drift 550 ft. north from the Consolidated Virginia shaft station, or 85 ft. south from the north boundary line of the mine, has been extended 29 ft., passing through porphyry and clay with lines of quartz assaying \$1 per ton; total length, 569 ft.; face is dry and does not show any seepage of water. 1650 level—On the 9th floor—the first floor above the sill floor of this level—the south drift from the east crosscut from the drift run south from the end of the stope has been extended 11 ft., passing through porphyry, clay and quartz assaying \$1 per ton; total length, 520 ft. From this south drift at a point 500 ft. in from its mouth, or about 50 ft. north from our south boundary line, an east crosscut has been started and advanced 16 ft., passing through porphyry, clay and quartz, assaying \$1 and \$2 per ton. 1750 level—From the 13th, 16th, 21st and 22d floors above the sill floor of this level at the north end of the stope in old ground of former workings, we have extracted during the week 117 tons of ore, the average assay value of which, per samples taken from the cars in the mine, was \$43.85 per ton. The south drift from the 24th floor from the end of the west drift has been extended 21 ft., through old stopes and fillings assaying \$20 per ton; total length 36 ft. The total extraction of ore for the week amounted to 117 tons, the average assay value of which, per samples taken from the cars when raised to the surface, was \$43.03 per ton. We have shipped to the Morgan Mill 253 tons and 290 lbs. of ore assaying, per railroad car samples, \$42.80 per ton. The average assay value per battery samples of all the ore worked at that mill during the week (165 tons) was \$36.41 per ton.

HALE & NORCROSS.—In this mine, on the 900 level, the north drift is in 214 ft. The face is in por-

phyry and stringers of quartz. No. 1 upraise—Have been working north and south on small streaks of pay ore. No. 2 upraise—Have been working north and south on second floor. The ore streaks continue about the same as last reported. 1,100 level—Advanced north drift 8 ft.; total length, 114 ft. The face is in old fillings of low value. Extracted during the week from 900-ft. level four car loads of ore assaying per mine car sample \$51 in gold and 42.81 oz. of silver per ton.

POTOSI.—The west crosscut from the top of the raise 450-ft. level is out 90 ft. The face continues in low-grade quartz. The west crosscut from the south drift, same level, is out 30 ft., having added 18 ft. during the week. The face is in quartz of low grade.

SIERRA NEVADA.—In this mine (Layton tunnel) they have completed repairs and resumed work in the north lateral drift from the northeast drift, started at a point 120 ft. in from the north drift and advanced the same 22 ft.; total length, 408 ft.; face in quartz and porphyry.

NEW JERSEY. MORRIS COUNTY.

Mt. PLEASANT.—This mine, which has been in almost continuous operation for upward of 100 years, is being stripped of its machinery preparatory to its total abandonment, says the *Dover Iron Era*. Of the 250 men employed in it 125 have been laid off and the rest will follow in the course of the next few weeks. While the ore taken from this mine was always low in phosphorus, the ore mined of late has been high in phosphorus and much less marketable in consequence. The mine is 1,200 ft. deep and 3,000 ft. long. During the past 10 years an average of from 50,000 to 60,000 tons of ore have been taken from it each year, and it is estimated by President Nicoll that fully 1,500,000 tons of ore have been taken from it since it was opened.

About 10 years ago the drifts began to extend beyond the Mt. Pleasant Mining Company's property into the Baker property, and nearly \$100,000 in royalty has been paid to the Bakers since. The mine has been very profitable, and machinery valued at \$75,000, and buildings valued at \$25,000 more have been paid for themselves many times over.

The mine is at present owned by the Lord estate, whose predecessors were the firm of Fuller, Lord & Company, who bought the mine in 1849 from the firm of Green & Dennison. From the time of the purchase of the mine from Green & Dennison to the present, Mr. Nicoll says, its owners never missed a pay roll. A fact quite as remarkable, Mr. Nicoll added, was that, during the panic of 1893, the company paid off its men in gold, which was brought over from England for that purpose. The abandonment of a mine in which several hundred families have earned their livelihood for so many years is a serious thing for the present employees. There is some talk of opening another mine, but it is improbable that anything will be done.

NEW MEXICO.

GRANT COUNTY.

STEEPLE ROCK DEVELOPMENT COMPANY.—This company has secured control of over 100 mining claims in the Carlisle and Steeple Rock districts. A force of miners has been employed for more than a year in the development of mines owned or bonded by the company, and a quantity of ore is exposed and ready to be taken out. The mines owned by this company are chiefly gold propositions.

SOCORRO COUNTY—COONEY MINING DISTRICT. (From Our Special Correspondent.)

CONFIDENCE.—The mine and mill are working steadily. Shaft No. 2 is down 163 ft. below the main tunnel level. A crosscut is being run through a porphyry horse toward the hanging wall to find the ore.

DEEP DOWN.—This mine and mill, which were operated under lease by Messrs. Kimbal, Macphalter & Brown, of Denver, Colo., remain shut down, the men having ceased to work because of not having received pay for several months. Everything belonging to the lessees is attached, but will far from cover demands. The operation has been a fraudulent affair from beginning to end. The company's office and laboratory were totally destroyed by a flood on August 19th.

FLOOD DAMAGES.—Over 20 houses were destroyed by the flood of August 19th, besides that done to the mines; no estimate can yet be made of the damage, but it must be considerable.

The road to camp was perfectly washed away and would cost at least \$5,000 to build again. In all probability this road will not be reconstructed, but the road from the valley via Graham and Confidence mine will be continued to camp.

FLORIDA.—Development work is being rapidly pushed with good results. It is reported that a sale is pending for a consideration said to be \$25,000. Over 400 ft. of development work has been done on the claim, proving it to be one of the most promising prospects in camp.

MAUD S.—The mill has been shut down for a short time, the mine being behind in development work. Good ore was recently struck on the 300-ft. level, and it is expected that a force of men will shortly be put on. During the flood of August 19th the dump on which the boiler-house for the mine hoist stood was washed away. The boiler is again in place and work in the mine has been resumed.

The assay office at the mill was also carried away and destroyed by the flood.

OHIO.

WAYNE COUNTY.

Drillers at Doylestown, who are prospecting for coal, have struck a 33-in. seam at a depth of 79 ft.

PENNSYLVANIA.

ANTHRACITE COAL.

HICKORY RIDGE COLLIERY.—It is reported that Messrs. Brennan, Boyle and Foy, Pittston capitalists, have purchased a large tract of coal land at Hickory Ridge, a few miles from Shamokin. They have selected a site for a new breaker, and decided to sink a slope, which will be commenced at once.

CASTLETON COAL COMPANY.—It is rumored that the property of the defunct Providence Coal Company at Scranton is to be further developed by this company, which was chartered to Scranton business men. James N. Rice, Charles W. Fulton, J. S. McAnulty, Colonel E. H. Ripple and Samuel H. Stevens are the charter directors.

BITUMINOUS COAL.

PITTSBURG.—This mine, at Monongahela, has been shut down, owing to lack of orders. About 300 men are rendered idle. This was the only mine in operation in the field, and was paying the union scale.

WEST BRANCH COAL COMPANY.—This company is opening a new mine near Spangler.

VENANGO COUNTY.

PATTERSON, TAIT & COMPANY.—In the old Bullion District this company has a second sand well on the McFadden farm that is reported to be good for 35 bbls. a day. This company has considerable territory under lease in that locality and is getting in the material to put down 10 more wells.

SOUTH DAKOTA.

LAWRENCE COUNTY.

BION.—The owners of this mine, in Galena, are now driving a crosscut to connect their main tunnel, now in over 100 ft., with a second tunnel 80 ft. distant. The crosscut now shows iron pyrite containing native copper and copper oxide, in addition to gold and silver, assays of which are said to show from \$3 to \$12 of these metals.

COLUMBUS MINING COMPANY.—This company is drifting north and south from the bottom of the 200-ft. shaft. The former is now in 100 ft. and the latter 120 ft. Both drifts will be extended to the boundary lines of the property, which is one of the most valuable on the free-milling belt.

DEADWOOD-TERRA COMPANY.—Stockholders in the above company have just received a dividend of 50c. per share on their holdings. The payment was ordered by the company on August 20th. It is the forty-sixth dividend. Up to September, 1892, the date of the last, the company paid to its stockholders \$1,140,000. The present one brings the total up to \$1,240,000. The company is capitalized at \$5,000,000, divided into 200,000 shares, par value \$25 each. It is under the Homestake management, and during the past year made a profit of \$6,000 per month on ore that averaged \$1.78 per ton by amalgamation. A greater profit, however, was realized from the silicious ore chutes discovered on the property during the same time.

WASP MINING COMPANY.—This company paid its regular monthly dividend August 19th, amounting to \$20,000. The product of this company is all treated at the Consolidated Kansas Smelting and Refining Works and gives a net profit of \$1,000 per car. Shipments average about 24 cars per month.

TEXAS.

MILAM COUNTY.

TEXAS BRIQUETTE AND COAL COMPANY.—An amendment was recently made to this company's charter increasing its capital stock from \$100,000 to \$200,000. The directors of this corporation are A. C. Schryver, Reagan Houston and L. S. Berg.

VERMONT.

WASHINGTON COUNTY.

WOODBURY.—This gold mine is said to yield about \$6.26 to the ton.

WASHINGTON.

OKANOGAN COUNTY.

IVANHOE MINING COMPANY.—This company, on Palmer Mountain, having made connection between the perpendicular and incline shafts, is rapidly making depth on the incline and taking out a high grade silver ore that also runs well in gold.

MORRIS MINING AND MILLING COMPANY.—William Lewis, superintendent of this company, of Ellensburg, owner of the Mammoth claims, has just completed a contract sinking the shaft to the depth of 85 ft., which is all in mineral, and another contract has been let to drift north and south from the bottom of the shaft to find the walls. The ore is a black sulphide and assays from \$10 to \$12 in gold and a few ounces in silver. Mr. Lewis has also located a tunnel site which will tap the Mammoth ledge at 1,500 ft.

WYANDOTTE.—There are 20 men at work at this mine setting up the machinery for the new cyanide process mill.

SNOHOMISH COUNTY.

DEER CREEK GOLD AND COPPER MINING COMPANY.—This company purchased a group of 8 mines from Messrs. Kennedy, Johnson, Jackson and Lun-

delin, the original locators, about two months ago. The claims are high-grade copper propositions, and the first ore was shipped last week. The Helena, on which the principal work is now being done, shows a lead of solid mineral 200 ft. in width.

WEST VIRGINIA.

MONROE COUNTY.

FISHER OIL COMPANY.—This company's strike on the Price farm, near Benwood postoffice, is rated as good for 10⁺ bbls. a day, and is quite an important find for new territory. Last year the Henry Oil Company drilled a well on the Holdachlagh farm, located 500 ft. southwest and got a 5-bbl. well; with this one exception, there is no production within five miles of the Fisher Oil Company's venture.

WYOMING.

LARAMIE COUNTY.

(From Our Special Correspondent.)

There is a good deal of work being done in a quiet way just south of the Union Pacific between Granite Canon and Buford.

ALEXIA.—Messrs. Stuart and Mann are now down 10 ft. on this claim, which is situated some 5 miles southwest of Granite Canon. The outcrop is 10 ft. wide and at a depth of 9 ft. there is a pay streak 18 in. wide carrying gold and copper. The owners of the property have let a contract to sink a shaft on the same at once.

CRYSLER.—At this syndicate's claim, 2½ miles from Granite, they are sinking a double compartment shaft for permanent work that is now down 40 ft.

HOMESTAKE.—Mr. G. H. Obert, who owns property near the Crysler group, has a shaft down 24 ft. on this claim. This is a 7-ft. vein of iron pyrites carrying gold at the surface.

LONE TREE.—Mr. J. H. Haygood's shaft is down 45 ft. on this claim. This ore body has the appearance of yellow ochre, is 3½ ft. wide between well defined walls of granite, and carries gold and a trace of copper.

SWEETWATER COUNTY.

GREEN RIVER OIL AND FUEL COMPANY.—This company has men and teams at work constructing a reservoir at the soda well which will be used to evaporate the product of the well. The reservoir will be 50 ft. square and 4 ft. deep, and it is estimated will, with one filling, produce 150,000 lbs. of soda.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

CARIBOO DISTRICT.

A despatch from Vancouver says that word has been received that the clean-up of sluices and cuts in the Cariboo hydraulic mine amounted to \$81,600 after a 25 days' run.

KOOTENAY DISTRICT.

NOBLE FIVE CONSOLIDATED MINING AND MILLING COMPANY.—This company, John G. McGuigan, manager, has begun operations with a large force of men. A portion of them will push ahead on the development work already laid out, and the remainder will take out ore, a large quantity of which has been blocked out. The high-grade ore will be sacked for immediate shipment, and the concentrating ore will be piled up to await the completion of the mill.

ROSSLAND DISTRICT.

(From Our Special Correspondent.)

CALIFORNIA.—Mr. Kelly, who has charge of the diamond drill which has been set up to prospect this property, says his plant is from Sherbrooke, Pa. The plant was put into operation, and a distance of 2 ft. was made the first day. The water supply is obtained from a well sunk in a spring 1,600 ft. away, the water for the main engine being forced by steam power that distance. Mr. A. C. Cook, who is foreman of the mine, showed your correspondent some very fine specimens of cap rock, which was well mineralized.

The second day the drill reached 4 ft. further. Not less than 200 ft. will be bored, and this will be increased as circumstances may require.

COLUMBIA & KOOTENAY COMPANY.—The property of this company, which is situated on the Columbia Mountain, comprises the Columbia, Kootenay Copper Jack and Tip Top mineral claims. The full extent of the work is not seen until a descent of the mountain is made to the valley below. It is here that the extensive power machinery of the company is being erected. It comprises a 40-drill air compressor, there being three boilers, and the work is being thoroughly done. A 6-in. system of piping will supply air to the tunnels in connection with the compressor, the water pipe being half that in diameter. The plant was formerly in use on the waterway in Chicago. The tunnel and shafting of the Columbia & Kootenay are not extensive, but they are in a good ore body which assays from \$5 to \$40 per ton. About 26 men are at work on the compressor, and they will have completed their work within 10 days.

The Columbia & Kootenay Company is a powerful organization with headquarters in Chicago. H. P. Mason is president, R. C. McKinney treasurer, and George E. Miller, secretary. At present, it is a considerable distance from the line of the Columbia & Western Railway, but it is understood that shipping facilities will soon be afforded.

HIGHWAY ROBBERY.—One of the first, if not the first, public robberies in connection with the gold mines of this district is reported from Camp McKinney. The statement is made that Mr. G. B. Macauley, one of the Caribou Company's officials, was waylaid by a masked man and made to hand over a gold brick worth \$12,000, which the masked man carried away, covering Macauley with his carbine. The authorities at Rossland received information of the robber, and that he was coming East by the Dawdsey trail. Officers have been sent in pursuit.

NORTH STAR.—This property has been closed down for some time, and nothing could be ascertained about it. It has a good situation, and it is said that its showing is favorable, but it lacks proper organization.

PHENIX.—In company with Mr. J. K. Clark, a visit to the Phoenix, which is located on the north-east slope of Deer Park Mountain, was made. The situation is about one-half mile from the Homestake in the South Belt. Two men are at work in the shaft, which has reached a depth of 50 ft. The shaft is on the foot-walls and a crosscut will soon be made to find the hanging walls. Mr. Clark, who is manager of the company, estimates the quantity of shipping ore at the mine to be 50 tons. Assays of this ore so far have reached from \$13 to \$20. The Phoenix was capitalized during the spring to the extent of \$500,000, the par value of shares being placed at \$1 each, and are selling at 10c. each. Its officers are: W. Witherop, president; Dana Hermen, treasurer; J. R. Heardan, secretary, with headquarters at Spokane, Wash. Mr. J. K. Clark the well-known mining promoter of Rossland, is manager.

SLOCAN DISTRICT.

It is reported that a 3-ft. vein of carbonate and galena ore has been discovered on Thomson & Sutro's claim near Sandon. The mine is within 500 ft. of the railway.

The Currie claim, situated in the Galena farm, has been bonded for \$20,000, payable in six months, to the Vancouver syndicate, represented by Mr. Evans.

Pearless and Kate, the two adjoining claims, were also bonded for \$3,000 and \$2,000 respectively, under similar conditions. Men have been put to work on these properties, and the Silverton Boy, a fine looking property, is also under bond to Mr. Evans, as is also the Creulander.

MEXICO.

CHIHUAHUA.

GOLD FIELDS OF MEXICO, LTD.—This company has recently been registered in England with a capital of £100,000, according to a London exchange, and is formed to carry on business as a promoting financial and mining company. Its first enterprise will be to purchase and deal with the auriferous district of Uruapa, a well-known mineral area, which has been in the possession of the present vendors, who are the native proprietors, for many years past.

NEW SOUTH WALES.

BROKEN HILL PROPRIETARY COMPANY.—Late advices show that fresh labor difficulties have been encountered at these mines. When the last strike occurred the directors successfully contended for their right to work the mine on the contract or wages system at their discretion. Since that time, until recently, work has been scarce, and the men have been glad to get employment on the directors' terms. Later, however, more men have been required, owing to the extension of underground operations. In June last the number of miners employed at Broken Hill was 1,230, as compared with only 882 four months previously. In the meantime a good many of the more experienced miners had drifted off to Western Australia and the other colonies, tempted by the glowing reports respecting the gold mining developments in those districts, and the healthier character of gold, as compared with silver-lead mining. The labor union, it appears, objects to the importation of skilled labor from other districts, while some of its members, whom the mine managers reject as incompetent, remain unemployed at Broken Hill. To this the mine managers retort by asking: "If competent men were procurable locally, is it likely we would take the trouble and incur all the cost of introducing them from a distance?" The dispute does not appear likely to become so acute as to lead to a strike at present, but may put the company to considerable trouble and expense, as when they advertise for miners the union officials call meetings and publish what are characterized as untruthful statements, with a view to prevent the men from taking engagements. Moreover, the Australian Mining Standard states that "from West Australia, New South Wales and Victoria the same tale is told of union officials whose offensive tone is becoming unbearable, who float directors, hector managers, threaten what they will do, and generally behave as if they were the mine proprietors, and the owners, who invest money and pay wages, were merely in possession on their sufferance." The power of which it is well known the labor party in the Australian colonies has become possessed makes their action a factor to be kept in view, owing to the check which may possibly occur in the development of these industries from a widespread dispute.

LATE NEWS.

THE FRANKLIN MINING COMPANY, of Michigan, reports its output of copper at 152 tons in August, against 155 tons in July and 168 tons in August, 1895.

THE QUINCY MINING COMPANY, of Michigan, reports production of 851 tons of copper in August against 850 tons in July and 850 in August of last year.

MR. A. F. LUCAS, who for a long time has been connected with Messrs. Myles & Company, the successors of the New Iberia Salt Company, of Avery Island, La., has resigned his position to take effect October 1st.

The SUPERIOR mine, about one mile west of Hurley, Wis., is burning. The fire was discovered coming out of shaft No. 1, and soon the shaft was completely burned out. The fire is supposed to be near the fourth level and spreading both ways. Volumes of smoke come up and there is no way to fight it, except to cover all the openings and smother it, which will take a month.

The Superior mine ships very rich ore and is a valuable property owned by the Odanah Iron Mining Company. It is not known how the fire originated.

The MINAS PRIETAS and LA COLORADO mines, of Senora, Mexico, have been purchased by an English company which has a capital of £250,000 in £1 shares. The stock is already quoted at £1½, or 50% premium.

The mine was examined and reported on for the Exploration Company by the well-known mining engineers, Mr. Henry Janin, of London, and Mr. John B. Parrish, of Denver, Colo.

The output of the mine was in June \$111,000; July, same amount; first half of August, \$117,000, with 33 stamps running.

BY TELEGRAPH.

(From Our Special Correspondent.)

LEADVILLE, Colo., September 4th.—The situation is very gloomy; no hopes of amicable settlement. The shutting down of the Penrose and Bon Air pumps will soon result disastrously to surrounding property. Up to this time the Weldon, the Capital and the Coronado, all of which are working, have not felt the effects of the stoppage of the pumps, but the water is known to be rising. The pumps in the Penrose and the Bon Air are already submerged. Messrs. Shull, of the Mahala, and Mudd, of the Small Hopes, have been paying \$6,000 a month to keep the Maid pumps going. Since the strike began Mr. Mudd has not shipped a pound of ore and is not likely to keep on paying pumping expenses much longer. The announcement is looked for any moment that the Maid pumps will stop, and the lessees on the Maid have already hoisted their tools. Stoppage of the pumps at that mine would mean the drowning out of the entire Carbonate Hill section, causing damage and loss amounting to millions of dollars in the aggregate.

COAL TRADE REVIEW.

New York, Friday Evening, Sept. 4.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending August 29th, 1896, compared with the corresponding period last year:

Table with 3 columns: Name, 1896 Week, 1896 Year, 1895 Year. Includes Pennsylvania Railroad.

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending August 29th, and for years from January 1st, 1896 and 1895:

Table with 3 columns: Name, 1896 Week, 1896 Year, 1895 Year. Includes Shipped East and North, Allegheny, Pa., Barclay, Pa., Beech Creek, Pa., Broad Top, Pa., Clearfield, Pa., Cumberland, Md., Kanawha, W. Va., Phila. & Erie, Pocanontas Flat Top.

Totals

* Week ending Aug. 15th, † Week ending Aug. 21st.

Table with 3 columns: Name, 1896 Week, 1896 Year, 1895 Year. Includes Shipped West: Monongahela, Pa., Pittsburg, Pa., Westmoreland, Pa.

Totals

Grand totals

Production of coke on line of Pennsylvania Railroad for the week ending August 29th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 57,988 tons; year, 2,826,521; to corresponding date in 1895, 3,729,198 tons.

Anthracite.

The anthracite coal trade shows some improvement during the past week, more coal having been moved. This was in part due to the advance in prices by the different companies on September 1st, which called out some orders to be filled before the new schedule went into effect. The increase in the volume of business still continues, however, broken and egg coal being in good demand, while stove coal is quite strong. In fact, one of the companies re-

ports an insufficient supply of these sizes on hand to meet promptly the demand for them. More than the usual quantity of coal is going West this week because of the increase in freight rates that will go into effect next Monday, September 7th. This probably accounts for the shortage of certain sizes at tidewater.

The rumor was widely circulated last Saturday that J. P. Morgan & Co., the New York bankers, acting for themselves and a syndicate of local and foreign investors, had purchased the anthracite coal mines, plant, railway, etc., in the Hazleton region, owned by Coxo Brothers & Co. The truth of the rumor is absolutely denied by those interested.

The September schedule of prices is as follows: \$4 for broken, \$4.25 for egg and chestnut, and \$4.50 for stove.

NOTES OF THE WEEK.

The Schuylkill Coal Exchange gives notice that the Philadelphia and Reading collieries drawn to return prices of coal sold in August, 1896, to determine the rate of wages to be paid, show an average price of \$2.62, and the rate of wages to be paid for the last half of August and the first half of September, 1896, is 4% above the \$2.50 basis.

Bituminous.

The Atlantic seaboard soft coal market continues to be in poor shape. What consumers are running seem to have fair stocks of coal on hand and do not appear to be desirous of taking more coal in, although the ocean freight rates are very tempting. These freights are inducing some of the dealers to put in a cargo or two, but it does not amount to much.

Usually at this time of the year the fall trade is opening, but with so many factories closed down, the condition of trade is not very promising. There do not seem to be any large orders in the market, so that most of the producers are working on from day to day orders.

The different consuming territories are taking about their usual comparative quantities; all seem to be cut down in about the same proportion. The nearby Sound ports are taking advantage of the low ocean freights and get what coal they are taking from the lower ports instead of from the New York harbor shipping ports, as is usual when ocean freights are high.

All rail business is very little changed from what it has been in the last month; one consumer reduces and another increases his stock as his wants require; keeping that line of the trade in about the same reduced conditions that have existed of late.

Vessels are receiving prompt despatch from all ports, though there have been some complaints of the Baltimore & Ohio facilities in Philadelphia. This, however, is an old story.

Transportation from mines to tide is of the promptest character, and would be expected under the circumstances, and the car supply is good; it is thought not one-half of the empty cars are being used.

In the coastwise market the supply of vessels is more than the demand. Vessel rates are at a minimum; they are accepted at this time merely to keep the vessels from drying out, and at least keep them moving.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem, Portland and the Sound ports, 50c.; Portsmouth and Bath, 55c.; Wareham, 75c.; Lynn, 60c@75c.; Newburyport, 60c@65c.; Dover, 80c. alongside and towage; Saco, 75c. alongside and towage; Gardiner, 55c. and towage; Bangor, 55c@60c. Five and ten cents above these rates are asked from Norfolk, Newport News and Baltimore.

The Association prices remain as follows: F. O. B. Philadelphia, Norfolk and Newport News, \$2.35; Baltimore, \$2.28; New York Harbor shipping ports, \$2.80, alongside; New York Harbor, \$3. There is a 20c. differential in favor of Clearfield and Beech Creek coals.

NOTES OF THE WEEK.

The Dominion Coal Company of Nova Scotia reports its total coal shipments for the six months of the fiscal year from March 1st to August 31st at 611,661 tons, against 444,619 tons for the corresponding period last year, and 546,613 tons in 1894.

Buffalo.

Sept. 3.

(From Our Special Correspondent.)

The most noteworthy feature of the anthracite coal trade this week was the advance of 25c. per ton on all sizes, wholesale and retail, on September 1st. It is too soon to write of the effect produced by the action. Lake freights on coal West are unchanged with fair movements.

Bituminous coal is dull; manufacturers are not making extensive purchases, preferring under present conditions to pursue the hand-to-mouth policy. Stocks are large and assortment good.

The quotations ruling in this market since September 1st are as follows: For anthracite coal per 2,240 lbs., delivered free on board vessels at Buffalo: \$5.05 for grate and \$5.30 for egg, stove and chestnut; delivered on cars at Buffalo or Suspension Bridge, \$4.75 for grate and \$5.00 for egg, stove and chestnut. Retail within city limits, delivered per 2,000 lbs., nominally, \$5.25 for grate, \$5.50 for egg, stove and nut; \$4 for pea. Blossburg sells at \$4 per net ton, delivered.

For bituminous coal per 2,000 lbs., in car lots on tracks, nominally as follows: Reynoldsville region—\$1.95 for select lump, \$1.85 for lump and nut mixed, \$1.75 for run of mines, \$1.70 for screened nut, and \$1.40 for slack; Fairmont region—\$1.95 for screened lump, \$1.85 for lump and nut mixed, \$1.70 for run of mines and screened nut, and \$1.35 for slack; Pittsburg region—\$1.95 screened lump, \$1.85 lump and nut mixed, \$1.75 run of mines; Mercer County region—\$1.85 for screened lump, \$1.75 for lump and nut mixed, \$1.60 for run of mine and screened nut, and \$1.20 for slack; Allegheny Valley region—\$1.80 for screened lump, \$1.70 for lump and nut mixed, \$1.60 for run of mines, \$1.45 for lump and slack mixed, and \$1.35 for slack. Brier Hill lump at wholesale, \$3.25; No. 1 cannel at wholesale, \$3.75. Coke is quoted at \$4 for Connellsville and \$2.65 for Reynoldsville.

The shipments of coal westward by lake from Buffalo, from August 23d to 29th, both days inclusive, aggregated 89,540 net tons, distributed as follows: 25,950 tons to Chicago, 26,050 tons to Milwaukee, 11,100 tons to Duluth, 1,000 tons to Gladstone, 4,215 tons to Toledo, 400 tons to Marine City, 11,200 tons to Superior, 3,500 tons to Lake Linden, 1,300 tons to Green Bay and 4,825 tons to Marquette. The rates of freight were as follows: 20c. to Chicago, Milwaukee, Duluth, Superior, Toledo, Green Bay, Gladstone and Marquette; 25c. to Lake Linden and 30c. to Marine City. Closing quiet with no prospects of advance in rates at present.

The New York State Canal Board has approved plans for improving the canal under the \$9,000,000 appropriation to the amount of \$3,123,301. Bids have been asked for.

Chicago. Sept. 2.

(From Our Special Correspondent.)

Anthracite.—Prices have increased 25c. per ton on all sizes, f. o. b. Chicago and other points West. The retail price has accordingly risen from \$6.75 to \$7 per ton. Hard coal was sold in Chicago a year ago at \$4.50 per ton, that low price being entirely due to the fight between agents and producers. The present advance of 25c. per ton is the third increase in price so far this summer. Dealers, as a rule, are dissatisfied with the advance in circular rates, as they say the situation really does not warrant any increase in price. With the industrial stagnation prevailing, an increase in the price of coal will surely have much effect in lessening the already very limited demand. Prevailing business is the poorest done here in years; those who are buying are not laying in supplies for any length of time, but buy only for immediate wants.

During the past two or three years there has been great competition among the coal dealers of Chicago, and as a rule retail prices have been made wherein there has been little or no profit. The past summer there has been more profit to the dealers from the fact that they have tried more or less to protect themselves, and have succeeded to a certain extent. Anthracite circular prices are \$5.60 for grate and \$5.75 for egg, stove and chestnut.

Rates on hard coal to trans-Missouri points will not be reduced. The announcement that the St. Louis and San Francisco road intended to make a \$2.75 rate per ton from New Orleans to Kansas and Nebraska points has been withdrawn.

Bituminous.—In soft coal there has been no increased business, outside of a somewhat larger demand from country trade. Soft coal for manufacturing purposes is in less demand, and the outlook for an increased business in that line is anything but assuring. Coal is now selling at any price and it is possible to buy lower now than ever before. It is hoped that the increased price of hard coal may stimulate buying in soft coal.

Coke.—The sales are not numerous, but little demand being observed. Circular prices on coke are \$4.55 for Connellsville foundry or crushed; Pocahontas, \$3.90; West Virginia, \$4.

Pittsburg. Sept. 3.

(From Our Special Correspondent.)

Coal.—Business is in a very demoralized condition. The difficulty in regard to prices continues. The miners will try hard to save the district wage scale. The men employed in the Panhandle have received notice that they must accept a reduction to the 60c. rate if they wish to continue at work. The men at the mines on the Pittsburg & Western, who were notified of a reduction, will probably resist and refuse to go to work. Of the Monongahela rail and river mines the following are working under the district rate, the miners being paid from 52c. to 60c.: Fidelity, Shannock, California, Clamont, Clipper, Jutte, Acme, Allen, Snow Hill, Black Diamond, Mingo, Buffalo, Cincinnati, Coal Bluff, Bunola and Little Alice. The following are paying the 70c. rate in this vicinity: The Charleroi, Redburn, Monon and Cleveland mines.

President John Blythe, of the Blythe Coal Company, has returned from West Virginia, where he opened a new mine on the Elk River in an entirely new territory. The mine, which will be a big one, is to be operated by the Elk River Coal and Coke Company, of which Mr. Blythe is president. He says the coal being taken from it is equal to Pittsburg coal. The stagnation in the river coal trade continues; but a few mines along the river are running on local contracts; the balance are idle, as there is no demand from the Southern markets at present.

Connellsville Coke.—Owing to the closing down of blast furnaces in Western Pennsylvania and farther West the demand for coke was greatly reduced last week, necessitating the blowing out of

nearly 1,000 ovens. The coke trade is on the ebb and unless the furnaces stop closing down it will not be long before the low point of 1893 will be reached. The number of ovens in actual operation is 7,300, many of which are only operating four or five days a week. The production of the region for the week amounted to 74,443 tons, a decrease, compared with the preceding one, of 8,700 tons. In the running order of the ovens in blast, 7,994 ovens drawn last week, 1,035 ovens made six days; 4,269 ovens made five days; 1,794 ovens four days; an average of five days. The shipments of coke from the region for the week amounted to 3,949 cars, against 4,548 cars the week previous; decrease, 599 cars. The shipments were distributed as follows: To Pittsburg and river points, 1,560 cars; to points west of Pittsburg, 1,533 cars; to points east of Everson, 856; total, 3,949.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 4, 1896

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From	
	Sept. 6, 1895.	Sept. 4, 1896.	Jan., '95.	Jan., '96.	Tons.	Tons.
Anthracite.	41	23,257	35	21,430	713,025	897,940
Coke.	140	148,820	112	133,119	4,961,214	5,511,714
Charcoal.	22	4,428	23	6,760	144,493	199,725
Totals	203	176,505	170	161,300	5,818,732	6,609,379

Pig iron production is still decreasing as furnaces continue to go out of blast. Speculative sales of 50,000 tons of Southern iron in New York are reported below, and in addition it is said that 15,000 tons have been taken for Louisville account.

In spite of this speculative movement the iron market generally continues very quiet. There is talk in some quarters of a more hopeful feeling and increased confidence, but these are not apparent in the amount of business or in prices. The action of the Steel Combination in refusing to reduce prices of billets would, it was claimed by some, give tone to the market, but it seems to have had rather the contrary effect.

The meeting of the Steel Pool at Cresson, last Saturday, is reported as short and harmonious; which is taken to mean that existing differences were privately settled before the meeting. The price of Bessemer steel billets was continued at \$20.25 per ton, Pittsburg delivery. A further arrangement was made in the formation of an auxiliary or supplementary pool to include makers of open-hearth steel, and the price of open-hearth billets was fixed at \$22.25, Pittsburg, or \$2 per ton above Bessemer.

The September meeting of the Nail Manufacturers Association was held in Buffalo this week. While no details of the meeting have been made public it is said that the reports showed practically no business doing. Nevertheless it was decided to retain the present base prices, \$2.55 per keg for wire nails in carload lots on cars at Pittsburg and \$2.30 for cut nails, same delivery.

NOTES OF THE WEEK.

The movement to place Southern pig iron in England is referred to in another column. It is offered in that country at 38s. for No. 2, equivalent to \$9.25@9.50, delivered in Liverpool.

The Carnegie Steel Company shut down its Edgar Thomson Steel Works at Braddock, Pa., on September 1st. It is uncertain how long this plant will continue closed. The cause given is a lack of new orders.

New York. Sept. 4.

The market must still be reported very dull so far as purchases for consumption and the placing of new contracts are concerned. Two large transactions in Southern pig iron have been the events of the week. One house, it is announced, has taken 20,000 tons and two other parties jointly 30,000 tons of Alabama pig, the former for October-December and the latter for September-November delivery. Both orders are for the lower grades of iron, no No. 1 foundry being included. It is semi-officially stated that the prices to be paid at furnace are \$6.40 per ton for No. 2 foundry, \$6.25 for No. 3 foundry, \$6 for No. 4 foundry and \$5.90 for gray forge, the deliveries to be in nearly equal lots of each grade. These are purely speculative transactions and while they relieve the sellers' present necessities, they leave these big blocks of iron to be reckoned with in any future consideration of the market. Upon the whole there is a serious doubt as to whether there is any real benefit resulting from such transactions. There are reports of other speculative purchases under negotiation, but all such rumors are to be accepted with caution.

There has been a little more inquiry in a small way, but buyers still hesitate about doing more than they are obliged to, and the care exercised about credits is not helping business.

Pig Iron.—Outside of the speculative sales noted above very little is doing. For all except the best approved brands it is still anybody's market and prices are uncertain. Premising that all prices are rather nominal except for high-grade irons, we quote for Northern iron: No. 1 foundry, \$11.75@ \$12.50; No. 2, \$11.25@ \$11.75; gray forge, \$10.50@ \$11. For Southern iron prices are: No. 1 foundry, \$10.75 @ \$11.25; No. 2 foundry, \$10@ \$10.75; No. 1 soft, \$10.25 @ \$10.75; No. 2 soft, \$9.75@ \$10.25; forge, \$9.25@ \$9.75. Basic pig is offered at \$10.50@ \$11. All prices are for tidewater delivery.

Cast-Iron Pipe.—A small order from Boston is the only new contract reported this week. Work is beginning to get scarce and there is sharp competition for any prospective orders.

Spiegeleisen and Ferro-Manganese.—No business of consequence is reported. Ferro-manganese is quoted at \$46.50@ \$47 for imported 80%, New York.

Steel Billets and Rods.—The pool price is still \$21.75, New York, for Bessemer billets. A new quotation has been made, \$23.75 New York, for open-hearth billets. No business is noted. Rods are \$28@ \$29, with very small sales.

Merchant Iron and Steel.—Business has been light, but prices are nominally unchanged. We quote: For common bars, 1" @ 1.15c.; refined bars, 1" @ 1.45c.; soft steel bars, 1" @ 1.30c. Other quotations are: Steel hoops, 1" @ 1.60c.; steel axles, 1" @ 1.75c.; links and pins, 1" @ 1.70c.; tire steel, 1" @ 1.90c.; spring steel, 1" @ 2.15c. All prices are for delivery on dock, New York.

Plates.—A few orders have been placed. Prices are nominally the same, but some brokers—who did not get the orders—say that no business can be done except at a lower point. We quote for universal mill plates, 1" @ 1.50c. For steel plates we quote: Tank, 1" @ 1.45c.; boiler shell, 1" @ 1.55c.; good flange, 1" @ 1.75c.; firebox, 2" @ 2.40c. Charcoal iron plates are quoted 2" @ 2.5c. for shell, 2" @ 2.75c. for flange, and 3" @ 2.5c. for firebox. Rivets are 2" @ 2.25c. for steel and 3" @ 2.5c. for iron.

Structural Iron and Steel.—The only contract let has been for the Herald Square Building, which will require about 3,000 tons, and it is said that the final closing of this is delayed by some uncertainty as to financial arrangements. Very little material is now being delivered on old contracts. We quote for angles, 1" @ 1.45c.; channels, 1" @ 1.75c.; tees, 1" @ 1.70c.; beams, 1" @ 1.75c. for large orders, and 1" @ 1.90 for small lots.

Wrought-Iron Pipe.—A little business is being done for small lots out of store, but no large orders are reported. Discounts are unchanged, as follows, out of store: For black, large, 67, 10, 10, 10 and 10; 1/2 in. and smaller, 57, 10, 10, 10 and 10. For galvanized, large, 55, 10, 10, 10 and 10; for 1/2 in. and smaller, 52, 10, 10, 10 and 10.

Nails.—The pool price continues \$2.55 per keg f. o. b. Pittsburg for steel wire nails, and \$2.30 per keg, f. o. b. Pittsburg, for cut nails. Buyers are taking practically nothing. There is a general feeling that the pool has made a mistake in keeping up prices.

Steel Rails and Rail Fastenings.—The combination price is still \$23.75 per ton at tide water, or \$24 at mill, for heavy sections. Girder rails are \$20@ \$31, tidewater. No business is reported.

Little is doing in rail fastenings. Angle-bars are 1" @ 1.25c. and spikes 1" @ 1.65c., tidewater delivery. Bolts are 1" @ 2.05c. for square nuts, and 2" @ 2.15c. for hexagon nuts.

Old Rails.—Some small lots of old iron rails have been placed at \$12.50@ \$13.50, New York, chiefly for export. Old steel rails are quoted \$10.50@ \$11.50, New York harbor, with a few small sales. Some old steel rails fit to relay have been offered at \$21@ \$22, New York, but this is rather above buyers' ideas, and \$20 would be nearer a selling price.

Scrap Iron.—Demand for foundry scrap is not heavy, but some good lots are reported taken at a fair price. We continue to quote \$10@ \$11.50 for good machinery; \$8.50@ \$9.50 for ordinary cast scrap; \$6@ \$7.50 for stove-plate and mixed.

Buffalo. Sept. 2.

(Special Report of Rogers, Brown & Co.)

The iron market in this vicinity has been very active during the past week, the orders entered being more for speculation than for immediate wants. Consumption remains light, and buyers are not inclined to buy for more than their wants for a month or so ahead. There is a more or less hopeful feeling, but that does not bring business in these times. Most consumers are at present more interested in collections than anything else. Lake Superior charcoal iron remains firm at prices named below. Northern iron has been firm during the week, more from the fact that the furnaces in this section can go no lower, and prefer to blow out. Southern iron was weak in the early part of the week, but the large blocks of that class of metal taken by speculators and those consumers having room and feeling it a good investment has stiffened the market for iron from the South. We quote on a cash basis f. o. b. cars as follows: No. 1 foundry strong coke iron, Lake Superior ore, \$12.50; No. 2 foundry strong coke iron, Lake Superior ore, \$12; Ohio strong softener No. 1, \$12.50; Ohio strong softener No. 2, \$12; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$11; Southern soft No. 2, \$10.75; Lake Superior charcoal, \$14@ \$14.50.

Chicago. Sept. 2.

(From Our Special Correspondent.)

There has been but little change in this iron market during the past week, buying in all lines still being of a temporary nature or just enough for immediate wants. There is an occasional order showing that some concern has bought rather extensively, on speculation presumably, but these are few and far between. Confidence is lacking and prices in a number of lines are not firm.

Pig Iron.—There has been no increased demand the aggregate sales probably footing up 3,000 tons, representing both Northern and Southern furnaces. Prices on Southern iron are lower. Northern irons

are lower by 25c. per ton, and it is said that even lower prices may be had. Quotations are as follows: Lake Superior charcoal, \$13.50@14; local coke foundry No. 1, \$11.50@11.75; No. 2, \$11@11.50; No. 3, \$10.50@11; local Scotch foundry No. 1, \$11.50@11.75; No. 2, \$11@11.50; No. 3, \$10.50@11; Southern coke No. 1, \$10.85@11.10; No. 2, \$10.35@10.85; No. 3, \$10.10@10.35; Southern No. 1, soft, \$10.35@10.85; No. 2, soft, \$10.25@10.35; Southern silveries No. 1, \$11.35@11.85; No. 2, \$11.10@11.35; Jackson County silveries, \$14@16; Ohio strong softeners, \$14@14.25; Alabama car-wheel, \$16.25@16.75; coke Bessemer, \$13@13.50.

Bar Iron.—Sales continue small and in the aggregate represent a poor week's business. Bar iron is quoted for common, 1'30@1'35c.; guaranteed, 1'35@1'40c.

Old Rails and Wheels.—A few small sales of old iron rails are noticed, but the market remains very inactive. Old iron rails are quoted from \$11 up. Old wheels are \$12.

Steel Rails.—A fair run of small orders is coming in, but nothing of any size has appeared. The railroads remain very cautious in their buying. Rails are quoted \$29, Chicago delivery.

Billets and Rods.—There is but little activity in either billets or rods, only a few sales of small lots having been made during the past week. Billets are quoted \$21.25.

Structural Material.—Very little business in either bridge or building shapes has been transacted. A few small bridges are at present in the market. Quotations are as follows: Beams and channels, 1'70@1'75c.; angles, 1'30@1'35c.; plates, 1.35@1'40c.; tees, 1'50@1'55.

Cleveland. Sept. 2 (From Our Special Correspondent.)

Iron Ore.—The continuation of a feeling of uncertainty prevented the transaction of business in the ore market during the past week. That there has been no appreciable increase in confidence among the consumers is shown in the fact that they refuse to purchase more than they actually require for the time being. One fact worthy of comment, however, is the recited number of inquiries, though sales have not increased. Notwithstanding the depressed condition of the market, prices remain as firm as when the standard was agreed upon early in the spring. Standard Bessemer are held at \$4; non-Bessemer hematites at \$3@3.25 and Mesabi non-Bessemer at \$2.45@2.60.

The lake freight rates are the same as last week. The outlook for the vessel owners is bad, and some of them fear that by the time confidence returns in the ore trade navigation will be closed for the season.

Pig Iron.—There is no change in the market this week, judging from the sales made. Small purchases in foundry iron are reported, but they are for immediate use and none of the foundrymen are buying to hold. Following are the quotations: Lake Superior charcoal, \$13.50@14; bituminous coke, No. 1 foundry iron, \$12.25; No. 2, \$11.75; Ohio Scotch No. 1, \$12.25; No. 2, \$11.75; Bessemer pig, \$12.25.

Philadelphia. Sept. 4 (From Our Special Correspondent.)

Pig Iron.—Talk about speculative buying has brought letters of inquiry from quite a number of consumers throughout our territory, in which information and opinions are solicited. There has hardly been any improvement in demand from actual buyers as yet, though there is a more unsettled feeling based on the possibility of the withdrawal of some of the extremely low quotations recently made. The gold influx has made our people more hopeful. Buyers when questioned as to what they intend to do substantially say they will not let present quotations fade before they have some iron delivered or contracted for. No. 1 foundry is \$12.50; No. 2, \$12; forge, \$10.50@11; Bessemer, \$12.50.

Billets.—A few lots have been purchased at \$21 or a little under.

Merchant Bars.—Manufacturers are badly off for business. Prices are 1'20@1'30. No one is inclined to talk.

Skelp.—It is hardly worth while to mention the little business done since Monday. Price 1'25 for grooved and 1'35 for sheared.

Merchant Steel.—No orders of consequence were placed this week.

Sheets.—The anxiety of manufacturers for business has weakened quotations on large lots without resulting in a single order up to to-day, so far as persistent inquiry can uncover the market. It is about all mill owners can do to run half time, though one or two will risk full time from next week and pile their material up.

Plates.—This month was to mark the opening of an active demand. Our manufacturers say they have not been asked to figure on a single large order. A few hand-to-mouth orders for boiler plate help along. Bridge stuff will be wanted after a while. Prices have remained stationary for several weeks. There is a probability of a closing down of some capacity in a few days. Tank plate is 1'40; shell, 1'55; flange, 1'60; fire-box, 1'80 up to 3c.

Structural Material.—Some business is being done, but it is unimportant. Brokers say they know of a good deal of estimating being done on specifications. The persistent seeking of business keeps

mills going in a half and half sort of way. Prices are firm, and angles are quoted at 1'40; beams, 1'70 up to 1'51.

Steel Rails.—A good deal of repairing was to have been begun in September, but for some cause the work has not been started. Rail makers have no information they feel at liberty to give, but they say prices will continue where they are.

Old Rails.—Old rails cannot be moved at this time.

Scrap.—If buyers made flat offers for scrap just now to the right yardmen they might find their offers taken up a little below anything that scrap has been held at this year. In a general way there is no change in quotations unless in railroad scrap, which is more plenty than usual. Some has sold at \$12, but each pile has its own price.

Pittsburg. Aug. 3 (From Our Special Correspondent.)

Raw Iron and Steel.—The general situation presents nothing of special importance; the market is still a waiting one. Buyers confine their purchases to lots sufficient to meet their immediate wants. There is little change in prices; while certain grades were more inquired for, others were neglected. The general opinion is that prices will go no lower, as bottom figures have evidently been reached, although buyers are as cautious as ever, and take nothing that they can get along without. There is very little demand from any quarter for any class of material, but production has been cut down to small proportions so that there is not the urgency to sell that there was some time ago.

The pig-iron industry at present is the greatest sufferer. Southern furnaces are situated differently from those in the Shenango and Mahoning valleys; they have reduced their prices more and their production is comparatively greater. They feel better able to stand up under the depression of the times than the pig-iron producers at other sections, principally because they are not confronted with the drawbacks of high-priced raw materials. Last year at this time there was a big boom in the iron market, June, July and August being the best months of the year. It was simply the unexpected happening; early in the year hardly anyone thought the summer months would prove so disastrous to trade.

Latest.—The market was slightly firmer; though the demand was light, there was considerable more inquiry. We have sales of Bessemer at \$11.25@11.50 which shows an advance. We note sales of Grey Forge at \$10.15; this is also an advance. Steel billets are not in demand; the extremes are \$19.50@20.25.

Table with columns for COKE, SMELTED, LAKE AND NATIVE ORE, Tons, Bessemer, Sept., Oct., Pits., etc., and prices.

SALES AT PITTSBURG JULY AND AUGUST.

Table with columns for 1896, Bessemer, Billets, Grey Forge, Wire rods, and sales data for July and August.

PRICES AT PITTSBURG, JULY AND AUGUST.

Table with columns for 1896, Bessemer, Billets, Grey Forge, Wire R., and prices for July and August.

By way of comparison with these it is interesting to report the following record of weekly sales at Pittsburg for July and August, 1895, those of Bessemer were 466,975 tons; billets, 160,250 tons; grey forge, 75,550 tons; total sales of all kinds at Pittsburg 801,010 tons.

The following are the fluctuations in price: July 5th, Bessemer, \$13.00@13.75; July 26th, \$14.35@14.50; billets, \$20.25@20.75; grey forge, \$11.00@11.25. On August 2d, Bessemer was \$14.35@14.50; billets, \$21.65@22; on August 30th Bessemer pig was \$16@17.50, grey forge, \$12.75@13.00. Wire rods on July 5th were \$27.50; on July 26th, \$28; on August 30th, \$31.

METAL MARKET.

NEW YORK, Friday Evening, September 4, 1896. Gold and Silver.

Prices of Silver per Ounce Troy.

Table with columns for August, St. Ex., London, N. Y. Cts., Value of silver, and September, St. Ex., London, N. Y. Cts., Value of silver.

The market has remained fairly steady, with a weaker tendency toward the close of the week. A tender to the French government this week strengthened the market and prevented a fall. The India Council will now only offer 40 lakhs of bills each Wednesday.

The United States Assay Office in New York reports the total receipts of silver at 53,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, July, 1896, and years from January 1st, 1896 and 1895:

Table with columns for Coin and bullion, Exports, Imports, In ores, Exports, Imports, Total excess, Exp. or Imp., and values for Gold and Silver.

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending September 3d, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Table with columns for Gold, Silver, Total Excess, Exp. or Imp., and values for Exports and Imports.

All the gold exported in 1896, which the week went to the West Indies; the silver went to London. The gold imported came chiefly from Europe, the silver from Central and South America.

Average Monthly Prices of Silver

in New York and London, per ounce Troy, from January 1st, 1896, and for corresponding months, 1895 and 1894.

Table with columns for 1896, 1895, 1894, Month, London, New York, London, New York, London, New York, and prices.

FINANCIAL NOTES OF THE WEEK.

The continued imports of gold have helped to make a more confident feeling, especially as their large amount is leading people to believe that they are the result of a genuine trade movement, at least in part, and are not entirely artificial.

The total amount of gold thus far reported taken for import into the United States during the present movement is \$24,020,000. This includes that which has already arrived, and that which is known to be on the way.

A part of the gold arrived has gone into the treasury, and its gold reserve increased this week \$1,679,224; the greater part, however, has gone into the New York banks.

The Treasury statement just issued shows the total amount of currency of all kinds in existence and in circulation on September 1st as below:

Table showing Treasury currency: In circulation, In Treasury, Total. Gold coin, Silver dollars, Subsidiary silver, Gold certificates, Treasury notes of 1890, Legal tenders, Currency certificates, National Bank notes.

The circulation per capita on September 1st was \$21.48. As compared with September 1st, 1895, there was a decrease of \$64,413,394 in the total circulation.

The statement of the United States Treasury for the two months of the fiscal year, from July 1st to August 31st, shows receipts and payments as below:

Table showing Treasury receipts and payments: Custom, Internal revenue, Miscellaneous, Total receipts, Payments, Deficit.

Expenditures were increased this year by the payment of sugar bounties, in accordance with the recent decision of the courts, and by the larger amount of interest required.

The statement of the United States Treasury on Thursday, September 3d, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

Table showing Treasury balances: Gold, Silver, Legal tenders, Treasury notes, Totals.

Treasury deposits with national banks amounted on September 3d to \$16,159,907, showing a decrease of \$141,515 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$126,821,280. Against these are held in the Treasury 10,412,789 coined standard silver dollars, and silver bullion purchased at a cost of \$116,408,491, making a total of \$126,821,280.

The following official statement shows the coinage executed at the Mints of the United States during the month of August:

Table showing coinage: Denomination, Pieces, Value. Double eagles, Eagles, Half-eagles, Total gold, Standard dollars, Half dollars, Dimes, Total silver, Five cent, One cent, Total minor, Total coinage.

The mints were fairly busy during the month.

Shipments of silver from London to the East for the year up to August 20th are reported by Messrs. Pixley & Abell's circular as below:

Table showing silver shipments: India, China, The Straits, Totals.

bar silver from New York, and £42,000 from the West Indies; a total of £288,000. Shipments for the week were £137,500 in bar silver to Bombay.

While the demand for Indian exchange continues good, the price has been somewhat lower. The 45 lakhs of Council bills offered in London were all taken, but the average price obtained was 14'03d. per rupee only, a fall of 0'16d. The other Eastern exchanges have also fallen, a reduction of 0'50@0'75d. per dollar or tael being noted, in sympathy with the price of silver.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending August 29th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

Table showing New York banks: Loans and discounts, Deposits, Circulation, Reserve: Specie, Legal tenders, Total reserve, Legal requirement, Surplus reserve.

Changes for the week this year were increases of \$689,700, in circulation and \$549,100 in specie; decreases of \$6,363,800 in deposits, \$2,576,500 in legal tender, and \$436,450 in surplus reserve.

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

Table showing specie holdings: Asso. Banks of New York, Bank of England, Bank of France, Imp. Bank of Germany, Austro-Hungarian Bank, Netherlands Bank, Belgian National Bank, Bank of Spain, Bank of Italy, Imp. Bank of Russia.

The return for the Associated Banks of New York is of date August 29th; all the others are of September 3d, except the Bank of Italy, July 20th, and the Bank of Russia, July 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin.

Domestic and Foreign Coins.

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

Table showing foreign coins: Mexican dollars, Peruvian soles and Chilean pesos, Victoria sovereigns, Twenty francs, Twenty marks, Spanish 25 pesetas.

Other Metals.

Copper.—The market continues to be rather dull, and the general improvement which is noticeable especially in financial circles during the last few days, and particularly since the Vermont elections, has so far had no influence on the metal markets.

The foreign market has shown little life except for speculative sorts, in which there has again been some manipulation, and the prices for G. M. B.'s were rushed up almost £1 from the lowest, closing at £47 10s. @ £47 12s. 6d. for both spot and three months.

£48 5s. @ £49 10s.; best selected, £49 10s. @ £50 15s.; strong sheets, £57 @ £57 10s., India sheets, £55 @ £55 10s.; yellow metal, 4 1/4 d.

Tin.—The scarcity of spot tin continues, and though a few hundred tons arrived during the course of the week, it transpired that the bulk of it was sold and importers realized satisfactory prices for the small quantities which they had to offer.

Stocks of tin available for consumption on September 1st are estimated as below in long tons:

Table showing tin stocks: London, Holland, Banks and Billiton, Straits, U. S., excluding Pacific ports, Totals.

The total visible supply shows an increase of 302 tons over August 1st, and of 7,534 tons over September 1st of last year.

Early in the week the London market declined to £59, but later on a better demand set in, and prices advanced somewhat, closing at £59 7s. 6d. @ £56 10s. for spot, and £59 17s. 6d. @ £60, for three months prompt.

Lead.—The refiners have discontinued the pressure to sell and from the moment values hardened quite perceptibly and we have to quote to-day for refined lead 2'70@2'75; but so far very little business has been doing at the higher prices, mainly because most of the consumers are well filled, and perhaps also because the advance was somewhat quick.

According to the Bureau of Statistics of the Treasury Department imports of lead in July were 7,731 long tons, and exports 4,096 tons. Stocks in warehouse July 31st were 5,668 tons, an increase of 475 tons over June 30th.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Since our last report the market has gained strength and prices show a slight advance.

Spelter continues to be flat, and values are rather irregular. While the general quotations are 3.55@3.60c., it is reported that some business has been done as low as 3.50c. delivered New York.

Nickel.—There is nothing new to report, and we continue to quote: 35@36c. per lb. for ton lots and 37@38c. for smaller orders. London prices are 14d. @ 15d. for large orders and 15d. @ 16 1/4 d. for small lots.

Antimony is only salable in retail lots. Cookson's is quoted at 7c.; United States French Star at 6 1/2 c., and Hallett's at 6 1/4 @ 6 1/2 c.

Platinum.—Demand is steady and prices are firm at \$14.50 @ \$15.50 per oz., New York. London quotations are 57s. 6d. @ 59s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotation, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes, 50c., 51c. and 52c. per gram.

Quicksilver.—The New York quotation is unchanged at \$35.50 per flask. The London price is £6 10s. per flask, with £6 8s. 9d. quoted from second hands.

The Minor Metals.—Quotations for these metals are given in the table below, the prices being for New York delivery:

Table showing minor metals: Aluminum, Bismuth, Phosphorus, Platinum, Tungsten, Ferro-tungsten.

Imports and Exports of Metals.

Table showing imports and exports: Philadelphia, Week, Year, Antimony, Copper ore, Ferro-manganese, Ferro-silicon, Iron ore, Manganese ore, Spiegeleisen, Tin and black plates.

Table with columns: New York, Expts., Impts., Year 1896. Lists various metals like Aluminum, Brass, Copper, Iron ore, Lead, Magnolia metal, Nickel, Steel, Tin, Zinc.

* Metal Exchange Reports. Week ending Sept. 3.

† From New York Metal Exchange Reports.

Table with columns: Baltimore, Week, Sept. 3, Year, 1896. Lists various metals like Bismuth metal, Chrome ore, Copper, Iron ore, Lead, Limestone, Manganese metal, Steel wire, Tin, Zinc.

**From our special correspondent.

Average Monthly Prices of Metals

In New York since January 1st, 1896, and for the corresponding periods in 1895, 1894, 1893 and 1892, in cents per pound.

Table with columns: Month, 1896, 1895, 1894, 1893, 1892. Lists prices for Copper, Tin, Lead, and Spelter for each month.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 4. Heavy Chemicals.—There is no material change to report in the condition of this market since last week. Business shows no indications of improvement.

soda, English, 70@72½c.; American, 65c. (in barrels), 80c. (in kegs) per 100 lbs.

Acids.—There has been no quotable change in the acid market during the past week. Sales continue in a fair way, but there is nothing doing that could be termed a brisk trade.

Brimstone.—The price of brimstone continues at the high figures recently attained, and the market is very strong at those rates.

Fertilizing Chemicals.—This market remains heavy and in the quiet condition reported for some weeks past.

Muriate of potash: The new prices are 178c. at New York and Boston; 179½c. at Philadelphia, Baltimore and Norfolk, 181½c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

Nitrate of Soda.—The prices quoted are 177½c. @ 180c. for spot, according to quantity; 180c. to arrive, and 182½c. @ 185c. for futures.

Messrs. Mortimer & Wisner, the well-known brokers of this city, send us the following statement of nitrate of soda, issued under date of September 1st:

Table with columns: 1896, 1895, 1894. Lists 'Imported into Atlantic ports from West Coast S. A., from Jan. 1, 1896, to date' and 'Stock in store and afloat Aug. 1, 1896, in New York'.

Stock on hand, Jan. 1, 1896. 53,839. Deliveries past month... 12,241.

Total yearly deliveries... 828,042. Prices cur. Sept. 1, 1896... 175@177½.

Liverpool.

Aug. 26.

(Special Correspondence of Joseph P. Brunner & Co.) In heavy chemicals buyers show no disposition to operate beyond their immediate requirements and the market all round is inanimate.

Soda ash is merely in hand-to-mouth demand and inactive. For tierces the nearest spot range as to market is about as follows: Leblanc ash, 48%, £4@£1 5s. per ton; 58%, £4 5s.@£4 10s. per ton net cash; ammonia ash, 48%, £3 5s.@£3 10s. per ton; 58%, £3 10s.@£3 15s. per ton, net cash; bags 5s. per ton less.

Soda crystals quiet, at £2 7s. 6d per ton, less 5% for barrels, and 7s. less for bags. Caustic soda slow, and although quotations are nominally unchanged, the tendency is in favor of buyers.

£7 7s. 6d. per ton, net cash; 74%, £8 5s.@£8 7s. 6d. per ton; 76%, £9@£9 5s. per ton, net cash.

Bleaching powder sick, and for hardwood pack-ages values range from £6 12s. 6d. to £7 per ton, net cash, according to destination.

Chlorate of potash idle, and 4¼d. to 4½d. per lb. may be called about nominal value.

Bicarb. soda selling to a fair extent, and steady at £8 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger pack-ages. Sulphate of ammonia attracts little attention from buyers, and £8@£8 5s. per ton, less 2½% may be called about nearest range for good gray, 24% and 25%, in double bags f. o. b. here, as to qual-ity. Nitrate of soda is quoted on spot at £8 2s. 6d.@ £8 5s. per ton, less 2½% for double bags f. o. b. here, according to quality, but there is not much doing.

Carb. ammonia, lump, 3d. per lb.; powdered, 3¼d. per lb., net cash.

MINING STOCKS.

Complete quotations will be found on pages 238 and 239 of mining stocks listed and dealt in at:

Table listing mining stocks: New York, Boston, Philadelphia, Baltimore, Pittsburgh, Denver, Colo., Aspen, Colo., Colorado Springs, Duluth, Minn., Helena, Mont., Salt Lake, Utah, San Francisco, St. Louis, Paris, France, Mexico, Shanghai, China, Valparaiso, Chile, London, England.

NEW YORK, Friday Evening, Sept. 4.

Though the total reported sales of mining stocks have shown a decrease during the week, there is a better feeling as the brokers are receiving more outside orders than for some time past.

The Comstocks have been stronger. Sales were made as follows: 200 shares Best & Belcher at \$1; 100 shares of Belcher at \$1; 150 shares of Chollar at \$2.35; 500 shares of Comstock Tunnel at 3c.; 400 shares of Consolidated California & Virginia; 250 shares of Hale & Norcross at \$1.60; 500 shares of Potosi at 90c.@\$1, and 200 shares of Union Consoli dated at 26c.

The ruling California stock is Brunswick, which shows sales of 2,100 shares at 20@22c. Bodie Con-solidated was traded in to the extent of 200 shares at 70c. Standard Consolidated recorded trans-actions of 100 shares at \$1.

The Colorados have been in some demand, the Cripple Creek stocks showing the largest number of sales.

In the Cripple Creek stocks we note sales of 600 shares of Alice at 25c.—the first sales for many weeks; 3,000 shares of Creede & Cripple Creek at 9c.; 300 shares of Cripple Creek Consolidated at 10c.; 600 shares of Mount Rosa at 11@12c.; 1,700 shares of Pharmacist at 8@9c.; 100 shares of Portland at \$1.35, and 100 shares of Victor at \$7. The only other Colorado stock to record dealings was Iron Silver with sales of 1,100 shares at 25@32c.

The financial statement of the Victor Gold Mining Company, for the year ending August 3d, 1896, shows that 3,073 tons of ore were sold to the smelter, having an average net value of \$10.86 per ton; also 10,662 tons of ore went to the mill, with an average net value of \$8.86. The cost of freight per ton and treatment of the ore at the smelter was \$14 50, while at the mill it was \$9.23. The gross value of the product was \$435,163. The company paid dividends amounting to \$240,000 during the year.

Kingston & Pembroke (Ontario) shows sales of 100 shares at 15c.

Chicago.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending September 2d:

Table with columns: Stocks, Aug. 27, Aug. 28, Aug. 29, Aug. 31, Sept. 1, Sept. 2, Sales. Lists various mining stocks like C. G. & C. C., C. C. Golden Group, Chl. & Mont., Chula Vista, Comstock, Delaware, Great Fissure, Medina, Peerless G. M. Co., Sumpter, Sunny side, Gilpin, Thompson, Utah Mercur.

Total shares sold, 54,330.

Boston.

Sept. 3.

(From Our Special Correspondent.)

There is no improvement to note in the volume of business in the mining stocks this week. Outside of Boston & Montana the market is practically dead, and if it were not for this stock the brokers would not get commissions enough to pay more than a small part of their expenses.

amounted to about 15,000 shares for the week. Old Dominion has been very dull and steady at about \$13 1/4 @ \$13 3/4. To-day a good buying demand appeared, and the price advanced to \$14 1/4 on moderate sales.

Calumet & Hecla declined to \$300, but on the announcement of a \$5 dividend it advanced to \$305, and sold to-day ex-dividend at \$300 1/2 @ \$301. This dividend makes the fourth declared so far this year, or \$20 per share. Only 10 shares of Quincy were sold this week at \$104; the scrip sold at \$77. Tamarack sold at \$70 for small lots. Atlantic declined \$1/2 to \$15 1/2, and Kearsarge advanced \$1/2 to \$10 on small sales. Osceola advanced to \$23 on moderate dealings. Franklin sold in small lots at \$8 1/2 @ \$8 3/4. Butte & Boston lost \$1/2, with sales at \$1 1/2. No Wolverine nor Tamarack, Jr., were sold this week.

In gold stocks Pioneer was steady at \$4 @ \$4 1/4; Santa Ysabel at \$9; Gold Coins new stock at \$2 1/2 and Merced at \$5. Boston & Cripple Creek made an appearance at 15 @ 17 1/2 c.

Cleveland, Sept. 2.

(From Our Special Correspondent.)

Several blocks of Minnesota stock changed hands Wednesday, through Charles H. Potter & Co., but at a price below the quotation of last week. Until the fore part of the present week Minnesota was held at \$52, and \$50 was bid for it. Wednesday offers of \$41 were accepted, and a short time after the stock was held at \$41.50. No transfers of other stocks were reported during the week. Following are the quotations:

Table with columns: Name of Company, Par val., Bid., Ask., Sept 'mb'r 2. Lists companies like Aurora, Biwabik, Champion Iron Company, etc.

Salt Lake City, Aug. 29.

(Special Report of James A. Pollock.)

Conditions in the local mining stock market remained practically the same for the week just closed as during the preceding same period. The feeling of depression was not at all unlooked for and the declining prices are due entirely to lack of support in the market. Ajax is making a very good record of production, but the stock did not display the anticipated strength. Alliance, Anchor and Gas were without feature. Bullion-Beck was somewhat shaded, the only apparent reason being its sympathy with the list. Bogan is pushing development work, but the stock stays down far below its old-time value. Centennial-Eureka is only being offered in limited amount and the general quotation continues strong. Dalton & Lark reports heavy shipments, but the stock was featureless. Even with dividends resumed, Daly did not display any of its old-time strength. Daly-West was in fair demand at last week's prices. Nothing of note was done in either East Golden Gate or Four Acres. The drill at the East Golden Gate is not working just now on account of breakages, but it is understood operations are to be resumed at once. The bottom of the drill hole is not yet in ore, although it has penetrated nearly 800 ft. below the surface. Galena was repeatedly on the market with high-grade ore, and the stock continued strong. Geyser is reported to be looking very well. Horn Silver was inactive. Mammoth will pay its August dividend of 5c. per share on September 1st. The stock was slightly shaded again. It is announced that the September dividend on Mercur will be paid on the regular date. Only a limited amount of business was done in the stock, the offerings continuing light. Ontario was quiet. Silver King was in fair demand at the usual strong quotations. Sioux Consolidated sold far down. Swansea continued quite active, but at somewhat shaded figures, although a slight reaction came at the close.

San Francisco, Aug. 29.

(From Our Special Correspondent.)

The market opened rather quietly on Monday, trading being light and prices rather weak. Matters were entirely in the hands of the small operators, and continued so through the whole of the week. Dullness was the rule, though there was a little stiffening up in prices toward the close of the week. Sales all through were light.

Some closing Comstock quotations are: Chollar, \$2.10 @ \$2.15; Consolidated California & Virginia, \$1.81 @ \$1.85; Hale & Norcross, \$1.35 @ \$1.40; Best & Belcher, \$1.10; Potosi, 95c.; Occidental, 60 @ 61c.

Not much was done in the Bodies, but they closed rather firm, prices to-day being as follows: Bodie Consolidated, 61 @ 63c.; Bulwer, 35 @ 36c.; Mono, 22c.

Business at the Gold Mining Exchange was quiet this week, but still a little better showing was made than for the preceding week. Dealings in the Comstock shares are becoming quite a prominent feature on the call board of the Exchange. Some quotations noted are: Champion, \$25; Sebastopol, 32 @ 35c.; Savannah, 29 @ 30c.

BY TELEGRAPH.

SAN FRANCISCO, Cal., September 4.—The opening quotations to-day were as follows: Best & Belcher, \$1.10; Bodie, 72c.; Bulwer, 45c.; Chollar, \$2.20; Consolidated California & Virginia, \$1.90; Crown Point, 34c.; Eureka, 25c.; Gould & Curry, 57c.; Hale & Norcross, \$1.50; Mexican, 62c.; Mono, 23c.; Occidental, 57c.; Ophir, \$1.05; Potosi, 96c.; Savage, 80c.; Sierra Nevada, 53c.; Union Consolidated, 48c.; Yellow Jacket, 39c.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, B. C., Aug. 27, 1896.

The present week has, perhaps, been the busiest of the midsummer season and the brokers who continue to gain in numbers have not felt in such good spirits since the activity of last May and the early part of June. The want of a regular exchange is again pressing itself on the attention not only of the brokers themselves, but of intending investors who have commenced to return to the camp.

A number of Canadian investors, among whom may be mentioned Mr. Gooderham and Mr. Blackstock, of Toronto, have lately visited the camp and have made some investments. The Canadian investors who have lately invested in the Trail Creek country have proceeded with great caution and they have been investigating the mining affairs of the camp after a very conservative fashion.

It is difficult to get facts where so much is said for effect. The figures which are mentioned in connection with the reported sales of the Crown Point, Maid of Erin, R. E. Lee and other properties in the south belt are not to be depended upon, but it seems to be true that a few important deals of well-known properties in the camp have either been made or are in course of consummation.

London, Aug. 22.

(From Our Special Correspondent.)

West Australians have been quiet and featureless, though on one or two days there was a little brightness in sympathy with rises in South Africans. New Zealanders have not been much to the front. At the present time we are in the midst of the holiday season and very little is being done. No new flotations are brought before the public.

Americans are also suffering a temporary eclipse by reason of the holidays, but I hear of several Rossland and Trail Creek properties being prepared for launching on the London market when business settles down again. It is a pity, now that there is some chance of Americans being received with favor here, that some recent flotations should already have turned out badly. For instance, a company called "Gilpin Gold Limited" was floated here in December last. The prospectus was headed with the words, "An Immediate Dividend Payer," and it was stated that regular dividends would begin in six weeks from the date of the prospectus, November 30th, 1895. It was stated that the mine was properly opened up, that large quantities of ore were already at bank and that the machinery to treat 30 tons per day was then being placed in position. On January 25th, when shareholders were just beginning to expect returns, a circular was sent out, stating that the erection of the machinery had been delayed a little, but that it would certainly be ready for work before March 1st. From that day to this no further information has been obtainable. The company owns the Cashier mine and the Electric Republic and South Brooklyn claims in Gilpin County, Colorado, and the local manager is R. St. John Cleary. Perhaps some of your readers may be able to tell what is going on at the mine.

Just as there appears to be a favorable opening for British Columbian propositions, it is a pity that irresponsible promoters should come over from the Dominion offering absurd propositions here. A party from Toronto is at present in London hawking round shares in "The Big Tree Mining Company," a company formed either under Dominion or Provincial laws. He is offering the stock in blocks of not less than 250 at the rate of 1s. for each \$1 share. The mine is somewhere in the Trail Creek District, and the officers of the company are: Rufus H. Pope, president; O. G. Labere, vice-president, and J. P. Graves, secretary and treasurer. This person is scattering circulars very widely, but is not bringing his schemes before the notice of the press. Perhaps some of your readers can give further information about the Big Tree Mining Company.

Paris, Aug. 23.

(From Our Special Correspondent.)

The most active department to be found here in the past week has been in the shares of the iron and steel companies. All of them are still at a high level, and the prospect of a good year has been well discounted. In sympathy with these the Russian metallurgical shares have also risen. They are now very high, if we consider the risk on the one hand of increased competition, and on the other of a decrease in the duties now imposed on imported iron. Briansk and Huta-Bankowa are the chief favorites. The lead and zinc shares continue to hold their prices well. The speculation in the copper shares is much less active, but with little decline in prices.

The South African shares have been more quiet, but have not declined. They will not be really strong, however, until a substantial increase in production is shown—one at least parallel with the great increase in the machinery at work and the capital invested.

Politically matters have been quiet. The journey which the Czar has undertaken and his intended visits to various courts of Europe and to

France are taken by financiers as assurances of the peaceful intention of Russia. The Cretan trouble apparently tends to compose itself—but one cannot tell where the Turk will next break out. AZORE.

MEETINGS.

Geyser Mining and Milling Company, at the office of the company in Silver Cliff, Custer County, Colo., on September 17th, at 10 a. m.

Gladstone Consolidated Mining Company, at the office of the company in Deadwood, S. Dak., on September 12th at 8 p. m.

Jessie Gold Mining and Milling Company, at the Denver Hotel, Breckenridge, Summit County, Co., on September 10th, at 4 p. m.

ASSESSMENTS.

Table with columns: Name of Co., Loc'n., No., Dng., Sale, Amt. Lists companies like Advance, Alpha Con, Anita Gold, etc.

* New assessment.

DIVIDENDS.

Table with columns: NAME OF COMPANY, Current Dividends, Paid since Jan. 1, 1896, Total to date. Lists companies like Etna Con, Alaska-Mexican, Alaska-Treadwell, etc.

* August dividend paid.

NOTE.—This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared. Many companies are close corporations and refuse to give the information. Readers of the Engineering and Mining Journal will confer a favor on the publishers if they will notify the Journal of any errors or omissions in the above table.

STOCK QUOTATIONS.

BOSTON, MASS.*

Table with columns: NAME OF COMPANY, Location, Par val, Aug. 28, Aug. 29, Aug. 31, Sept. 1, Sept. 2, Sept. 3, Sales. Lists various companies like Allouez, Arnold, Atlantic, etc.

*Official quotations Boston Stock Exchange. Total sales, 17,043.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table with columns: NAME OF COMPANY, Par value, Aug. 29, Aug. 31, Sept. 1, Sept. 2, Sept. 3, Sept. 4, Sales. Lists companies like Balt. & Ohio, Ches. & Ohio, etc.

*Official quotations N. Y. Stock Exchange. Total shares sold, 234,187.

NEW YORK.*

Table with columns: NAME OF COMPANY, Location, Par val, Aug. 29, Aug. 31, Sept. 1, Sept. 2, Sept. 3, Sept. 4, Sales. Lists companies like Adams, Ajax, Alamo, etc.

*Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total shares sold, 12,300.

COLORADO SPRINGS, COLO.*

Table with columns: NAME OF COMPANY, Par val, Aug. 24, Aug. 25, Aug. 26, Aug. 27, Aug. 28, Aug. 29, Sales. Lists companies like Ajax, Alamo, Am. C. & C., etc.

*Official quotations and sales Colo. Springs Mg. Stock Assoc. * Board of Trade Exchange.

ST. LOUIS, MO. Week ending Aug. 11.

Table with columns: NAME OF COMPANY, Company's Office, Par Value, Bids, Asked, Last Dividend. Lists Central Lead, Con. Coal, etc.

SAN FRANCISCO, CAL.*

Table with columns: NAME OF COMPANY, Location, Par. value, Aug. 29, Aug. 31, Sept. 1, Sept. 2, Sept. 3, Sept. 4. Lists Alta, Belcher, Best & Belcher, etc.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending Sept. 3.

Table with columns: NAME OF COMPANY, Locn. Par value, Bids, Asked, NAME OF COMPANY, Locn. Par value, Bids, Asked. Lists Balt. M. & S. N. C., Conrad Hill, etc.

* Official quotations Baltimore Stock Exchange.

BRITISH COLUMBIA.* Week ending Aug. 22.

Table with columns: NAME, Selling price, NAME, Selling price, NAME, Selling price. Lists Boundy Creek, Lily May, Evening Star, etc.

Par val.: Hall Mines Jumbo and Le. Rol. \$5; Slocan Star, 50c., other stocks \$1.

LONDON.

Aug. 21.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers), and various company names like Nth Americans, Alaska-Mexican, etc.

DENVER, COLO.*

Table with columns: NAME OF COMPANY, Par val., Aug. 24, Aug. 25, Aug. 26, Aug. 27, Aug. 28, Aug. 29, and Sales. Lists companies like Anaconda, Big Six, etc.

PARIS.

Week ending Aug. 21.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Div. last year, Prices (Op'ning, Closing), and various company names like Acieries de Creusot, etc.

SALT LAKE CITY, UTAH.*

Week ending Aug. 29.

Table with columns: STOCKS, Par value, Bids, Asks, Actual selling price, and various company names like Ajax, Annie, etc.

MEXICO.

Week ending Aug. 13.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices (Opening, Closing), and various company names like Amistad y Concordia, etc.

PHILADELPHIA PA.*

Table with columns: NAME OF COMPANY, Loca-tion, Par Val, Aug. 27, Aug. 28, Aug. 29, Aug. 31, Sept. 1, Sept. 2, and Sales. Lists companies like Cambria Iron, etc.

HELENA, MONT.*

Week ending Aug. 7.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bids, Asks, Shares sold, Price, and various company names like Am. Dev. & M. Co., etc.

PITTSBURG, PA.*

Week ending Aug. 31.

Table with columns: NAME OF COMPANY, Loca-tion, Par Val, Bids, Asks, Selling price, and various company names like Mansfield, etc.

VALPARAISO, CHILE.*

July 23.

Table with columns: NAME OF COMPANY, Capital, Share value, Last dividend, Prices (Bids, Asks, Last sale), and various company names like Arturo Prat, etc.

SHANGHAI, CHINA.*

July 21.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price, and various company names like Jieibu Mg. & Trad., etc.

NOTE: In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

* Special Report of James A. Pollock. † All the companies are located in Utah.

* Official quotations Philadelphia Stock Exchange. Total sales, 5,954.

* Special Report of Samuel K. Davis. Total shares sold, 5,550.

* Official quotations Pittsburg Stock Exchange.

* Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Date and Amount of Last. It lists 180 different mining companies and their financial details.

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 \$31,330,000 in dividends and the Cons. Virginia \$42,390,000. § Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

CLASSIFIED LIST OF ADVERTISERS.

Air Compressors and Rock Drills. Bullock, M. C. Mfg. Co. ... Air Hoists. Whiting Foundry Equipment Co. ... Amalgam Plates. Western Plating and Mfg. Co. ... Anti-Friction Metals. Besley, Chas. H., & Co. ... Asayers' and Chemists' Supplies. ... Bankers and Brokers. ... Belting. Hendrie & Bolthoff Mfg. Co. ... Belt Lacing. Bristol Co. ... Blasting Caps. ... Blasting Batteries. ... Blowers, Pressure. ... Boilers. ... Brattice Cloth. ... Brick Machinery. ... Bridges. ... Car Wheels. ... Carbons. ... Chain and Link Belting. ... Chemicals. ... Chilled Castings. ... Coal. ... Coal Cutters. ... Compressors. ... Concentrators, Crushers, Pulverizers, Separators, Etc. ...

Contractors. (See Machinery.) Conveying Belts. Robbins Conveying Belt Co. ... Corrugated Iron. Berlin Iron Bridge Co. ... Cranes. Whiting Foundry Equipment Co. ... Cyanide. ... Druggists. ... Educational Institutions. ... Electrical Machinery and Supplies. ... Elevators, Conveyors and Hoisting Machinery. ... Engines. ... Excavators. ... Fire Brick and Clay. ... Furnaces. ... Gages, Recording, Etc. ... Gearing. ... Grease, Graphite, Etc. ... Heavy Machinery. ... Hoists. ... Hydraulic Ram. ... Injectors. ... Insulating Wires and Cables. ... Insurance Companies. ...

Joint Fittings. Tight Joint Co. Lead Linings for Chlorination Tubs. Raymond Lead Co. Locomotives. General Electric Co. ... Lubricators. Asbestos Paraffine Co. ... Machinery. Dealers in Mining, Milling and Other Machinery. ... Metallurgical Works and Ore Purchasers' Processes. ... Mine, Mill and Smelters' Supplies. ... Mining and Land Companies. ... Ore Cars. ... Ore Roasters. ... Ore Testing Works. ... Packing and Pine Coverings. ... Refined Metals. ... Peroxide of Sodium. ... Phosphor-Bronze. ... Pipe Drivers. ... Pipes. ... Plating. ... Powder. ... Pressure Blowers. ...

Publications. American Fertilizer. Arms & Explosives. Australian Mfg. Stand. Bullionist. Denver Republican. El Mero Mero. Electrical Plant & Electrical Industry. ... Pumps. ... Quarrying Machines. ... Railroads. ... Railroad Supplies and Equipment. ... Regulators, Damper, Heat, Etc. ... Rock Drills. ... Rubber Goods. ... Screens. ... Second Hand Machinery. ... Separators. ... Shoes and Dies. ... Shevils (Steam). ... Smelting and Refining Works. ... Steel Rails, Castings, Rolls, Drill Steel. ... Tanks. ... Telegraph Wires and Cables. ... Tubes. ... Tubing-Rubber. ... Turning Water-Wheels. ... Valves. ... Ventilators. ... Voltmeters. ... Vulcanite Emery Wheels. ... Water-Wheels. ... Well Drilling Machinery. ... Wharfage. ... Wheels, Car. ... White Lead. ... Wire Cloth. ... Wire Rope and Wire. ...

POSITIONS VACANT.

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.

1472 WANTED—A FIRST-CLASS MILLWRIGHT accustomed to quartz mill for mine in Central America. Contract three years. Give terms and references. Address MILLWRIGHT, ENGINEERING AND MINING JOURNAL.

1473 WANTED.—A GOOD BLACKSMITH for mining camp in Central America. Must understand mule shoeing. Contract three years. State terms and references. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

1476 WANTED—A FIRST-CLASS ASSAYER and ore sampler, also as assistant manager and engineer in the operating of a large deposit of manganese of the kind known as "wad" or "bog." Address with full particulars, references, etc. PRINCIPAL, ENGINEERING AND MINING JOURNAL.

1477 WANTED.—A PRACTICAL MINING engineer and metallurgist to take charge of a gold mine and mill in one of the Northern States. Send references and name salary wanted. Address M. & R. Co., ENGINEERING AND MINING JOURNAL.

1478 WANTED.—A FIRST-CLASS ASSAYER for custom sampling works in the Northwest; experience and credentials of the best class indispensable; acquaintance with the business of custom sampling would be an advantage. Reply, stating rec'd, references and salary, to NORTHWEST, ENGINEERING AND MINING JOURNAL.

1480 WANTED — A SUPERINTENDENT who understands handling mica. Apply with particulars, etc., MICA, ENGINEERING AND MINING JOURNAL.

1481 WANTED—A COMPETENT MINING manager, by an American company, to develop a gold mine near Bat, Portage, Ontario, Can., and erect a stamp mill if everything proves satisfactory; must assay and have knowledge of chemistry; age about 40 years; reference to persons in New York, Philadelphia or Cleveland; state salary. Address C. P. E., ENGINEERING AND MINING JOURNAL.

1482 WANTED—TWO TECHNICALLY educated young men for electric furnace work residing in or near New York City. Work is hard and exacting, but chances good for right men. Reply fully. Address ELECTRON, ENGINEERING AND MINING JOURNAL.

1483 WANTED—A SUPERINTENDENT to erect and manage a dynamite factory. Must have had successful practical experience in this line. Address DYNAMITE, ENGINEERING AND MINING JOURNAL.

1484 WANTED.—A MILL MAN WITH some experience, who understands concentrating ores by Cornish Jig process, to act as night foreman in small concentrating plant in northern part of Mexico; must speak Spanish. State salary, which must be moderate to commence with. Address CONCENTRATOR, ENGINEERING AND MINING JOURNAL.

1485 WANTED.—A CHEMIST TO TAKE charge of a small chlorination mill treating pyritic concentrates containing gold, silver and a little copper. Address OREGON, ENGINEERING AND MINING JOURNAL.

1486 WANTED.—A MAN TO TAKE ENTIRE charge of a mining property in Mexico; must be a first-class man and thoroughly conversant with the management of Huntington Mills and chlorination; one who speaks Spanish preferred; permanent engagement, with good prospects, given to first-class man. Address INDEPENDENCIA, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

A MINING ENGINEER, CHEMIST AND Assayer, graduate of technical school, three years' practical experience in mining and timbering, desires position. Locality no object. Address MINER, ENGINEERING AND MINING JOURNAL, No. 14,799, Sept. 12.

WANTED—POSITION AS ACCOUNTANT and purchasing agent for a large company. Had wide experience in this direction. Best of references given. Address C. A. C., ENGINEERING AND MINING JOURNAL, No. 17,498, Sept. 5.

WANTED—POSITION, LONG AND varied experience in opening and working mines of coal, gold, silver, copper, lead and zinc ores; in concentration, smelting and milling; in planning and erecting works; in examination of mining lands. Address H. C., ENGINEERING AND MINING JOURNAL, No. 17,489, Oct. 10.

A GRADUATE MINING ENGINEER NOW under engagement with well-known mining company desires change. Has been continuously engaged for past 20 years with the most successful mines in the West in every capacity. Best reference. Address WEST, ENGINEERING AND MINING JOURNAL, No. 17,462, Sept. 26.

POSITION WANTED—BY YOUNG GRADUATE engineer. Has had one year's experience in active mining, mostly in Colorado. Can assay, survey, keep books, etc. Best of references. Address J. F., ENGINEERING AND MINING JOURNAL, No. 17,473, Sept. 5.

WANTED—SITUATION AS CHEMIST, ASSAYER or assistant, by a young engineer of thorough experience and education; neat, accurate, reliable and not afraid of work; correspondence solicited. Address ACTIVE, ENGINEERING AND MINING JOURNAL, No. 17,490, Sept. 5.

YOUNG CHEMIST AND ASSAYER DESIRES position. Can draught, survey and handle men. Not afraid of hard work. Best of references. Address VOLENS, ENGINEERING AND MINING JOURNAL, No. 17,494, September 8.

WANTED—POSITION BY ASSAYER AND Millman, experienced in concentration, amalgamation and cyanidation. Address T., ENGINEERING AND MINING JOURNAL, No. 17,496, Sept. 5.

MINING ENGINEER AND METALLURGIST, graduate of Lehigh University, '95, desires a position with reliable mining company. Address LEHIGH, ENGINEERING AND MINING JOURNAL, No. 14,901, Sept. 12.

MASTER MECHANIC WANTS SITUATION; experience of 10 years in mill work; 29 years of age, and strictly temperate; now employed at large silver reduction works in Mexico; unquestionable references; speaks a little Spanish; has first-class kit of tools and not afraid of hard work; correspondence solicited. Address M. M., ENGINEERING AND MINING JOURNAL, No. 14,801, Oct. 3.

MINING AND MECHANICAL ENGINEER of executive ability and 20 years' experience is open for engagement with first-class company, as superintendent or resident manager; specialty, erection and treatment of low-grade ores; speaks German and Spanish; references the best. Address A. L., ENGINEERING AND MINING JOURNAL, No. 14,933, Sept. 9.

MECHANICAL ENGINEER, TECHNICAL graduate, with practical experience, wants a position; is familiar with use of transit and level and has had considerable drafting room experience; would prefer position in the East. Address MECHANICAL, ENGINEERING AND MINING JOURNAL, No. 14,804, Sept. 5, 1896.

WANTED.—POSITION BY A MINE ACCOUNTANT, capable of taking entire charge of a mine office and attending to the commercial business of such a concern, or as representative of a Mining or Manufacturing Company; highest references furnished. Address A., ENGINEERING AND MINING JOURNAL, No. 17,904, Sept. 12.

MINE BLACKSMITH—A FIRST-RATE MECHANIC, able to do well everything, from setting diamonds in a drill to the heaviest forging. An excellent, industrious, sober man, desires a permanent position, where he will get high wages—which he will earn—and have good educational advantages for his children. He has the very best references. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

Contracts Open.

TREASURY DEPARTMENT, OFFICE OF THE Supervising Architect, Washington, D. C., August 28th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 18th day of September, 1896, and opened immediately thereafter, for furnishing and putting in place the laundry machinery for the U. S. Marine Hospital building at New Orleans, La., in accordance with the drawing and specification, copies of which may be had at this office or the office of the Custodian, New Orleans, La. Each bid must be accompanied by a certified check for a sum not less than 10% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked "Proposal for Laundry Machinery for the U. S. Marine Hospital, New Orleans, La.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., September 2d, 1896. Sealed proposals will be received at this office until 2 o'clock, p. m., on the 29th day of September, 1896, and opened immediately thereafter, for all the labor and materials required for the plumbing and gas piping for the U. S. Court House, Post Office, etc., at Omaha, Neb., in accordance with the drawings and specifications, copies of which may be had at this office or at the office of the superintendent at Omaha, Neb. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids, and to waive any defect or informality 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 enclosed in envelopes, sealed and marked, "Proposal for Plumbing and Gas Piping for the U. S. Court House, Post Office, etc., at Omaha, Neb.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

BEAR TRAP DAM, ETC.—Sealed bids addressed to the Board of Trustees of the Sanitary District of Chicago, Ill., and indorsed: "Bids for Constructing Foundations for Bear Trap Dam and Collateral Work" will be received by the Clerk of said Sanitary District at Room H, Rialto Building, Chicago, Ill., until 12 m. (standard time), of September twenty-third (23), 1896, and will be publicly opened by the said Board of Trustees at the regular meeting held that day, or at a special meeting called for that purpose. The work for which the said tenders are invited is the furnishing, delivering and erecting in place ready for continuous use the various parts of the Foundation for Bear Trap Dam and Collateral Work, described and specified in the detailed specifications furnished by the Chief Engineer. Each bid must be accompanied by a certified check or cash to the amount of \$3,000. All certified checks must be drawn on some responsible bank doing business in the City of Chicago, and be made payable to the order of the Clerk of the Sanitary District of Chicago. Said amount of \$3,000 will be held by the Sanitary District until all of said bids have been canvassed and the contract awarded and signed, the return of said check or cash being conditioned upon any bidder to whom the award of said work may be made appearing within ten days after notice of such award being given, with bondsmen, and executing a contract with the Sanitary District for the work so awarded, and giving a bond satisfactory to the said Board of Trustees for the fulfillment of the same in the amount of \$15,000. All bids must be made upon blank forms furnished by the Sanitary District, and must give the price for each separate class of work or material called for by the specifications. The bids will be compared on the basis of the aggregate of the lump sum bids, and of the prices per cubic yard for all other work. The quantities of such work to be done being estimated inside of lines on the plans being marked "estimate line." No bid will be considered unless the party making it shall furnish evidence satisfactory to the Board of Trustees of his experience and ability in this class of work, and that he can control sufficient capital to enable him successfully to prosecute same in case the contract therefor shall be awarded him. Bidders are required to state in their bids their individual names and places of residence in full. Specifications and plans may be seen at the office of the Chief Engineer, Room 522, Rialto Building, Chicago, Ill. The said Board of Trustees reserve the right to reject any and all bids. THE SANITARY DISTRICT OF CHICAGO, By B. A. ECKHART, President. JAMES REDDICK, Clerk.

DREDGING—U. S. Engineer Office, 106 Granby street, Norfolk, Va.—Sealed proposals for dredging harbor at Norfolk and its approaches, Va., will be received here until September 23th, 1896, and then publicly opened. Information furnished on application. THOS. L. CASEY, Capt. Engineers.

NASHUA AQUEDUCT—OPEN CAHNNEL—Sealed proposals will be received at the office of the Metropolitan Water Board, 3 Mt. Vernon street, Boston, Mass., until September 15th, 1896, for excavating an open channel in Southborough, Mass., about three miles in length, and constructing two small stone dams and six or more stone bridges across the same. The quantity of earth excavation is about 290,000 cubic yards and the quantity of masonry about 2,800 cubic yards. Pamphlet containing further information for bidders forms of proposal, contract and specifications will be mailed to contractors who apply to the Chief Engineer for the same, or may be obtained at his office, 3 Mount Vernon street. Plans may be seen at the office of the Chief Engineer, and also at the office of the Engineer of the Dam and Aqueduct Department, Clinton, Mass. Printed forms must be used in making proposals. The board reserves the right to reject any or all proposals, or to accept the proposal deemed best for the Commonwealth.

THE ENGINEERING AND MINING JOURNAL ADVERTISING RATES. (NONFARREIL MEASUREMENT.) Table with columns for Lines, Inches, Regular Edition, One Month, Three Months, Six Months, Nine Months, Twelve Months. Includes special positions and rates for front page, back outside page, page facing editorials, page facing market reports, inside front cover, and inside back cover.

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50 West 2d South St., Salt Lake City, Utah.

MEXICAN BURIED TREASURE.

Particulars of above adventure were given in ENGINEERING AND MINING JOURNAL of August 29th. Fifteen shares remaining of the three hundred into which the pool is divided are now offered for subscription at \$100 each. Each \$100 share will receive in case of success about \$200,000. Applications for shares must be accompanied with the money, and if too late money will be returned in full. Address GOSSET, ENGINEERING AND MINING JOURNAL.

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NOTICE OF SALE OF MINING PROPERTY.

Notice is hereby given that the undersigned, Receivers of the Charter Oak Life Insurance Company, acting under authority and in pursuance of an order passed on the 12th day of June, 1896, by the Superior Court of Hartford County and State of Connecticut, will, between the hours of 12 o'clock, noon, and 2 o'clock P. M. on Saturday, the 29th day of August, 1896, at the west front entrance to the City and County Building, in the City and County of Salt Lake, in the State of Utah, offer for sale, and sell at public auction, to the person or persons who shall make the highest bid therefor for cash, upon delivery of the deed therefor by said Receivers, within thirty days after said sale, all the right, title and interest vested in, and which they now as Receivers as aforesaid have, of, in and to the following described mining claim and machinery, and tunnel claim and other property connected therewith, situate in Ophir Mining District, Tooele County, State of Utah, described as follows, to wit:

That certain mining claim situate in said district commonly known as and called the Mono Mine, being more particularly described as follows, to wit: Mineral entry No. 105 in the series of the Land Office at Salt Lake City, Utah, designated by the Surveyor-General as lot No. 46, containing 3.67 acres of land, more or less, and according to the return on file in the General Land Office in said City of Salt Lake, described and correctly described, with magnetic variation at 16° 30' east, as follows, to wit: Beginning at corner No. 1 a post marked No. 1, Lot No. 46, thence south 83° 30' east, 1,600 feet to corner No. 2 a post marked No. 2, Lot No. 46, from which a fir tree 17 inches in diameter marked B. T. bears north 71° 30' west at the distance of 21.5 feet; thence from said corner No. 2 north 6° 30' east 100 feet to corner No. 3, a post marked No. 3, Lot No. 46, from which a fir tree 17 inches in diameter, marked B. T., bears north 76° west at the distance of 13 feet, and U. S. Mineral Monument No. 6 a fir tree 17 inches in diameter, marked U. S. M. No. 6 on the south side, and U. S. Mineral Monument No. 6 on a board nailed on the east side bears north 59° west at the distance of 402 feet; thence from said corner No. 3 north 53° 30' west 1,600 feet to corner No. 4, a post marked No. 4, Lot No. 46; thence south 6° 30' west 50 feet to a point from which discovery stake bears north 83° 30' west, at a distance of 800 feet, 10 feet to the place of beginning. A description of which is also found recorded in the Recorder's office in said county of Tooele, in Book BB of records on pages 632 to 636, inclusive. Nevertheless, however, reserving and excluding therefrom all that part thereof "which is situate east of the center of the ravine crossing said premises nearest the eastern boundary thereof, which ravine is further designated and identified as the one in which a living spring rises a short distance above the north boundary of said premises." Together with all and singular the tenements, hereditaments and appurtenances thereto belonging or in any wise appertaining, including all hoisting works, engines and machinery, tailings and property therein and thereon.

Also in the same district and nearby the same, and once worked in relation to said mine, that certain mining tunnel commonly known and called in that vicinity "The Aetna Tunnel."

Upon such sale being so made and the purchase money paid, said Receivers will convey said property to the purchaser within thirty days after said sale.

Dated this 7th day of July, 1896.

ISAAC W. BROOKS & EDMUND A. STEDMAN,

Receivers as aforesaid.

MARSHALL & ROYLE, Salt Lake City, Utah.

GROSS, HYDE & SHIPMAN, Hartford, Conn., Attorneys.

CONTRACTS OPEN.

Continued from Page 18.

PUMPING ENGINE.—The Water Commissioners of the city of Binghamton, N. Y., invite proposals for a pumping engine located on foundation, as shown by plan and specifications, complete, having a capacity of not less than twelve millions (12,000,000) of U. S. gallons of water in 24 hours, against a daily maintained pressure of seventy (70) lbs. per square inch and whenever required against a fire pressure of one hundred (100) lbs. and will maintain a steady flow of water against the changes of the "direct supply system" and work properly in every respect under the conditions of our service. Each proposal will state the number of foot-pounds duty that will be guaranteed from one hundred (100) lbs. of coal at a steam pressure of one hundred (100) lbs., the Board of Water Commissioners reserving the right to reject any or all bids in case the interests of the city of Binghamton shall seem to require such rejection. Plans and specifications may be obtained of the secretary. Proposals will be received until 2 o'clock p. m., September 15th, 1896. **JOHN ANDERSON,** Secretary.

Received Too Late for Classification.

WANTED—POSITION AS MINE SUPER-intendent or manager. Have had 15 years' experience in flat and pitching veins; also preparation by wet or dry breakers. References given. Address **ANTHRACITE, ENGINEERING AND MINING JOURNAL,** No. 14, 86, Sept. 12.

WANTED—BY BRIGHT YOUNG MAN, an opportunity to learn assaying with assayer. Am a bookkeeper. Best references. Address **E. O., ENGINEERING AND MINING JOURNAL,** No. 14, 86, Sept. 12.

HERMANN SHOFEHRN, Consulting Engineer.

PARIS: 16 Rue Erlanger. **NEW YORK:** Care Engineering and Mining Journal. Specialties: TREATMENT OF METALS AND ORES BY ELECTROLYSIS. Contractor for the Refining of Gold, Silver, Copper, Lead, Zinc, Etc. Manufacturer of CALCIUM CARBIDE.

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CO-PARTNERSHIP NOTICE.—THE FIRM of Chandler & Shapleigh, consisting of Wm. Henry Chandler and Waldron Shapleigh, Consulting Chemists, of 46 Broadway, New York City, has this day been dissolved by mutual consent. The business will be continued at the same location by **Aug. 24, 1896. WM. HENRY CHANDLER.**

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DIVIDENDS.

ISABELLA GOLD MINING COMPANY.

COLORADO SPRINGS, COLO., August 10th, 1896.

DIVIDEND NO. 8.

A dividend of ONE CENT PER SHARE (\$22,500) has been declared, payable August 25th, 1896, to stockholders of record August 18th, 1896.

The stock transfer books will be closed August 18th, 1896, at 3 o'clock p. m., and will be re-opened on the morning of August 26th, 1896.

PERCY HAGERMAN,

Vice-President and Treasurer.

NEW YORK AND HONDURAS ROSARIO MINING COMPANY,

No. 18 Broadway.

DIVIDEND NO. 27.

NEW YORK, September 1st, 1896.

The Trustees of this company have this day declared a dividend of ten cents per share on its capital stock, payable 15th inst., at this office.

The transfer books will be closed from 5th to 10th inst.

S. JACOBY, Treasurer.

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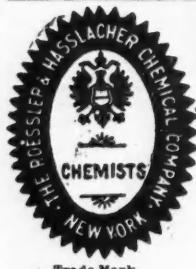
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