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Visitors to New York will find at the offices of *The Engineering and Mining Journal*, 253 Broadway, files of papers from the mining districts of this and other countries, books of reference and every convenience for correspondence. They can also have their letters addressed in care of *The Engineering and Mining Journal*, P. O. Box 1833, New York.
 All are cordially invited to make use of these facilities.

The index for Vol. LX. of the *Engineering and Mining Journal* is now completed, and is sent out with the present number. All subscribers should therefore receive the index with this issue, and should notify us if it is missing.

Mining Law Reform.
 The Miners' Association of California has formulated its dissatisfaction with what is called the Caminetti law, by drafting a bill in Congress "to appropriate money for the construction of works to impound mining debris, and thereby to protect the navigable streams of California." The situation is as follows: Certain recommendations were made by the Commission appointed by Act of Congress regulating hydraulic mining in California; this was followed up by the State appropriation of \$250,000, but this amount is conditional upon the action of Congress in deciding whether or not \$1,030,000 shall be appropriated for the same purpose.

The work and recommendation of the Debris Commission, appointed some five years since, have so far done little to revive hydraulic mining in California; the existence of an Anti-Debris Association, and the discouragement to capital from investing in California owing to the long autocratic closing of the hydraulic mines, have been quite sufficient to retard redevelopment. We learn, however, that better times may be coming and that the Anti-Debris Association will not oppose the law for the relief of the hydraulic miners.

Phosphate Production.
 For the past year or two a good deal of apprehension has been felt by phosphate producers in this country and elsewhere as to the competition of the African deposits. The extent of those deposits was outlined in *The Mineral Industry*, Volume III., but their present importance has been very much exaggerated by general report. The Tunisian mines are not yet worked to any considerable extent, and, according to *L'Engrais*, the total production of Algeria in 1895 was 121,475 metric tons, which is only a very small amount compared with the total consumption of Europe alone. At present very little work is in progress, owing to the difficulties over the concessions at Tebessa and elsewhere. Our Florida producers have, apparently, no occasion to be alarmed at African competition for some years to come. A more formidable interference with their business is found in the rapidly increasing use of Thomas slag as a source of supply of phosphoric acid. The quantity of this slag produced in Germany and Belgium is growing, and its application in the manufacture of fertilizers has been promoted by its abundance and cheapness, so that it has become a considerable article of commerce.

Mining Dividends.
 We frequently receive criticisms from our subscribers on the subject of the incompleteness of our mining dividend table. We have explained this matter before, but it may be just as well to repeat our former explanation, as the difficulty in obtaining correct returns is even greater than formerly. With such development as has recently taken place in mining property a larger proportion of profitable enterprises than ever has gone into the hands of a few individuals, and unless these properties are incorporated and the stock placed for sale on the market it is almost impossible for us to get returns of profits or dividends from them. Occasionally even incorporation is avoided with the distinct and avowed intention of avoiding publication of returns and publicity. It would certainly very greatly benefit the entire mining industry and attract capital to it were all the mines, whether corporate or private ownership, to send us regularly a statement of their earnings.
 There would be no necessity for publishing the individual earnings of any one undertaking, as it would be perfectly simple for us to group together two or three or half a dozen mines in one district, or if sufficient, all the mines of one state or territory, giving the aggregate of their earnings, and in this way we should commit no breach of faith nor give to the public any information that the owners prefer to reserve themselves.

Roentgen's Discovery.
 In our last issue we gave a short note describing in outline the discovery by Prof. Wilhelm Conrad Roentgen, of Wurzburg, of a new light by aid of Crookes' tube and electricity which penetrates wood, animal tissues and certain metals, aluminum being so far the most translucent. At first the discovery was set down as a fake by some critics, and others maintained that there was no new discovery at all. The application of the rays from a Crookes' tube must certainly be looked upon as a discovery, even if the light itself is not new.

It is on record that Professor Zeugen photographed Mont Blanc in 1885 at midnight on so dark a night that even with the aid of an opera glass not a vestige of the outline of the mountain could be seen. The exposure was long, but an excellent picture was obtained.

The great question among scientists seems to be whether the rays now brought into action are "cathode rays" (that is the so-called "rays" projected from the cathode or negative pole of a battery), and which for some time have been known and recognized, or whether they are new "invisible chemical rays" not yet understood, or at least not clearly defined, but called at present x rays. There is absolutely no question as to the fact that a real discovery has been made, as in the first place the subject has been investigated and verified by Mr. Campbell Swinton, in London, one of the most able and practical scientists of the day, and his researches have been corroborated by Professor Trowbridge, of Harvard, within the past few days. Mr. Swinton's experience was extremely interesting: for instance, in one case he succeeded in photographing through wood and leather the coins in a leather purse, nothing being visible except the coins, and on another plate he showed the skeleton of a hand and on the little finger a gold ring appeared apparently hanging in air around the bone, no flesh or muscles being visible. Mr. Campbell Swinton also confirmed Professor Roentgen's statement that aluminum was quite as translucent as wood. The only discouraging feature of Mr. Swinton's conclusions is that he is reported to be somewhat skeptical as to any practical results forthcoming.

We trust that this opinion is simply the reserve and conservatism of a very practical scientist, for we see before us a great field in metallurgy and physical science for this invention. For instance, Professor Roentgen took a photograph of a large metal plate which had been broken and afterward welded together, and in the strongest ordinary light showed no sign of fracture, yet under the so-called x rays the line of junction was shown distinctly. Not only in testing important castings and heavy wrought iron work without unnecessary fracture, but in everyday work, such as approving of steel rails, armor plate, bridge material, etc., this discovery may be of immense value.

We hope, however, the prospector or mine seller will not take advantage of this new method of seeing the unseen, otherwise we shall have so much gold and silver "in sight" that the occupation of the sanguine expert will be at an end.

Barnato Finance.

The meeting of the Barnato Bank, Mining and Estate Corporation, Limited, which was held on Tuesday, January 14, proves conclusively that in spite of the slump in South Africans and in spite of the efforts of his many detractors, Mr. Barnato continues to hold his position as the most prominent, popular and successful of all the South African magnates. It is continually being urged that Mr. Barnato is an unscrupulous financier, a prince of inflaters, an unmitigated humbug, that he unloads on the people all his worthless rubbish, etc. City men who pride themselves on being "superior people" refuse to recognize his existence and the majority of the financial and daily papers make a dead set at him. If, however, we make impartial inquiries into his record and business methods we find that with one exception, his past record has been blameless and even in the case of this one exception, the proofs of his fall from the paths of rectitude are very vague and shadowy. His first great success was the formation of the De Beers Company, and the manner in which he developed and supported the diamond industry in the early days deserves the greatest credit. Afterward when he went into gold mining he purchased for mere songs several mismanaged mines, and many prospects which in good hands promised well for the future. The first thing he did was to engage competent American mining engineers, and from the very start the mines under his control commenced to pay handsome dividends, at the same time he started the Johannesburg Water-works Company by means of which a constant supply of water was provided for the mines and the city. More recently he established the Johannesburg Consolidated Investment Company which took over some of his interest in various concerns together with other properties both mining and real estate. During the past year he has formed the Barnato Consolidated Company, and the Barnato Bank, Mining and Estate Corporation. The former was organized to take over his interest in a very large number of mining companies and mining claims, all of which are of fully established worth, and the latter was formed to take over his interest, details of which are given below and its primary object is to finance other undertakings and to provide ordinary market facilities to the shareholders in Barnato companies and the public in general. When the Barnato Bank was formed a few months ago it was registered in the Transvaal as all Barnato's companies are, and consequently no prospectus was issued in London. Nevertheless the British and Continental public rushed in to buy the shares, and the quotation of the £1 shares was up to £4 in a day. At the meeting held on January 14th Mr. Barnato met his European shareholders for the first time, and explained the object of the company and gave a detailed account of the assets. In spite of the recent slump the market value of the assets is quite 25 per cent. higher than the capital of the company. The assets are distributed over a very large ground, and include securities in such eminent dividend payers as De Beers, Johannesburg Consolidated, Johannesburg Water-works, New Primrose, Glencairn, etc., besides innumerable in-

terests in many less known companies and thousands of proved claims in the Transvaal gold-fields. If this bank does not succeed in paying satisfactory dividends it is difficult to see what company ever will.

HAMMOND'S ARREST.

The first authentic information on the subject of John Hays Hammond's arrest and imprisonment at Pretoria is conveyed in the following despatch to the *Journal* of yesterday's date. Comment is unnecessary, as the whole story is told in the cablegram.

PRETORIA, via Colesburg, January 29th.

To HEARST, *Journal*, New York:

I was arrested with 94 others, charged with sedition and high treason. The circumstances are as follows:

The history of the Transvaal is that of a small, unenlightened, retrogressive community. The Government is a narrow oligarchy, with a bad, inefficient administration. Monstrous monopolies and corruption are rampant. The new population, including many prominent Americans, comprises more than twice the number of the governing class.

They are the wealth producers, capable of all industries, yet they bear nine-tenths of the taxation.

They feel themselves alone, have no voice in affairs, are excluded from franchise, have no municipal government, no participation for their children in the public schools. They are oppressively taxed and badly treated. The independence of the Supreme Court is constantly assailed by the Legislature.

This condition of affairs has continued for years. All petitions for redress of grievances and remonstrances to the Boer Legislature were treated with scorn. In December the leading citizens of Johannesburg, including all the prominent Americans, constituted a reform committee to obtain constitutional redress, and issued a manifesto of their demands, having first hoisted the Transvaal flag and sworn to maintain the integrity of the Republic.

While agitating the questions constitutionally the Jameson incident occurred. It was quite disassociated from the Reform movement.

December 31 the Government sent a commission to Johannesburg asking the Reform Committee to send a deputation to Pretoria. The deputation went and conferred with the Government. No understanding was arrived at.

The battle of Doornkop was fought, Jameson's column surrendered, and Johannesburg people asked to lay down their arms, which was done on understanding from the Government that our demands would be favorably considered, which we were making solely to protect the lives of our women, children and property. The Government guaranteed protection to all these.

The conditions of the Government were carried out without any demonstration of violence on our part. Nevertheless, many prominent Americans and others numbering 60, were arrested and prosecuted for sedition and treason, under penalties involving imprisonment and confiscation of property valued at millions sterling.

The detention of all the prisoners is unjustifiable, and the confiscation of property a monstrous oppression.

Ask our government to urge on the Transvaal Government that the demands of the Reform Committee were reasonable and based on primary principles of the Republic.

Protest against the treatment of all, and of the Americans in particular.

If the Transvaal Government persists in its present course, our government can only invoke the aid of Great Britain, as paramount South African power, to coerce the Transvaal, which then forfeits the moral support of a sister republic.

This course the Transvaal would fear.

First urge the reasonableness of our claim; then warn the Transvaal Government of the consequences of loss of support and of invoking aid of Great Britain, which is much disliked by the Transvaal Government.

Wire copies of this to Generals Miles and Schofield.

Urge our Government to act immediately.

Enlist sympathy in our favor. Reply to Consul, Capetown.

HAMMOND.

NEW PUBLICATIONS.

THE ANATOMY OF A RAILROAD REPORT. By Thomas F. Woodlock. New York: the United States Book Company. Pages 72. Price, 50c.

To most people, who are not trained accountants, the official report of a company is a mysterious document the meaning of which they do not really expect to master, although they may read over its pages in the hope of ascertaining an occasional fact. Many railroad reports are, unfortunately, not intended to show the actual condition of the company; while others are honestly made, but are misleading; sometimes because they are badly arranged and prepared, sometimes because they are accompanied by a bewildering mass of detail, in which the real facts are hidden. The author of the little book before us has done investors a service by showing how best to reach the real meaning of a report, how to analyze its statements, and what a report should be expected to show. He gives several practical illustrations and does not hesitate to mention the companies whose statements are insufficient or misleading, and to criticize the form and arrangement of others. The study of the book will certainly be a great help to the average stock or bondholder.

Railroad companies' reports differ from those of mining corporations, because of the greater complexity of their property and the many cases in which agreements, leased lines, subsidiary and allied roads, and the like must be taken into consideration. The underlying principles which should govern a report are the same in both cases, however, and are well stated by the author when he says that every good report should show the financial condition of the company; the property which it owns, with its present condition and earning power; and the actual earnings (of all kinds), expenses and payments for the period under review. These figures should not only give the gross receipts and expenses but, in a railroad, the receipt and cost per mile and per unit of traffic. In a mining report this would be, of course, the return and the cost of working per ton of ore, which is generally the unit in such ventures. In either case the stockholder should have the means furnished him of estimating for himself the value of his investment and, so far as possible, its prospects for the future.

The author's suggestions are nearly all very much to the point, and his explanations are clear and frequently illustrated by examples from practice, so that they can be readily understood. He points out a number of the expedients adopted by companies which desire to cover up their

real condition, and indicates several signs of a suspicious nature which can readily be detected by a comparison of reports running over several years.

The concluding chapter illustrates the author's methods and instructions by an analysis of the Erie Railroad reports for a series of years, from which he shows very clearly the causes which lead to the last receivership and reorganization of the company. The manual is one in which every investor in corporate property will find useful information.

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.

South African Mines. By Charles Sydney Goldmann. London, Eng., Effingham Wilson & Co. Volume III.; with maps and plans.

Roads and Pavements in France. By Alfred Perkins Rockwell. New York: John Wiley & Sons. Pages, 107; illustrated. Price, \$1.25.

Republica Mexicana: Estadística Fiscal Datos Relativos a Agosto de 1895 y a Agosto de 1894. City of Mexico; National Printing Office. Pages, 29.

South Australia. Report of Northern Territory Explorations. By H. Y. L. Brown, Government Geologist. Adelaide; Government Printer. Pages, 34, with maps.

"*The Science and Art of Mining*" *Handbooks for Mining Students and Colliery Managers: Part II.—Boilers and Fittings; Heat and Steam; Steam and other Engines.* (Specially Prepared.) Wigan, England: Published by "The Science and Art of Mining." Pages, 51, Price, in New York, 35c.

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.

Treatment of Refractory Ores.

Sir: I see by *Journal*, December 28th issue, in article "The Treatment of Australian Ores" that Mr. Howell is to use an electrolytic process for the production of metallic zinc by electrolysis owned by Siemens & Halske. As this process is presumably guaranteed by Siemens Bros. it has probably virtue, etc. Would you be kind enough to refer me to the U. S. patent or literature where details are given, or parties who can give details? I am aware of Siemens & Halske copper process, also a patent for using chlorine in a zinc bath for purposes of depolarization supposed, but neither of these processes indicate to me a practical process of electrolysis of zinc. Having spent much time on this subject I would like to know of any feasible process and have it adopted here in America where the complex ores of zinc are yet untreated in quantity.

Very truly yours,

PARKER C. CHOATE,
P. O. B. 816, Portland, Me.

Mineral Industry, MUY DISTINGUIDO SR. MIO Y COLEGA:

Sr.: Con su atenta del 31 de Agosto he tenido el gusto de recibir el Volume III. de la importante obra "The Mineral Industry" que constituye la publicación de interés mas palpitante, respecto a minería, que se imprime en el mundo. Felicito a V. calurosamente por el éxito alcanzado ya en dicha publicación y tendré un verdadera placer en dar cuenta de la obra y de mis impresiones en las columnas de esta Revista.

Con este motivo me reitero de V. muy atento y S. S.

Q. B. S. M.,

ROMAN ORIOL,

MADRID, Nov. 25, 1895. (Editor, "Revista Minera," Madrid, Spain.)

Sir: Together with your esteemed favor of August 31st I had the pleasure of receiving Vol. III. of that important work, "The Mineral Industry," the most interesting publication in respect to mining which is printed in the world. I congratulate you warmly on the success already attained by it, and I shall take pleasure in giving an account of the work and of my impressions of it in the columns of the Revista.

The Florence Mining District, Idaho.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: The mining camp of Florence is situated on the summit of the Salmon River Mountains, at an elevation of 6,200 ft. above sea level. It is on the State wagon road, 45 miles south of Grangeville. Gold was first discovered at this place in the fall of 1861, and extremely rich placer ground was found and worked. For many years past, in fact since 1870, the camp has been practically deserted, no attention being paid whatever to quartz mining and only a few white men and Chinese working placers. About a year ago quartz discoveries of some value were made, which led to a rush of prospectors this season, and the result has been that a number of promising looking claims have been found and are being worked. The district lies in a basin of some five miles square in extent. The formation of the district is granite. As yet no hard rock requiring the use of explosives has been found, as the greatest depth yet sunk on any of the claims is 50 ft. The district is a perfect network of small quartz veins carrying free gold in paying quantities. The veins have a general course North 80° West, and run from a seam to 2 ft. in thickness. In many cases on the surface a mere seam of talc develops into good vein of quartz. There is no iron or other mineral in connection with the quartz but gold. The gold averages in value \$12 per ounce. A two-stamp mill has been erected in the camp and has thus far crushed 100 tons of quartz taken from six different claims, that averaged \$20 per ton gold.

About 70 men are in the camp at present for the winter and will continue work taking out rock as long as they can, without the assistance of either pump or hoist.

W. H. H.

GRANGEVILLE, Idaho, Jan. 15, 1896.

Mining Notes of a Great Prospective Goldfield.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: About 25 miles from Helena, in the extreme southwest corner of Lewis and Clarke County, is one of Montana's prospectively great gold-fields—not a new discovery, for a great many claims were located and some patented, ten or twelve years ago, but the then conditions of milling were of such a character that there was no profit in working these ores, but now, in the light of results in the working of low-grade ores with a profit in the Black Hills, in Alaska and in South Africa, it is different, and so this field may be called a rediscovery.

It is embraced in a reef or dyke called porphyry (though that may be questionable), of 10 or 12 miles in length, with an average width of 600 ft., all of which pans free gold, showing good colors everywhere, and assaying from \$5 or \$6 gold, and generally carrying some silver.

The conditions are such that operations can be carried on most economically, neither shafts, tunnels, adits nor timbering being required; the ore being quarried out and all crushed without sorting, and the practical test with a 10-stamp mill, determines the fact that the cost of mining and milling is not over \$1 per ton, and it goes without saying that a larger plant will decrease the cost. At the present time there is only one mill completed and working, that of Mr. Switzer, and his Butte associates, a 10-stamp mill in which he crushes 4 tons to the stamp—or 40 tons per day—and is saving \$4 per ton of the gold product. Two other mills are being built, one by the Merrill Gold Mining Company of Butte, and the other by Helena parties. The first-named will be in operation early in January, 1896.

Now given, that this body of ore averaged in depth only 100 ft. (the greatest depth so far attained is 120 ft. and the ore had increased in value with that depth), and these other mills demonstrate the proposition that they can save \$1.00 per ton, and I doubt whether South Africa, Alaska, or any other country, can show a better outlook for low grade gold mining—the tonnage and possibilities are simply immense.

But that is not the only great gold-field, either of low or high grade ores, that Montana has developed—there is scarcely a section of the State where they are not found adapted to one of the known treatments and only awaiting capital for proper development, and which we, being too conservative, have never made any effort to obtain outside of our own resources.

SAMUEL K. DAVIS.

HELENA, Jan. 21, 1896.

Is Zinc Potassium Cyanide a Solvent for Gold?

Sir: Mr. Wells says that zinc potassium cyanide is a solvent for gold, and gives results he obtains by experiments to substantiate his theory. He further adds that "so long as the solution contains free potassium cyanide, the zinc-potassic cyanide will not act as a solvent for gold."

Mr. Wells' experiments under such conditions as he names do not prove that zinc-potassic cyanide is a solvent for gold, because he has not proved that free potassium cyanide was not present in his tests with zinc-potassic cyanide.

The zinc-potassic cyanide obtained from the "zinc filter boxes" may be used over and over again as weak cyanide solutions, and were they brought into contact with zinc sponge after being used as such, the gold would not be deposited, unless the zinc was first thrown down; and as there is no auro-zinc-potassic cyanide solution, the question as to whether zinc-potassic cyanide solution is a solvent for gold has not been satisfactorily answered by him. He further says: "So long as the solution contains free potassium cyanide the zinc-potassic cyanide will not act as a solvent for gold, and since in practice the solutions always do contain free cyanide, the solvent power of the double salt will not be available." If this be the case in practice, how does he know it was not the case in his experiments, and if it were the case in his experiments, how can he claim zinc-potassic cyanide to be a solvent for gold?

Heretofore it has been considered advisable to use the weak solutions coming from the zinc boxes over again, but Mr. Wells says these solutions "are of no value as a solvent in the process." We must differ with him there, as they are of very great value in the process.

That these solutions never become saturated with zinc shows that some action takes place from the time they leave the zinc boxes until they return, and this is also the case whether used as washes or strengthened to the standard solution.

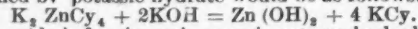
If asked were zinc potassium cyanide a solvent for gold my reply would be in the negative, since it suggests the question, "is auro-potassic cyanide a solvent for zinc?" To understand the action of auro-potassic cyanide in the zinc boxes, we must look beyond mere chemical action into electrical chemical action or electrolysis. Gold is not precipitated from the solution; it is deposited, and because of the weak nature of the solution, fine filiform threads of zinc are necessary for deposition.

These fine threads of zinc will not decompose cyanide of potassium solution readily unless iron or gold is in the solution, in which latter case a brisk evolution of hydrogen will commence, showing that electrical action is taking place. The gold is then deposited on the zinc which is the cathode, but it should be remembered that auro-potassic cyanide is not a solvent for zinc in this connection.

At the moment of deposition of the gold upon the zinc, potassium and cyanide are liberated, part of the potassium forms caustic potash, the remainder being converted into potassium cyanide. This potassium cyanide now unites with the zinc, forming the double salt of zinc potassium cyanide. There are other chemical combinations which undoubtedly take place, causing both a loss of cyanogen and zinc.

It is now thoroughly understood that oxygen must be present before gold will unite with potassium cyanide, and oxygen would be required in case gold united with the potassium cyanide of the zinc potassic cyanide. It would be necessary to decompose this double salt as Mr. Wells states, but not as difficult to decompose the zinc as the potassium—considering we have a voltaic couple with gold as a negative and zinc potassic cyanide as a positive element: Zinc being more positive is oxidized the quicker, leaving the potassium cyanide to be then oxidized in part, allowing the gold to unite with the potassium cyanide of the solution. This would satisfy the condition as far as Mr. Wells remarks that free

cyanide of potassium is always present in the solution, and at the same time account for zinc potassic cyanide not acting on gold when free potassium cyanide is present, but it will not prove that zinc potassic cyanide is a solvent for gold. The zinc boxes of the MacArthur-Forrest process are termed filter boxes by some, by others precipitation boxes—when in reality they are boxes for depositing gold on zinc. We are not quibbling, and the mystery of the zinc boxes will be considerably cleared up if we consider that the deposition is due to electrolysis and not to chemical precipitation. With the double salts such as are obtained from "zinc filter boxes" the reaction obtained by potassic hydrate would be as follows:



That zinc cyanide is free in such cases is extremely doubtful; in case it was the zinc would be precipitated by the alkali present. E. B. W.

The Acetylene Mystery.

Sir: I presume that the majority of your readers have been and still are anxiously awaiting answers to the questions which you have propounded to the promoters of the Electro Gas Company in relation to their exploitation of "rights" to manufacture and use calcium carbide and acetylene. The fact that no answers whatever have been forthcoming from them is rendered the more significant by the publication in the New York World on Sunday, January 26, of a full page advertisement, in which all the statements they have formerly made, and which you have so ably and justly criticised, are reiterated and emphasized. How is this mode of procedure to be interpreted by honest people? Has the Electro Gas Company nothing to reply to your questions and to the charges of your correspondent "Acetylene?" If not, I should like to know how its officers understand their responsibility, and where they expect to "wind up?"

NEW YORK, Jan. 28, 1896.

Yours respectfully,

TENEBRIS.

Sir: The calcium carbide-acetylene mad stock scramble based upon the \$5 to \$7 promises, seems to be abating among people who are tolerably well informed. The schemers have withdrawn somewhat from public view, and "the country is safe" and will be from their promised "revolution." It only remains for these gentlemen, at their Buffalo plant, which should now be ready, to prove that they can do as they have promised, produce calcium carbide at the figures above mentioned. Of course after the experience we have had with their Spray plant and figures, we will not be asked to accept any more of their own estimates. We must have the coming work looked into by men of the technical standing described in my former letters, and they must also be men known to be beyond reproach. We will have no more jugglery, no matter what the cost may be to get to the bottom of it. I may be saved some expense in this direction, however, by the work of independent, non-scheming, carbide producers who are, I believe, now actively at work on the problem of cheap production. Ample private capital will be employed to get the bottom figures, and if calcium carbide can be produced at paying prices we shall probably know it in a proper manner. Wise investors will await developments.

While my position has in no wise changed as to cost of production of calcium carbide, I do not think the independent gas interests of this country will be jeopardized by the failure of the production of carbide at a price to compete with naphtha. Their way out of the danger of complete dependence upon a single influence is plain, though of course distasteful. Works will have to be changed to reach new conditions, and our present extravagant methods abandoned. Capital, led by the advice of its experts, generally rebels against fresh outlays and changes of course. The experts know their present field of work and do not know the new one in which they would have to compete with new experts, thus endangering their financial welfare. When we touch the pocket we touch the soul, it seems. For these reasons innovations and improvements are frequently held in check too long for the safety of some capital. Some men learn from the experience of others; some do not, but those who do generally lead the progress of the world.

Our methods, compared with those of Europe, are extravagant in the extreme. Compare any gas works in this country with those of Paris, for instance. We are arrogant, and too full of assurance. The older civilization of Europe sets us a good example in care, caution and management, and many industries there make their profits out of by-products, which we in our might, throw away. We only have to look and learn to find that our gas interests may not be subject to the dictation of any single influence.

My last week's reference to the Standard Oil Company, should not be misunderstood. As a corporation it has, I believe, little to do in the ownership of gas interests, but the individuals of that vast company are putting their money in such securities for the very good reason that the profit on gas is large, about 100%, when done on a hard-pan basis. Can we, then, reproach any capitalist for putting money into such a business? Where is there another such wholesale business, which offers such profit on a general necessity of such enormous importance? This capital will go into gas business more readily if it be conducted on an economical basis, as in Europe, instead of our plan. Indeed it is because of this knowledge as to what may be done in this line with good management that has led them to this fresh field for the use of money.

Now these views bear directly, to an extent, upon the carbide matter. I believe that the leaders of this calcium carbide craze have known for some time that their original claims were nonsensical, and in pure desperation have kept up the blind fight.

The "outsider" is possibly getting a glimpse of the inside of the matter by this time. The present calcium carbide party, described in my last letter, are not known as "safe" people, and as gas leaders their day is almost done and they know it. The appearance in the gas field of the new and vast aggregation of capital, which is inimical to the class of management which the calcium carbide party are familiar with, makes the writing on the wall plain. If these schemers could only get an enricher independent of the great interest referred to they would have a lever with which to again force an entrance to their strong boxes. That in my opinion is the underlying motive of the Benedict-Dietrick-Jerzemenowski party, and accounts for their desperation, evidenced by their

unwise course in sticking to the \$5 and \$7 promises, which work in two ways, viz: (1) To possibly scare the other fellow, and (2) to make a little money "on the last lap," by sales of "rights," which that distinguished letter-writer, Mr. Seward, says is all right because the buyer is satisfied—until he unties the bundle, which I fear will be found to contain the regulation green goods package, with possibly some money in it, say a dollar bill at top and bottom, which about truly represents what the outsider will possibly make out of this "revolution."

I trust that these letters have been useful despite the fact that the carbide party refers to them as "inaccurate criticisms." These gentlemen now have the opportunity of proving their "inaccuracy" upon the chief point and which covers the whole question in a material sense, by producing calcium carbide commercially at from \$5 to \$7 per ton.

It may be my pleasure to go further into this question.

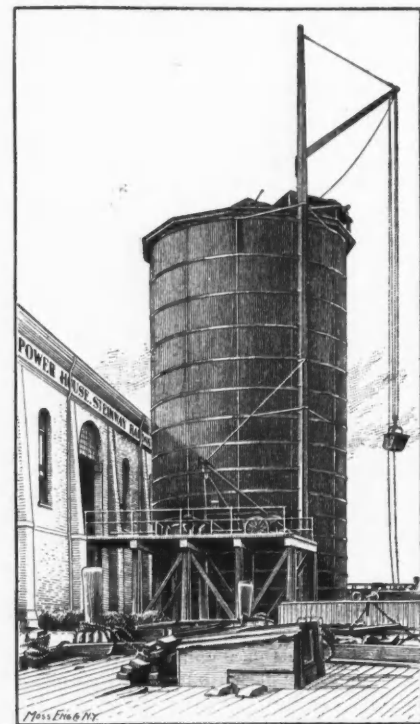
Yours, &c.,

ACETYLENE.

[We learn from Paris, France, that the price of calcium carbide in that city is 9c. per lb.; in other words, \$180 per ton, and that no money has been spared in trying to cheapen the cost of production.—Ed. *Engineering and Mining Journal*.]

COAL POCKETS.

A very important element in the designing and building of power plants is the question of the proper storing of coal. No power plant should be designed without providing for the storage room for from 500 tons to 1,000 tons of coal, and in larger plants this capacity should be very much increased. The danger of a strike in a coal region, or delays in transportation incident to strikes, weather, floods, etc., are so many and great that no power plant should take these risks, but should provide storage for sufficient coal on hand to provide against a contingency of this kind. The difficulties in designing a proper bin or pocket for storing this coal are many and great, owing to the large floor space required. Our attention has been called to a pocket lately designed by the Berlin Iron Bridge Company, of East Berlin, Conn., for the power house of the Steinway Electric Railroad Company, at Astoria, which has attracted much attention. The design is unique and possesses many points of



merit, owing to the large amount of storage capacity in proportion to the exceedingly limited amount of floor space occupied. The general appearance is shown in the accompanying illustration, which is taken from a photograph of the completed pocket, in operation. Especial attention is called to the cylindrical form of construction. This particular pocket is 28 ft. in diameter, 54 ft. in height, and has a capacity of 1,000 tons of coal. The coal is unloaded from the barge or carts, at the edge of the pocket in the ordinary way, and hoisted by means of a bucket to the top of the pocket so that no expensive machinery is required to fill the pocket, an ordinary hoisting engine being all that is necessary. Of course, more expensive mechanical appliances might be introduced for doing this work, in the shape of an endless chain or some of the other appliances of a similar nature, but we doubt very much whether the revenue would pay the interest on the incurred cost, over the apparatus shown in the illustration. There is an opening in the side of the pocket, near the base, for removing the coal in the ordinary way, so that it can be carried into the boiler room by means of an endless chain, with buckets, or by hand, or by carts, or whatever way may be desired. The advantage of this pocket does not lie in its presenting any additional facilities for handling the coal, but more in its being an economical method of storing coal, and, as such, it offers many advantages and commends itself to owners of large steam plants, as it admits of greater capacity in proportion to the floor surface, and thorough protection from weather, than any methods that have lately come to our attention. The patents on this construction are owned and controlled by the Berlin Iron Bridge Company, of East Berlin, Conn.

ROENTGEN'S DISCOVERY.

This discovery, development or whatever it may be termed, was brought about by pure accident. This has frequently been the history and birth of many most important discoveries.

Professor Roentgen while experimenting in a dark room with a Crookes' tube through which an inductive electric current was passed, was greatly astonished to find that a photographic plate enclosed in wooden slides which had been lying in the same room, revealed on examination, some strange impressions which could not possibly be attributed to the influence of ordinary light from without. Struck with the curiousness of this phenomenon, for which no possible reasons seemed to exist, Professor Roentgen experimented again under exactly the same conditions, and found that the photographic plate could have been reached only by a light which was capable of penetrating wood, a substance which hitherto has always been considered as opaque. Further trials showed not only that such light existed and was generated in a Crookes' tube, but that it possessed the faculty of penetrating many other substances, such as organic tissues, paper, etc.; whilst certain metals and bone substances (calcium phosphate) did not lose their opacity. Professor Roentgen further succeeded in obtaining photographic impressions of metallic objects which had been enclosed in a wooden box, and also of the skeleton of a living hand.

Immediately on this discovery becoming known in England, Mr. Campbell Swinton, of 66 Victoria street, Westminster, undertook the task of repeating Prof. Roentgen's experiments.

Mr. Campbell Swinton has a collection of plates on which photographic impressions had been made in the manner described by Professor Roentgen; that is to say, the light developed in a Crookes' tube by an inductive current, was allowed to fall upon the photographic plate covered by wooden slides, in front of which various objects, such as keys, coins, ebonite rings, etc., had been placed. After the plate had been exposed for a few minutes it was then developed, and the impressions of all these objects, with the exception of the ebonite rings, pieces of cardboard, etc., were clearly to be seen on the plate. It appears to be a fact that the wooden case which surrounded the sensitive plate is quite as translucent with the new light as the plate would be in the ordinary course. One plate, it may be mentioned, on which the image of a leather purse containing some coins had been thrown, showed the coins only, the leather being translucent to the light, the coins alone being visible.

Mr. Campbell Swinton found in his experiments that aluminum, contrary to some other metals, is quite as translucent under these conditions as wood, and has the photographs of some metallic objects which were taken through aluminum sheets.

In addition to Mr. Swinton's researches, it has been ascertained that lead is as nearly translucent as aluminum.

In order to obtain some indication as to the nature of the new light, Mr. Campbell Swinton made the following experiment:

Two small aluminum trays, one containing a solution of alum, and the other a solution of iodine (in carbon disulphide), were placed before the photographic plate, and the solution was exposed to the action of the Crookes' light as before mentioned. It is, of course, known that alum solution absorbs the ultra-red, and iodine the ultra-violet rays of light. The developed plate showed only one impression, which was that of the tray with the alum solution, while the iodine solution remained invisible. Mr. Campbell Swinton concludes from this that the new light contains rays which are absorbable by iodine, and that it is likely these are the ultra violet rays. This, of course, is only presumption at present. There has no definite idea been formed as yet as to the real nature of the light. It may be mentioned that Mr. Campbell Swinton is somewhat sceptical as to any practical results being forthcoming in consequence of the discovery, but at the same time he reserved his opinion as regards its scientific significance.

Perhaps the most important result may be in the direction of metallurgy. It has been found that, although most metals are apparently opaque to the rays of this strange light or force, yet any internal defects or lack of homogeneity in them are quickly detected and recorded on the telltale plate. The sensitiveness and accuracy of the negatives in this respect are described as marvelous.

No two metals are alike under this new test. Lead proves to be almost as transparent as aluminum and wood. Hitherto it has not been possible without a complicated process to test the uniformity of structure of metal work, for instance, gun barrels, iron rails, railroad wheels, or to distinguish at sight the different varieties of iron and steel. All this, it is anticipated, will be shortly achievable by the help of the new photography. It is no exaggeration to say that this would mean the complete revolution of many branches of metallic industry, especially in the manufacture of arms.

Exact reproductions have been obtained of inscriptions or relief drawings on signet rings and metallic surfaces. To the great astonishment of the experimenters, it was found that metallic objects exposed to Roentgen's rays show in the photographic reproduction all inequalities that exist in the structure of metals, such as fractures and cavities. This quality theorists recognize as being due to the great sensitiveness of the rays to variations in the thickness. All alloys or composite metals—and most of those used in the manufacture of arms are composite—show on the photographic plate whether they are completely homogeneous throughout and where and to what extent one metal, for instance, zinc or copper in the so-called steel-bronze cannon, has not thoroughly amalgamated with another. Owing to the intensity of the photographic picture obtained by the new rays, carbon is readily distinguished from iron, and hence it will be possible to recognize the quality of iron or steel. The rays will also probably furnish a simple method of control in the Bessemer process.

Crookes' tube is simply a modification of Geissler's tube. It consists of an egg-shaped bulb of glass, from which the air has been almost exhausted. At one end the positive current is brought into the tube by means of a fused platinum wire and a small disk-shaped piece of aluminum is placed at the end of the wire. On the lower side of the tube is the spot where a similar disk of aluminum receives the current which has been transmitted through the vacuum. Where the current enters is called the anode, and where it leaves is called the cathode. These are otherwise known as the positive and negative poles, and are often indicated by a plus and minus sign, respectively.

Arthur Bowes, of Salford, England, gives the following description to the *London Photographic News*:

"By the kindness of Professor Schuster, of the Owens College, Manchester, I have been able to examine the photographs sent to this country, and obtain some particulars of the marvelous discovery they illustrate, made by Professor Roentgen of Wurzburg. As some of your readers may be aware, these photographs demonstrate the possibility of photographing through substances which are opaque to ordinary light.

It has long been known that in experimenting with electric discharges through glass tubes, which have been exhausted more or less completely of air, there is produced a strong phosphorescence of fluorescence in the glass walls of the tube. Some years ago Hertz showed that these phosphorescent emanations would permeate thin metal, and in 1893 Dr. Lenard described before the Royal Prussian Academy of Sciences at Berlin an arrangement by which the rays were made to pass through a plate of aluminium .003 millimeters thick. This plate, while quite opaque to ordinary light, permitted the rays from the Geissler tube to permeate it, rendering the air faintly luminous and creating a strong odor of ozone.

Prof. Roentgen's discovery is that, in addition to this phosphorescence, another radiation of a hitherto unknown nature is produced, which is capable of penetrating through all bodies, though not to the same extent. Wood and human flesh are more easily penetrated by it than glass, and although its effects do not make themselves visible to the human eye, they can be recorded photographically.

Thin plates of metal offer little opposition to its passage, and can be photographed through almost as readily as can a pane of glass with ordinary daylight. The first photograph which Prof. Schuster showed me was a half-plate print on albumen paper, exhibiting the effect of interposing a human hand between the source of light and the sensitive plate.

The outlines of the flesh were only faintly defined because the flesh was comparatively transparent to the radiations; the bones of the fingers were very plainly shown, with the knuckles clearly defined; a signet ring on one finger was the most distinct feature in the picture. The whole effect was that of a badly defined skeleton hand with a ring on one finger.

No camera had been used, because, as Professor Schuster explained, the new light—or radiation, as the Professor preferred to call it—differed from ordinary light in some of its most essential features. So far as is yet known it can neither be reflected nor refracted; the lens has no power to concentrate it and form an image in the usual way. All the photographs taken with it are in the nature of shadows, formed by interposing various substances in the path of the rays.

Another photograph showed a mariner's compass or similar dial which had been photographed while inclosed in a metal case. The dial was about 2 in. in diameter and well defined. In another experiment the source of light had been placed at one side of a wooden door, while the plate had been exposed on the other side, and in the resulting picture the internal markings of the wood were revealed, as well as the outlines of a metal hasp or fastener.

A photograph of a piece of zinc, composed of several strips of zinc rolled into one apparently homogeneous mass, revealed distinct striations in the interior of the metal. One of the most instructive of the photographs was produced by passing the radiations through thin slabs of various materials, such as glass, Iceland spar, iron and aluminum. The relative amount of obstruction offered to the rays was made manifest by the varying depths of tint in the photograph, and Professor Schuster pointed out that the opacity seemed to vary in the same relation as the density.

The heavy substances, such as iron, lead, glass, Iceland spar, offered more obstruction than did lighter substances, such as wood, paper, aluminum, or flesh, and this holds good, quite irrespective of the behavior of these substances with ordinary light. As thin layers of wood are comparatively transparent to the new emanations, it will be seen that a photograph can be taken on a plate inclosed in a dark slide without drawing the shutter of the slide.

According to the Berlin correspondent of the *New York Times* it is already questioned whether Professor Roentgen deserves all the credit. Rays are known of, which are called cathode, or Hittorff's, rays; Professor Leonard has already shown that they pass through very thin plates of aluminum. Professor Roentgen, however, points out that the cathode rays do not approach the newly found rays in power of penetration, and, unlike the cathode rays, are not deflected by the magnet. Another claimant who has more to base his claim on is a Mr. Hans Schmidt in Munich, who sent in for publication last year in the *Photograph Review* a paper which has only just appeared, wherein he maintains that objects and materials which seem impenetrable to light rays are nevertheless not so. He says that the ultra-violet rays in electric light, which do not produce the effect of light on your eyes, pierce through blackened paper, thin wood, india rubber and other materials, while thin layers of metal keep them back. These discoveries in and about the field where Professor Roentgen works will not harm the latter's well-earned fame.

A very practical result of the discovery is likely to be this: Ironmasters will be able to examine photographically the inner structure of guns and pieces of machinery in order to detect flaws. Doubtless other uses for the new rays will soon be found in the widest fields of industry and science.

Professor Wright, of Yale, has investigated the subject with the following result: With a great variety of substances it was found that strong impressions were obtained upon a photographic plate even when it was enclosed in an opaque wrapping of black paper and covered with a pine board half an inch thick. It was evident at the outset that the order of transparency of different subjects for the light rays was very different from that which is found with the cathode rays. Thus pieces of glass were more opaque to these rays than some of the metals or than ebonite, which is perfectly opaque to luminous rays, but transmits the cathode rays with great freedom. Among the metals aluminum is especially distinguished, and in one of the experiments of Professor Wright an aluminum medal left its impress on the plate so clearly as to show both the design and lettering. In this latter case the layer between the medal and the sensitive plate was absolutely opaque ebonite, which is the substance used by photographers to darken completely the plate-holder.

In other experiments which were made by Professor Wright with pine board interposed, a closed paper box containing aluminum grain weights

left a trace upon the plate, which appeared as though the box were almost transparent and the weights themselves somewhat translucent. An ordinary lead pencil lying near the box upon the interposed board showed its graphite core by a darker trace in the middle of the fainter impress of the wood of the pencil. Another paper box contained embedded in cotton three small spheres, one of platinum, one of brass, and one of aluminum. In this case also the box and the cotton appeared so nearly transparent as to leave but a slight impression on the plate. The brass and platinum spheres intercepted a large portion of the kathode rays, the aluminum sphere a much smaller proportion. A number of American coins—silver, copper, and nickel—produced strong impressions, showing almost complete interception of the rays; but there were differences, the copper coins transmitting more than the nickel and the nickel more than the silver.

In an earlier experiment a somewhat thinner board of white-wood was used, the plate being wrapped in black paper as before. On this board was laid a pocketbook of dark Russia leather with several flaps of leather within, and containing seven cards, two of them thick. A number of small coins were slipped into the inside compartment of the book, which was then closed and laid upon the board under the tube. On the plate, when developed, only a faint shading was left by the pocketbook, but the coins left a strong and definite picture, showing with surprising clearness their number and position in the book. A trace of Professor Wright's hand, which rested upon the board during this experiment, was also strongly depicted. The outlines of the hand were somewhat blurred, and in the palm faint traces of the passage of the rays between the bones could be detected, but there was little of the effect, reported by Professor Roentgen, of the greater distinctness of the impression made by the bones.

ABSTRACTS OF OFFICIAL REPORTS.

Lehigh Valley Coal Company.

The report of the Lehigh Valley Railroad Company, just issued, gives the following statements of the operations of the Lehigh Valley Coal Company for the fiscal year ending November 30th, 1895.

The coal mined and shipped from the company's property was as follows, in tons:

	1894.	1895.
By Company.....	2,061,115	2,619,960
By Tenants.....	2,822,135	2,864,090
Total.....	4,883,250	5,484,050

By regions, the coal shipped in 1895 was as follows: Wyoming, 2,693,040; Lehigh, 653,233; Pottsville, 142,796; Mahanoy, 1,994,981; total, 5,084,050 tons.

The statement given above shows an increase for the year 1895 of 600,800 tons. For the purpose of comparison with 1894 there should be added the tonnage of G. B. Markle & Company, omitted from the foregoing statement. This for the year 1894 was 457,213 tons, making an actual increase for the year 1895 of 1,058,013 tons.

The average breaker time of all the collieries operated by the Lehigh Valley Coal Company was a little over 159 days, an increase of about 18 days as compared with 1894.

The capacity of the collieries operated by the Coal Company has increased from 13,832 tons in 1894 to an estimated capacity of 17,000 tons per day of 10 hours, and the gross capacity of all the collieries tributary to the Lehigh Valley system is estimated as about 47,000 tons per day of 10 hours.

The anthracite coal sold by the Coal Company, produced from mines owned or controlled by it was 2,717,005 tons; purchased from individual operators, 3,217,912 tons; total, 5,934,917 tons, showing an increase over 1894 of 787,377 tons. This does not include Jeddo and Highland coal (sold for account of G. B. Markle & Company) and bituminous coal amounting to 538,175 tons, which added makes the total coal sold 6,473,092 tons.

The distribution of the anthracite coal sold, as above, omitting the Markle & Company coal and bituminous coal, was as follows, in tons:

	1894.	1895.
Tidewater at New York.....	1,876,713	2,268,316
Philadelphia.....	749,925	806,265
Buffalo.....	517,623	677,988
Chicago.....	512,570	781,416
Delivered at local points.....	1,490,709	1,400,902
Total.....	5,147,540	5,934,917

About half the increase in 1895 was in coal carried to tidewater at New York. Buffalo and Chicago shipments showed a very large increase. There was a decrease in local deliveries.

The report gives for the first time a general balance sheet for the Lehigh Valley Coal Company. We give below the figures for 1894 and 1895.

	1894.	1895.	Changes.
Capital stock.....	\$650,000	\$650,000	
First mortgage 5% bonds.....	12,000,000	11,800,000	D. \$200,000
Snow Shoe 5% bonds.....	500,000	500,000	
Sinking fund, first mortgage.....	135,559		D. 135,559
Notes and mortgages payable.....	255,113		D. 255,113
Due Lehigh Valley R. R. Co.....	2,435,706	3,304,493	I. 868,787
Sundry creditors.....	933,570	1,133,248	I. 199,677
Profit and loss.....	2,786,406	2,019,376	D. 767,030
Total liabilities.....	\$19,696,354	\$19,407,117	D. \$289,237
Coal properties.....	\$5,078,679	\$4,855,585	D. \$223,094
Colliery improvements.....	4,567,954	4,908,551	I. 430,597
Advanced royalties.....	3,077,666	3,203,311	I. 125,645
West Superior coal storage.....	167,646	293,564	I. 125,918
Cash.....	658,138	820,067	I. 161,929
Notes and mortgages receivable.....	622,359	631,562	I. 9,203
Interest in allied coal companies.....	603,563	693,508	I. 90,945
Royalties due by lessees.....	48,227	59,061	I. 10,834
Due for coal sold.....	2,148,649	2,245,867	I. 97,018
Sundry debtor accounts.....	277,635	240,677	D. 36,958
Coal on hand.....	2,355,833	1,363,570	D. 992,263
Trustees of sinking fund.....		1,934	D. 1,934
Total assets.....	\$19,696,354	\$19,407,117	D. \$289,237

During the year \$200,000 bonds were canceled from the sinking fund. The item "sundry creditors" includes the amounts due on November coal. A study of the changes in the account shows some interesting points.

The amount due the Lehigh Valley Railroad Company increased \$868,787 last year, of which \$818,375 was cash advanced, the balance being real estate accounts transferred.

The report further says: "Our operations were considerably crippled during the past three or four months by reason of scarcity of water, due to the unusual drought prevailing in this part of the country, a number of collieries being idle altogether for want of water for steam and washing purposes, and others able to work only a short time.

"The collieries of the Lehigh Valley Coal Company have been kept fully up to their usual high standard, and with the extensive improvements at Hazleton and Primrose collieries a considerable increase in the production may be had if the market should demand the coal. These improvements have been made in the best manner.

"No revenue was received during 1895 by the Railroad Company from the Hazleton collieries, which, as stated in last year's report, had been transferred to the Coal Company. A severe and dangerous fire occurred in the slope at Breaker No. 1 on the morning of January 28th, and for a time threatened to involve the breaker; it was finally extinguished about the middle of August. The breaker and outside plant at this mine have been practically rebuilt and fitted throughout with modern machinery and boilers. It is estimated that a saving of about \$7,000 per year in wages and of 50% in fuel consumption will be effected by these changes, together with a large increase in the capacity of the colliery. A new breaker of large capacity is proposed for the eastern end of the property, abandoning Breakers 2, 3 and 5, which, with their antiquated machinery, cannot be so altered as to bring them up to a proper efficiency. This, and the extensive improvements at Primrose Colliery, will result in such economies in preparation and increased yield of the mine cars that we can confidently predict a return of the entire cost of making these changes within a few years of their completion. In confirmation of this we find at Maltby Colliery that we have been able since the breaker was remodeled to get a yield of 1.86 tons from a mine car which before gave us but 1.48 tons, an increase of 0.38 ton. Our hoisting there this year was 106,260 mine cars, which, at the rate above mentioned, yielded us about 40,380 tons more than would have been possible had we continued the use of the old breaker. This increased tonnage was obtained without any increase in our labor cost, since the same quantity of material would be handled in either case; it is simply a saving of what would otherwise go to waste, and represents practically a net increase in our receipts at this colliery of at least \$1.20 per ton upon the coal thus saved, or \$48,456, to say nothing of the lessened cost of handling, due to better facilities, and the increase in the total tonnage which will be derived from the property. We have had like experience at other places, notably at Franklin, Spring Brook, and Exeter, and there is every reason for believing we can accomplish similar results at Hazleton and Jeanesville.

"The improvement of the property secured in South Chicago, referred to in the report for 1894, has not been begun, but the plans and specifications therefor have been approved, and the work will be proceeded with at once, with a view to its completion by June 1st next.

"The hopes of an improved condition in the anthracite coal trade have not yet been realized; on the contrary, the average rate received for transportation of coal was 5.65c. per ton less than in the previous year, 1894, and the Coal Company realized a loss upon the coal mined by it and that purchased from individual operators of 13.48c. per ton. The cost of production was somewhat less than for 1894, notwithstanding a charge of about 6c. per ton on the entire tonnage for permanent improvements, and a heavy loss by fire at Wyoming mines."

The report gives some account of the negotiations to secure some adjustment in the anthracite trade, beginning in March last, the origin, progress and final failure of which were fully treated in the *Engineering and Mining Journal* at the time.

METHODS OF CLOSING CRAOKS IN CAST-IRON.

Many methods for closing cracks or pores in cast-iron have been devised, according to our contemporary, *Industries & Iron*. Chemical or other products, such as sal ammoniac, urine, are often used to cause the formation of an iron salt, easily oxidizable, which in a short time gives a certain quantity of hydrated-oxide of iron. This is made use of very often to stop up leaks which develop in metallic cylinder. This method is, however, a somewhat lengthy one, several days being oftentimes necessary to obtain satisfactory results; that is to say, entire absence from leakage. A method of closing cracks or pores in a more rapid and certain manner has lately been devised by M. A. Demalght, of Brussels. The method is described as follows: The cylinder is filled with a certain quantity of perchloride of iron. The liquid is then compressed until globules appear on the external surface. The cylinder is then impregnated with perchloride of iron right through, as regards its thickness. Any perchloride in the cylinder is then emptied out, the cylinder being then wiped until the polished surface is again made brilliant. It is then filled with ammonia at 22° Baumé, this also being subjected to compression. The effect of this operation is soon noticeable, the perchloride of iron in the metal becomes transformed under the influence of the ammonia into hydrated oxide of iron, at first somewhat frothy in character, and afterward under the influence of the external pressure, rough and compact. Some hydro-chlorate of ammonia also remains, which will soon afterward react on the iron, which will eventually be converted into an oxide compound, adding itself to the first. The leaks marked at the commencement of the operation will be entirely stopped up as soon as the ammonia commences to move out externally the whole operation not occupying more than a couple of hours. One advantage of the new process is, that leaks are stopped by an independent injection of hydrate of iron, whilst in the many processes at present in use, the result is obtained at the expense of the iron in the cylinder, that is to say, one part has to lose that which another portion gains.

Belgium Pig Iron Production.—The production of pig iron in Belgium for the month of December was 69,595 metric tons, a decrease of 10,075 tons compared with December 1894. For the full year 1895 the output was 828,510 tons, a decrease of 76,200 tons, or 8.4%, as compared with 1894.

MINERAL IN BASALT.

Written for the Engineering and Mining Journal by Harrington Blauvelt.

During the last year, while in the Castle Creek District, Yavapai County, Arizona, I ran across two mines, or rather mineral deposits, that a brief description of may interest the *Journal* readers. It is an accepted fact among mining men and prospectors in general that basalt, or "mal-apaïs" (the recent volcanic intrusions and lavas) contains no mineral, at least none of the precious metals. On a former trip I was surprised myself to find a copper mine in the above rock, and, on a subsequent trip, was again surprised to find a silver mine in the most recent of volcanic lavas. The Castle Creek District is an oxidized one, all its ores are oxidized, also the country rock, which shows oxidation and decomposition to considerable depths. The rock of the district is largely of tufas and trachytes, which have been weather and water worn along Castle Creek into castellated peaks and turrets, giving the district its name. In the southwesterly portion of the district I found a copper mine in some small rolling hills, in a basin like, and surrounded by high buttes and ridges of red trachyte and yellow tufa. By referring to Plate II., which gives a vertical section of the hill, it will be noticed that there are two dykes of andesite porphyry, separated by some 60 ft. of a purplish-colored shaley basalt, which has become more or less impregnated with copper, mostly in the form of silicate (chrysocolla). The basalt has been shattered or crushed evidently, and in the interstices, or on the surfaces of the fragments, the silicate has been deposited. In a few places the rock has been replaced entirely, and in spots copper glance (chalcocite) has been substituted. This latter is found in nodules, bunches, or in a few small streaks through the rock. A shaft has been sunk upon the deposit sixty feet; at that point the rock has become solid and all traces of copper are rapidly disappearing as depth is attained. The changing of the basalt with copper silicate has not extended a distance of more than seventy or eighty feet in length along the strike of the formation; for the full sixty feet in width, however, it is coated more or less green. This replacement has been carried so far with the present surface rock as

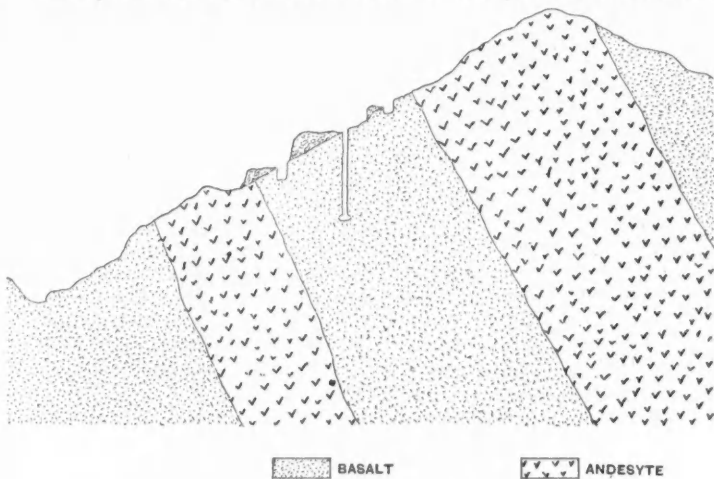


Plate I

to make much of it valuable as copper ore, some two hundred tons of it having been taken from the shaft and other large but shallow excavations and piled up on the dump that will assay ore 20% copper. The andesite is the common grey or birdseye porphyry, the crystals in a light greyish base with but little mica and a few fine augite crystals distributed through it where not decomposed or altered. Evidently the oxidation and leaching of the enclosing dykes of andesite are responsible for the copper, there being no carbonated waters at hand it was deposited as silicate. On my last trip I went to look at a silver mine in the western portion of the district where the Hasyampa Creek cuts through for one or two miles a basaltic formation. This is scoriaceous in places and varies in color, being dark to reddish brown, purple, slate, black and dark, by referring to plate II, showing a section along creek, a later overflow lying horizontally upon the massive basalt along the creek is seen; at the point as a fault extends easterly and westerly at right angles to the flow of the creek for a distance, I am informed, of from four or five miles: all along this fault a little copper stain (silicate) is found. This fault at the point bb, is some six to eight feet wide, and has been filled with crushed lava, some in boulders, but mostly in very fine material, all stained or coated with silicate of copper, and containing in addition "malleable silver" (argentine) in seed or bean-like shot, some of them as large as the end of one's thumb. Upon crushing up a sample and panning it half a teaspoonful or more of malleable pellets is obtained. In addition, small threads of copper silver glance are found here and there, running some samples up to 500 or 600 ozs. silver per ton. Some 30 or 40 tons of this material is upon the dump, about 15 tons of it running 176 ozs. silver and 8% copper. An open cut has been run upon the fault westerly from creek some 40 feet, and a small shaft 10 feet deep sunk below the bottom. All show similar character of material. Of course a little depth will soon carry one below the deposition of the copper and silver solutions, but it is remarkable that there is none other but volcanic rock adjacent to this fault line—in fact, none within three or four miles.

The Inventor of Calcic Carbide.—The "inventors" of calcic carbide are multiplying. Dismissing the claims of Wöhler, who, being dead, is not able to speak for himself, we have two original inventors of the carbide, Moissan and Willson, who, however, are now supplemented by a third. In the *Deutsche Submissions Anzeiger* it is related that Harren Sohns and K. Kastner, of Rossleben and Halle respectively, have invented a *neuen Leuchtstoff*, otherwise *calciumcarbidlicht*, and have taken out a patent for the same.—*Industries and Iron*.

THE VOLUMETRIC ESTIMATION OF MANGANESE.

By George Auchy.

Mr. W. H. Thomas has described his experience with Low's and with Volhard's method of determining manganese. The latter he finds reasonably accurate. The former not at all so. Some 10 or 12 years ago, in the *Transactions* of the American Institute of Mining Engineers, Williams' method in steel, which is based on the same principle as Low's method in ores, was the subject of considerable controversy; some claiming, others disputing its accuracy.

Are methods based upon this principle reliable? Mr. Thomas' experience with Low's method is further evidence to the contrary. But as regards Williams' method, perhaps it may be said that Mr. Thomas' results are not in evidence, inasmuch as potassium chlorate and strong nitric acid are stronger oxidizing agents than bromine water, and may therefore be depended upon to oxidize the manganese completely to manganese dioxide, even if the latter cannot be. But Mr. Stone's and others' work is against this assumption; also the following results obtained from manganese ores:

Ore No.	Williams' method (practically). method		Volhard's method	
	Per cent.	Per cent.	Per cent.	Per cent.
1.....	51.71	53.04	51.71	53.04
2.....	51.58	53.00	51.58	53.00
3.....	44.88	46.81	44.88	46.81
4.....	43.00	46.24	43.00	46.24
5.....	41.22	42.64	41.22	42.64
6.....	34.39	40.60	34.39	40.60
7.....	44.88	46.40	44.88	46.40
8.....	31.61	43.76	31.61	43.76

Among steel works chemists, Williams' method is very popular on account of its great ease and simplicity. Comparatively few, perhaps, use Volhard's method. And it is, therefore, important that the reliability of the former method be more fully and definitely established. So far the evidence in its favor is strong and positive. But there is still room for doubt. More work seems to be required to fully settle the question, and it would be well for chemists, who use this method, to patiently check with Volhard's method for a considerable time (using different lots of chlorate) and communicate their results and opinions to the Society. I say Volhard's method, because the gravimetric is too cumbersome for such an extended use, and is probably moreover not any more accurate—perhaps not so much so—as Volhard's. My own experience with Williams' method leads me to believe that it

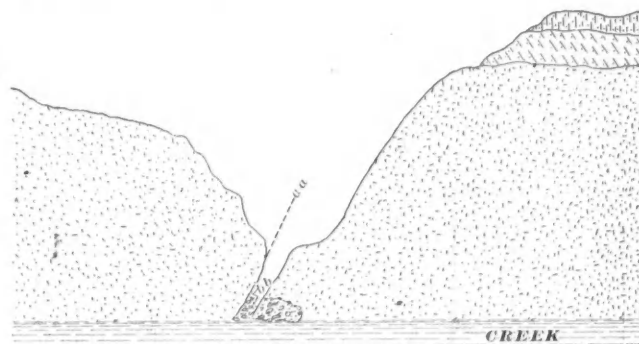


Plate II

usually, but not always, gives accurate results. And I am disposed to think that if chemists who have repeatedly obtained good results with that method, and who have therefore every confidence in it, would nevertheless keep on for an extended period checking their results by Volhard's method they would sooner or later be treated to a disagreeable surprise such as illustrated by the last four of the following results:

Heat	Williams' method. method		Volhard's method	
	Per cent.	Per cent.	Per cent.	Per cent.
114.....	0.42	0.42	0.42	0.42
115.....	0.43	0.45	0.43	0.45
116.....	0.50	0.50	0.50	0.50
120.....	0.40	0.41	0.40	0.41
121.....	0.42	0.42	0.42	0.42
Tire steel.....	0.92	0.94	0.92	0.94
Heat..... 125	0.48	0.51	0.48	0.51
Tire.....	1.04	1.20	1.04	1.20
Heat..... 162	0.37 and 0.42	0.45	0.37 and 0.42	0.45
"..... 163	0.40	0.48	0.40	0.48

With heat 163 Williams' method was given up. With regard to the method of oxidizing to permanganate by lead oxid and titrating with arsenious solution, without having given the method actual trial, I am nevertheless convinced that it gives uniformly low results, from the fact that while it was in use at these works, 135 and 140 lbs. of ferromanganese per charge was needed to bring the manganese content to the required point, working by this method, while now, with Volhard's method in use, only 90 and 100 lbs. are used to bring the same result. But the lead oxid used in the method was the tetroxide. Probably by the use of dioxide good results may be obtained.

For the benefit of chemists, who have never used Volhard's method, and who feel disposed to give it a trial, for the purpose I have suggested, I beg to call attention to certain precautions which are essential to a successful practice of the method:

1. In boiling off the nitric acid with sulphuric acid, it is very essential to avoid too much sulphuric acid, as otherwise the bumping and spattering will be so violent as to altogether spoil the test.
2. The dry mass should be taken up with hot water, allowing the dish first only a minute or two for cooling. If the dish be allowed to cool completely, and cold water be added, and then boiled up, very frequently a red ferric sulphate carrying much manganese will remain insoluble, no matter how much additional sulphuric acid be added. Even this precaution is valueless, however, if the dry mass be heated too long. But this residue can be brought into solution by decanting the clear solution and then heating

for some time with sulphuric acid. But to save time its separation should of course be prevented in the first place.

3. In steels high in manganese it is advisable, and in steels low in manganese it is absolutely essential that not too much zinc oxide be used; as it will separate out when the solution is heated if much has been used, and will retard the settling of the manganese dioxide if the steel be high in manganese, and will completely prevent it if the steel be low in manganese (0.18 — 0.24%), and thus make the observation of the end of the titration impossible. Before the zinc oxide is added, therefore, the solution should be in as small a bulk as convenient and be as nearly neutralized with sodium carbonate as possible.

4. When titrating with permanganate, the reddish color caused by the permanganate should be completely changed into clear yellow by shaking the flask before more permanganate is added, and at the end the liquid must be distinctly and permanently rose colored—that is, it must retain its color through a dozen good shakings. It is well, toward the end, to add the permanganate four drops at a time (when two drops equal $\frac{1}{10}$ cu. cm.) till the distinct rose-tint is reached, and then deduct $\frac{1}{10}$ cu. cm. from the reading of the scale.

It may be a convenience to state the method in detail. Take exactly three and three-tenths grams in a 6-in. evaporating dish. Cover and dissolve on the hot plate in 40 cu. cm. of nitric acid containing a little more than half of strong acid. Add 8 cu. cm. (no more) strong sulphuric acid. If, however, the liquid becomes cloudy on boiling, the violent bumping and spattering before referred to will inevitably occur as the boiling progresses further. Add then at once some strong hydrochloric acid, and transfer to a wire gauze, where boil down rapidly over a good strong flame till the mass is nearly dry—a little pastiness still remaining here and there. It is best to remove the cover when the liquid gets pasty. Allow to cool a minute or two. Take up with hot water and boil a few minutes. Cool by placing in a larger dish of cold water. Pour into a 500 cu. cm. measuring flask. Nearly neu-

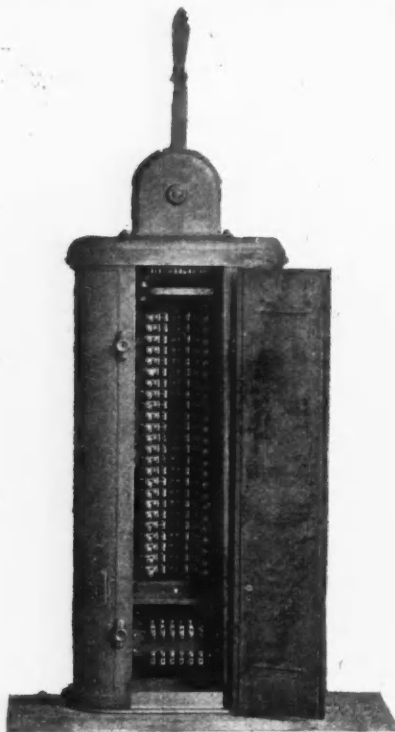


FIG. 2.—CONTROLLER.

tralize with sodium carbonate. Add zinc oxide emulsion until sudden stiffening of the solution. Dilute to the mark. Pour into a dry beaker, mix with rod, and pour through a very large ribbed filter into a 250-cu. cm. measuring flask. When the liquid has reached the mark, withdraw and transfer to a 500-cu. cm. Erlenmeyer flask. Heat to boiling. Add nearly the full amount of permanganate of strength exactly 0.0055, if the percentage of manganese is approximately known. If not add only $\frac{1}{4}$ cu. cm. permanganate, and boil until the manganese dioxide separates in flakes, and the liquid becomes yellow. Finish the titration, shaking after each addition of permanganate till the yellow reappears. The number of cubic centimeters permanganate divided by 10 will give the percentage of manganese.

Where the method is in daily use it will be well to use for neutralizing before adding zinc oxide common sal soda instead of the expensive chemically pure carbonate. But this will add about 0.03% to the manganese, and must be determined and deducted. The sal soda can be procured at grocery or drug stores. Two pounds in two liters of water (and filtered) is a convenient solution.

The impurity is best determined by doing a steel with pure sodium carbonate, then with the sal soda. For convenience, the amount of the soda solution required to nearly neutralize the manganese solution is noted, and that amount is then at once added in subsequent determinations.

Tin Plate Industry.—The manufacture of tin plate in the United States has increased 33% in the last fiscal year. During this year the production of commercial tin and terne plate was 193,801,073 lbs., against 139,223,467 lbs. in the preceding year. Of this production 83% were made from sheets rolled in the United States. In all 52 American firms were producing commercial tin and terne plates, and 29 were producing black plates.

"THE CARD" MULTIPOLAR SERIES REVERSIBLE MILLIMOTOR.

For operating heavy machinery in rolling mills, smelting plants, foundries and particularly for swing bridges and traveling cranes, in fact all other places where a strong, simple and servicable machine is required, no power can be more adaptable than the electric motor.

The accompanying cuts Fig. No. 1, 2 and 3 show "The Card" Series Reversible Multipolar Motor and Controller manufactured by The Card Electric Company, Mansfield, O. Fig. 1 shows the motor completely enclosed and can be used in places where the open type of motor would soon be destroyed. This motor in connection with improved controller and current regulator makes a very desirable outfit for operating traveling cranes, turnbridges, hoists, bending rolls and other kinds of machinery which require various speeds in either direction. Attention is called to the method of mounting this motor for general work. The front of the motor is supported on a cast-iron stand rigidly fastened to the bed plate of the machine or other foundation, with trunions on each side of the upper part taken through suitable bearings on the motor case, forming a pivot for the motor to swing on. The rear part of the motor is supported on springs at each side, with springs above, held in compression by bolts through the pedestals, which support them and which are also fastened to the bed plate. The object for this arrangement is to provide a flexible support for the motor and a cushion for the gearing when heavy loads are thrown on the motor or the direction of rotation is suddenly reversed. In practice it has been found to work admirably, and, in addition to saving the gears, gives the motor a noticeable advantage in starting heavy loads at slow speed. Where the conditions are such that the spring suspension is not advisable, brackets are provided on the motor for bolting to the bed plate or foundation, rigidly.

To satisfy the class of work for which this motor is designed, nothing but the best material can be used with safety, and the construction must be as thorough and complete as it is possible with modern machine tools

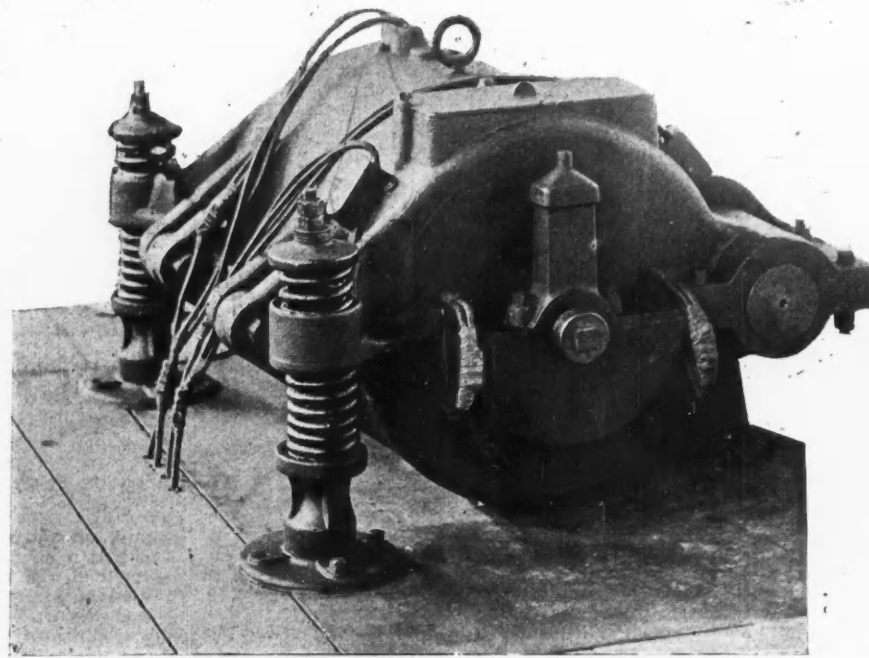


FIG. 1.—REVERSIBLE MOTOR.

to make it. Special pains have been taken with the design to provide large bearings for the armature shaft and other parts subjected to strains and wear, and allowed in every part a generous excess of metal for mechanical strength and as a factor of safety electrically.

Fig. 2 shows the controller with the lever in a vertical position for current "off" and the door open, exposing the mechanism for regulating the current.

Fig. 3 shows the back removed, exposing the wiring and connections to contact fingers.

The controller is strongly put together and finished with iron filler or japan, as desired. The working parts have received the most careful attention. They are practically self-contained, and, with the exception of the operating lever, are fastened to a back made in one piece, which can be removed from one case to another without disturbing any of the parts.

Each controller is provided with two revolving cylinders, geared together and operated by the lever at the top on which are fastened a series of contact rings. The one at the right is used exclusively for opening and closing the circuit and has 24 contacts. These contacts are so arranged with reference to the motor winding that arcing is impossible. A separation of $\frac{1}{16}$ in. between rings and contact arms will open the circuit without carrying current across. The cylinder at the left carries the reversing rings and others for regulating the flow of current through the motor. Of these there are ten and the resistance between them is so proportioned that no spark follows when a change is made, no matter how slowly the lever is moved. Near the bottom of the controller are a series of binding blocks for making connection to the motor, current regulator and the line. These binding blocks are plainly marked with letters and figures and correspond with others on the motor and regulator. The cylinders for starting and regulating the current are compact

and strong with ample insulating resistance for use on any circuit up to and including 500 volts and have sufficient metal in the contacts to carry a large excess of current without heating.

A complete installation of the above described apparatus "Driving Bending Rolls" will be illustrated in one of the succeeding issues of the Journal.

THE ORISKANY IRON ORES AT RICH PATCH MINES, VA.

Written for the Engineering and Mining Journal by Edmund C. Pechin.

I think that it is safe to say that as far as we now know, the estate of the Rich Patch Iron Company, in Alleghany County, Virginia, is the most interesting, remarkable and valuable brown ore property in the United States. The quality of the irons made of the Oriskany brown hematites by the Longdale Low Moor and Princess furnaces during the last 15 years is too well known to need any comment.

The Rich Patch Iron Company's lands adjoin the Low Moor estate on the south and west, a few miles west of Clifton Forge, and consist of 9,300 acres in fee. The property runs unbrokenly in a southwest direction some seven or eight miles, embracing West Rich Patch Mountain and Horse Mountain, a lower but parallel ridge, really an undulation of the main mountain.

On this whole distance, on both the north and south slopes of Horse, and on the north slope of Rich Patch, the outcrop of the ore can be followed, always showing float more or less heavy and at times bluffs and ledges of massive ore. In addition to natural indications, the company has dug a considerable number of test pits along these outcrops, proving the ore in place, and in good quality and condition.

My first visit was in 1890, when, apart from the great bluffs of ore standing where No. 5 opening now is, the only development was a small test tunnel driven into the hill across the lead, a short distance southwest of the Low Moor line, showing about 40 ft. of good ore ground. My second was in February, 1892, when the mining operations had been fairly started and making a favorable showing. My third, in October, 1892,

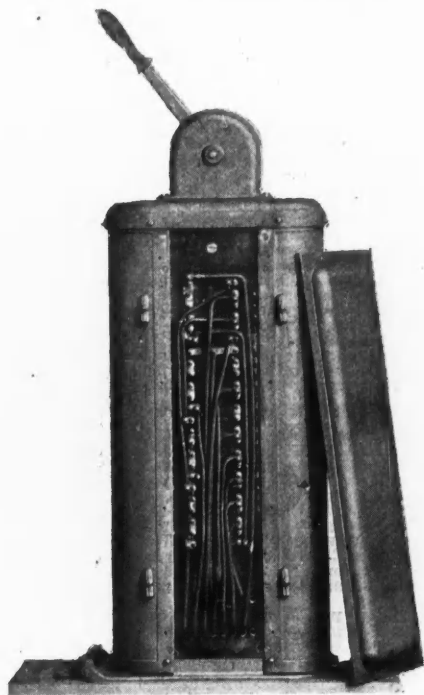


FIG 3.—CONTROLLER.

was professional, and the opinions formed in my preceding visits were fully verified. The opportunity lately offering, curiosity prompted another visit. After spending several days inspecting the various workings and the tests made on outlying portions of the property, I am fully justified in what I above stated, that it is the most valuable and interesting brown ore property in the country, and, beyond any peradventure, it can mine enormous quantities of ore for many years to come.

The geology of the district has been fully described by Prof. I. L. Campbell and others (vide *The Virginias*, 1880), and all that was then foreshadowed has been more than realized. The examinations then made seem to indicate a great seam or bed of brown hematite ore following the Oriskany sandstones, appearing, disappearing and reappearing over a large area, the strike remaining fairly northeasterly and southwesterly with the dip continually changing as the fold was sharpened or flattened. The deep gorges of the streams on the property give abundant facilities for noting the sweep of the measures. This is especially noticeable in the deep gorge cut by Mill Branch into Horse Mountain, where at this time of year, with leafless trees, the great Oriskany sandstone shows as a perfect gothic arch, near the top of the mountain; lower down the Clinton (No. V.) and at the base the Medina Sandstone (No. IV.) On tops of the ridges of Horse and Rich Patch the ore is ended and gone, but comes in lower down on the slopes, and from the dip of the sandstones and of the ore itself, where it is being worked, ought to run to very considerable depths into and under the valleys. The possibilities of this will be better seen when we come to a description of the workings.

On the southwest end of the property, at Hayes Gap, between six to seven miles from the mining camp on the north side of the mountain, a

large opening has been made, showing the ore in place and of high grade. While the cut has not been driven through the ore, the indications on the surface point to a width of 25 ft. to 30 ft., before the hanging wall is reached. This lead has been traced without difficulty, along the mountain side, about four miles northeasterly. Up Mill Branch, at Gillams, on this same lead, a mine was opened and worked between 1883 and 1885, the ore being hauled in wagons about two miles to the Chesapeake & Ohio Railroad for shipment to furnaces on the road.

An open cut on the ore was driven 75 ft., and then a tunnel 200 ft., the ore averaging from 25 ft. to 30 ft. in width. Openings have been made still further to the northeast, showing the continuity of the seam.

These tests were made simply to give some knowledge of that portion of the estate, and without any reference to early working.

In the descriptions that have come under my notice, only one great lead or seam of ore is assumed as occurring in the fold. Some years since Mr. H. G. Merry, the manager of Low Moor, established on that property the existence of two large bodies of ore, in close juxtaposition to each other, and these two ore bodies were heading directly toward the Rich Patch line. The reasonable supposition would be, there was originally one great seam, which at this point had split with an intersection of gangue or folded on itself, but in view of the positive developments at No. 6 Tunnel at Rich Patch, nearly a mile distant, which will be noted below, there is ground for assuming that there are two distinct seams of ore. Whatever the theory of the formation may be, the fact remains that there have been proved, in this one locality at least, two great beds or seams of ore, adding immensely to the economic possibilities and importance of this particular section.

Karnes Creek, on which the present mining camp is located, flows through the Low Moor estate into the Jackson River. At opening No. 5, Rich Patch, it divides, one branch, with a southwesterly direction, being called Clear Creek, and the other to the east, Raleigh Run, the latter cutting through to Rich Patch Mountain.

On the right of Clear Creek rises a bold ridge about 500 ft. high above the creek bed, having no local name. I called it, for convenience sake, Middle Ridge, as at its northeast end it stands boldly out between Horse on one side and Rich Patch Mountains on the other. At its westerly end it runs into and connects with Horse Mountain. For a very considerable distance the sharp summit of this ridge is covered with float and heavy boulders of ore running almost due northeast and southwest. In holding this direction northwardly the float cuts sharply down the hillside and across a depression. At a point in this ridge overlooking Karnes Creek Valley about 4,000 ft. in a direct line from the washing plant, and at a depth of say 150 ft. below the crest, and say 300 ft. above the valley, is one of the most impressive showings of Oriskany ore I have ever seen. A cut had been started across the lead. It is from 8 ft. to 19 ft. wide and from 40 ft. to 50 ft. long with a face of massive ore about 5 ft. high. This cut commences in ore with no signs of any foot wall. As no rocks are exposed nearby, the location of the hanging wall can only be conjectured, but the heavy rich float, apparently in place, indicates a width of from 60 ft. to 70 ft. of ore ground. The cut yielded nothing but massive lump ore of the best description, without the slightest observable interjection of free silica.

There is no evidence of any disturbance on this ridge, on the contrary everything points to the existence of a great undisturbed lead and the heavy float looks in place uncovered by gradual erosion, without the deposition of any drift. It now seems beyond question that it is the extension of the great lead now being worked to the northeast. It can be followed in an almost unbroken line southwestwardly to the opposite foot hills of the West Rich Patch Mountain up to, and over the divide at Laurel Run, the heavy float giving way in places to bluffs and ledges of ore. On the southwest side of Laurel Run, about four miles or so from the camp, are the remains of an old cut driven on the strike of the seam, along the hanging wall. It is 50 ft. long, 5 to 6 ft. wide and 6 to 8 ft. deep, showing throughout the usual characteristics of the Oriskany ore. This is chiefly valuable as showing the persistency of the bed. Particular notice has been taken of this showing on Middle Ridge, because this special locality offers opportunities for the establishment of a great mining operation that are almost ideal. A short extension of the present railroad must necessarily follow the ravine of Clear Creek, at the base of the ridge. At numerous points along such an extension short tunnels can be driven to the ore, which will give drainage and outlet for from 300 to 400 vertical ft. of ore. The cost of opening and of dead work will be light for an enormous output. It is perfectly idle to attempt to give any estimate of the amount of available ore on this 9,000 acres. A fair inference may be drawn from the ground now being worked, and from what others have found under similar conditions. Mr. Merry told me that they had driven 5,000 ft. on this lead always in ore, never less than 15 ft. in width and at times widening to 60 or 70 ft. Several years ago I saw the Longdale mines, a few miles distant, but on another fold of these ore measures. At the time adits had been driven on nearly 4,000 ft. of strike, the ore holding throughout. At the lowest level, nearly 400 ft. below the outcrop, but still above water level, the ground was as good if not better than near the surface

(To be continued.)

Mining in Siam.—Mining of tin ore on a small scale is developing more actively at present in the northern part of the Malay peninsula, likewise the digging of rubies near Chantabun. Most of the concessions granted for gold and coal mining during the last five years have been forfeited and never renewed, because the prospectors could not raise the necessary capital. The "Goldfields of Siam Company," of London, which had commenced to operate the gold mines at Bantapan in 1888, became defunct after losing the entire capital stock. The "Sapphires and Rubies of Siam Company," of London, liquidated after working three years without profit. The concession of the latter was bought by the newly-organized "Siam Exploring Company," of London, with a capital stock of £100,000. In the southeastern provinces of Siam, on the line of Cambodja, a Parisian syndicate has bought the three gold mines of Wattana, Buckhanon and Sakeo, which were operated formerly by Siamese. French experts are of the opinion that the enterprise will furnish good profits. The French intend to buy also the English gold mine Kabin, which is situated in the neighborhood.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

DUTY ON CALCINED MAGNESITE.—Calcined magnesite assessed at 20% under section 3, but claimed to be dutiable under paragraph 79 at 10% as cement, other than Roman, Portland or hydraulic cement, or under paragraph 81 as gypsum, ground or calcined, or under paragraph 543 of the free list as magnesite. The claim that the merchandise is dutiable under paragraph 79 was sustained.—*H. de Vallior and Knauth, Nachod & Kuhne vs. Collector at New York, United States Board of General Appraisers.*

DUTY ON CORDED ASBESTOS FIBER.—Corded asbestos fiber, assessed at 25% under paragraph 351 as manufacture of asbestos not specially provided for, but claimed to be free under paragraph 388. The Board found the merchandise to be asbestos not subjected to a process of manufacture whatever. The protest was sustained.—*Eimer & Amend vs. Collector at New York, United States Board of General Appraisers.*

CONTRIBUTORY NEGLIGENCE OF MINOR EMPLOYÉ.—Though the employment of boys in mines is forbidden by law, the defense of contributory negligence may be set up in an action by a boy for injuries sustained by reason of such employment.—*Queen vs. Dayton Cal and Iron Company (32 Southwestern Reporter, 460), Supreme Court of Tennessee.*

RULE OF SAFE PLACE FOR MINING.—It is a positive duty which the owner of a mine owes to his employes, after the mine is opened and timbered, to use reasonable care and diligence to see that the timbers are properly set, and to keep them in proper condition and repair, and for this purpose to provide a competent mine boss or foreman, to make timely inspection of the timbers, walls, and roof of the mine.—*Western Coal and Mining Company vs. Ingraham (70 Federal Reporter, 219), United States Circuit Court of Appeals.*

EXTENT OF MINING CLAIM: RIGHT TO FOLLOW DIP.—The laws of the United States provide that locators shall have exclusive right to any vein or lode whose apex lies within the lines of the location, throughout its entire depth, through such vein or lode, in its downward course or dip, extends beyond the side lines of the location, but that the right to the portion outside such lines shall be confined to the portion lying between the points of intersection of the vein or lode with vertical planes dropped from the end of the lines of location, or the continuation of such planes. Where the apex of a vein crosses the east end line of a location and extends to and crosses its south side line, and thence passes into another location, and the dip is from the apex of the vein in the former location southward, crossing the vertical plane of the south side line, such south side line will not be considered as an end line, but the owners of the former location have the right to all ore found on the dip south of their south side line, between the intersection of the vein, with the vertical plane of their east end line and a parallel plane dropped from the point where the apex crosses their south side line.—*Fitzgerald vs. Clark (42 Pacific Reporter, 273), Supreme Court of Montana.*

Tin History in England.—The Phoenicians traded with England for more than 1,100 years before the Christian era. Under the Normans the tin mines produced considerable revenues to the Earls of Cornwall, particularly to Richard, brother of Henry III. A charter and various immunities were granted by Edmund, Earl Richard's brother, who framed the Stannary Laws, laying a duty on the tin. Edward III. confirmed the tinners in their privileges, and erected Cornwall into a dukedom, with which he invested his son, Edward the Black Prince, 1337. Since that time the heirs apparent to the crown of England, if eldest sons, have enjoyed it successively.

Zone Railroad Tariffs.—Since the introduction of the zone tariff in Hungary, the passenger traffic has been continuously increasing. In the year 1889 there were 502 passengers per railway kilometer, which figure during the next four years rose to, respectively, 1,652, 2,185, 2,502, and 21842. The number of passengers on all the railway lines rose from 1888 to 1893 (inclusive) by 22,364,400, or 245%; the gross receipts during the same period having increased 50%. Some alterations in the tariff are about to be made; the third-class tariff remains unaltered; the first-class tariff will be raised, so will the second-class tariff as regards the 13th and 14th zones.

Iron Production in Sweden.—According to official statistics just published, the production of iron and steel in 1894 amounted to 462,809 tons of pig iron, being 9,388 tons more than in 1893. There was a falling off in the out-turn of iron blooms and billets, and also in that of Bessemer steel ingots, the respective quantities of which were 204,517 tons and 803,296 tons; but, on the other hand, there was a great increase in the production of steel ingots by the Siemens-Martin process, the quantity of which was 81,714 tons, being an increase of 1,893 tons. Only 464 tons of crucible cast steel were produced, showing a diminution of 54 tons. Iron and steel bars, 146,786 tons; and iron and steel hoops, 78,092 tons, both show an increase, the last-named description especially, and while the 28,764 tons of wire rods show a falling off, plates, 10,850 tons, show an increase. The blast furnaces turned out an annual mean of 3,192 tons each; and on an average each furnace remained in blast during 257 days in the year. The mean daily out-turn of a furnace was 12.43 tons. Charcoal practically constituted, as heretofore, the only fuel used; but for the production of a small quantity of spiegeleisen a little English coke was added.

West Australian Gold Production in 1895.—The hold which West Australian mining has taken on the British Public may be gauged by the fact that during 1895, 369 companies, with an aggregate nominal capital of £37,450,000, were registered in the United Kingdom, to conduct mining and exploring operations in that colony. As the total capital of mining companies was £90,000,000, it will be seen that West Australia has come

very much to the front. This colony is progressing, not very rapidly perhaps, but as fast it is possible under the many adverse circumstances. The revenue for 1895 was £1,438,717, or £575,038 over that of 1894, while the output of gold is reported as 231,512 oz. valued at £879,748 compared with 207,131 oz. valued at \$ 87,099. Some weeks ago it was mentioned in these columns that Sir John Forrest, the Premier of the Colony, had promised that the government should do something in connection with the water question. He has just made an announcement that this promise is to be fulfilled at an early date by the expenditure of £100,000 in erecting water tanks and in boring operations at five different districts in the Coolgardie gold-field and at two stations on the way to Coolgardie. It is probable, however, that a great deal more will have to be spent on water supply before gold mining becomes a genuine success.

Experiments on Nickel Steel.—Owing to the supposed difficulty of working nickel steel, it has never come into as common use as its merit would seem to warrant. This fact is greatly to be regretted, as the following tests, made by one of our government inspectors thoroughly experienced in this class of work, show conclusively that nickel steel is vastly superior to carbon steel of the same chemical and physical qualities:

	C. '22, S1. '009, P. '064, S. '025, M. '648, COPPER, '658.	NICKEL, 2'154.
Diameter.....	777	797
Area per square inch.....	4742	4989
E. L. gauge.....	26.200	23.000
E. L., per square inch.....	55.250	46.700
Ult. gauge.....	38.500	37.400
Ult. per square inch.....	81.190	74.970
Reduced area.....	28.27	24.10
Per cent. reduction.....	40.3	51.9
Per cent. elongation in 8 inches.....	18.25	17.87

A piece of this material, $1\frac{1}{2}$ in. thick, was forged cold to $\frac{1}{4}$ in., and another piece heated and forged from $1\frac{1}{2}$ ins. square to $\frac{1}{4}$ in., and then allowed to become a blue heat, when it was reduced to a knife edge. Neither showed signs of fracture.

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 JANUARY 14TH, 1896.

- 553,118, 553,119. ELEVATING APPARATUS FOR COAL ORES, ETC. Charles W. Hunt West New Brighton, N. Y. Filed July 22, 1893. Serial No. 481,175. Combination of a boom, its upper and lower members connected together the lower members being formed of angle irons projecting toward each other and forming track rails, a truck with wheels running upon the tracks, the truck projecting downwardly below the rails and having a sheave over which the hoisting chain passes and means for preventing the truck tipping as it is pulled up the tracks upon the boom.
- 553,163. PULVERIZING APPARATUS. Emile Jolicoeur, Lyons, France. Filed August 28th, 1891. Serial No. 531,516. Patented in France January 25th, 1894. No. 235,745. Combination with casing of a centrifugal fan rotating within the same, means for delivering the material to be crushed into the casing, articulated beaters secured upon the periphery of the centrifugal fan, a conduit for carrying away the crushed material by the blast produced by the fan, a deflector at the exit end of the conduit, a movable plate in juxtaposition to the deflector, for regulating the strength of the blast at that point to control the fineness of material discharged from the apparatus and a return conduit for delivering the coarsely crushed material to the casing to be again crushed.

WEEK ENDING JANUARY 21ST, 1896.

- 553,382. GUARD FOR MINES. Charles E. Anderson, Altman, Colo. Filed October 25th 1895. Serial No. 566,858. Combination with a trap door, of a support, a lever or gate fulcrumed on the support, a substantially horizontally disposed stop lever fulcrumed adjacent to the trap door, and carrying a stop adapted to engage the car, and links connecting the levers with the trap door, whereby when the latter is raised, the gate will be closed and the stop will be brought into operative position.
- 553,443. PROCESS OF CARBURIZING WATER-GAS. Thomas L. Willson, New York, N. Y., Assignor to the Electro Gas Company, of West Virginia. Filed December 19th, 1894. Serial No. 532,356. The process consists in having illuminating hydrocarbons, and acetylene gas independently made and added to the water-gas.
- 553,464, 553,465. APPARATUS FOR ELECTROLYZING CHLORIDE SOLUTIONS. Eugene Hermite London, Eng. Assignor of two-thirds to Edward James Paterson and Charles Friend Cooper, same place. Filed June 22d, 1895. Serial No. 553,708. Combination of a battery consisting of a plurality of tubes of insulating materials closed at their ends, a plurality of tubular cathodes arranged respectively in these tubes and containing wire anodes, a series of tubular connections which place the ends of the plurality of tubes in communication from the bottom of each to the top of the next in regular order whereby the liquid flows from one tube to another throughout the series, a liquid supply connected with a tube at one end of the series for introducing the liquid thereinto, and a vessel for receiving the liquid from a tube at the opposite end of the series.

Great Britain.

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

WEEK ENDING DECEMBER 14TH, 1895.

- 15,734 of 1894. W. Pegge, Swansea. A machine for breaking down coal, in which the lateral pressure is given by mechanism similar to lazy tongs.
- 13,617 of 1895. J. Lunt, Warrington. Wash for preventing molten copper from adhering to casting molds, formed by calcining oak bark with vanolia, and mixing resulting ashes with water.
- 17,746 of 1895. H. Gabe, Copenhagen. Apparatus for decomposing calcium carbide, to form acetylene according to the consumption.
- 18,824 of 1895. C. Kaesner, Halle, Germany. Apparatus for decomposing calcium carbide to form acetylene, according to the consumption.

WEEK ENDING DECEMBER 21ST, 1895.

- 16,342, 16,705, of 1894. T. L. Wilson, New York. The production of calcium carbide by heating lime and carbon in an electric furnace.

WEEK ENDING DECEMBER 28TH, 1895.

- 17,145 of 1894. W. B. Priest, London. Forming lead pigments by heating sulphate of lead and calcium hydrate.
- 24,992 of 1894. W. Ackroyd and W. Best, Morely. Using a mica shield in miners' safety lamps.
- 584 of 1895. H. R. Lewis and G. Gelstharp, London. A method of making chlorine incidental to the extraction of zinc from its ores, where hydrochloric acid is used.
- 2,729 of 1895. H. L. Sulman, London. In tanks, holding solution of gold cyanide, automatic apparatus for injecting zinc fumes at stated intervals.
- 2,730 of 1895. H. L. Sulman, London. Purification of zinc fume from oxide.
- 17,020 of 1895. E. L. Oppermann, E. Fischer and C. T. Oppermann, London. The use of mercury vapor for catching float gold.

PERSONAL.

MR. JAMES SHANNON has been appointed superintendent of the Gracey-Woodward furnaces at Clarks-ville, Tenn., in place of Mr. Harvey Woodward, resigned.

MR. ROBERT S. TOWNE, president of the Compania Metallurgica Mexicana, and of the Sombrete Mining Company, has arrived in New York after a protracted visit to Mexico.

MR. A. W. GREENWOOD has been appointed Superintendent and Master Mechanic of the East Broad Top Railroad and Coal Company. The appointment takes effect at once.

MR. WM. J. EVANS, now at Great Falls, Mont., connected with the Bigelow mills, will succeed John Gundry as superintendent of the Tamarack Mining Company's mills at South Lake Linden, Mich.

MR. E. P. HANNAFORD, who has been chief engineer of the Grand Trunk Railway Company for 30 years, has resigned his position. He will be succeeded by Mr. Joseph Hobson, engineer of the southern division, under whose supervision the St. Clair tunnel was constructed.

MR. F. P. MILLS, of Ishpeming, Mich., one of the best known mining men on the Marquette Range, for the past eight years agent of the Cleveland-Cliffs Iron Company, has resigned his position and will remove to Colorado Springs, Colo. Mr. Mills will have charge of important mining properties in Colorado.

MR. DWIGHT M. PHILBIN, general manager of the Duluth, Missabe & Northern Railroad since its iron ore traffic began, has resigned. His record with the company and with the Duluth, South Shore & Atlantic, with which he was formerly connected, places him among the foremost iron ore traffic managers in the country.

We desire the present address of THOMAS J. JONES, Metallurgist, 28 years of age, graduate of the School of Mines, Columbia College, 1890 and until last October, acting Superintendent of the Zinc Works, Pulaski City, Va. Mr. Jones' parents are very anxious to get his address and any of our readers knowing it, are requested to send it to the office of the *Engineering and Mining Journal*.

MR. GEORGE W. MELVILLE, Chief Engineer United States Navy has been nominated by the President to be Engineer-in-Chief of the Navy, with the relative rank of Commodore. Commodore Melville for nearly nine years past has been Chief of the Bureau of Steam Engineering, his remarkable work in that position having won for him two reappointments. The present reappointment will enable him to serve four successive terms at the head of the Bureau, an honor which has never fallen to any other officer of the Navy. Chief Engineer Melville, as is well known, has designed the engines and machinery for nearly all the ships built for the new United States Navy.

OBITUARY.

A. P. COLLINS, superintendent of the Tecumseh (Ala.) Iron Company, was shot and killed recently by unknown parties while on a hunting expedition, a few miles from his home.

B. F. WILSON, well-known in Pittsburg coal circles, died at his home at Osborne Station, Pa., on January 27th, aged 66 years. He was a native of Emsere, England, but at an early age moved with his parents to Wales. At the age of 18 he came to America and settled in Pittsburg. He engaged in the coal business as an employee of the W. H. Brown coal firm. Later, in company with Capt. William Cunningham and Samuel Roberts, he organized the Roberts Coal Company. This organization dissolved seven years ago, Mr. Wilson entering the Little Red Stone Coal Company, and was a director in the Hillsdale and Chartiers Coal Companies. He was also president of the former company.

SOCIETIES AND TECHNICAL SCHOOLS.

ENGINEERS' CLUB OF ST. LOUIS.—A meeting of the club was held on January 22d. Mr. E. J. Spencer read a paper on "Underground Electrical Service."

ENGINEERS' CLUB OF PHILADELPHIA.—A regular meeting of the Club will be held on February 1st. A paper on "The Boilers of Queen Lane Pumping Station" will be read by Mr. John E. Codman. The following officers for 1896 have been elected: President, A. Falkenau; vice-president, Carl Hering; treasurer, George T. Gwilliam; secretary, L. F. Roudinella; directors, Max Livingston, Joseph T. Richards, L. Y. Schermerhorn.

OHIO INSTITUTE OF MINING ENGINEERS.—The annual convention of the institute opened at Columbus on January 22d. The evening programme included the annual address of Prof. Edward Orton, president of the society, encouraging and interesting reports by the secretary and treasurer, and papers by Professor Atwater and John Kane. This society was organized in 1880 and now has a membership of 127. On the next day the members of the institute visited the steel works of King Gilbert & Warner at Steelton.

MONTANA SOCIETY OF CIVIL ENGINEERS.—The annual meeting of the society was held last week in Helena. Officers chosen for the ensuing year were elected as follows: President, John Herron; first vice-president, James M. Page; second vice-president, A. E. Cummings; secretary and librarian, F. J. Smith; treasurer, A. S. Hovey; trustee, Gen. William A. Haven; member of the board of managers of the Association of Engineering Societies, James S. Keerl. A number of interesting papers were read. The report of the officers showed that the society is in a prosperous condition.

MICHIGAN ENGINEERING SOCIETY.—A three days convention of the society was held at Saginaw, Mich., on January 9th. Papers were read as follows: "Holly Race Track," showing its construction and other features, by George W. Doane; "Electrolysis," and its effect upon leaden pipes, by T. P. Whither; "Electric Street Railroad Construction for Cities," by City Engineer R. W. Roberts; "What to Do with the Waste Products of the Lumber Woods," by J. J. Hubbell; "Cleaning Sewers," by G. M. Ames; "Effects of Frost on Cement," by E. W. Muenscher; "Improvement Work on Toledo, Ann Arbor & Northern Railway," by H. E. Riggs; "Amateur Photography," by F. Hodgman; "Basket of Chip," by Dorr Skeels; "Iron and Steel Railroad and Highway Bridges," by W. J. Duncan, and "Timber Preservation," by George L. Wells.

CONNECTICUT CIVIL ENGINEERS' AND SURVEYORS' ASSOCIATION.—The association held its twelfth annual meeting at Hartford on January 14th. The president, William G. Smith, delivered his annual address. The secretary's report showed a membership of 87. The election of officers resulted as follows: President, William G. Smith, of Waterbury; first vice-president, R. A. Cairns, of Waterbury; second vice-president, L. W. Burt, of Hartford; secretary and treasurer, George K. Crandall, of New London. Papers were read as follows: "Geology, Its Relation to Civil Engineering," by Huber L. Card; "Points in Design and Construction of Factory Floors," by Edward O. Goss, and a general review of improved highways in the State by Charles E. Chandler and Edwin P. Angur. The papers were fully discussed.

INDUSTRIAL NOTES.

The steel rail mill of the Bethlehem Iron Company will resume operations on February 3d.

The repairs to the Charlotte Furnace, at Scott-dale, Pa., have been practically completed and the furnace is ready for operation.

Several new soaking pit furnaces are being put in the plant of Jones & Laughlins, Pittsburg, Pa., making four now erected at this place.

During 1895 the plant of the Eagle Iron and Steel Company, of Ironton, O., ran 260 days and turned out 19,000 tons of bar iron and 3,000 tons of sheet.

The Spartansburg (S. C.) Iron Works has been incorporated with a capital stock of \$50,000. W. D. Fowler, C. F. Christopher and others are interested.

At the annual meeting of the Vulcan Iron Works, Toledo, O., the following officers were elected: President, A. L. Backus; vice-president, M. I. Wilcox; secretary, John W. Smith.

The plans have all been prepared for the new plant of the American Weldless Steel Tubing Company, which is to be erected at Toledo, O. As yet, no site has been selected for a location.

The works of the American Tube and Iron Company at Youngstown, O., which have been idle for some time making repairs, have resumed in all departments. The prospects for a long, steady run are reported bright.

The Pacific Coast Borax Company, of San Francisco, Cal., has secured contracts for 6,000 tons of raw borax to be delivered in England during the current year. It is rumored that a scheme is on foot to pool the borax output of the world.

The American Cyanide Manufacturing Company has been incorporated at Trenton, N. J., with a capital stock of \$250,000. The incorporators are Aurelius J. Swaze and William B. Martenis, of Den-ville, N. J.; John H. Dahlke, Jacob V. Carter and Richard T. Drake, of Belvidere, N. J.

Messrs. J. & J. B. Milholland have contracted with the Pittsburg & Bellevue Coal Company, the Chartiers Block Coal Company, the Pennsylvania Salt Manufacturing Company and the Eureka Coal Company for their standard wire rope haulage engines. These four contracts require 8 engines and 8 drums, all having the patent friction drums.

The rolling mills of the Illinois Steel Company, located at South Chicago, Ill., which were shut down on December 31st in order to make extensive repairs in the rail and steel departments, opened on January 28th with no decrease in the force of men. This gives work to 6,000 employees who have been idle since the shut-down.

The Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa., has received a number of awards at the Atlanta Exposition for the handsome exhibit of electrical apparatus made. Several gold and silver medals are among them, which is only what was to be expected from the well-known character of the company's work.

The Southern Pacific Railway has completed the extension of the Coast Division from Santa Margarita, Cal., to Guadalupe. From the latter place to the Los Alamos Viaduct, 18½ miles, the grading has been completed and the track is now being laid. To the Santa Ynez River, 7½ miles, the grading is very nearly completed. When this line is finished as far as Santa Barbara, through Los Angeles, trains will be put on.

The Pittsburg Iron and Steel Company, the new firm which recently purchased the Moorhead & McCleane plant in Pittsburg, went into the hands of a receiver January 28th. There was no opposition to the application, and Judge Buffington, in the United States Circuit Court, appointed the Union Trust Company receiver. The latter gave bonds in \$50,000 for the faithful performance of the trust. The application was filed by the Vega Iron Company, of Duluth, Minn., which company holds a judgment against the defendant firm.

The Clayton Air Compressor Works, New York, report a recent sale of a large duplex steam actuated air compressor of their latest improved pattern to the Pennsylvania Railroad Company, for the various applications of this power in its Altoona shops. The Clayton Works also have orders for several large compressors from other railroad companies for their shop uses of compressed air, and are also doing a large business in smaller compressors, for testing and inflating hose and bicycle tires and for supplying crude oil burners.

The new plant of the Finished Steel Company at Haselton, O., was put in operation last week. The main building is 224 x 62 ft., the pickling department 70 x 20 and the boiler house 55 x 24 ft. Steam and electricity are both employed in operating the plant. Polished shafting is the principal product. P. M. Haas has charge of the plant. The company is capitalized at \$100,000, and its officers are C. Seymour Dutton, president and general manager; H. M. Garlick, vice-president; Thomas E. Davey, secretary and treasurer.

The Falcon Bronze Company's new plant at Youngstown, O., has started up and orders have been booked which will employ it for some time. The product will be brass and bronze castings, particularly such as are required by rolling mills and blast furnaces. At the annual meeting held last week the following directors were elected: G. B. Booth, John Tod, G. A. Doeright, W. W. Bonnell and Richard Garlick. The directors elected as officers: President, G. B. Booth; secretary and treasurer, John Tod; general superintendent, G. A. Doeright.

The suit brought by W. J. Rainey, the coke operator, against the Isabella Furnace Company, Pittsburg, ended in the United States Circuit Court, at New York, in a verdict for the plaintiff for \$34,800. The suit was for \$75,000 damages. W. J. Rainey made a contract with the Isabella Furnace Company immediately prior to the strike of 1894 for coke at 90c. per ton; subject to any market advance. During the strike coke sold as high as \$3.50 a ton. A portion of the time Rainey was practically the only operator in the region able to run his plants. The dispute hinged on what was the market price of coke during the strike period. In this connection the defendants raised the question whether Rainey, as the sole producer, could set a market price. The plaintiff contended that the market price is what coke will bring, and that the fact of its being sold by one person or many was not material.

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.

Senator Dubois, of Idaho, has introduced a bill in Congress, which provides that 25% of the fund derived from the sale of mineral lands by the United States, shall be divided among the States of California, Oregon, Washington, Montana, Idaho, Nevada, Wyoming, Colorado and South Dakota for the support of schools of mines in those States.

ALASKA.

ALASKA MEXICAN GOLD MINING COMPANY.—This company reports the clean-up for the month of December as follows: Period since last return, 31 days; bullion shipment, \$26,837; ore milled, 7,173 tons; sulphurets treated, 124 tons; of bullion there came from sulphurets, \$9,318; working expenses, \$13,776.

CALIFORNIA.

CALIFORNIA DEBRIS COMMISSION.—The Commission has given authority to the owners of the Goyan mine, near Diamond Springs, El Dorado County, to erect a dam for impounding debris. The following mines, whose owners had already built dams,

have been given permits to do hydraulic mining: Manzanita mine, near San Juan, Nevada County; Jay Bird mine, near Camptonville, Yuba County; Kanaka Flat mine, near Spanish Ranch, Plumas County; Adkin's mine, near Ono, Shasta County.

CALIFORNIA MINERS' ASSOCIATION.—This Association is asking Congress to appropriate, at its present session, \$1,250,000 for the purpose of erecting two or more dams to supplement the dams for impounding debris from the hydraulic mines that have been or will be built by private capital, and Hon. Tiley L. Ford, of the Executive Committee of the association, is now on his way to Washington to urge the passage of a bill of this character.

BUTTE COUNTY.

(From Our Special Correspondent.)

GOLD BANK.—The big tunnel in this mine, in the Forbestown District, is in 1,200 ft. and the vein has been cut at a point about 2,400 ft. from the surface level. The showing is better than in the upper workings, the vein, it is reported, being larger and richer.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

GWIN.—At this mine on the Mother Lode, three miles west of Mokelumne Hill, a 7-ft. vein of good ore has been discovered at the 1,000-ft. level.

HUMBOLDT COUNTY.

(From Our Special Correspondent.)

HUNGRY HILL.—The owners of this mine on Knownothing Creek have just completed a 10-stamp mill. A tunnel $6\frac{1}{2} \times 5$ ft. is being run.

MARIPOSA COUNTY.

(From Our Special Correspondent.)

MERCED GOLD MINING COMPANY.—At this company's mines on Black Creek, west of Coulterville, work is being rapidly pushed by a large force of men. The foundations of the 40-stamp mill are solid rock. Large ore bins are being erected and the 100 H. P. engine is being set.

MONO COUNTY.

BODIE CONSOLIDATED MINING COMPANY.—The superintendent's latest letter says that for the week ending January 19th the east crosscut from the north drift, 200 level, was extended 7 ft.; face in porphyry. North drift from above crosscut was extended 9 ft. Have about 3 ft. of low-grade quartz in the face. South drift, same point, was extended 10 ft. The quartz in the face is about 18 in. wide, of low grade. East crosscut from Gildea vein, 300 level, was extended 21 ft. Face is in porphyry.

PLACER COUNTY.

(From Our Special Correspondent.)

RISING SUN.—At this mine, near Colfax, a bed-rock tunnel has been started from a point near Bear River, to tap the old workings at about the 500-ft. level. The shaft through which the mine is now being worked is down 900 ft.

SAN DIEGO COUNTY.

(From Our Special Correspondent.)

GOLDEN CROSS MINING AND MILLING COMPANY.—This company which owns the Golden Cross, Golden Crown, Golden Queen, General Miles, Sutton, Black Hawk and Union mines, has gone into the hands of a receiver. At a meeting of the creditors of the company a deed of trust was executed to James Spiers and Joseph Scloss, of San Francisco, and L. W. Blinn, J. M. Johnston, A. Haas and C. Seligman, of Los Angeles. The company will have 15 months to settle its indebtedness and redeem the property. In case it defaults in payments, the property will be sold at public auction. The trustees are now in possession. The indebtedness is more than \$125,000. It is thought that the financial embarrassment is only temporary and that the old management will be in possession again in a few months as the mines are good producers and the cost of mining and milling is very low.

SHENANDOAH.—This mine, in the Mesa Grande district, 10 miles north of the Santa Ysabel Ranch, is operating a 5 stamp mill on good ore. The shaft is down about 250 ft.

COLORADO.

BOULDER COUNTY.

(From Our Special Correspondent.)

AMERICAN EAGLE.—This mine is reported to have been recently sold to an English syndicate whose representative is expected here soon to close up the deal and begin operations. Mr. M. Russell, of California, one of the former owners, is in the city awaiting the arrival of the syndicate's representative.

CYCLONE.—This property was sold on January 25th by Monell & Murray to W. H. Bellows, of Victor, Colo., for \$8,000. The new owner is an experienced mining man and will begin development at once.

DENVER.—A strike is reported from this property at a depth of 50 ft. in the shaft. The ore was found in a small streak almost at the surface, which opened out into a large body early this week. The Denver is being operated by Al. Bowen.

ECLIPSE.—The workings of this property are being thoroughly repaired preparatory to an early resumption of operations. It is expected that a crosscut will soon be run from a point near the mill site which will cut the Eclipse lode 150 ft. below its present workings. The vein in the old tunnel is 8 ft. wide.

GOLDEN EAGLE.—W. M. Reynolds, of New York, arrived in the city this week, and is now negotiating with the owner for control of this property.

HOMESTAKE.—Frank Doyle, of Denver, who has a lease and bond on this property, will begin operations at once.

I. X. L.—This mine, situated at Magnolia, has resumed operations under the management of Mr. J. A. Teagarten, and is employing two shifts. The shaft is being sunk and will soon be started, and the extensive ore bodies will be thoroughly developed. Mr. Teagarten claims to have invented a new chemical process for treating the ore cheaply, and will put in a plant this spring.

LITTLE JENNIE.—New machinery has been put in and the shaft is being sunk to a greater depth. Drifts are being run at the 50-ft. level, and others will be driven when the shaft reaches the 100 ft. notch.

LOGAN.—This mine is being worked under lease by Stephen Hoyle and M. Hunter, who are following a good sized streak of very rich gold ore.

ORPHAN BOY EXTENSION.—Gen. J. N. Ives was in the city this week from Kansas, looking after his property and preparing for extensive developments during the summer.

RED MONSTER.—This property, a new discovery, near Nederland, has just shown a large body of rich gold ore at a depth of 10 ft. A large force of men has been put on, and necessary buildings are in course of erection.

CLEAR CREEK COUNTY.

ALIUNDE.—The 850-ft. level has been cleaned out preparatory to driving it westward. Below this, for 250 ft., water is bothersome and no effort will be made at present to drain it.

BALD EAGLE.—An important strike of galena has been made in the first level below the adit. The shaft is to be sunk at once and at the same time the adit will be drifted on.

BELMAN.—The New York owners have decided upon sinking the shaft by contract and are now asking for bids. The shaft is down 300 ft. and in a drift, at 160 ft., a big body of ore, suitable for concentration, opened out.

CHAMBER OF COMMERCE.—Idaho Springs has just organized a board for the purpose of advertising the resources of Clear Creek County.

CROWN POINT & VIRGINIA.—This mine, near Idaho Springs, has an increased capitalization for the purpose of doing development work. The stock is being listed on the new Chicago exchange.

GERMAN.—This property, at Idaho Springs, is receiving considerable attention. The shaft is being sunk to a depth of 370 ft., from which levels will be run. A good streak of ore, carrying good values in gold, is showing.

IDAHO SPRINGS.—An important action has been brought in the Federal Court at Denver by the United States Attorney to annul a patent issued on about 200 acres of very valuable ground adjoining the eastern town limits of Idaho Springs. It is claimed that the land in question was taken up fraudulently in 1867 for agricultural purposes when it was known to be placer ground. The defendants are given as the Placer and Tile Company, the Silver Age Mining and Milling Company, the Virginia Mining and Milling Company, the Union Pacific Railroad, the Colorado Central Railroad, the Denver & Gulf road, Frank Trumbull, receiver, and Frank-Wilson.

SEATON.—In sinking and drifting another pocket of ore has been struck, a carload just shipped netting \$190 a ton.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

BLUE BIRD.—The lessees of this property are all doing well. The Bartlett lease employs 30 men on a small strip of ground and are breaking about two cars a week of high grade ore.

CALEDONIA.—This mine, at Mound City, is being worked by the well-known mining firm of McMasters Brothers, who have been successful in Clear Creek and Gilpin counties of this State. Already a large plant is being erected, and also suitable buildings for the sorting of ore, etc. This property produced, when worked previously, about \$25,000. The shaft has been sunk 200 ft. and levels extended north 250 ft. The ore-shoot has been hitherto largely confined to the phonolite dike which traverses the granite.

CRATER GOLD MINING COMPANY.—The Deerhorn, on Globe Hill, owned by this company, has a shaft sunk 600 ft. and prospecting from the bottom of the shaft is now being conducted in earnest.

GOLD DOLLAR.—The Gold Dollar Tunnel has pierced Beacon Hill 400 ft. The breast is now in hard rock, a close-grained granite. It is anticipated that at 470 ft. the contact will be met, when better progress will be made. The rate of progress has been considered fairly satisfactory. The machine drills are being worked by three shifts. At 930 ft. the Gold Dollar shoot is expected to be found.

JUBILEE.—This mine is on the west slope of Globe Hill and bids fair to do well. A steam hoist has been erected and the shaft timbered all the way. The appearance of the vein justifies such an expenditure. The lessees are well-known Gilpin County miners.

NIGHTHAWK.—This is a small fraction adjoining

the Buena Vista on Bull Hill. It is being worked by the owner. The shaft has been sunk 200 ft. and crosscuts will be extended east and west in hopes of striking an ore shoot.

PRINCE ALBERT.—This Beacon Hill property is being actively worked by the lessee. The shipments average nearly 20 tons per day of about 2-oz. ore. The vein at the 75-ft. level south is 6 ft. wide.

REBECCA MINING COMPANY, LIMITED.—The C. O. D., in Poverty Gulch, owned by this company, of Paris, is still being actively worked, and the output increased to 100 tons a week. The new shaft has been sunk 330 ft., and at 350 ft. a station is to be cut, and the ore shoot will be intersected. The new ore shoot in the old workings has been proved by a winze sunk 50 ft. below the fourth level. The mine gives steady employment to 30 men.

RENO.—This mine, situated in Poverty Gulch, is being worked under lease by Mr. J. J. Brown, of Leadville, one of the owners of the Little Johnnie mine. The tunnel has been extended into the hill 325 ft. and 5 men are at work driving it. Although the tunnel is not being driven on the vein yet rich assays are often met with.

SACRAMENTO.—This Bull Hill mine is being equipped with a steam hoist by the lessee, J. K. Miller, who intends to sink the present 90-ft. shaft to a depth of 200 ft. The vein warrants such an expenditure.

TRACHYTE.—This property, on Bull Hill, is being vigorously worked. The shaft has been sunk 100 ft. and a drift has been extended on the regular vein, north, and drifts have been extended 100 ft. on a cross vein, which shows marked improvement over a few days ago. Assays as high as \$172 were recently found, the character of the seams in the rock being largely fluo- and telluride.

LAKE COUNTY.

(From Our Special Correspondent.)

ALPS CONSOLIDATION.—At a depth of 150 ft., a number of good streaks of ore have been encountered and the ground gives indication of heavy mineralization.

CHIP & TURBOT.—About 1,000 tons a month are being shipped from the Turbot and 300 tons from the Chip. In the latter shaft a rich streak has been followed for some time, but has not yet opened up into any body.

CORONADO.—Development work is the order of the day. Connections are being made with the Sixth street shaft and the two drifts will meet in a few days. This will be very important as it will give the workmen better air and at the same time facilitate the handling of the ores from both properties.

GOLD CONTACT COMPANY.—New York capitalists are at the head of this new company which under the management of Mr. Geo. Campion is to be the re-organization of the old Gold Belt Leasing Company. A large amount of development work will be carried on in the spring. The properties consist of the Hermann, Hugh and other ground well located in South Evans Gulch.

HOLLAND MINING COMPANY.—Articles of incorporation were filed this week. The capital stock is \$100,000 and the incorporators are F. F. Struby, J. C. Heinz, T. S. Schlessinger. These, with Denis Sheedy and G. H. Estabrook, constitute the Board of Directors.

SPOT CASH.—Development work is resulting favorably. From 10 to 20 tons of gold are shipped daily.

OURAY COUNTY.

(From Our Special Correspondent.)

BENDIGO.—Ex-Mayor Pierson, of Ouray, is working a small force on this property, and is taking out some rich ore.

CENTER.—A carload of high-grade gold ore was shipped last week from this property, by the lessees.

INDIANA.—Logan Sommers and J. G. Gibson have struck a body of ore in this property which runs 225 oz. silver, \$10 in gold and a large percentage in lead. Shipping will commence at once.

NEVADA.—Clamp & Kresher have struck a large body of ore, and are now regular shippers.

PORTLAND.—A large body of high-grade ore has been encountered on this property, and shipping will begin immediately.

REVENUE MILL.—The management is putting in the new McCoy process in this mill.

SLIDE.—T. W. Emerson has reopened the Slide and commenced shipping. A force of 12 men is at work.

WHEEL OF FORTUNE.—A rich gold strike was made in this property last week. The extent is not yet known, as developments have not been made.

YANKEE GIRL.—This property has resumed operations after an idleness of nearly six months.

SAN MIGUEL COUNTY.

BRADLEY & PIONEER.—This property has been sold for \$75,000 by Messrs. Hart, Lynch and Carson, lessees, to John C. Rice and associates, of Denver, who have organized a company under the laws of Colorado, which will be known as the Bradley & Pioneer Mining and Milling Company. The buyers have also purchased the Union Placer Mill site at the mouth of Bear Creek, on which they propose to erect a concentrating mill. A force of men will be employed all winter developing and opening up new

ore bodies, and shipments will be continued. Paying ore is being extracted from a greater depth in the trachyte, says the *Telluride Journal*, than at any mine in either Marshall or Savage basin.

CARRIBEAU & MONTEZUMA.—There are nearly 40 men at work contracting and leasing on the upper workings of the Carribeau & Montezuma mine, at Ophir. A few cars of the best ore are shipped every month, which nets the lessees a fair profit, its gross value being about \$65 per ton in silver and lead, says the *Telluride Journal*. It is understood that Manager Charles S. Newton intends erecting this spring a Crooke concentrating mill.

GOLD KING CONSOLIDATED MINING COMPANY.—The mine and mill are running regularly and employing about the same number of men as during the summer and fall, says the *Telluride Journal*. Only a part of the 40-stamp mill is working, and on an average 60 tons of ore are treated per day. The Gold King quartz comes nearer being free milling than that of any other property in the county.

IRON CAP.—The owners of this mine are preparing to commence shipping a car of ore per day from the mine.

SUFFOLK-GLOBE MINING COMPANY.—Operations ceased on the upper or old working of the Suffolk at Ophir, about the first of the year and the miners were transferred to the Red Jacket, which has since been closed down also, on account of the tramway not working properly. The company has leased the old or upper workings of the Suffolk. Most of the lessees are extending drifts, taking out and stacking in the stopes the ore encountered, which will be treated at the company's mill in the Spring. It is reported that the company will build a large addition to its 40 stamp mill next summer, increasing its capacity to 100 stamps. When the Red Jacket starts up again next month it will be worked through the Red Jacket tunnel connecting the mine with the upper terminal of the tramway. In the breast of the levels on this property there is from 8 to 12 ft. of milling ore. A crosscut tunnel is in progress from the Red Jacket to the Suffolk vein, which will cut it at a depth of 700 ft. below the present workings. When the intersection is made the Suffolk can then be worked the year round through the underground workings.

FLORIDA.

COMPAGNIE GENERAL DE PHOSPHATE DE LA FLORIDE.—This company has filed articles of incorporation with a capital stock of \$1,000,000, with A. A. Riche, Constant Charmeaux, Gustave Tavernier, Francisque Durer, Etienne Solomon, M. G. Riche, Ch. Riche and Edgar Pierce Allen as incorporators. Their lands are mainly in Alachua and Levy counties. Offices will be in Ocala, and Paris, France.

PHOSPHATE AGREEMENT.—A number of the hard-rock miners have agreed to shut down their works and stop mining for six months, from January 1st, provided three-fourths of all the operators will join in the agreement.

PHOSPHATE SHIPMENTS.—The shipments for the year ending December 31st are reported by the *American Fertilizer* as below:

Port.	Tons.
Savannah.....	80,427
Brunswick.....	23,484
Fernandina.....	137,435
Port Tampa.....	61,154
Total.....	302,500

This total compares with 304,296 tons in 1894 showing a decrease of 1,796 tons. These figures are applicable only to hard rock, and do not include shipments of pebble.

MARION COUNTY.

CHICAGO-FLORIDA PHOSPHATE COMPANY.—All lands and equipments of this company were sold under execution in Ocala recently, and purchased for \$30,000 by Charles L. Billings, it is stated, represents the bondholders and will reorganize the company.

LIVE OAK PHOSPHATE COMPANY.—This company is erecting a plant at the mines at Elnwood, for grinding rock.

GEORGIA.

PAULDING COUNTY.

YORKVILLE GOLD MINING COMPANY.—This company, minimum capital \$50,000, has been incorporated to develop mines near Dallas. The bulk of capital has been furnished by citizens of Detroit, Mich., whose proxies were held by H. C. Wisdom and William M. Courts, of that city. Mr. Courts has been developing the properties as trustee for the owners for some time, but has deeded the mines to the new company. He will continue as general manager. The principal office is in Atlanta, the mill and plant at the mines, near Dallas.

IDAHO.

ADA COUNTY.

VIOLA.—Regarding the recent strike at this property, which is the southern extension of the Black Hornet, advices from Boise City state that the drift now shows 6 ft. of ore running from \$10 to \$15 per ton in gold.

SHOSHONE COUNTY.

(From an Occasional Correspondent.)

PIERCE CITY.—Placers were discovered here in 1859 and since then they have been worked continuously, never employing less than 500 men; in latter years principally Chinese. The formation is granite intersected by porphyry and syenite reefs. The indica-

tions are that the gold is local, every gulch carrying a gold of different fineness running from \$14 per oz. to \$19.50. It has only been within the last 5 years that there has been any attempt to develop the quartz lodes of the camp. At present there are 3 mills in the district, two of which are in active operation, one on the Crescent Gold Mining and Milling Company property, and one on the Idaho, owned by Messrs. Miller & Sevey. The former is a small ledge of high-grade ore, averaging about \$90 to the ton. The Idaho ledge is about 3 ft. wide and runs from \$20 to \$30 a ton; picked rock going as high as \$200. There are also numerous small properties with a little development work done on them, but not enough to show any real value, most of the owners not being in circumstances to do more than the annual assessment work.

INDIANA.

COAL MINERS' CONVENTION.—The result of the convention, recently held at Terre Haute, threatens to be a strike. So far the operators' association has taken no official cognizance of the miners' demand for increased wages. The operators claim that the coal market is glutted; that the demand is weak, and that the price is low. The scale demanded by the miners is an advance of 6c., and Joseph Martin, president of the Park County Coal Company, says the men have chosen the worst time for making such a request. He predicts that if a strike results wages will go lower instead of higher. Over 3,500 Indiana miners and several scores of operators are interested in the outcome of the situation.

KANSAS.

CHEROKEE COUNTY.

GALENA SMELTING COMPANY.—This company, of Weir City, has been organized by landowners who are taking the initiative with the object of getting all landowners having ore-producing land to become members of, and take stock in, the corporation; and to agree also to sell all their ore for a period of ten years to any smelting company who will erect a ten-block smelter at Galena and buy the ore on an assay basis.

KENTUCKY.

BRADFORD & KENTUCKY OIL COMPANY.—This company has been organized in Bradford, Pa. It has secured leases on 25,000 acres of land in Pulaski County, Ky., and Scott County, Tenn., and drilling will be commenced at once. Mr. H. S. Southard is the manager. Another oil company was also recently organized in Bradford, known as the Pennsylvania Oil Company, and will operate in Wayne County, where it holds leases on 14,000 acres of land.

BOYD COUNTY.

ASHLAND COAL AND IRON COMPANY.—The sale of 6,600 acres of coal lands located near Ashland, Ky., was concluded recently, the tract passing from the Means & Russell Iron Company to the Ashland Coal and Iron Company. This coal land will be developed at no very distant date.

MICHIGAN.

COPPER.

CENTENNIAL MINING COMPANY.—It is announced that the reorganization committee will bring suit in New York at once to compel the management to show the company's books. The management offered copies, but the originals are preferred. The New York interest, it is said, made the committee a proposition which the latter could not accept.

FRANKLIN MINING COMPANY.—The Franklin mine resumed hoisting on January 25th, having been idle for 62 days. The new buildings were completed a month ago, but delay was experienced in securing rebuilding of hoisting appliances.

TAMARACK MINING COMPANY.—This company's output of mineral for the month ending January 12th was approximately 1,140 tons, or practically the same as for the past three months.

IRON—GOGEBIC RANGE.

AURORA IRON MINING COMPANY.—The recently elected officers of this company are: President and treasurer, Charles F. Rand; secretary and general solicitor, Howard Morris; directors, Fred T. Gates, James C. Colgate, Charles L. Colby, Charles F. Rand, of New York, Edwin H. Abbot, of Cambridge, Mass., L. H. Severance, of Cleveland, O., and W. J. Olcott, of Bessemer, Mich.

IRON—MENOMINEE RANGE.

CHAPIN MINING COMPANY.—In accordance with plans to secure control of the Hamilton and Ludington mines, this company increased its capital to \$1,000,000 at the annual meeting in Cleveland, recently. Directors and officers of the company are as they were last year. M. A. Hanna is president, J. C. Hanna vice-president, and A. M. Robbins, of the firm of M. A. Hanna & Company, secretary.

MINNESOTA.

(From Our Special Correspondent.)

The Duluth and Winnipeg road is to try the use of gondola cars for ore carrying, and has ordered 600 of them from the Michigan Peninsular Car Company of Detroit. They are adapted for use both as ore and timber cars, and with the idea that they are to be used in one kind of business in summer and another in winter. The experiment will be watched with curiosity by mining men and railway officers, none of whom have cared to make the trial themselves.

MERRITT VS. ROCKEFELLER.—This week the \$940,000 judgment of Alfred Merritt, of Duluth, against John D. Rockefeller, is under review by the United

States Court of Appeals, sitting at St. Louis. The judgment, with costs and interest to the present time, amounts to more than \$1,000,000. The Court of Appeals is final adjudicator in the case, and its decision will be waited with the deepest interest in Minnesota, where there are suits aggregating about \$4,000,000, ready to be brought on precisely the same basis, if this first one is successful. It is believed that negotiations for a settlement, in case Merritt wins, have already been started with the rest of the Merritt family who can claim the same direct representation.

The statement has been made by local papers of the head of Lake Superior that the Duluth and Winnipeg road was preparing for handling 500 cars of ore daily during the season. The road will not handle a fourth of that amount, as a matter of fact.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

FRANKLIN MINING COMPANY.—This company is also indignant at the action of the committee at Cleveland, which placed its allotment at 250,000 tons. The Franklin group has been making arrangements to mine very much more than this.

HALE-PALMER EXPLORATIONS.—On section 34, 58-17, on six 40-acre tracts under lease from the Security Land Company, Messrs. Hale and Palmer, of Duluth, have found a body of ore 1,600 ft. in length, and as much as 900 ft. wide in parts. It is of considerable depth, and is of excellent grade. The Genoa mine, of the Minnesota Iron Company, now being opened for business, is in this same section. The Genoa is one of the best Bessemer properties on the Mesabi and the Hale-Palmer assays much the same.

MAHONING ORE COMPANY.—At the stripping of this company over 400,000 tons of ore have already been laid bare by the operations of the present winter. The company has completed large and commodious buildings and is prepared for the future in a very comfortable way.

MESABI CHIEF IRON COMPANY.—This company has given an option on its three 40-acre tracts in the northwest quarter of section 23, town 57-22, to the Lake Superior Consolidated mines for three and a half months, at \$150,000, for which the Consolidated has paid down \$15,000. The company has now one drill at work on the mine, and will add others soon, with the intention of thoroughly proving the ore deposit before the expiration of the bond. Among those who know the mine it is believed that the option will be taken up and the mine passed into the Rockefeller hands. Some \$8,000 was spent by the Mesabi Chief for exploration two years ago, but the work was not properly done, though it showed up a large body of excellent ore of Bessemer grade. It is generally believed that the deposit is one of the large ones of the range. The land is owned by the State, and is held by the Chief company on a State lease at 25c. a ton. The company retains 120 acres in the immediate vicinity, which it will explore. The purchase of this mine will necessitate the building of 10 miles of road from Hibbing west. The Mesabi Chief is the westernmost deposit of merchantable ore yet found on the Mesabi.

Explorations on the 8 forties lately bought by Robinson, Cheesebrough and others in section 11, 57-210, and for which they paid \$100,000, as stated a few weeks ago in these columns, have opened rich bodies of Bessemer ore not far from 200 ft. thick. As a result of their explorations, they have now optioned one of the eight 40-acre tracts at \$140,000, and a sale is probable. These lands lie just south of the Mahoning Ore Company's southerly deposits.

MINNESOTA IRON COMPANY.—This company is exploring lands west of Mountain Iron mine, and finding valuable ore bodies.

OLIVER MINING COMPANY.—This company is the chief stumbling block to an agreement on the Bessemer pool basis for the coming year. It mined last year about 500,000 tons and the committee wants to cut it down to less than its minimum, which Mr. Carnegie and his associates refuse to permit.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

I KNOW.—This mine, in Leadville Hollow, near Joplin, is one of the many in the district that has earned good profit for its owners. The plant was started in on June 1st, 1895, and seven months later it had paid 300% dividends on the capital stock. The first dividend was declared on June 16th, and between that time and the last of the year 10 others were declared. A detailed report of operations follows: Number of days hoisting, 177; dirt hoisted, 23,111,860 lbs.; zinc ore produced, 2,653,140 lbs.; lead ore produced, 71,460 lbs.; per cent. of zinc ore in dirt, 9.44; per cent. of lead ore in dirt, 0.25; total per cent. of ore in dirt, 9.69. Gross revenue, less 20% royalty, \$25,341; operating expenses, \$8,258; net revenue, \$17,082.

BEASLEY.—This mine, on the Center Creek, is equipped with a complete concentrating plant and has made the best record of any mine in the district, having been a steady producer for 18 years, making an output of from 25 to 50 tons of zinc ore per week. There is still good ore in the bottom of the shaft that will be worked as soon as the water is lowered, but at present work is being done from a scaffold, mining the ore that was left in roofs of the drifts.

JOPLIN ORE MARKET.—The storm restricted the output somewhat last week, and the turn in was light. The buyers were after high grade ores, and

the sales made were at fairly satisfactory prices. The average price paid for jack in Joplin was about \$24 per ton. In other camps it ranged a dollar less. At Galena the average was about \$21 per ton. Lead ore sold at \$16 per 1,000, with 50c. added for hauling. The turn-in was as follows: Joplin, zinc, 1,011,420 lbs.; lead, 223,670 lbs.; value, \$15,325. Webb City, zinc, 339,500 lbs.; lead, 19,310 lbs.; value, \$4,062. Cartersville, zinc, 793,160 lbs.; lead, 114,170 lbs.; value, \$10,593. Zincite, zinc, fine, 7,220 lbs.; value, \$83. Galena, Kan., zinc, 1,700,000 lbs.; lead, 300,000 lbs.; value, \$24,595. Spring City, zinc, 25,480 lbs.; lead, 3,870 lbs.; value, \$354. Oronogo, zinc, 37,740 lbs.; lead, 9,010 lbs.; value, \$321. District totals, zinc, 4,004,520 lbs.; lead, 670,032 lbs.; value, \$55,834.

OUTPUT FOR 1895.—The figures given in the statement which follows are taken from the weekly reports of the mines published in the *Engineering and Mining Journal*. They make a splendid showing for the great industry of Southwest Missouri and Southeast Kansas. January, zinc, 16,000,380 lbs.; lead, 5,237,180 lbs.; value \$219,786. February, zinc, 16,876,600 lbs.; lead 3,512,810 lbs.; value \$206,561. March, zinc, 25,547,930 lbs.; lead, 3,983,400 lbs.; value \$282,233. April, zinc, 21,596,000 lbs.; lead, 4,504,230 lbs.; value \$270,574. May, zinc, 25,142,840 lbs.; lead 4,699,320 lbs.; value \$292,860. June, zinc, 33,673,090 lbs.; lead, 6,208,770 lbs.; value \$435,897. July, zinc, 21,960,300 lbs.; lead 5,251,350 lbs.; value \$398,193. August, zinc, 24,248,590 lbs.; lead, 5,621,050 lbs.; value \$324,625. September, zinc, 24,542,730 lbs.; lead 4,857,110 lbs.; value \$406,734. October, zinc, 23,412,300 lbs.; lead 4,120,110 lbs.; value \$334,144. November, zinc, 23,431,550 lbs.; lead, 4,787,930 lbs.; value \$332,560. December, zinc, 21,553,130 lbs.; lead, 3,856,300 lbs.; value \$267,803. Total for the year, zinc, 278,046,510 lbs.; lead, 56,674,720 lbs.; value \$5,771,980.

MONTANA.

DEER LODGE COUNTY.

PRIZE.—The new 1000-ft. steam hoist and boiler at this mine at Granite Butte, started work last week. There are 26 men employed at present, and the work at the mine is progressing favorably. Last week the management shipped to Helena a gold bar, the result of 14 days' run, which was the largest ever produced at that mine in the same length of time.

GRANITE COUNTY.

(From Our Special Correspondent.)

ROYAL.—The strike made a short time since on the Royal seems have opened up a large body of ore. That is the conclusion from the explorations made.

WYMAS.—This Wyman claim, near Bearmouth, is prospecting well, a rich body of gold ore being uncovered, the extent of which is not known.

JEFFERSON COUNTY.

(From Our Special Correspondent.)

BASIN DISTRICT.—At Basin the Hope people are adding to their force of men, and the Basin Mining Company is timbering the shaft of the Katie, that was burned out last August.

COLUMBIA.—This mine, in the southern part of the county, which is owned by Messrs. D. McNeill, Berendes and Aaron, has been bonded to O-car Van Tassel and Chas. Hoffman, of Bozeman. The bond is for one year and there is to be a certain amount of development work done for each month of its continuance. The price at which the property will go if the bond is taken up is \$25,000.

GRANITE MOUNTAIN GOLD MINING COMPANY.—This company, of Butte, has purchased the Ursa Major and four other claims 15 miles northeast of Butte, which is regarded as valuable property. The company expects to put machinery upon it, and open up the claims this spring.

HOMESTAKE.—The water has been drawn out of this mine in Park Canyon, and the Glass Brothers are proceeding to sink on the property.

MINAH.—Two new Bruckner furnaces of a capacity of 10 tons each will be added to the Minah concentrator. When they are in the concentrator will be able to handle about 40 tons of ore daily. In the mine it is estimated that there are 50,000 tons of ore in sight.

LEWIS & CLARKE COUNTY.

(From Our Special Correspondent.)

EAST HELENA SMELTER.—There is talk of a new smelter at East Helena. This is probably only talk. The occasion of building a copper smelter at East Helena is said to be the opening of the Castle district to the world by a railroad now being constructed to that point. While there are copper prospects near Castle, and good ones, too, there are no copper mines there that could produce sufficient copper ore to operate the smallest copper smelter. I believe the lead ores of Castle will be sufficient to make the railroad a paying proposition, but it will be sometime before the copper ores there would add to the tonnage of the road. There are many copper prospects in Montana, but few outside of Butte are sufficiently developed to produce ore in any quantities.

ST. LOUIS MINING AND MILLING COMPANY.—This company is making preparations to build a mill on Trinity Gulch as soon as the weather permits.

MADISON COUNTY.

(From Our Special Correspondent.)

BALD MOUNTAIN.—It is reported that the mills recently erected on Bald Mountain by the Little Kid and California companies are running on good ore. The Little Kid Company expects to add a

cyanide plant. The Revenue and Monitor near by are running steadily and their production is said to be satisfactory. They are all gold properties.

EASTERLY.—A big strike in the Easterly near Virginia City is reported, a new vein of fine ore being opened up. It is also reported that the Granite Mountain people of St. Louis are looking at the property with a view of purchasing.

MAJOR HENRY ELLING, of Virginia City, the commissioner from Montana to the Mexican National Exposition, is making arrangements to have Montana mines and minerals exhibited at that exposition. He has already had the promise that the minerals and ores of Madison County shall be well represented.

MEAGHER COUNTY.

MAGPIE GULCH.—Work on the placer mines in Magpie Gulch is progressing nicely with good results, and the camp promises to yield quite a nice lot of gold during the coming summer.

BIG SEVEN.—A car of ore was shipped from the Big Seven last week that was probably the richest ever produced in Neihart. It yielded \$22,000 to the owners. This mine is located near the Benton group and is being managed by E. J. Barker, who with U. L. S. Barker, own the property.

BROADWATER.—This mine at Neihart, has finished its shaft from the second to the lower or 470-ft. level. It is in good ore nearly the entire way down. These mines are working more men and shipping more ore than they have for some months.

GALT.—This mine is shipping some very good ore, of which it has uncovered considerable quantities. The mine is employing 30 men.

MURRAY DISTRICT.—Several sacks of ore from this copper district have recently been sent to Butte to be tested, and it is hoped Butte capital may interest itself in the development of these mines.

NEVADA.—The shaft is down 160 ft., and sufficient ore has been taken out during sinking to pay the expenses. A rich vein of ore, running \$3.50 a ton has recently been uncovered. This mine belongs to Max Sklower and others in White Sulphur Springs.

(From Our Special Correspondent.)

DUCK CREEK.—More rich ore bodies have been exposed in the claims along Duck Creek.

NEIHART.—More men are now employed in Neihart than at any time during the last two years. Many of them are employed on development work. It is expected that the shipments of ore will soon be increased.

RAVALLI COUNTY.

(From Our Special Correspondent.)

A gold district has been discovered on the South Fork of the Bitter Root River. A number of claims have been located and samples of ore have run high. There has not been sufficient development on any mine in the district to show its worth, but the prospects indicate that some good mines will be opened there. A 13-ft. vein of coal has been exposed some five miles west of this district.

SILVER BOW COUNTY.

(From Our Special Correspondent.)

ALICE MINING COMPANY.—At a meeting of this company, at Salt Lake, the president stated that the mine is in better condition financially than it has been for some years and, while not being in shape to pay dividends, the old debt had been considerably reduced during the past year. The mine is running a 40-stamp mill, while the interior workings are lea- ed, with the exception of a small portion of the mine which the company still continues to work.

CHILDE HAROLD.—Patrick Mullins and Charles Johnson, lessees, have struck the ledge at a depth of 100 ft. They will continue to sink, as the shoot of ore gave every indication of being permanent. They are said to have refused \$25,000 for their lease and bond.

LEXINGTON.—It is reported that the Lexington mine will soon again be operated on day's pay instead of by tributing. This rumor lacks confirmation.

MORNING STAR.—A strike has been made on the Morning Star in Butte. This property is all built over. The shaft-house is near the corner of Montana and Mercury streets. The property was worked years ago, but the slump in silver closed it down. A new vein seems to have been discovered. It is some 30 in. wide, and carries both gold and silver.

PARROT FLAT.—Nearly all the properties in the Parrot Flat are now working, and some of them, particularly the J. I. C. and Ground Squirrel No. 2 shafts, are lifting large quantities of ore. The Anderson, further to the west but on the same vein, is also doing well. A large body of good ore has been struck. As a rule the veins in the flat are much nearer the horizontal than those on the hill. Neither are they so large, but the ore bodies are richer in copper and carry more silver. They are more expensive to work on account of their great incline.

RARUS.—A new shaft is being developed at a point several hundred feet down the hill and will be sunk to the 450-ft. level, where connections will be made with the old workings. This will be known as shaft No. 2. When this work is accomplished ore will be hoisted through this shaft and the old shafts will be enlarged and retimbered from the 600 ft. level up to the surface. The Rarus is economically worked. The Silver Bow, on the south, drains the mine of the largest portions of its water. A sump of 70 ft. below the 700-ft. level serves to

catch the accumulated seepage of three or four days and a few hours' work with tanks during the week suffices to keep the underground workings perfectly dry.

TIMBERED BUTTE.—The operations on Timbered Butte, south of Butte City, are very encouraging, and it is thought that large bodies of copper gold ore will be shown up in that district. The Alice May, belonging to the Washington Valley Mining Company, is being developed to a greater extent than any other.

WHITE TRAIL DISTRICT.—It is said that considerable quantities of native copper have been encountered in the veins in the White Trail Park district near Butte. The Fitschen Brothers are the parties principally interested.

NEVADA.

STOREY COUNTY—BRUNSWICK LODGE.

EXPLORATION COMPANY.—The following is an extract from the latest weekly official report: In shaft No. 1, on Hale & Norcross ground near the Chollar north boundary, the station has been completed, and they have started an east crosscut from the same, which has been advanced 12 ft. through porphyry, clay and stringers of quartz showing some value. Shaft No. 2, on the boundary of Consolidated California & Virginia and Best & Belcher, has been sunk 9 ft. on the incline through hard porphyry; total length, 209 ft. The Gould & Curry tunnel, in Savage ground, has been extended 25 ft. through porphyry, clay and quartz showing some value; total length from mouth of tunnel, 512 ft. In the Occidental Consolidated mine, on the 650 level, the main northwest crosscut has been extended to a total length of 320 ft. The face is in quartz and porphyry. The north drift from said crosscut is 94 ft. The face shows 2 ft. of fair grade ore. From the top of the upraise started from said north drift have crosscut to the east a distance of 12 ft. The crosscut shows a streak of ore 18 in. wide which assays about \$36 per ton.

STOREY COUNTY—COMSTOCK LODGE.

Following are extracts from the latest weekly official letters of the mine superintendents:

BELCHER.—There have been hoisted and stored in the ore-house 48 mining carloads of ore, the average top sample of which was \$29.59 per ton. Shipped to the Brunswick mill for reduction during the week 387 tons and 640 lbs. of Belcher ore, the average battery sample of which is \$20.03 per ton. The returns in bullion from this ore have not yet been received.

CHOLLAR.—We extracted from the stopes above the 450-ft. level during the week, and sent to the Nevada mill, 112 tons of ore. The average battery assay was \$34.52 per ton.

CONSOLIDATED CALIFORNIA & VIRGINIA.—We extracted during the week from the various levels 192 tons of ore, of an average car sample assay value of \$14.53 per ton.

HALE & NORCROSS.—The ore in upraises Nos. 2 and 3 is improving. We extracted during the week 30 carloads of ore, assaying per car sample \$37.78 in gold and 439 oz. of silver per ton.

POTOSI.—The mine yielded 191 tons of ore from the openings above the 550-ft. level. The average battery assay was \$21.90 per ton.

SAVAGE.—On the 950 level the north lateral drift is advanced a total distance of 170 ft.; face is in porphyry. The north prospecting drift, started from the west crosscut from eighth floor of the north upraise, is advanced 12 ft. in ore of good quality. We have saved 40 cars of ore of good quality from this drift; car samples average \$31.85 per ton; face continues in ore that assays about \$40 per ton. Resumed work in the east crosscut from the south drift eighth floor of the north upraise. The north upraise was advanced to a total height of 102 ft.; top is in quartz, giving some fair assays.

SEGREGATED BELCHER.—There were hoisted 12 carloads of ore, the average car-sample assay of which was \$18.96 per ton. Shipped to the Brunswick mill for reduction 89 tons and 390 lbs. of ore, the average battery assay of which so far is \$20.66 per ton.

NEW YORK.

ST. LAWRENCE COUNTY.

ST. LAWRENCE MARBLE COMPANY.—Judge Truax, of the New York Supreme Court, on January 29th, appointed Austin Stevens, of Brooklyn, receiver for this company, of Gouverneur, at the request of two-thirds of the stockholders and principal creditors. The company was incorporated on April 12th, 1884, with a capital stock of \$250,000. The schedules show liabilities of \$154,915 and nominal assets of \$129,319. The liabilities include bonds and accrued interest, \$94,000; mortgage liens, \$15,600; bills and accounts payable, \$10,166; contingent liabilities, \$5,149. The assets consist of real estate valued at \$88,000, which is not nearly sufficient to satisfy the bonded debt and mortgage liens; accounts, \$1,605; machinery, fixtures, etc., \$8,333; marble, \$31,375. Belding Bros. & Company, of New York, hold \$45,000 bonds of the company, and are also creditors for \$16,125; the Metropolitan National Bank, of Chicago, is a creditor for \$8,331, and holds \$9,000 bonds as collateral security; J. W. Griswold, of Chicago, holds \$20,000 bonds. The president of the company, John Benham, resides in Chicago.

PENNSYLVANIA.

BITUMINOUS COAL.

At a meeting of the Pittsburgh Railroad Coal Operators' Association on January 29th, it was de-

cided to advance prices of coal for the lake shipping season beginning April 1. The price is fixed at 30c. a ton above the price of mining, whatever that may be.

VINTONVILLE MINES.—Between 400 and 500 men employed at the coal mines at Vintonville, have gone on a strike, owing to the coal company having engaged a doctor from Philadelphia under a guarantee of \$100 a month for attending to the miners, and the subsequent action on the part of the company in deducting \$1 each from the men last pay day. The men are reported to be well organized and financially able to remain idle for a long while.

CLINTON COUNTY.

It is reported that while drilling for water on land owned by W. H. Darnblosser, near Lamar, workmen discovered a vein of iron ore 20 ft. thick. The ore is said to be of good grade.

NORTHAMPTON COUNTY.

BANGOR PEERLESS SLATE COMPANY.—The annual meeting of this company was held recently, when the following officers were elected: President, George I. Speer, of Wilmington, Del.; vice president, E. J. Johnson, of New York; secretary, Thomas Ditchett, of Bangor; treasurer, William Blake, of Bangor; manager, Thomas Masters, of Bangor. The same gentlemen will compose the board of directors. The stockholders intend to make additional developments, and to put in another hoisting engine.

BANGOR SOUTHERN QUARRY.—James Masters, of East Bangor, and E. D. Peters and W. K. Peter, of Slatington, have leased from Twombly & Eldert this quarry for a term of ten years. It is the intention of the lessees to put the quarry in running order and begin making slate as soon as possible.

BOWER SLATE QUARRYING COMPANY.—The stockholders of this company held their annual meeting, at Allentown recently, and elected these officers: President, Henry Soidan; vice-president, E. G. Elk; secretary, Jas. F. Johnson; treasurer, B. A. Halliday; directors, the above, C. D. W. Bower, John N. Bower and George Bower.

GOLDEN RULE QUARRY.—Parson Bros., lessees of this quarry, at Pen Argyl, will spend a considerable amount in enlarging their quarry, the work having already commenced. They will also erect new machinery.

MADOC SLATE COMPANY.—This is the name of the most recently organized company at Slatington. It is composed of five well-known slate men: William P. Davis, Morris Pierce, Robert G. Davis, John H. Arylon and John Davis.

NORTHAMPTON HARD VEIN SLATE COMPANY.—At its annual meeting recently this company elected the following directors: James Young, Theodore Whitesell and George W. Geiser, of Easton; Chester Smith, of South Easton, and William M. Smith, of Allen Township. The board subsequently met and organized by electing officers as follows: President, James Young; secretary, George W. Geiser; treasurer, Theodore Whitesell.

YORK COUNTY.

PEACH BOTTOM QUARRIES.—The syndicate of capitalists represented by Mr. J. Summerfield Bull of Baltimore, which was formed to acquire sole control of the Peach Bottom quarries has closed a deal with George H. Wysham, of Delta, Pa., for the output of the Atlantic Slate Company, of Delta, of which Mr. Wysham is president, says the *Slate Trade Journal*. Mr. Bull says that the success of the syndicate is now assured. It will be incorporated in all the States, the main office probably being located in either Philadelphia or Baltimore.

TENNESSEE.

PHOSPHATE SHIPMENTS.—According to the *American Fertilizer* the phosphate statistics for the year 1895, are as follows: Shipments, 49,135 tons, production, 50,000 tons; on hand January 1st, 1896, 3,640 tons. On January 1st, 1896, instead of four companies in the field as at the opening of 1895, there were seven in operation, and all with more orders than they can fill promptly, notwithstanding the improved methods of hauling adopted by at least three of them.

CAMPBELL COUNTY.

JELICO COAL DISTRICT.—A statement given in the *Chattanooga Tradesman* shows that the coal output greatly increased during 1895; the figures amounted to about 650,000 tons, valued at over \$1,000,000. About 3,000 miners are employed. The Southern Jellico Coal Company—composed of the Proctor Coal Company; East Tennessee Coal Company; Hywel Davies Coal Company; Central Jellico Coal Mining Company and Standard Coal and Coke Company—has supplied 455,000 tons of the entire output. Falls Branch Coal Company has shipped 65,053 tons, Woodridge Jellico Coal Company 82,038, Indian Mountain Coal Company about 12,000 tons, Bird Eye Coal Company about 15,000 tons, J. M. Wilson about 5,000 tons since August, while the Jellico B. G. Coal Company, Blue Gem Company, R. H. Watkins Coal Company and Wilmont Coal Company have shipped about 17,000 tons.

HICKMAN COUNTY.

DUCK RIVER PHOSPHATE COMPANY.—This company has put in an air compressor at its mines, and is operating the compressed air drills very advantageously. The same company has built a tramroad from its mines to Duck River, where the rock is loaded on barges and floated down to the crusher at Centerville.

SWAN CREEK PHOSPHATE COMPANY.—This company has now in operation a narrow gauge railroad from the Nashville, Chattanooga & St. Louis road to its mines on the west side of Swan Creek, and proposes to extend the road soon to its mines on the east side of Swan.

TENNESSEE PHOSPHATE COMPANY.—This company put in a narrow gauge road to its mines several months ago, but have operated it very little as yet. This company made an assignment in September, but the liabilities have all been paid, and it is reported that it will begin operations again very soon.

PUTNAM COUNTY.

CUMBERLAND COAL COMPANY.—At the annual meeting recently at Nashville, the following directors were elected: John H. Onstatt, Jerome B. Martin, V. E. Onstatt, Joseph J. Massey, Alma Onstatt and Edna Onstatt. Col. John H. Onstatt is the president of this company, which has its principal office at Monterey, with general office in Nashville.

UTAH.

SALT LAKE COUNTY.

SALT LAKE COPPER MANUFACTURING COMPANY.—The statement of Receiver C. P. Mason, of this company, for the quarter ending December 31st shows receipts amounting to \$29,077 and disbursements in the sum of \$17,697, with a balance on hand of \$11,379.

SUMMIT COUNTY.

SILVER KING MINING COMPANY.—An adjourned meeting of the stockholders of this company was held in Park City on January 20th. There were represented 119,910 shares out of a total of 150,000. The secretary's report showed that during 1895 the corporation had paid \$300,000 in dividends. This is the only item in the secretary's report given out for publication. The following board of directors was elected: David Keith, Thomas Kearns, W. V. Rice, James Ivers and Ezra Thompson. The new board chose the following officers: David Keith, president; Thomas Kearns, vice-president; W. V. Rice, treasurer; Walter Scott, secretary. Previous to the meeting of the stockholders the old board of directors declared the usual monthly dividend of \$37.50c, payable at the office of the company on February 7th.

TOOELE COUNTY.

MERCUR GOLD MINING AND MILLING COMPANY.—This company held its annual meeting on January 20th. The following officers were elected: John Dern, president; John Heinrich, vice-president; Ed. H. Airis, secretary, and John Dern, treasurer. These, with W. S. Brown, constitute the board of directors.

SEARCHLIGHT MINING COMPANY.—A sale of the group owned by this company, and which adjoins the property of the Sunshine Mining Company in Camp Floyd mining district, was accomplished last week, and it is reported by the *Salt Lake Tribune* that \$150,000 will be divided by Simon Bamberger and his co-owners. The sale is made to an English syndicate which will at once take possession and begin the systematic development of the ground. The management of the property will be under the direction of C. W. Miles.

VIKING GOLD MINING COMPANY.—Capt. J. R. De Lamar has purchased the property of this company, upon which a bond in the sum of \$30,000 was held. Mr. James W. Neill, manager for the company, is quoted by the *Salt Lake papers* as saying: "This gives Captain De Lamar 58 acres of patented ground under which no ore has yet been found, but which well-posted mining men believe to be valuable. Captain De Lamar has also purchased all of those claims belonging to the Viking Company embraced within the territory known as the Brickyard group. While there has recently been a company organized in Salt Lake City known as the Brickyard Mining Company, which claims to have accepted a portion of these properties in payment for its stock, the records show that the title to the claims is in the Viking Company. As Captain De Lamar has succeeded to the ownership it may lead to some stubborn litigation."

VERMONT.

ADDISON COUNTY.

GRANVILLE SEA GREEN SLATE TRUST.—This concern recently secured an order to ship 5,000 squares of roofing slate to England. It is expected that this will be followed by other orders.

WEST VIRGINIA.

MINERAL COUNTY.

PIEDMONT-CUMBERLAND COAL COMPANY.—Melville C. Fuller, Patrick F. White, Michael P. Gannon and Michael F. Gleeson have purchased the property of this company, and will continue to operate the mines located at Piedmont. The following officers were elected: Patrick F. White, president; Melville C. Fuller, secretary and treasurer, and John McDonald, superintendent.

WYOMING.

UINTA COUNTY.

No. 5 MINE.—It is reported that this coal mine, at Almy, which blew up last March, is to be opened at once. Superintendent A. E. Bradbury says that probably 60 men will be employed.

FOREIGN MINING NEWS.

SOUTH AFRICA.

TRANSVAAL.

WITWATERSRAND GOLD OUTPUT.—The cable report of the gold production of the Witwatersrand mines in December gives the total amount at 178,428 oz., an unexpectedly small amount. The output for the month is 16,790 oz. less than in November, 25,145 oz. less than the maximum reported, which was in August, and is 3,676 oz. less than in December, 1894; the first time on record when the gold production in any month has shown a decline when compared with the corresponding month in a previous year. The scarcity of native labor, the continued drought and political troubles are given as the cause of the light production. This return makes the total output for the year 2,277,635 oz., as compared with 2,024,159 oz. for 1894, 1,478,473 oz. in 1893, and 1,210,867 oz. in 1892. Reducing this to fine ounces at the usual rate for Witwatersrand gold—'816 fine—we have an output of 1,858,540 fine oz. in 1895, against 1,651,714 fine oz. in 1894.

TASMANIA.

MT. LYELL MINING COMPANY.—We learn from Dr. E. D. Peters, Jr., that this company has nearly completed the railroad up the canyon of the King River from Strahan (harbor) to the new smelter. The latter is being rapidly pushed, and will be a pyritic smelter, with bessemerizing plant, and a capacity of 500 tons daily. The company has contracted with Fraser & Chalmers for a complete bessemerizing plant. The deposit has been found considerably richer in copper at the south end than was estimated, and much good ore is being extracted from that portion of the mine. It has also been found to extend much further up the hill than was supposed, and on the hanging wall, where the ore was considered to be low-grade, considerable gossan has been encountered carrying 40 to 60 oz. silver and 10 dwt. gold.

TASMANIAN GOLD MINING COMPANY, LIMITED.—The half-yearly report of the directors recently issued, states that the concentration machinery reported last half-year as being expected to arrive from Germany, came duly to hand. Most of the plant is now erected, and would soon be ready for work. A contract for lighting the works with electricity had been completed, the motor being driven by water power. The furnace for treating the concentrates and chlorine works would be proceeded with at once, and when completed they expected the plant would be one of the best in the colonies. The capital of the company had been increased from 45,000 to 48,000 shares, 1,012 of the new issue being absorbed by the purchase of the Phoenix Company's property, and the balance of shares issued pro rata amongst the shareholders at £6 per share. The 40-head Florence battery had been in full work for the past six months, and crushed 6,655 tons of quartz from between the 500-ft. and 718-ft. levels, yielding 9,005 oz. retorted gold, being an average of 1 oz. 7 dwt., 1 gr. to the ton; value, £31,355. The working account showed a profit of £12,369. Out of that amount the directors had paid four dividends amounting to £9,400. The total amount of gold obtained since the formation of the company was 341,356 oz., from 258,320 tons of quartz crushed, being an average of 1 oz., 5 dwt., 21 gr. to the ton; value £1,205,165, and paid in dividends £586,275.

LATE NEWS.

Four turret top plates for the *Oregon*, weighing 38 tons, have been shipped by the Bethlehem Iron Company to the Union Iron Works at San Francisco.

The regular monthly meeting of the New York Section of the American Chemical Society will be held on February 7th, at 8:30 p. m. in the Chemical Lecture Room of the College of the City of New York, corner of Lexington avenue and Twenty-third street. The usual informal dinner will precede the meeting, and will be at the Hotel Bartholdi at 6:30 p. m.

Alfred L. Kennedy, a metallurgist and geologist, was burned to death during a fire which occurred in his rooms, in Philadelphia, Pa., on January 30th. He was nearly 80 years old. He was a graduate of the University of Pennsylvania, and in 1853 established the Polytechnic College of Philadelphia and was its president until the college went out of existence a year ago. Dr. Kennedy was also the founder, Vice-President and Geologist of the State Agricultural Society.

An explosion of gas occurred in the Pettebone Mine, at Dorranceton, near Wilkes-Barre, Pa., January 30th, doing considerable damage to the interior of the workings. No one was injured. A second explosion of gas took place in the afternoon, causing a serious fire in the workings. A gang of fire fighters, composed of nine firemen, were in the pit at the time, and as soon as the report was heard they rushed to the spot where they found six men burned and injured. They were sent to the surface as soon as the signal could be given. The mine had not been working that day owing to a party of timbermen doing some necessary work in the Cooper vein, which is 1,800 ft. from the foot of the opening. The first explosion was caused from a lamp carried by William Z. Phillips, one of the

timbermen, who was slightly burned. Extra pumps were put in place, and hose stretched to the face of the fire, which was confined mainly to the wood-work. If it can be extinguished before reaching the coal, the loss will not be heavy.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 31.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending January 25th, 1896, compared with the corresponding period last year.

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	61,567	215,171	272,416
Phila. & Reading Railroad.....	291,025	1,080,354	901,878
Totals.....	352,592	1,325,525	1,177,294

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs., for week ending January 25th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	47,520	187,005	152,537
Barclay, Pa.....	1,330	4,096	.....
Beech Creek, Pa.....	175,615	214,201	186,294
Broad Top, Pa.....	8,615	37,328	34,835
Clearfield, Pa.....	103,448	433,760	335,114
Cumberland, Md.....	361,602	157,801	194,921
Kanawha, W. Va.....	199,015	271,979	218,253
Phila. & Erie.....	868	3,624	7,997
Pocahontas Flat.....	172,783	190,280	116,704
Totals.....	473,796	1,500,002	1,246,685

† Week ending January 21st.
‡ 18th.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	14,905	65,258	49,686
Pittsburg, Pa.....	38,330	150,162	137,434
Westmoreland, Pa.....	35,782	163,046	223,306
Totals.....	87,017	378,466	410,426

Grand totals..... 560,813 1,878,468 1,657,111
Production of coke on line of Pennsylvania Railroad for the week ending January 25th, 1896, and year from January 1st, in tons of 2,000 lbs.: Week, 91,045 tons; year, 368,283; to corresponding date in 1895, 433,363 tons.

Anthracite.

There was an air of expectancy in the coal trade during the early part of the week, due to the president's meeting announced for Thursday. As time wore on the belief that the presidents would do something to patch up the trade grew stronger. As we prognosticated last week, the chances were in favor of a definite understanding.

Despite the opinions and rumors to this effect, the week has been one of the dulllest for many months past. Naturally there was no inducement for sellers to press their coal at the ruling figures, and, in fact, some companies began to take steps for cancelling old low priced orders remaining unfilled on February 1st. On the other hand, buyers were either well supplied or were not apprehensive of an advance. Up to Thursday morning good anthracite coal could have been bought at the figures which ruled during the preceding week, namely, Stove, \$3.20@3.25; egg, \$2.95@3; chestnut, \$2.85@2.95; broken, \$2.75, all net on board.

On Thursday the presidents of the coal carrying companies held a meeting at which the report of the Committee of Three was submitted, and after considerable discussion was adopted. It gives to the various companies the following percentages for 1896, the actual shipments for 1895 being added in the table for the sake of comparison:

	Allotment.		Shipments.	
	1896.	1895.	1896.	1895.
Philadelphia & Reading.....	20.50	21.47	20.50	21.47
Lehigh Valley.....	15.65	15.81	15.65	15.81
Delaware, Lackawanna & Western.....	13.35	13.16	13.35	13.16
New Jersey Central.....	11.70	11.56	11.70	11.56
Pennsylvania Railroad.....	11.40	10.79	11.40	10.79
Delaware & Hudson.....	9.60	9.34	9.60	9.34
Erie.....	4.00	3.91	4.00	3.91
Pennsylvania Coal Company.....	4.00	3.75	4.00	3.75
Coxe Brothers & Co.....	3.50	4.11	3.50	4.11
New York, Susquehanna & Western.....	3.20	3.04	3.20	3.04
New York, Ontario & Western.....	3.10	3.16	3.10	3.16
Total.....	100.00	100.00	100.00	100.00

In addition to agreeing upon percentages for 1896, a standing committee of five, consisting of Presidents Maxwell (chairman) of the Jersey Central; Harris, of the Reading; Wilbur, of the Lehigh Valley; Thomas, of the Erie, and Walters, of the Delaware, Susquehanna & Schuylkill, was appointed for the purpose of formulating a plan whereby the coal traffic of the anthracite companies may be regulated like other freight traffic; in short, some plan similar to that of the Trunk Line Association. The committee will begin its duties at once.

Acting under instructions from the presidents, the sales-agents held a meeting on Friday morning, and decided on the following tidewater prices: Stove, \$3.60; egg and chestnut, \$3.35; and broken, \$3.10 net on board, an advance of 35c. to 40c. per ton. The output for February was fixed at 2,500,000 tons.

It is yet too early to say how the trade will receive this news. The memory of the unprofitable experiences of 1895 is still too fresh for the companies to begin breaking faith with each other at once. The sales-agents have notified their customers of the advance, and will doubtless maintain prices. It is an evidence of wisdom on their part that they did not try to re-affirm the last, or October 24th, circular which was on the basis of \$4 for stove, as it had been rumored might be done.

The anthracite trade is still more on a

basis by which the companies may prevent low prices, provided they carry out their agreement. And when a final plan of operation is decided upon they will be more closely joined than for many years. Whether history will fail to repeat itself ere the current year is over and this new pool goes to pieces remains yet to be seen. In the meantime the dealer who was wise enough to profit by the warning, exclusively given in the *Engineering and Mining Journal* last week has reason to congratulate himself. And, again, the public should reserve judgment on the new "pool" until we learn what it shall be. There are anti-Trust laws which even the "coal barons" must heed.

Bituminous.

The soft coal market of the Atlantic seaboard is dull. At this time of the year, being between seasons, it is always very quiet, but it seems more than usually so just now. Most of the operators are trying to squeeze another order or two out of the old contracts, but the large tonnages of 1895 seem to have filled up the great majority of the contracts, and consumers apparently have no need of any extra cargoes.

As far as the present coal movement is concerned, it is the old story of the far East taking very little, the greater part continuing to go to Sound ports. New York harbor trade is fairly active. Owing probably to the disturbances in Cuba, the export business is duller than usual.

The all-rail trade is fairly active. The railroads continue from time to time to allow cars to go to those points on the main lines which are usually embargoed, and this opens up a small field to the producers.

Transportation is very good, and the same may be said of the car supply.

The demand for vessels, on account of quiet trade, has grown smaller, until now, despite the small supply of vessels, rates have weakened and declined at a time of the year when they should be firm and advancing. We quote ocean freight rates from Philadelphia as follows: To Boston and Salem, 80c.; Portland, 85c.; Sound ports, 70c.; Portsmouth, 80c. The market is weak at these rates, and lower figures may be named any day.

Nominal prices are unchanged. We quote f. o. b. at the various ports, as follows: Norfolk and Newport News, \$1.90@2.15; Baltimore, \$2@2.20; Philadelphia, \$1.75@2.20; New York harbor shipping, \$2.20@2.65; alongside New York harbor, \$2.40@2.75; alongside Boston, \$2.75@3.

Concerning the proposed "combination" of soft coal interests it is reported that an association will be formed based upon the plans of some one of the former combines, most probably like the old Seaboard Steam Coal Association. A meeting will be held in about two weeks, at which the plans proposed by the sub-committees will be ratified. It is believed by many soft coal interests that unless haste is made by the committees their efforts will prove fruitless, as the contract season is drawing near, and if matters are allowed to drift until orders begin to come in there will be no association. It is owing to just such a delay that previous attempts to "combine" have failed.

NOTES OF THE WEEK.

The statement of the Philadelphia & Reading Coal and Iron Company for December, the first month of the fiscal year, is as follows:

	1894.	1895.
Gross receipts.....	\$1,588,255	\$2,216,357
Working expenses.....	1,775,684	2,298,778
Loss from working.....	\$187,429	\$82,421
Fixed charges.....	106,000	95,000
Deficit.....	\$-93,429	\$177,421

Working expenses in 1895 included \$65,728 for colliery improvements and \$2,320 for permanent improvements.

The following is the preliminary statement of the Delaware & Hudson Canal Company for the year ending December 31st.

	1894.	1895.
Coal.....	\$7,864,152	\$7,369,379
Railroads.....	9,448,993	10,129,182
Miscellaneous.....	755,074	1,321,107
Total earnings.....	\$18,068,219	\$18,819,618
Working expenses.....	12,529,548	13,376,732
Net earnings.....	\$5,538,671	\$5,442,886
Interest and rentals.....	3,319,959	3,078,491
Surplus.....	\$2,218,712	\$2,364,395

The surplus in 1895 amounted to 6.75% on the company's stock, against 7.10% earned in 1894.

Buffalo, N. Y.

Jan. 30.

(From Our Special Correspondent.)

The demand for anthracite coal is very moderate in consequence of comparatively mild weather. Prices unchanged. Stocks ample.

Bituminous coal fairly active at the prevailing low prices, which are particularly exasperating to miners and dealers. Stocks large of nearly all varieties, which is a factor in the cheapness of this fuel. All our manufactories are busy, but many of the proprietors have stocks of fuel on hand.

It is understood that in 1896 the same arrangements as were in existence the latter part of 1895 relative to the purchasing of fueling coal for vessels will be in force. No fuel will be purchased under any circumstances from shippers of hard coal. So

says the committee of the Lake Carriers' Association.

The total tonnage entered at the port of Buffalo in 1895 was 4,684,053; Chicago report shows 4,602,508 tons; Milwaukee 3,529,919 tons and Cleveland 2,820,362 tons—Buffalo is ahead.

Sixty-three vessels were totally lost on the lakes in 1895, of the value of \$1,300,000.

Milwaukee received 1,335,942 net tons of coal in 1895, as compared with 1,236,959 net tons in 1894.

The Grand Trunk Railway of Canada asks for bids for "locomotive coal" for one year from April 1st, 1896. Tenders will be received by Mr. Taylor, storekeeper, Montreal, on or before February 6th.

Chicago.

Jan. 29.

There has been but little coal sold in this market during the past seven days, and dealers say it has been the dulllest week that they have seen in a long time. The remarkable weather conditions are wholly to blame for the state of affairs, the weather having been for some time at the regulation spring temperature. With dealers it is a matter of getting the limited business going and prices are therefore an uncertain quality. The circular rates are away off from the existing ones and the market has rather the look of demoralization. There is a considerable hard coal coming to town, and it soon will be a matter of demurrage with some heavy shippers.

In bituminous coal the situation is unchanged there having been but a small amount of buying during the week. With the increase in the iron trade, naturally an increased soft coal trade would be in order, but as yet soft coal has not been influenced. Colder weather is looked for to increase business, but as the coldest month of the year has almost passed, there is but little hope for the coal dealers of Chicago if they rely entirely on weather conditions to produce trade.

Coke is in small demand at prices that are not steady.

Pittsburg.

Jan. 30.

(From Our Special Correspondent.)

Coal.—At last we have coal-boat water, and a good sized fleet is now on the way to the Western and Southern markets. The run, from present appearances, will reach 10,000 tons, and may exceed it, provided the water holds out. A huge number of empties will arrive and will be forwarded to the various parties to be loaded. This will open up the mines that have been closed and give employment to the miners that have been waiting for a rise.

D. patches from Ironton, O., say that James B. Townsend, of New York, has within 10 days leased nearly all the available coal lands in the field back of Proctorville at \$12.50 per acre. It is on the projected lines of the Ohio Southern and the Cincinnati, Hamilton & Dayton extension.

An important spur will soon be finished in McKean County, Pa. The grading of the Buffalo & St. Mary's Railroad, which is being built from St. Mary's northward to Clermont, is about finished. The distance to Clermont, where the new road will connect with the Western New York & Pennsylvania Railroad, is just 24 miles, or 16 miles less than by the existing line via Ridgway.

Councilville Coke.—The year's coke shipments would make a train reaching across the continent. Since the advance in the price of coke there has been considerable quiet hunting for coking coal by furnace owners who want to own their coke plants and be independent of the big coke companies. There is not much coking coal left, except south of Fairchance, and it is nearly all optioned and held by Uniontown people. Representatives of the Shenango Valley Steel Company want to purchase a tract of 400 acres of coking coal, optioned by Uniontown parties, which they have decided to buy. The Uniondale Coke Works, of Reid Bros. & Co., at Dunbar, are being prepared for resumption, after a shut down of two years. The coke trade took a large drop, both in production and shipments, the former running 15,000 and the latter 10,000 tons below the preceding week. The ovens blown out reached 400. Just how much longer the falling off will continue is a matter of speculation. The operations are reported firm for \$2, or no coke. The week's operations show 14,463 ovens in blast, with 3,484 idle. Production for the week, in tons, amounted to 124,586, a decrease compared with the preceding week of 14,543 tons. The running order of the active ovens were: 4,246 ovens made six days, 353 ovens made five days and 9,877 ovens four days, an average of 460 days. Week's shipments from the region were as follows: To Pittsburg, 1,612 cars; to points East, 1,810 cars; to points West, 3,041 cars; total, 6,443 cars. Prices are \$2—or no coke.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 31, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From	
	Feb. 1, 1895.	Jan. 31, 1896.	Jan. 31, 1896.	Jan. '95.	From Jan., '96.	
Anthracite.	38	21,632	59	76,700	98,889	162,528
Coke.....	124	145,123	160	180,200	663,419	795,029
Charcoal....	23	5,140	21	4,900	23,497	21,700
Totals ..	185	171,895	240	221,800	785,800	982,257

The market generally is in an improved condition, and the reports from all quarters show an increased volume of business and higher prices than could have been looked for three or four weeks ago.

While much still depends upon the general condition of financial affairs, there is a more hopeful disposition apparent everywhere. Makers of finished products are more willing to buy raw material and intimate that their orders are mounting up in an encouraging way. The spurt in the Pittsburg market has quieted down, but a general activity is reported there still.

Orders for rails are coming forward a little better, though still slowly; one of 20,000 tons for Pacific Coast delivery is reported, but it is said that some concession had to be made by the mills to secure it.

The most important news of the week is that relating to the agreement among the Lake Superior iron ore producers. While the details are not made public, the general terms of the arrangement have been given out. It is stated that the output of ore for the year 1896 is to be limited to 10,500,000 tons, or about the same as in 1895. Of this 9,000,000 tons will be Bessemer ores, and a point to be especially noted is that the limit of Bessemer ore is fixed at 0.07% phosphorus, which will admit a good deal of Mesabi ore heretofore classed as non-Bessemer. Of the total output named, one-third, or 3,500,000 tons, will be allotted to the Mesabi; approximately, one-third, or 3,400,000 tons, to the Marquette and Menominee ranges together; 2,500,000 tons to the Gogebic, and 1,100,000 tons to the Vermilion Range. There is a little surprise, and, it is said, some dissatisfaction at the large share given the Gogebic mines. The proportions assigned to individual mines on the different ranges are not to be made public.

As to prices, no announcement is made, though it is said that Mesabi ores will range from 25 to 75c. per ton below the standard Gogebic Bessemer.

While nearly all the leading ore mines have joined in the agreement, there are some dissenters. The mines which are directly owned or controlled by iron-makers, such as those of the Carnegie Company on the Mesabi and the Norris in the Gogebic, will probably mine as required, without reference to the pool.

The Frick Company is determined to maintain its price of \$2 per ton for furnace coke, and it is announced that no reduction is to be expected. An immediate consequence is an increased inquiry for West Virginia coke, and it is stated that several contracts for Pocahontas coke have already been made in addition to the large one of the Illinois Steel Company reported two weeks ago.

NOTES OF THE WEEK.

In Chicago this week, in the Circuit Court, the Attorney General of Illinois began proceedings in *quo warranto* under the State anti-trust law against the Illinois Steel Company, on the ground that in consolidating with the Joliet Steel Company it exceeded its corporate power. Proceedings were begun at the same time against the Joliet Steel Company for a revocation of its charter, because that company has been merged in the Illinois Steel Company and has ceased to exercise corporate functions. Officers of the company say that they do not fear the result of the suits, the consolidation having been made with the best legal advice.

A boiler exploding in the mill of the Hollidaysburg Iron Works at Hollidaysburg, Pa., on January 30th killed four men, injured 20 others and badly damaged a part of the works.

New York. Jan. 31

The local market is in good condition, and we are apparently to have a renewal of the conditions of last fall—a generally active trade and a steady run of small orders, making in the aggregate a large business. Dealers say they are getting a very good amount of trade without any necessity of cutting prices to secure it.

The Newark City Council has insisted upon the enforcement of city's contract with the East Jersey Water Company. This requires the putting down of a second pipe line from the reservoirs at Charlotteburg and Macopin to Newark, and arrangements are reported already made with Pittsburg parties for the material, which will amount to 8,000 or 9,000 tons of plates.

Pig Iron.—A pretty active business is reported for the week, several of the large foundries in this vicinity having closed contracts. Sellers continue firm in their ideas for northern brands. The disposition to press Southern iron continues manifest, but no concessions of any importance are known. Prices are without change.

We quote, for tidewater deliveries: Northern iron, No. 1 foundry, \$13.25@13.75; No. 2, \$12.25@12.75 gray forge, \$11.75@12.25. For Southern irons prices are: No. 1 foundry, \$12.50@13; No. 2 foundry, \$12@12.50; No. 1 soft, \$12.25@12.50; No. 2 soft, \$11.75@12; forge, \$11.50@11.75.

Cast Iron Pipe.—Negotiations are pending for several good contracts, chiefly for New England. A contract for some 4,000 tons, nearly all heavy pipe, for the city of Jacksonville, Fla., has been taken by the Bessemer Foundry, Alabama, at \$19.20 per ton, all round. The bids ranged from the figure given up to \$21.50.

Spiegeleisen and Ferro-Manganese.—The market is still very quiet, and prices are lower. We quote \$49.50@50 per ton for ferro and \$24.50@25 for spiegeleisen.

Steel Billets and Rods.—While sales have not been heavy here, prices are firm. Billets are

quoted \$20.50@21 at tidewater, and wire rods at \$26@27 at tidewater.

Merchant Iron and Steel.—Business has been good and small orders continue to come in. Prices show no change. Bars are 1.25@1.35c. for common and 1.35@1.50c. for refined. We quote for soft steel bars 1.30@1.40c.; open-hearth machinery steel, 1.50@1.60c.; steel hoops, 1.65@1.75c.; steel axles, 1.65@1.80c.; links and pins, 1.60@1.75c.; tire steel, 1.85@2c.; spring steel, 2.10@2.25c. Rivets are 2.20@2.30c. for steel, and 3@3.30c. for iron.

Plates.—Business has been active and prices are well maintained. The mills all seem to be busy. Prices for Universal mill plates are 1.45@1.55c. For steel plates we quote: Tank, 1.45@1.55c.; boiler shell, 1.55@1.65c.; good flange, 1.80@1.95c.; firebox, 2.10@2.40c. Charcoal iron plates are 2.20@2.30c. for shell, 2.70@2.80c. for flange, and 3.20@3.30c. for fire-box.

Structural Iron and Steel.—Contracts for a number of buildings are pending, and several have been closed. The outlook for new construction is much better. No change in prices is noted, and we quote, for angles, 1.45@1.55c.; channels, 1.60@1.75c.; tees, 1.65@1.75c.; beams (up to 15-in.), 1.55@1.70c. for large lots and 1.85@2c. for small orders.

Steel Rails and Rail Fastenings.—Rails are unchanged at \$28 per ton at mill, or \$28.75 at tidewater for standard sections. Girder and street rails are \$28@32 per ton at mill, according to section. No sales are reported.

Rail fastenings are steady and prices unchanged. Quotations are: For fish and angle-plates, 1.40@1.50c.; spikes, 1.65@1.80c.; bolts, 1.95@2.05c., for square nuts, and 2.05@2.15c. for hexagon nuts.

Scrap Iron.—Demand for foundry scrap is steady and we quote \$9.50@11 per ton, according to size and quality of lots.

Buffalo. Jan. 29.

(Special Report of Rogers, Brown & Co.)

During the past week there has been more interest shown in the local pig iron market in purchases for future wants. While the inquiries do not all result in orders being placed, yet it shows that much more thought is now being given the subject and the orders which have recently been entered have encouraged local furnaces to feel that they can at least hold their own. We believe the market in this neighborhood to be more active, and if the much talked of bonds are easily placed, it will result in more work for foundries. We quote on the cash basis f. o. b. cars, Buffalo: No. 1 foundry strong coke iron, Lake Superior ore, \$13.50; No. 2 foundry strong coke iron, Lake Superior ore, \$13; Ohio strong softener, No. 1, \$15; Ohio strong softener, No. 2, \$14; Jackson County silvery, No. 1, \$16.25@17; Southern soft, No. 1, \$13.50; Southern soft, No. 2, \$13; Hanging Rock charcoal, \$18.50; Lake Superior charcoal, \$15.75@16.25.

Chicago. Jan. 29.

The Chicago iron market continues to improve, the week just over having been the best week of any in a number of months. Trade in all lines has picked up, and consumers are becoming imbued with the idea that it is better to pay present prices than await the possibilities of an advance. The Illinois Steel Company has opened up the South Chicago works after a shut down of a month. The mills there will run alternately on billets and rails. There has been a great run in the merchant steel line, consumers showing much anxiety to buy at prevailing prices.

Pig Iron.—The sales of Southern iron have been large in this market the past week, 5,000 or 6,000 tons of that material having been sold to the pipe manufacturers of Northern Ohio, and more of it having been disposed of to other consumers. Local iron has had some fair sized sales and a few thousand ton lots were disposed of. Prices withal are decidedly weaker, as may be evidenced from the quoted ones below.

Prices are: Lake Superior charcoal, \$14@15; local coke foundry No. 1, \$13.50@14; No. 2, \$13@13.50; No. 3, \$12.50@13; local Scotch foundry, No. 1, \$13.50@14; No. 2, \$13@13.50; No. 3, \$12.50@13; Southern coke, No. 2, \$12.10; No. 3, \$11.85; Southern, No. 1, \$12.35; No. 2, soft, \$11.85; Southern silveries, No. 1, \$14; No. 2, \$13.50; Jackson County silveries, \$14.50@16; Ohio silveries, No. 1, \$13.50; No. 2, \$13; Ohio strong softeners, \$15@15.50.

Bar Iron.—Bar iron has been in fair demand, some of the railroads having bought freely during the past few weeks. Prices on common iron, f. o. b. Chicago are 1.30c., and 1.40c. on refined.

Billets and Rods.—There is a renewed activity in billets. There is not much doing in rods, some few small sales being made right along at \$28. Billets are quoted \$19.50.

Steel Rails.—A few thousand tons of rails have been sold during the week, and there are indications of some big contracts being booked very soon. The quoted price on steel rails is about \$29, Chicago.

Merchant Steel.—There has been a big business in merchant steel during the week, and consumers are rushing into the market. The increased business is probably through the fact that prices are low and higher ones are bound to soon prevail. Quotations are as follows: Smooth finished machinery steel, 1.75@1.80c.; tire, 1.65

@1.70c.; tool steel, 5.50@7.50c.; specials, 11c. and upward; Bessemer bars, 1.55@1.65c.

Old Rails and Wheels.—Sales of old wheels to an aggregate of 850 tons were made during the week at prices of \$13.50@14. Old rails are quiet.

Cleveland. Jan. 30.

(From Our Special Correspondent.)

Iron Ore.—The situation in the ore trade is perceptibly stronger this week. As the result of the several conferences recently held in this city, it is now stated that the Bessemer producers, including those of the Mesabi range, will work in harmony this coming year. No prices for the new season, however, have yet been established. Ore agents are discouraging the protracted winter market, which has been the rule in previous years. The evident wish of a majority of the dealers is to postpone all negotiations of ore rates until March, at which time prognostications of the season's business can be more accurately forecast, and prices established on a more intelligent basis. Furnacemen are beginning to visit the shippers to inquire about coming ore values, but it cannot be learned that they have as yet received anything more than intimations. The impression is general that standard Bessemer will sell somewhere about \$4, perhaps a shade or two better, and that the soft Mesabi ores will range from 25c. to 75c. lower.

Just at present the consumption of ore is somewhat reduced. A little trading of ores is going on among furnacemen to piece out their mixtures until navigation opens, but the transactions in old ores between dealers and consumers are very small and the prices for these scattering sales hover around \$4 for standard Bessemer, while some furnaces may run a little short of favorite grades of ore before the output for 1896 can be reached, yet the stocks on hand at Lake Erie docks, generally speaking, will, it is thought, be ample for all requirements.

Pig Iron.—The feeling in pig iron is firm. While Bessemer irons can now be purchased in the Valley at \$12.50 for immediate delivery the sales are reported to be not from first hands and the furnacemen are almost universally holding for \$13, which is equivalent to \$13.75 at Cleveland. Prices are quoted even higher than these, as high as \$14.25 f. o. b. Cleveland, for April and May deliveries. Southern foundry iron has a tendency to stiffen in this market. Lake Superior charcoal holds firm at \$15.50 for immediate use but for delivery after May 1st, it can be purchased for \$15. We quote current prices as follows: Bessemer pig, \$13.50; Ohio Scotch, No. 1, \$14.25; No. 2, \$13.25; Northern strong, No. 1, \$14.75; No. 2, \$13.75; Lake Superior charcoal, \$15.50.

Steel.—Billets have advanced in this market about \$2 during the past two weeks and are now quoted at \$18.25@18.50.

Merchant Iron and Steel.—The market is not yet very active, and consumers are holding off.

The bar iron men are in session here to-day perfecting an organization which already includes nine-tenths of the bar iron manufacturers of the United States.

Philadelphia. Jan. 31.

(From Our Special Correspondent.)

Pig Iron.—The situation in a nutshell is this: More pig iron is selling, there are more inquiries, prices are firmer, and, while everybody is anxious to sell, there is less feverishness on the subject. The demand is altogether legitimate. Southern makers have tried to make inroads on us and further Eastern markets under the incentive of lower prices, but our most patient inquiry does not show that very much business in Alabama iron has been done, though brokers say that there is a good chance for Southern iron. Several mill lots were sold at \$11.50, and, judging from the office talk, a good deal of mill iron is likely to be contracted for very soon. Even now there are rumors of stronger prices. No. 1 foundry is \$13@13.25; No. 2, \$12.50.

Steel Billets.—The quoting of \$21 to-day was looked upon more as a threat than as a square business proposition. Some makers who have sold a few thousand tons are making a pretense of quoting higher figures than they hope to get. A fair price is \$20, but the chances are that this figure will be withdrawn.

Muck Bars.—Quoted \$20@20.50.

Merchant Bars.—This is a good week for the bar iron men, not so much as to volume of business as number of buyers. There is a stronger tone. Mill quotations are based on 1.20; store price, 1.40. All brokers and agents report an improvement, and when buyers see that the basis is permanent they will do better. The new classification works smoothly.

Nails.—The improvement is not yet felt in nails and there are some low figures drifting around.

Pipes and Tubes.—Contracts closed this week were for larger quantities.

Skelp.—The brokers report orders sent to mill at 1.25 for grooved.

Sheet.—Manufacturers have secured a few good orders for heavy sheet. The distribution at stores is improving.

Plate and Tank.—The two or three big orders sent to mills this week were taken at very low figures. Business was said to reach 1,400 tons, all kinds. Bids will soon be asked on a 15-story

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Jan.

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Tons.

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building. The plate iron makers received substantial encouragement this week. Tank and universal plates, 1'45; shell, 1'60; flange, 1'80.

Structural Material.—The proposal to construct six new battleships is received with satisfaction here. Some bridge specifications are about ready for figuring on that will run into big figures if there is no hitch. Our people say some of the hesitancy is due to the big loan. Angles, 1'40; beams and channels, 1'50.

Steel Rails.—Brokers profess to have some intimations of large pending orders, but they do not expect to place them.

Old Rails.—For the first time in several weeks old rail people succeeded in doing some business of importance. Quoted price, \$14.50.

Scrap.—All the yardmen report a little better movement in the railroad and No. 1 wrought and machinery.

Pittsburg. Jan. 23.
(From Our Special Correspondent.)

Raw Iron and Steel.—Business conditions continue favorable. As a general thing most leading products have shown an advance and increased the volume of transactions. The financial situation and outlook have assumed a more encouraging phase, and while enterprise has been held measurably in check, as it is likely to be pending the outcome of the bond issue, there has been an evident abatement of apprehension of unfavorable developments. Iron and steel trade conditions show decided improvement and further price advances have been noted in Bessemer pig, gray forge and steel billets, with considerable business transacted at the leading markets. There has been an improved demand for finished products and the general price position is firmer, on account of the enhanced cost of production; but a proportionate recovery has been delayed by the continued competition between manufacturers, many of whom are still short of orders. The Pittsburg Forge and Iron Company started 10 puddling furnaces, putting 35 men to work.

Zug & Co. had to close down their plant owing to a break in the water main; the sheet mill has been closed since December 20th. There is an opinion among some dealers that accumulations of raw material and partly manufactured stock may continue for some little time to supply the steel trade and allied branches, but there are great divisions of the iron trade in which there are no stocks and in which heavy buying must soon begin.

The requirements this spring for raw and finished material are certain to be large if prices are not advanced so far as to prevent consumption and a steady and moderately profitable business is reasonably assured.

Latest.—Market steady with a fair local demand; dealers are somewhat apart in their views, buyers showing a disposition to hold off as holders refuse to make any concessions, in fact are more disposed to ask an advance. The demand for finished iron and steel is improving.

COKE, SMELTED, LAKE AND NATIVE ORE.		Tons.	Cash.
8,000	Bessemer, Mar., Apr., May, Jun., Pitts.	3,000 Billets, Apr., May, at mill.	18.00
5,000	Bessemer, Feb., Mar., Valley.	2,000 Billets, 2 inch, Prompt, at mill.	19.00
5,000	Bessemer, Feb., March, April, Valley.	1,500 Billets, March, Apr., May, at mill.	18.25
3,000	Bessemer, Mar., Apr., May, Pitts.	1,000 Billets, Feb., Mar., at mill.	18.20
3,000	Bessemer, Mar., April, Pitts.	SKELP IRON.	
2,500	Gray Forge, Feb., Mar., Pitts.	500 Wide gr'v'd spul.	\$1.25 4 m.
2,500	Gray Forge, Mar., April, Pitts.	300 Sheared.	1.40 4 m.
2,000	Gray Forge, Feb., March, Pitts.	250 Wide gr'v'd.	1.25 4 m.
1,000	No. 2 Foundry, March, Pitts.	200 Nar'w gr'v'd.	1.25 4 m.
1,000	Bessemer, Mar., Apr., May, Pitts.	SHEEP STEEL.	
500	Bessemer, Feb., March, Pitts.	1,000 Nar'w gr'v'd.	\$1.20 4 m.
600	Gray Forge, Prompt, Pitts.	375 Wide gr'v'd.	1.20 4 m.
500	No. 2 Foundry, Prompt, Pitts.	360 Sheared.	1.35 4 m.
200	Mottled Mach, Pitts.	SHEET BARS.	
125	No. 2 Foundry, Spot, Pitts.	3,000 at mill.	\$19.00
100	No. 1 Foundry, Spot, Pitts.	350 at mill.	19.50
75	No. 2 Foundry, Prompt, Pitts.	MUCK BAR.	
40	No. 2 Foundry, Prompt, Pitts.	1,200 Neutral, Feb., March.	\$20.75
		500 Neutral, del'v'd.	20.50
		250 Neutral.	20.00
		STEEL WIRE RODS.	
		1,300 5-gauge, at mill.	\$24.00
		BLOOMS, BILLETS AND BAR ENDS.	
		1,500 Billets and Blooms ends, delivered.	\$14.00
		BESSEMER STEEL SHEETS.	
		65 26 gauge, per 100 lbs.	\$2.10
		FERRO-MANGANESE.	
		100 80%.	\$32.50
		SPELTER.	
		75 Prime.	\$3.65
		OLD RAILS AND SCRAP.	
		1,000 Iron rails, Valley.	\$17.00
		500 Steel rails, mixed, Cleveland.	13.50
		500 Melting Stock, gross.	13.25
		00 Busheling scrap, net.	11.25
		330 Wrought Turnings, net.	8.50

METAL MARKET.

NEW YORK, Friday Evening, Jan. 31, 1896.

Gold and Silver.

Prices of Silver per Ounce Troy.

Jan.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	Jan.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
25	1'88 1/2	30 1/2	67	518	29	1'88	30 1/2	67 1/2	519
27	1'88 1/2	30 1/2	67 1/2	519	30	1'88 1/2	30 3/4	67 1/2	519
28	1'88 1/2	30 1/2	67 3/4	521	31	1'88 1/2	30 3/4	67 1/2	519

Silver has been quite firm, with the inquiries chiefly for continental account. French orders have absorbed the amounts offering and the market closes steady at current rates.

The United States Assay Office in New York reports the total receipts of silver at 162,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, December, 1895, and years 1895 and 1894 in coin and bullion:

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Dec.	\$15,481,347	\$1,311,048	\$5,159,537	\$870,759	\$18,459,077
1895.	104,605,023	32,529,336	53,833,133	11,273,277	E. 114,625,563
1894.	101,819,924	20,607,561	47,044,265	9,824,408	E. 113,432,169

The statements in the table above include only gold and silver in coin and bullion. The exports and imports of gold and silver in ores are reported as below for the year ending December 31st:

	Gold.		Silver.	
	1894.	1895.	1894.	1895.
Imports.	\$743,046	\$1,810,357	\$7,309,196	\$12,610,327
Exports.	29,811	361,315	201,692	368,351
Excess, exports.	\$713,235	\$1,449,042	\$7,007,504	\$12,241,976

Adding the exports and imports in ores to those in coin and bullion, we have the following statement for the year 1895:

	Exports.	Imports.	Excess.
Gold.	\$104,966,338	\$34,379,693	E. \$70,586,645
Silver.	54,201,594	23,883,604	E. 30,317,990
Totals.	\$159,167,932	\$58,263,297	E. \$100,904,635
Totals, 1894.	149,065,542	38,984,201	E. 110,111,341

This shows an increase in 1895 of \$10,072,300 in exports and of \$19,279,096 in imports, the result being a decrease of \$9,206,796 in the balance exported.

The figures above are furnished by the Bureau of Statistics of the Treasury Department and include all United States ports.

Gold and Silver Exports and Imports, New York

For the week ending January 31st, 1895, and for year from January 1st, 1896, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$339,901	\$969,096	\$765,150	\$25,721	E. \$210,777
1896.	9,183,473	6,112,143	3,211,744	153,535	E. 5,757,539
1895.	25,548,166	520,742	2,975,809	161,089	E. 27,842,144
1894.	1,637,518	592,117	4,273,059	116,394	E. 5,321,476
1893.	14,744,569	95,064	2,796,481	295,207	E. 17,182,779
1892.	473,372	635,169	2,748,769	139,692	E. 3,222,132

The gold exported for the week went to the West Indies and South America; the silver nearly all to London. The gold imported was from Europe; the silver from Mexico and Central America.

FINANCIAL NOTES OF THE WEEK.

The bond issue continues to be the chief topic of discussion, and until next week, when the bids are announced, the result will remain in doubt. While there is no doubt that the bonds will be taken, the nature and kind of bids for them are still a matter of much speculation. The bulk of the bids will come from the banks, but the question is how large a proportion of these bids will be made on behalf of individual customers, and how much they will take for themselves, either as a basis for circulation or to sell by degrees. The average small investor finds it very much easier, if he wants government bonds, to buy them from his bank than to go through the process of sending in a bid to the Treasury, with all the forms required then, and for payment afterward.

There has been apprehension expressed in some quarters as to undue contraction of the currency and consequent tightness of money to be caused by the payments for the bonds. This apprehension has generally passed away, if it was ever really entertained. The payments for the bonds will not be concluded until the end of May, which is quite time enough for an easy adjustment.

No gold has been reported taken for exports this week with the exception of \$500,000 shipped from New York to South America. Gold continues to come in, about \$2,500,000 having been received from Europe during the week, while more is reported on the way. It is estimated that not less than \$10,000,000—and probably not more than \$15,000,000—of

the gold to be paid for the bonds will be brought from abroad. Nearly all of this comes here for account of American operators, for it does not appear probable that any large proportion of the bonds will be taken abroad.

Berlin dispatches say that the Bundesrath—the Imperial Federal Council—has rejected the resolution introduced in the Reichstag by Count von Mirbach on February 15th last and passed by that body, instructing the Government to issue invitations for an international monetary conference to take measures to bring about the rehabilitation of silver as a circulating medium.

The statement of the United States Treasury on Thursday, January 30th, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Jan. 23.	Jan. 30.	Changes.
Gold.	\$50,775,167	\$50,254,320	D. \$520,867
Silver.	19,219,482	21,589,666	I. 2,370,184
Legal tenders.	76,730,116	73,419,797	D. 3,310,319
Treasury notes, etc.	24,006,953	25,254,816	I. 1,247,863
Total.	\$170,731,738	\$170,514,599	D. \$217,139

Government deposits with national banks on the same date amounted to \$14,810,289, a decrease of \$55,123 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$137,403,280. Against these are held in the Treasury 13,401,928 coined standard silver dollars, and silver bullion purchased at a cost of \$124,001,352, making a total of \$137,403,280.

The statement of the New York banks—including the (9) banks represented in the Clearing House—for the week ending January 25th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

	1894.	1895.	1896.
Loans and discounts.	\$418,771,600	\$490,159,600	\$447,859,900
Deposits.	547,694,400	559,512,600	489,740,800
Circulation.	12,677,200	11,320,900	13,816,500
Specie.	126,895,800	81,175,600	76,169,900
Legal tenders.	119,070,800	104,583,000	83,952,900
Total reserve.	\$245,966,600	\$185,758,600	\$160,113,700
Legal requirement.	136,923,600	139,878,150	122,435,200
Surplus reserve.	\$109,043,000	\$45,880,450	\$37,678,500

Changes for the week this year were increases of \$2,570,400 in specie; \$2,116,800 in legal tenders, and \$5,382,950 in surplus reserve; decreases of \$6,008,300 in loans; \$2,663,000 in deposits, and \$112,900 in circulation.

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:

	Gold.	Silver.	Total.
Asso. Banks of New York.			\$76,160,900
1895.			81,175,600
Bank of England.	\$241,571,395		241,571,395
1895.	179,933,600		179,933,600
Bank of France.	387,481,500	\$247,724,100	635,205,600
1895.	424,123,958	246,911,612	671,035,570
Imp. Bank of Germany.			207,585,000
1895.			271,385,000
Austro-Hungarian Bank.	124,889,500	64,041,500	188,931,000
1895.	76,085,000	68,545,000	144,630,000
Netherlands Bank.	15,632,000	34,300,000	49,932,000
1895.	20,535,000	34,469,000	55,004,000
Belgian National Bank.			20,349,000
1895.			26,360,000
Bank of Spain.	40,022,000	51,247,000	91,269,000
1895.	40,021,000	57,202,000	97,223,000
Bank of Italy.	59,800,000	9,950,000	69,810,000
1894.	39,745,000	13,670,000	73,415,000
Imp. Bank of Russia.	351,560,000	44,075,000	395,635,000
1894.	214,032,000	112,761,600	326,793,600

The return for the Associated Banks of New York is of date January 25th; all the others are of date January 30th, except the Bank of Italy, whose return is dated December 10th, and the Bank of Russia, December 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Imports of gold and silver by water at San Francisco in December amounted to \$228,805, of which \$204,549 was from Mexico and the remainder from British Columbia. The total included \$91,997 in gold, mostly in bullion. Of the silver \$69,621 was in coin. The imports for the calendar year 1895 were from the following sources:

Mexico.	\$2,563,369
Australia.	487,502
British Columbia.	287,387
Honolulu.	50,000
Miscellaneous.	46,639
Total 1895.	\$8,434,297
Total 1894.	3,572,418

The descriptions imported in 1895 include \$1,506,918 in gold, of which \$865,301 was in foreign bullion and \$1,927,379 in silver, of which \$707,374 was in foreign coin, presumably Mexican. The above imports include only such specie as arrived by water

the bulk of the business doing consists of deliveries on old contracts. Alkali is in light request. Sal soda is dull. Bleaching powder has been fairly active at unchanged prices. We quote: Caustic soda, 2 1/2% @ 2-37% c. for spot according to test; Carbonated soda ash, 48% is '90@1c., according to quantities and deliveries. Alkali is 85@95c., according to test and package. Bleaching powder, prime brands, \$1 85@ \$1.90. Sal soda, 65@70c.

The shipments of heavy chemicals from Liverpool to the United States during 1895 were as follows: Caustic soda, 31,274 tons as against 20,494 tons in 1894; bleaching powder, 42,487 tons against 38,331 tons in 1894; salt cake, 14,410 tons against 12,016 tons in 1894; sal soda, 5,358 tons, against 4,638 tons in 1894; crystal carbonate, 1,352 tons against 1,348 tons in 1894; bicarbonate of soda, 727 tons against 342 ton in 1894.

Acids.—Manufacturers report a fair consumptive demand which, while not very active, is enough to prevent heavy accumulations in sellers' hands. Our quotations per 100 lbs. in New York and vicinity, in lots of 50 carboys or over are as follows: Acetic acids (in barrels), \$1.40@1.70. Muriatic acid, 18", 75@80c.; 20", 80@90c. Nitric acid, 36", \$3.50@4; 40", \$4@ \$4.50; 42", \$4.75@5.25. Oxalic acid, \$7.10@7.60. Mixed acids, according to mixture. Sulphuric acid, 66", 75@85c.; chamber acid, \$6.50@7.25 per ton at factory. Blue vitriol, \$3.65@4.10 according to size of order.

Brimstone.—We quote for shipments, best un-mixed seconds, \$15. Thirds are 50c. less. Spot or nearby is \$16 for seconds.

Fertilizing Chemicals.—There is a fair business doing in fertilizers, especially with the South. Prices show little change of consequence. Quotations are as follows: Sulphate of ammonia, gas liquor, \$2.50; bone, \$2.40. Dried blood, high grade, \$1.80@1.90; low grade, \$1.60@1.70 per unit. Azotine, \$1.80@1.90. Concentrated phosphate (30% available phosphoric acid), 70@71% c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 57c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 90@92c. per unit. Acidulated fish scrap, \$12, and dried scrap with few or no sales, nominally \$21 f. o. b. fish factory. Tankage, high grade, \$19@20; low grade, \$18@19. Bone tankage, \$21; ground bone, \$19@20. Bone meal, \$21 @ \$22.50.

In lots of 50 tons on contracts we quote, per 100 lbs.: Double manure salts, 48-53% (basis of 48%); New York, Boston and Montreal, \$1.10; Philadelphia and Norfolk, \$1.12; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.15. Sulphate of potash, 90%, and minimum, 96% respectively (basis of 90%); New York, Boston and Montreal, \$2.08@ \$2.10; Philadelphia and Norfolk, \$2.10; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.13.

Muriate of Potash.—Quotations for lots of 50 tons are as follows: 80-85% and minimum 95%, respectively (basis of 80%); New York, Boston and Montreal, \$1.78, Philadelphia and Norfolk, \$1.80; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.83.

Kainit.—Prices for kainit (minimum 23%) are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, \$8.80; Norfolk, \$9.15; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$9.55.

Nitrate of Soda.—Quotations are \$1.70@1.75 on the spot and for arrivals.

Valparaiso, Chili. Dec. 21.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—With the exception of the Lautaro Nitrate Company all the remaining nitrate producers have adhered to the proposed combination and it is hourly expected that the directory of the former in London will also give their acquiescence to the project. The transactions during the past fortnight amount to about 1,200,000 quintals at slightly higher prices than those ruling previously, 5s. 2d.@5s. 3d. being paid for December and January delivery of 90%, and 5s. 3d.@5s. 3 1/2d. for March and April; some business also done for July and August @5s. 6 1/2d. Several parcels of the refined quality have also changed hands at rates equivalent to 5s. 5d.@5s. 6d. according to delivery. We quote 5s. 2 1/2d. for 95% January and February, 5s. 3d. for March (guaranteed sailing during said month) and 5s. 5 1/2d. for 96%. The price of 5s. 2 1/2d. with 22s. 6d. all-round freight stand in 75% net cost and freight without purchasing commission.

A few vessels have been taken up for nitrate at 21s. 3d. from discharging ports, and 22s. 6d. from other ports, at which latter figure more are offered without finding charterers. For other produce there is no inquiry. The disposable tonnage is still increasing, amounting to 66,260 tons register. We quote as follows: Nitrate in iron vessels to United Kingdom: ports, 22s. 6d. per ton; to United States, 23s. 9d. to Hampton Roads or order.

MINING STOCKS.

Complete quotations will be found on pages 126 and 127 of mining stocks listed and dealt in at:

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

NEW YORK, Friday Evening, Jan. 31.

There has been no improvement in the demand for mining stocks since our last report. There are spasmodic bursts of semi-activity caused by occa-

sional inquiries from the public, but a steady demand has not been experienced for a long time in this city.

The New York Mining Exchange, from which so much is expected, will probably be opened for business about the middle of February. A committee from the exchange left for Denver last night, where it will meet the delegation of mining men which is to come East. The exchange has already fitted out its quarters in this city, and is practically ready for business.

During the week the Comstocks have been in small request. There were sales of 3,000 shares of Comstock Tunnel at 7@8c.; 200 shares of Consolidated California & Virginia at \$2.50; 50 shares of Crown Point at 30c., and 250 shares of Hale & Norcross at \$1.50.

The only California stock dealt in during the week was Standard Consolidated, of which 300 shares changed hands at \$1.85@1.90.

The Cripple Creek stocks continue to be the favorites in point of demand. The sales this week were 200 shares of Alamo at 9c.; 2,800 shares of Creede & Cripple Creek at 78c.; 1,200 shares of Cripple Creek Consolidated at 20@21c.; 11,200 shares of Croesus at 4c.; 1,200 shares of Gold & Globe at 24c.; 2,700 shares of Golden Fleece at \$1.70@1.75; 300 shares of Isabella at 58c.; 600 shares of Mount Rosa at 17@18c.; 3,500 shares of Pharmacist at 17@18c.; 100 shares of Portland at \$1.90, and 950 shares of Vic'or at \$5.50@5.75. Appropos of the latter the Victor Gold Mining Company has issued a circular signed by Mr. Eben Smith, vice-president and general manager of this company, in which he described the company's property and tells of its condition at the present time. It also gives a brief history of the mine, of which the most interesting item is the following: The mine was bought as a prospect in 1892 for \$65,000. It produced in 1893, \$191,321, at the cost of \$74,345. It produced in 1894, \$202,298, at a cost of \$69,786. During the year 1894 the mine was idle for 6 or 7 months, owing to labor strike. It produced in 1895, \$391,250, at a cost of \$151,864.50.

Of the other Colorado stocks we note sales of 400 shares of Iron Silver at 20c., 1,100 shares of Lacrosse at 10@12c.; 2,200 shares of Leadville Consolidated at 11@12c., and 1,100 shares of Small Hopes at 82@85c.

There was a sale of 50 shares of Ontario at \$11. Of Phoenix of Arizona 1,100 shares changed hands at 10@11c.

Chicago. Jan. 29.

(From Our Special Correspondent.)

The Chicago Mineral and Mining Board has completed its first week of existence, and each day's proceedings have shown a good growth, making it apparent that the Chicago public is looking with favor upon the Exchange. The total sales for the six days ending January 29th, footed up 308,700 shares. Rhyolite and finance stocks were in greatest demand more than 100,000 shares of both changing hands. Rhyolite advanced four points, Finance having lost nearly that much. Jefferson was in demand and on Wednesday a sale of 5,000 shares at 26c. was made, this price being 1c. higher than the Colorado Exchange quotations, and presumably brought about through the news that a good strike had been made in the Mattie L., one of the Jefferson properties. Some of the latest stocks to be listed are the Stockholm, the Defender, the Goldfield and the Gold & Globe. Transfer offices for a number of companies are opening up here, such mines as the Rhyolite, Goldfield, Thompson, of Cripple Creek, the Ingold Placer Mining Company, of Boulder, and the Great Gold Belt Mining Company, of Leadville being already in the field. Others are soon to follow and there is every indication that Chicago will have ample opportunity to invest in mining stocks during the coming year. The Mechem Investment Company, of Denver, has opened offices in the Western Union building of this city. Quotations by direct wires are daily received, and quotations are given of the Denver, Cripple Creek and Colorado Springs exchanges. The Mechem Company, although in business but about six weeks, are said to be doing a paying business already.

The bid prices and transactions recorded on the Chicago Mineral and Mining Board for the week ending January 29th were:

Name.	23	24	25	27	28	29	Sales.
Anaconda	.67 1/2	.68	.....	.....	.....	.....	1,900
Auchoria L.	2.95	.....	.....	2.85	.....	.....	.....
Bankers	.....	.....	.....	2 3/8	.....	.....	1,000
Boston & Colo.	.....	.....	.....	.02 1/2	.....	.....	2,000
Defender	.....	.....	.....	.01 1/2	.....	.....	18,000
Favorite	.....	10 1/8	10 1/8	10 1/8	.....	.....	3,500
Finance	.06 3/4	.06 1/4	.06 1/4	.04 1/2	.03 1/2	.....	88,000
Golden Fleece	1.57	.....	.....	.....	.....	.....	.....
Goldfield	.....	.....	.....	.02 1/2	.....	.....	32,000
Iron Mountain	.65	.....	.....	.....	.....	.....	7,200
Isabella	.23	.22 1/4	.22 1/4	.23 1/2	.26	.25	8,700
Jefferson	.67 1/4	.06	.06 1/2	.07	.....	.....	4,000
Justice	.....	.....	.....	.40	.....	.....	.....
Mattie Gibson	.16	.16 1/2	.17	.17 1/2	.....	.....	12,000
Pha maist	.....	1.80 1/2	1.80	.....	.....	.....	100
Portland	.....	.....	.....	.12 1/2	.13 1/2	.....	74,200
Rhyolite	.09 1/2	.13 1/2	.12 1/4	.12 1/2	.13 1/2	.....	15,000
Royal Age	.....	.....	.....	.02 1/2	.....	.....	13,100
Sleepy Hollow	1.09 3/4	0.09 1/2	1.0 3/4	1.0 3/4	.....	.....	12,100
Squaw Mountain	1.15 1/2	.11	.10 3/4	.11	.10	.....	8,700
Stockholm	.....	.....	.....	.01 1/4	.01 1/2	.....	37,000
Union Gold	.41 1/2	.40	.4 1/4	.41	.....	.....	10,200
Total shares sold, 324,700.							

Cleveland, O. Jan. 30.

(From Our Special Correspondent.)

Republic Iron Company stock is scarce and prices are advancing. Holders are asking \$16, and \$14 is bid freely. In past years the Republic declared

large dividends. Its output has been decreasing in recent years and the impression has been that the ore was about exhausted. But at the north end of the mine the lenses have been widening enough to warrant the company in sinking another shaft, and the prospective yield for 1896 will probably slightly exceed that of 1895, which was 174,000 tons. Sales have been made this week in Lake Superior Consolidated at \$20.50. The general tone of the iron ore stocks is strong, but the local money market is very close and transactions are few. It is estimated that Cleveland bankers will bid for \$2,000,000 of the gold bonds, and money is held close awaiting the results of these bids.

Following are quotations of current prices:

Name of Company.	Par val.	Jan. 30.	
		Bid.	Ask.
Aurora	\$25	.....	\$8
Chandler	25	\$38	40
Cleveland-Cliffs Iron Co.	100	40	42
Jackson Iron Co.	25	70	75
Lake Superior Iron Co.	25	30	32
Lake Superior Consolidated	100	20	21
Minnesota Iron Co.	100	70	.....
Pittsburg & Lake Angeline	25	75	85
Republic Iron Co.	25	14	16

Colorado Springs, Colo. Jan. 25.

(From Our Special Correspondent.)

The mining stock market was rather dull during the early part of the week, but toward the close business improved, both as to volume and as to prices. In view of the dullness in other lines of business elsewhere our brokers are encouraged by the way trading in mining stocks keeps up. The exchanges here continue to receive inquiries from all parts of the country. It is a noteworthy fact that the falling off in business has been in some of the lowest priced and least favorably known stocks. This fact will, doubtless, serve as a deterrent to the promoters of wildcat companies. The stocks which are known to have intrinsic merit or good prospects continue to appeal to investors.

The most important item of news this week is the statement that at a special meeting held on Thursday by the governing committee of the Colorado Springs Mining Stock Exchange the application for membership was considered from several members of the Board of Trade Exchange. The result was that 25 of them were accepted as members of the old Exchange at an entrance fee of \$500 each, although the market value of these seats is now \$950. The total membership of the Colorado Mining Stock Exchange is now 93.

COLORADO SPRINGS, January 28th.—(By Telegraph.)—Twenty-five brokers of the Board of Trade having joined the Mining Stock Association, the Board of Trade has consolidated with the Consolidated Mining Exchange, and the first call was held in the rooms of the latter this morning. This leaves again only two exchanges in this city.

BY TELEGRAPH.

Messrs. Gardner & Co. wire us the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending January 30th, as follows:

Name of Company.	24	25	7	28	29	30
Alamo	.08 1/4	.08 1/2	.08 1/2	.08 1/2	.08 1/2	.09
Anaconda	.79	.68 1/2	.65 1/2	.70	.69	.69
Argentum-Juniata	.60	.60	.61	.61	.61	.60
Blue Bell	.....	.10	.11	.12	.11	.10
Cripple Creek Con.	.....	.20 1/2	.20 1/2	.20	.20	.19 1/2
Golden Fleece	1.40	1.40	1.65	1.65	1.65	1.63
Isabella	.57 1/2	.57	.56 1/2	.57	.57 1/2	.57
Mattie Gibson	.51	.50	.50	.54	.50	.50
Mount Rosa	.16 1/2	.16 1/2	.18 1/2	.19	.18	.17
Pharmacist	.16 1/2	.17 1/2	.18	.18	.17	.17
Portland	1.87	1.87	1.85	1.85	1.85	1.83
Silver State	.....	.24	.02 1/2	.02 1/2	.02 1/2	.02
Union	.40 1/2	.41	.43	.44	.43 1/2	.41
Work	.30 1/2	.30 1/2	.30 1/2	.21 1/2	.22	.20

In addition to the above quotations Messrs. A. Pick & Co., of New York, furnish the following:

Name.	24	25	27	28	29	30
Bankers	.20 1/4	.20 1/4	.20	.20	.20 1/4	.19
Des Moines	.08 1/4	.08 1/4	.08 1/4	.08 1/4	.08 1/4	.08
Gold & Globe	.2	.25	.21 1/2	.22	.20 1/2	.20 1/2
Gold Standard	.09 1/2	.10	.10 1/2	.10 1/2	.10 1/2	.10
Isabella	.57 1/2	.57	.56 1/2	.57	.57 1/2	.57
Jefferson	.22 1/2	.24	.24 1/2	.24 1/2	.24	.22
Keystone	.08 1/4	.08	.08	.08	.08	.08

Leadville, Colo. Jan. 25.

(From our Special Correspondent.)

To-day was mining exchange day at the Leadville Ice Palace, and all the mining exchanges of the State were represented. There were three calls during the day, and nearly 2,000,000 shares changed hands. At a meeting held during the evening an attempt was made to agree on a uniform rate of commission to be charged by brokers, but after a lengthy squabble it was decided to let each exchange make its own rate. No action was taken regarding the proposed trip of the mining exchanges to New York.

Salt Lake City, Utah. Jan. 25.

(Special Report of James A. Pollock.)

That promised improvement in the local mining stock market is making its appearance in good shape and the volume of business is very gratifying, this being especially the case in the outside order department.

The board of directors of Ajax has reinstated the

5-cent assessment rescinded some time ago. The stock was not very active but held its own. Alliance is preparing for the coming battle with the Silver King, and the stock continues weak, ranging in the neighborhood of 65 cents. Anchor is making a good record at both mines and mill, and the stock showed more strength, although little business was done in it. Bullion Beck is making some heavy shipments and the properties are reported to be in good shade. It is anticipated that the earnings of the company will make possible an increased dividend next month.

Some rich samples of the recently opened ore bodies in the Dalton were received, and the assays gave very flattering returns. The stock showed some strength, sales being made several cents higher than was the case last week. The officers report a carload of the high grade ore ready for shipment as soon as the snow will permit.

But little Horn Silver is being offered on this market, the highest bid being around \$2. Holders do not care to sell at those figures.

Mammoth is reported to have found the high-grade ores for which the management was looking on the 1,400-ft. level. The stock just about holds its own. The improvements recently decided upon are being placed. It is anticipated that the new shaft at the Morgan (Mears) will be in operating order within the next week or two. Little business is being done in the stock. The deferred annual meeting of the stockholders of the Mercur Company was held on the 20th, the date of the payment of the \$25,000 regular monthly dividend. The report of President Dern was of a most satisfactory character and was received with great approval by the stockholders. It proved the property to be in excellent shape, and the outlook for the coming year is most encouraging. The previous board of directors was unanimously re-elected, and a vote of thanks tendered to the members for their able management of the company's affairs. The stock made a rapid advance during the week, closing at \$6.70 bid and \$6.75 asked.

Ontario was in demand in the neighborhood of \$9.25. It is thought dividends will be regular in the future. Rover will probably have a mill in the very near future, the ore development making the improvement possible, in fact, imperative. Silver King will pay its usual dividend of \$37,500 on the 7th. The annual meeting has been held. The stock is held very strongly above \$15. Tetra is working with a double shaft, and the face of the tunnel is in very promising ground. Utah sends in its usual amount of high-grade-ores each week, and the stock is held very strongly above \$1.05.

San Francisco. Jan. 25.
(From Our Special Correspondent.)

The opening on Monday was very quiet, but later in the day matters brightened and there was a slight rise in the North End and Gold Hill stocks. On Tuesday activity was maintained, and on Wednesday the Middle Comstocks joined in and there was a brisk buying business, which gave the Exchange quite a lively appearance. Prices were stronger than for some time past.

Later in the week the market continued strong in spite of several little raids, directed chiefly against Occidental and Confidence. At the close prices were heavy under the influence of a number of sales and an apparently strong effort to bear certain stocks.

Some closing quotations were: Consolidated California & Virginia, \$2.45; Ophir, \$1.45; Hale & Norcross, \$1.30; Confidence, \$1.05; Best & Belcher, 88@90c.; Occidental, 88@91c.; Mexican, 61@63c. The Bodies made quite a show during the week: Bodie Consolidated was quoted 39@41c.; Bulwer, 16c.; Mono, 6c.

The following standing committees for the present year were announced at the regular weekly executive session of the San Francisco Stock and Exchange Board Wednesday morning: Executive committee, H. L. Van Wyck, Charles W. Fox, William Edwards, George I. Ives, M. J. McDonald; finance committee, A. B. Ruggles, R. W. Heath, W. F. White; stock list committee, R. F. Rogers, Werner Stauff, E. Epstein, H. J. Kuhl, E. L. Atkinson; commissions and rules committee, George W. Kelly, J. Mackenzie, A. F. Coffin.

Judge Seawell has sustained the election of Charles H. Fish and the other directors of the Consolidated California & Virginia Mining Company. The decision was in the suit brought by Theodore Fox to set aside the election of the defendants as directors. Objection was made that Fish, as trustee, voted stock which did not appear on the books of this company in the names of the real owners. Judge Seawell held the act of the legislature urged by the plaintiff in support of his position to be unconstitutional.

The Orleans Mining Company has levied an assessment of 10c. per share, delinquent February 29th.

THE NEW EXCHANGE.

The final arrangements have been concluded for the formation and operation of the new Gold Mining Exchange, of San Francisco, at a meeting at which all the charter members signed the constitution and by-laws. The Exchange can now be considered as fairly launched. The permanent officers are Gen. Walter Turnbull, president; ex-Lieutenant-Governor John Daggett, vice-president; J. F. Crossett, secretary; D. E. Miles, treasurer. Since the proposition for the formation of the Exchange has been made public, the temporary officers have been flooded with communications, and requests for in-

formation have come from all parts of the country, showing how much attention is given at the present time to this class of investment. In making its selections for charter members, the committee on membership gave preference to those engaged directly in mining enterprises and the purely speculative element was put upon the waiting list, which fact indicates that the Exchange means to do business on sound and legitimate lines. Arrangements have been made for offices, which are to be located at No. 11 Rotunda of the Mills Building, and the officers have been authorized to fit them up in a substantial and handsome manner. The standing committees will be appointed at once. The most important is the Committee on Mines and Mining, and this will be composed of men chosen from the best known and most influential miners of the coast.

A project for a development company, which will operate as an auxiliary of the Gold Mining Exchange, is being worked up. The idea is to form a company composed of men of substantial financial standing, who are interested in legitimate mining operations; this company to be ready to develop and promote mining enterprises, where the owners have not the necessary capital. All money which may be put in will only be expended under the supervision of the engineers of the development company and on proper reports. While the investment money is being expended, the properties will be entirely in the hands of the development company, and the intention is to have all reports entirely unbiased and free from any local influences, and to offer substantial assistance to meritorious prospects.

The following are some of the charter members of the new Exchange: Walter Turnbull, John Daggett, Frank McLaughlin, Robert McMurray, Oscar Newhouse, F. J. Fletcher, I. R. Wilbur, H. D. Ranlett, George R. Wells, J. F. Crosett, Martin Jones, C. J. Schuster, C. G. Yale, Oliver O. Howard, Henry Picboir, F. C. Siebe, David Rodrick, Felix Chappelle, Hugh McCrum, W. R. Smedberg, M. A. Hurley, F. K. Stevenot, M. F. Tarpey, Emil Sutro, Theodore Reichart, C. L. Hovey, W. K. Flint and B. F. Lacy.

BY TELEGRAPH.

San Francisco, Cal., January 31st.—The opening quotations to-day were as follows: Best & Belcher, 86c.; Bodie Consolidated, 40c.; Bulwer, 13c.; Chollar, 59c.; Consolidated California & Virginia, \$2.45; Gould & Curry, 50c.; Hale & Norcross, \$1.25; Mexican, 62c.; Mono, 16c.; Ophir, \$1.40; Savage, 30c.; Union Consolidated, 39c.; Yellow Jacket, 40c.

Paris. Jan. 16.

(From Our Special Correspondent.)

The defeat of the Chartered Company's conspiracy, and the belief that order will be maintained in the Transvaal, with perhaps some reforms in the government, has led to an upward reaction in the African gold stocks, and all their values are somewhat higher.

Our insular neighbors are in a frame of mind very amusing to an observer. Their glorification of the filibuster, whose operations they condemned so severely when he was an American, is very characteristic and has brought out strongly those qualities which have made the Englishman so hated here and in other continental countries.

The other stocks have not been very active, but in some quarters an unexpected strength has been developed. This is especially the case with the copper shares, which have generally increased in price, and are expected to go higher.

Huanchaca has declined on reports of trouble from inundations, which may affect the working of the great mine. The other silver stocks, which have been neglected for a good while, are coming into favor again, and there are signs of a new speculation in them. In London there has been a sharp rise in Broken Hill shares, but they are not considered here.

For some time past there have been rumors of dissensions in the management of the Comptoir d'Escompte, and now M. Vlasto, the vice-president, has resigned. This, it is said, will remove the discordant element.

The tax on Bourse transactions for the year 1895 produced a total amount of 10,082,000 fr. revenue. This was 82,000 fr. more than the estimate of the Ministry of France, an unusually close correspondence.

The new Chinese Bank to be administered by France and Russia has been duly constituted. The French members of the government are Baron Hottinguer, representing the Bank of France; M. Denormandie, the Comptoir d'Escompte; M. J. Stern, the Banque de Paris et des Pays Bas, and M. Rene Brice, the Credit Lyonnais. The four institutions named take part in the new international bank. A majority of the directors are Russian financiers.

I have mentioned heretofore that there were differences of opinion as to the expediency of the proposed Exposition of 1900. Now a serious check has arisen with regard to the preparations. You will remember that the State agreed to contribute 20,000,000 fr. to the expenses, while the municipality of Paris was to contribute 20,000,000 fr. also. The plans provided for the inclusion of the space on the north bank of the Seine from the river to the Champs Elysées; the Palais d'Industrie was to be torn down and a magnificent bridge to be built across the river, to serve as a permanent memorial. Now the special committee of the Chamber of Deputies has voted that no part of the Exposition shall be north of the Seine, except that the Trocadero shall be used. To this the city of Paris objects, and claims that, as the plans are to be changed, the municipal-

ity is no longer bound by its agreement to contribute 20,000,000 fr. This disagreement may result in the abandonment of the whole project.

Should this follow, I do not think that many will regret it, outside of the few who expect to make money directly. These are not so numerous as might be supposed; for the apparent money benefits to certain classes in these great expositions are really more than offset by the losses before and after. Moreover, there are certain injuries due to the collection of great masses of people which are realized more and more on each occasion.

Who knows? Your great city of Chicago may retain the honor of holding the last Universal Exposition.

The Transvaal troubles and the doubtful feeling which has sprung up between England and Germany have taken more attention than any other event just now; the Turkish question and your own new policy are laid aside for the moment. Truly the world is uneasy just now, and it is difficult to forecast even the immediate future; but our financiers are preparing themselves to meet trouble. AZORE.

MEETINGS.

ADDIE C. MINING COMPANY, annual meeting, at the office, Room 204, Mining Exchange, Denver, Colo., February 8th, at 3 p. m.

ALLIANCE MINING COMPANY, annual meeting at the office 168 South East Temple street, Salt Lake City, Utah, February 3d, at 2 p. m. Transfer books close February 1st, and re-open February 4th.

BUSHWHACKER MINING COMPANY, annual meeting, at the office, Aspen, Colo., February 11th, at 2 p. m.

GRANITE MINING COMPANY, annual meeting, at the office, Room 6, Lewisohn Building, Butte, Mont., February 3d, at noon.

LADY EMMA MINING COMPANY, annual meeting, at the office, Mills Building, San Francisco, Cal., February 5th.

SULPHUR BANK QUICKSILVER MINING COMPANY, annual meeting at the office, No. 306 California street, San Francisco, Cal., February 3d, at noon.

YELLOWSTONE COAL MINING COMPANY, stockholder's meeting, at the office, 29 East Granite street, Butte, Mont., February 3d, at 8 p. m.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Delq.	Sale.	Amt.
Alta.....	Nev.	6	Feb. 17	.....	.10
Anchor Coal.....	Wash.	6	"	Mar. 5	.03
Anita Gold.....	Cal.	7	Jan. 18	Feb. 4	.08
Bullion Con.....	"	6	Dec. 24	Jan. 27	.10
Butte & Boston.....	Mont.	.....	Jan. 10	Feb. 3	.00 1/2
Channel Bend.....	Cal.	.....	Feb. 21	Mar. 13	.35
Con. New York.....	Mont.	14	Jan. 15	Feb. 6	.05
Florence G. & S.....	S. D.	8	Feb. 1	Mar. 1	.02 1/2
Gray Eagle.....	Cal.	42	"	"	.05
Good Hope.....	"	4	Jan. 30	Feb. 20	.70
Hale & Norcross.....	Nev.	108	"	"	.15
Haskell.....	Cal.	1	"	"	.01
Hite.....	"	2	"	"	.10
Inter-Mountain.....	S. D.	3	"	"	.00 1/2
Jenny Lind.....	Cal.	.....	Feb. 1	Mar. 18	.01 1/2
Julia Con.....	Nev.	27	"	"	.05
Justice.....	"	.....	Feb. 17	"	.10
Kimberly G. & S.....	Cal.	7	Jan. 25	Feb. 15	.002
Lady Wash. Con.....	Nev.	11	Feb. 17	Mar. 10	.05
New Basil Con.....	Cal.	29	Jan. 6	Feb. 19	.05
Occidental Con.....	Nev.	21	"	"	.15
Orleans.....	Cal.	.....	"	Mar. 24	.10
Rainbow.....	S. D.	9	Jan. 22	Feb. 11	.001
Savage.....	"	88	Feb. 6	"	.20
Shasta.....	Cal.	3	"	Mar. 10	.001
Trinity Con.....	"	.....	"	Feb. 27	.04
Ybarra.....	Mex.	3	Jan. 27	"	.50

DIVIDENDS PAID BY MINING COMPANIES, JANUARY AND YEAR 1896.

NAME OF COMPANY.	Loca-tion.	Paid in January.	Paid in since Jan. 1.
Alaska-Treadwell.....	Alaska..	75,000	75,000
Bangkok-Cora Belle.....	Colo.	3,000	3,000
Belden, F. E. (Mica).....	N. H.	4,000	4,000
Bullion-Beck & Champion.....	Utah.....	25,000	25,000
Centennial-Eureka.....	"	30,000	30,000
Dominion Coal.....	N. S.	600,000	600,000
Gold Coin.....	Colo.....	15,000	15,000
Golden Fleece.....	"	18,000	18,000
Gold & Globe Hill.....	"	15,000	15,000
Highland.....	So. Dak.	25,000	25,000
Homestake.....	"	31,250	31,250
Horn Silver.....	Utah.....	50,000	50,000
Maryland Coal.....	Id. ....	.....	.....
Mercur.....	Utah.....	25,000	25,000
Moose.....	Colo.....	6,000	6,000
Napa Con. (Quicksilver).....	Cal.....	20,000	20,000
Ontario.....	Utah.....	.....	.....
Osceola Con.....	Mich.....	75,000	75,000
Silver King.....	Utah.....	37,500	37,500
Smuggler-Union.....	Colo.....	500,000	500,000
Tom Boy.....	"	.....	.....
Utah.....	Utah.....	1,000	1,000
Victor.....	Colo.....	20,000	20,000
Victor L. & M.....	"	3,000	3,000
Totals.....		\$1,588,750	\$1,588,750

This list is as complete as we can secure at present, and the 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 of stock quotations for Boston, Mass. listing companies like Allouez, Arnold, Atlantic, and others with columns for location, par value, and dates from Jan. 24 to Jan. 31.

* Official quotations Boston Stock Exchange. Total sales, 60,543.

NEW YORK.*

Table of stock quotations for New York listing companies like Alamo, Anaconda, Argentinum, and others with columns for location, par value, and dates from Jan. 25 to Jan. 31.

* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. Total sales, 36,906.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad listing companies like Balt. & Ohio, Ches. & Ohio, and others with columns for par value and dates from Jan. 25 to Jan. 31.

* Official quotations N. Y. Stock Exchange. Total shares sold, 3,9315.

PITTSBURG, PA.*

Week ending Jan. 30.

Table of stock quotations for Pittsburgh, Pa. listing companies like Nat. Gas, Allegheny, and others with columns for location, par value, bid, and ask prices.

* Official quotations Pittsburg Stock Exchange.

COLORADO SPRINGS, COLO.*

Large table of stock quotations for Colorado Springs, Colo. listing companies like Ajax, Alamo, American C, and others with columns for par value and dates from Jan. 20 to Jan. 25.

Total shares sold: Listed, 1,041,001; Unlisted, 1,257,710; Mining Stock Association, 457,150; Consolidated Exchange, 1,145,000; 1,470,100.

ST. LOUIS, MO., STOCKS.

Week ending Jan. 23.

Table of stock quotations for St. Louis, Mo. listing companies like Central Lead, Con. Coal, and others with columns for company name, par value, bid, and last dividend.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, Cal. listing companies like Alta, Belcher, Best & Belcher, and others with columns for location, par value, and dates from Jan. 25 to Jan. 31.

* Official telegraphic quotations San Francisco Stock Exchange.

BALTIMORE, MD.*

Week ending Jan. 30.

Table of stock quotations for Baltimore, Md. listing companies like Balt. M. & S., Conrad Hill, and others with columns for location, par value, bid, and ask prices.

* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES.

Jan. 31.

Table of miscellaneous securities listing companies like American Coal, Chateaugay Ore & Iron, and others with columns for location, par value, bid, and ask prices.

LONDON. Jan. 17.

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers). Lists companies like Alaska-Mexican, Alaska Trend, Alaska United, Banner, Cripple Creek G. F., etc.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par val., Jan. 21, Jan. 22, Jan. 23, Jan. 24, Jan. 25, Sales. Lists companies like Addie C., Agate, Alamo, Amity, Anaco, etc.

PARIS. Week ending Jan. 16.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Prices (Opening, Closing). Lists companies like Aciéries de Creusot, Firminy, Fives-Lille, etc.

PHILADELPHIA, PA.

Table with columns: NAME OF COMPANY, Location, Par Value, Jan. 23, Jan. 24, Jan. 25, Jan. 27, Jan. 28, Jan. 29, Sales. Lists companies like Acety. L.H. & P., Bethlehem, Cambria Iron, etc.

MEXICO. Week ending Jan. 23.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Prices (Opening, Closing). Lists companies like Amistad y Concordia, Angustias, Arevalo y Anexas, etc.

SALT LAKE CITY, UTAH. Week ending Jan. 25.

Table with columns: Name of Company, Par value, Bids, Asked, Actual selling price, Name of Company, Par value, Bids, Asked, Actual selling price. Lists companies like Ajax, Alliance, Amer. Nat. Gas, etc.

ASPEN, COLO.

Table with columns: NAME OF COMPANY, Location, Par value, Bids, Asked, Sales, Price. Lists companies like Alta Argent., Argentin-Juniata, Aspen Contact, etc.

VALPARAISO, CHILE. Week ending Dec. 21.

Table with columns: NAME OF COMPANY, Capital, Share value, Last dividend, Prices (Bids, Asked, Last sale). Lists companies like Arturo Prat, Caracoles, Descub. de Huantajaya, etc.

HELENA, MONT.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bids, Asked, Shares sold, Price, Date. Lists companies like Am. Dev. & M. Co., Bald Butte, Benton Group, etc.

SHANGHAI, CHINA. Dec. 27.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Last dividend, Price. Lists companies like Jelebu M. & Trad., Punjom M. Co., Ltd., etc.

DULUTH, MINN.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bids, Asked, Price. Lists companies like Adams Iron, Biwabik Mt. Iron, Lake Superior Con., etc.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES

Main table with columns: Name and Location of Company, Capital Stock, Shares, Dividends, Assessments, Name and Location of Company, Capital Stock, Shares, Assessments. Lists various 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 \$31,320,000 in dividends, and the Cons. Virginia \$42,380,000. ‡ Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. § Previous to this company's acquiring Northern Belle, that mine paid \$400,000 in dividends against \$425,000 in assessments.

CLASSIFIED LIST OF ADVERTISERS.

Air Compressors and Rock Drills
 Bostelmann, Louis F.
 Bullock, M. C., Mfg. Co.
 Burlington Rock Drill Co.
 Clayton Air Compressor Works.
 Fraser & Chalmers.
 Gates Iron Works.
 Ingersoll-Sergeant Drill Co.
Aluminum Bronze
 Fairbanks Co.
Automatons
 Bucyrus Steam Shovel & Dredge Co.
 Fraser & Chalmers.
 Gates Iron Works.
Anti-Friction Metals
 Besley, Chas. H., & Co.
 Chester Steel Cast. Co.
Architects and Builders
 Burlington Bridge Co.
 Pittsburg Bridge Co.
 Pollock, Wm. B. & Sons.
Assayers and Chemists
 Alsworth, Wm. Sm., & Ref. Wks.
 Baker & Adamson.
 Baker & Co.
 Becker, Christian.
 Bullock & Crenshaw.
 Denver Fire Clay Co.
 Elmer & Amend.
 Gates Iron Works.
 Henry Hill Chem. Co.
Attorneys, Corporation
 Emik, C. E.
 Jones & Rieft.
 McIndoe, H.
Automatic Boiler Feeds
 D'Eate & Seelye.
Babbit's Metal
 Besley, Chas. H., & Co.
Bankers and Brokers
 Bonbright, W. P., & Co.
 Canfield, A. A.
 Canfield & Huff.
 Decker, L. H.
 Dorey, U. H.
 Dornaday Rope & Co.
 Edsall, Clarence & Co.
 Fall, Brooks & Cramer.
 Farnsworth, C., & Co.
 Fletcher, C. S., & Co.
 Gardner & Co.
 Grant, E. R.
 Handy & Harman.
 Harriott, W. M.
 Hendricks, J. J.
 Hodgins, L. W.
 Hicks & Benzie.
 Kenrick, W. F.
 Kinney, M.
 Kjellander, C. F., & Co.
 Lentz, John S.
Belting
 Carpenter, Geo. B., & Co.
 Hendrie & Bothhoff
 Mfg. Co.
 Lelphelmer, N.
 Miller, Chas. N., & Co.
 Mayer, Andrew
Belt Lacing
 Bristol Co.
Blasting Caps
 Metallic Cap Mfg. Co.
Blasting Batteries
 Climax Fuse Co.
Lau, J. H., & Co.
Pressure Blowers
 Pennersville Blower Co.
Boilers
 Denver Eng. Wks. Co.
 Enterprise Boiler Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Philadelphia Eng. Wks., Ltd.
Brattice Cloth
 Besley, Chas. H., & Co.
Brewers
 Pabst Brewing Co.
Brick Machinery
 Freese, E. M., & Co.
Bridges
 Berlin Bridge Co.
 Pittsburg Bridge Co.
Buckets
 Scaife, Wm. B. & Sons.
Carbons
 Bishop, Victor, & Co.
 Bostelmann, Louis F.
 Lexow, Theodore.
Chain and Link Belting (See Belting.)
Chemicals
 Baker & Adamson.
 Bullock & Crenshaw.
 Elmer & Amend.
 Henry Hill Chem. Co.
Coal
 Berwind-White Coal Mfg. Co.
Caster and Curran
 Consolidation Coal Co.
Coal Cutters
 Ingersoll-Sergeant Drill Co.
 Jeffrey Mfg. Co.
 Leyner, J. Geo.
 Link Belt Machinery Co.
Compressors
 Clayton Air Compressor Works.
 Norwalk Iron Works Co.
Concentrators, Crushers, Pulverizers, Separators, Etc.
 Allis, Ed. P., & Co.
 Beckett Foundry & Machine Co.
 Blak, T. Geo., & Co.
 Boston Ore Machinery Co.
 Bradley Pulverizer Co.
 Chas. I. W. Works.
 Denver Eng. Works Co.
 Englebach Mach. Mfg. Co.
 Fraser & Chalmers.
 Free Vanner Concentrator.
 Gates Iron Works.
 Hendrie & Bothhoff Mfg. Co.
 Joplin Mach. Co.
 Krom, S. K.
 Krupp, F.
 Link Belt Machinery Co.
 McCully, R.
 Scoville, H. H., & Co.
 Stedman Foundry & Mach. Co.
 Waburn-Swenson Mfg. Co. (See Machinery.)
Contractors (See Machinery.)
Copper Dealers and Producers.
 American Metal Co.
 Arizona Copper Co.
 Atlantic Mining Co.
 Balbach S. & Ref. Co.
 Bath, H., & S. N.
 Boston & Mont. M. Co.
 Bridgeport Copper Co.
 Butte & Boston M. Co.

Canadian Copper Co.
 Copper Queen Mfg. Co.
 Detroit Copper Mfg. Co.
 Elliott's Metal Co., Ltd.
Corrugated Iron
 Berlin Iron Bridge Co.
 Scaife, W. B. & Sons.
Crucibles, Graphite, Etc.
 Denver Fire Clay Co.
 Dixon, Jos. Crucible Co.
Dampers and Regulators
 D'Eate & Seelye.
Diamonds
 Bishop, Victor, & Co.
 Bostelmann, L. F.
 Lexow, Theodore.
Diamond Drills
 Bishop, Victor, & Co.
 Bostelmann, L. F.
 Bullock Mfg. Co., M.C.
 Lexow, Theodore.
 Sullivan Machinery Co.
 (See Air Compressors and Rock Drills.)
Dampers
 Young, Wm. R.
Drawing Materials
 Besley, Chas. H., & Co.
 Dietzgen, E. & Co.
 (See Engineering Instruments.)
Dredges
 Bucyrus Steam Shovel & Dredge Co.
 Souther & Co.
Dryers
 Brown, Horace T.
 Cummer, F. D. & Son Co.
 Denver Eng. Wks. Co.
Dump Cars
 Denver Eng. Works Co.
 Hendrie & Bothhoff Mfg. Co.
Educational Institutions
 Arizona School of Mines.
 Columbian University.
 Chicago School of Assaying.
 Correspondence School of Mines.
 Lehigh University.
 Mass. Inst. of Technology.
 Michigan Mining School.
Electrical Batteries
 Jacobeth, James, & Co.
Electrical Machinery and Supplies
 Besley, Chas. H., & Co.
 Carl Electric Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 General Electric Co.
 Jeffrey Mfg. Co.
Elevators, Conveyors and Hoisting Machinery
 Brown Hoist & Conv. Mach. Co.
 Caldwell, H. W., & Co.
 California Wire Wks.
 Cooper, Hewitt & Co.
 Crook, W. A., & Bros. Co.
 Denver Eng. Wks. Co.
 Field & Gutzman.
 (See Wire Rope Tramway and Machinery.)
Emery Wheels
 Besley, Chas. H., & Co.
 New York Belting & Packing Co., Ltd.
Engineers, Chemists, Metallurgists
 See Directory Pages 4, 5 and 6.
Engineers' Instruments and Supplies
 Buff & Berger.
 Bullock & Crenshaw.
 Dietzgen, E., & Co.
 Fauth & Co.
 Gurley, W. & L. E.
 Kurtz & Co.
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Dayton Gas Engine & Mfg. Co.
 Enterprise Boiler Co.
 Ellison, Wm., & No.
 Fraser & Chalmers.
 Lidgerwood Mfg. Co.
 Philadelphia Eng. Works, Ltd.
Excavators
 Bucyrus Steam Shovel & Dredge Co.
 Souther & Co.
 Vulcan Iron Works.
Fire-Brick and Clay
 Clair, A. T.
 Denver Fire Clay Co.
Furnaces
 Brown, Horace.
 Gates Iron Works.
 Hoskins, Wm.
 (See Machinery.)
Fuses, Powder
 Ingersoll-Sergeant Drill Co.
Fuse, Safety
 Climax Fuse Co.
Gas Engines
 Dayton Gas Engine & Mfg. Co.
Gas Works
 Pollock, Wm. B. & Co.
 Weller, J. & Co.
Gauges, Recording, Etc.
 Bristol Mfg. Co.
Gearing
 Besley, Chas. H., & Co.
 Chester Steel Cast. Co.
 Denver Eng. Wks. Co.
Grease, Graphite, Etc.
 Besley, Chas. H., & Co.
 Dixon, Jos. Cruc. Co.
Harvyl Steel
 Pierce & Miller Engineering Co.
Heavy Machinery
 Denver Eng. Works Co.
 Fraser & Chalmers.
 Gates Iron Works.
Hose, Rubber, Etc.
 New York Belting & Packing Co., Ltd.
Injectors
 Penberthy Injector Co.
Insulated Wires and Cables
 Okonite Co., Ltd. The
Insurance Companies
 Hartford Steam Boiler Inspect' and Ins. Co.
 Mutual Life Insurance Co.
Lead Lining for Chlorination Tubs.
 Raymond Lead Co.
Locomotives
 General Electric Co.
 Hunt, C. W., & Co.
 Porter, H. K., & Co.

Machinery, Milling and Other Machinery
 Allis, Ed. P., & Co.
 Bacon, E. Co.
 Bocket Fdy. & Mch. Co.
 Besley, Chas. H., & Co.
 Blake, T. A.
 Bostelmann, L. F.
 Boston Ore Mach'y Co.
 Bradley Pulverizer Co.
 Buckeye Engine Co.
 Bullock, M. C. Mfg. Co.
 Caldwell, H. W., & Co.
 Card Electric Co.
 Carter, Geo. B., & Co.
 Channon, H. Co.
 Colorado Iron Works.
 Connorsville Blower Co.
 Crook, W. A., & Bros. Co.
 Davis-Colby Ore R. Co.
 Denver Eng. Wks. Co.
 Ellison, Wm., & Son.
 Englebach Mfg. Co.
 Field & Gutzman.
 Fraser & Chalmers.
 Gates Iron Works.
 Hammond, Mfg. Co.
 Hendrie & Bothhoff Mfg. Co.
 Ingersoll-Sergeant Drill Co.
Manganese Steel.
 Taylor Iron & Steel Co.
Metal Dealers
 American Metal Co.
 Am. Zinc Lead Co.
 Baker & Co.
 Bath, Henry & Son.
 Besley, Chas. H., & Co.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 Foster, Blackett & Wilson.
 James & Shakspeare.
 Johnson, Matthey & Co.
 Lambert's Wharf Co.
Metallurgical Works and Ore Processors
 Amer. Zinc Lead Co.
 Baker & Co.
 Balbach S. & Ref. Co.
 Baltimore Copper Wks.
 Bridgeport Copper Co.
 Canadian Copper Co.
 Denver Eng. Wks. Co.
 Elliott's Metal Co., Ltd.
 Eureka Co.
 Foster, Blackett & Wilson.
 James & Shakspeare.
 Johnson, Matthey & Co.
 Lambert's Wharf Co.
Mine Cars
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Hendrie & Bothhoff Mfg. Co.
 Hunt, C. W., & Co.
 Sheffield Car Co.
 (See Machinery.)
Mine, Mill and Smelters Supplies.
 Carpenter, Geo. B., & Co.
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Parkhurst & Wilkinson.
 (See Machinery.)
Mining and Land Companies
 Atlantic Mfg. Co.
 Arizona Copper Co.
 Boston & Mont. Mfg. Co.
 Butte & Boston Mfg. Co.
 Clark Land & Mines Co.
 Copper Queen Mfg. Co.
Nickel
 Canadian Copper Co.
Ore Roasters
 Brown, Horace T.
 Cummer, F. D., & Sons Co.
 Davis-Colby Ore Roaster Co.
Ore Testing Works
 Hunt & Robertson.
 Ledoux & Co.
Packing and Pipe Coverings
 Brandt, Randolph.
 Jenkins Bros.
Perforated Metals
 Aitchison, R., Perf. Metal Co.
 Fraser & Chalmers.
 Harrington & King Perforating Co.
Phosphor-Bronze
 Phosphor-Bronze Smelting Co.
Pile Drivers
 Bucyrus Steam Shovel and Dredge Co.
 Ingersoll-Sergeant Drill Co.
Pipes
 Pollock, Wm. B., & Co. | Wyckoff, A., & Sons,
Platinum
 Baker & Co.
 Johnson, Matthey & Co.
Powder
 Atlantic Dynamite Co.
 The Powder Co.
 Ingersoll-Sergeant Drill Co.
Pressure Blowers
 Connorsville Blower Co.
Pressure Regulators
 D'Eate & Seelye. (Curtis.)
Publications
 Arms & Explosives.
 Australian Mfg. Stand.
 Bullionist.
 McNeill's Code.
 Mining Journal.
 Denver Republican.
 El Minero Mexicano.
 Scientific Pub. Co.
 So. African Mfg. Jour.
 Steffen, C. A.
 Zeitschrift fur Practische Geologie.
Pumps
 Blake, Geo. F. Mfg. Co.
 Cameron, A. S., Steam Pump Works.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Goulds Mfg. Co.
Rickets & Banks.
 State Ore Sampling Co.
New York Belting & Packing Co., Ltd.
 Wyckoff & Son, A.

Quarrying Machines
 Bostelmann, L. F.
 Gates Iron Works.
 Ingersoll-Sergeant Drill Co.
 Rand Drill Co.
 Sullivan Machinery Co.
Quicksilver
 Eureka Co.
Railroads
 C. R. & Quincy R. R.
 Denver & Rio Grande R. R.
 Denver, Leadville & Gunnison Ry.
 Florence & Cripple Creek R. R.
 Midland R. R. of Kentucky.
 Rio Grande Southern R. R.
 U. P., D. & G. R. R.
Railroad Supplies and Equipment
 Carpenter, Geo. B., & Co.
 Channon, H. Co.
 Fairbanks Co.
 Hunt, C. W., Co.
 Porter, H. K., & Co.
 Robinson & Orr.
 (See Machinery.)
Regulators, Damper, Heat, Etc.
 D'Eate & Seelye Co.
 Eddy Valve Co.
 Jenkins Bros.
Return Steam Traps
 D'Eate & Seelye. (Curtis.)
Rock Drills. (See Air Compressor.)
Roofing
 Berlin Iron Bridge Co.
 Phelps, Dodge & Co.
 Pittsburg Bridge Co.
Rubber Goods
 New York Belting & Packing Co., Ltd.
Scales
 Fairbanks Co.
Screens
 Aitchison, R., Perf. Metal Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Harrington & King Perforating Co.
 Link Belt Machinery Co.
 Ludlow-Saylor Wire Co. (See Machinery.)
Second Hand Machinery
 Robinson & Orr.
Separators
 D'Eate & Seelye Co.
Shoes and Dies
 Chester Steel Cast. Co.
 Chrome Steel Works.
 Crescent Steel Co.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Harrington & King Perforating Co.
 Link Belt Machinery Co.
 Ludlow-Saylor Wire Co. (See Machinery.)
Shovels (Steam)
 Bucyrus Steam Shovel & Dredge Co.
 Souther & Co.
Smelting and Refining Works
 Balbach S. & Ref. Co.
 Baltimore Cop'r Wks.
 Bridgeport Copper Co.
 Elliott's Metal Co., Ltd.
 Kan. City Sm. & Ref. Co.
 Mathison Smelting Co.
 Newark Pulv'ng Wks.
 Orford Copper Co.
 Pennyl. Salt Mfg. Co.
 Ricketts & Banks.
 Russell Process Co.
 State Ore Sampling Co.
 Waburn-Swenson Mfg. Co.
Steel Rails, Castings, Rolls, Drill Steel
 Bethlehem Iron Co.
 Carpenter Steel Co.
 Chester Steel Cast. Co.
 Chroma Steel Works.
 Crescent Steel Co.
 Goffe, Wm. B., & Sons Co.
 Moore, S. L., & Sons Co.
Tanks
 Denver Eng. Wks. Co.
 Gates Iron Works.
 Jessop Wm. & Sons Ltd.
 Walker Mfg. Co.
 Williams & G. Co.
Telegraph Wires and Cables
 Okonite Co., Ltd. The.
Temperature Regulators
 D'Eate & Seelye. (Curtis.)
Testing Laboratories
 Fairbanks Co.
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 Besley, Chas. H., & Co.
 Pratt & Whitney Co.
Tubes
 Besley, Chas. H., & Co. | Pollock, Wm. B. & Co.
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Tubing-Rubber
 New York Belting and Packing Co., Ltd.
Turbine Water-Wheels
 Gates Iron Works.
 Stilwell-Bierce & Smith-Valle Co.
Valves
 D'Eate & Seelye Co.
 Eddy Valve Co.
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Vulcanite Emery Wheels
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 Girard Water Wheel Co.
 Lefel, James, & Co.
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 Bostelmann, L. F.
 Sullivan Machinery Co.
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 Chester Steel Cast. Co.
 Sheffield Steel Co.
 Taylor Iron & Steel Co.
White Lead
 Foster, Blackett & Co.
Wire Cloth
 Aitchison, R., Perf. Metal Co.
 Barnum, E. T.
 Gates Iron Works.
 Harrington & King Perforating Co.
Wire Rope & Wire
 Besley, Chas. H., & Co.
 Broderick & Bascom.
 Rope Co.
 California Wire Wks.
 Carpenter, G. B., & Co.
 Carpenter Steel Co.
 Channon, H. Co.
 Cooper Hewitt & Co.
 Gates Iron Works.
 Hunt, C. W., Co.
 Leichen, A., & Sons.
 Rope Co.
 Phelps, Dodge & Co.
 R'bling, J. A. Sons & Co.
 Rowways Syndicate.
 Trenton Iron Co.
Wire Rope Tramway
 Brown Hoist & Conv. Mach. Co.
 Calumet Wire Wks.
 Colorado Iron Works.
 Denver Eng. Wks. Co.
 Fraser & Chalmers.
 Gates Iron Works.
 Hunt, C. W., Co.
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 Vulcan Iron Works

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.

1425 WANTED—A GENERAL MANAGER for an iron ore company making a large output. Familiarity with the Spanish language is desirable. Address with full particulars of experience and references, M. H. HIERRO, ENGINEERING AND MINING JOURNAL.

1426 WANTED—AN EXPERIENCED foreman capable of taking charge of the construction and operation of a lead refining plant of 20 tons daily capacity. Must have references from former employers. Address BULLION, ENGINEERING AND MINING JOURNAL.

1427 WANTED—A FIRST-CLASS ASSAYER and ore sampler, with a knowledge of the Spanish language, to take charge of an ore purchasing agency. References imperative. Address ORE BUYER, ENGINEERING AND MINING JOURNAL.

1429 WANTED—A MAN FAMILIAR with the refining of sulphur from its ores, by the most improved modern processes, and who can give estimates of cost of such plant. Address SULPHUR, ENGINEERING AND MINING JOURNAL.

1430 WANTED—A YOUNG MAN conversant with the Cyanide process and able to properly superintend the installation of plant. Moderate salary until ability is proven. Address, with references, TANKAGE, ENGINEERING AND MINING JOURNAL.

1431 WANTED—STEEL CASTING AND Engineering firm, in good financial condition, and with works having about 200 tons weekly capacity, requires a general manager. Must have knowledge of this special business, have general mechanical and metallurgical ability, and be well acquainted with general commercial routine, reliable costing system and able to control workmen. Preference given to one who could extend and introduce business. A very liberal salary and share of profits would be offered to one of special ability. Applications will be treated in strict confidence. Address SPECIAL STEEL CASTINGS, ENGINEERING AND MINING JOURNAL.

1432 WANTED.—ELECTRO-CHEMIST for work on the Pacific coast. Must be familiar with the latest advances in electrolytic manufacture of commercial products from salt. Address PACIFIC, ENGINEERING AND MINING JOURNAL.

1433 WANTED—ANALYTICAL CHEMIST for factory in New York. One speaking the German language preferred. State experience, age and former employment. Address P. C. P., ENGINEERING AND MINING JOURNAL.

1434 WANTED—THOROUGHLY COMPETENT draftsman, familiar with designing steel buildings, roofs and columns, to take charge of office. Must understand how to handle men to good advantage. None others need apply. State where employed, remuneration required, and give full copies of recommendations. Address Box 22, ENGINEERING AND MINING JOURNAL.

1435 WANTED—A MINING MACHINERY salesman. State experience, age, salary desired, etc. Address SALESMAN, ENGINEERING AND MINING JOURNAL.

1436 WANTED—A CHEMIST PRACTICALLY familiar with the manufacture of petroleum products. Address PARAFFINE, ENGINEERING AND MINING JOURNAL.

1437 WANTED—ASSAYER AND ASSISTANT chemist, by a firm of refiners of the precious metals, near New York City. Address REFINERS, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

A YOUNG CHEMIST AND ASSAYER, with thorough and practical business education, desires position where hard work and efficiency will insure promotion. Experienced in surveying, keeping of mine accounts, etc. North or West preferred. Address ASSAYER, ENGINEERING AND MINING JOURNAL. No. 17,351, March 14.

GRADUATE MINING ENGINEER AND chemist desires position. Eleven years' successful experience in the economical management and development of mining properties and the milling of ores by amalgamation and cyanide process. Understands Spanish. Best of references. Address COLORADO, ENGINEERING AND MINING JOURNAL. No. 17,325, Feb. 22.

WANTED—POSITION AS MANAGER OR Superintendent of Gold or Silver Mining and Milling Property. Thorough knowledge of every detail of the business, both as to construction and operating. Practical assayer, expert accountant. Specialty—Careful business management and close supervision of details. Best of references. Address, PRACTICAL, P. O. Box 298, Prescott, Ariz. No. 17,357, Feb. 8.

METALLURGICAL ENGINEER, SPECIALTY in Cyanide process, who has designed, constructed and put in operation two of the largest and most successful plants in this country, will be open for engagement February 1st. Best of references. Address M., ENGINEERING AND MINING JOURNAL. No. 17,352, Feb. 8.

WANTED—POSITION AS CHEMIST AND assayer, age 27, 5 years' experience. Will go anywhere with responsible people. Have commercial education, scientific and practical knowledge of prospecting, some little of mine engineering, and a graduate in chemistry and assaying, can be useful; fair salary expected. Address "A. I., AG. CU AND PB," ENGINEERING AND MINING JOURNAL. No. 17,353 Feb. 15.

A YOUNG CHEMIST AND ASSAYER, four years' experience, desires a position with some silver lead smelter or mine in Mexico or United States. Best of references. Address H. A., ENGINEERING AND MINING JOURNAL. No. 17,355, February 15.

MINING ENGINEER, of 20 years' experience in gold and silver exploration, mining, and milling, desires to change location. No objection to foreign countries or the Tropics. Ten years as superintendent and general manager. Familiar with amalgamation, leaching and concentration. Speaks Spanish. New York and Chicago references. Address MINING, ENGINEERING AND MINING JOURNAL. No. 17,356, Feb. 26.

Contracts Open.

TO BOILER MAKERS.—Proposals will be received at the Middletown State Homeopathic Hospital, Middletown, N. Y., for a 150 H. P. steam boiler, up to and including February 20, 1896. With proposal must be submitted detailed drawing showing construction and necessary foundation, smoke connections and setting; also specifications stating quality of material, number of square feet of heating surface and list of trimmings to be furnished with boiler. Proposal must include erection complete with steam, water and smoke connections made ready for service. Plans for subfoundation as well as setting to be approved by the Commissioner of the New Capitol. An Ashcroft pop safety valve, 10-in. brass case steam gauge, pressure damper regulator, water column glass gauge and try-cocks, shaking grates, flue cleaner and fire tools, as well as all valves and connections to be of stated make and quality. With bid must be submitted satisfactory evidence of the evaporative economy of the proposed boiler, either from tests made on one of same make and rating in actual service, or the evaporative economy must be guaranteed. Tests shall be conducted under the supervision of a competent engineer to be selected by the Commissioner of the New Capitol. Bids should be addressed to GRINNELL BURT, President Board of Trustees.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., February 3d, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 27th day of February, 1896, and opened immediately thereafter, for all the labor and materials and erecting complete either a hydraulic or an electric passenger elevator, including pumps, tanks, piping, car, etc., for the U. S. Court House and Post Office Building at Springfield, Mo., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Springfield, Mo. Each bid must be accompanied by a certified check for the sum of \$100. 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 inclosed in envelopes, sealed and marked, "Proposal for Passenger Elevator, etc., for the U. S. Court House and Post Office Building at Springfield, Mo.," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., January 31st, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 26th day of February, 1896, and opened immediately thereafter, for all the labor and materials and fixing in place complete the low pressure steam heating and mechanical ventilating apparatus, power boilers, etc., required for the U. S. Court House and Post Office Building at Detroit, Mich., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Detroit, Mich. Each bid must be accompanied by a certified check for \$200. The right is reserved to reject any and 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 inclosed in envelopes, sealed and marked, "Proposal for the Low Pressure Steam Heating and Mechanical Ventilating Apparatus, etc., for the U. S. Court House and Post Office at Detroit, Mich.," and addressed to WM. MARTIN AIKEN, Supervising Architect.

BRICK OR CONCRETE SEWERS, STEEL Trestle, etc. Mayor's Office, San Antonio, Tex.—Sealed proposals for furnishing all materials and performing all the work required for the construction of about four miles of brick or concrete sewers and appurtenances will be received by the Mayor of the City of San Antonio, Tex., until February 10th, 1896, the approximate quantities being as follows:

7,695 lin. ft. of 36-in. sewer, 11,695 ft. of 44-in. sewer, 1,600 ft. of 44-in. concrete invert, 1,755 ft. 36-in. steel pipe, 55 ft. 44-in. steel pipe, 38 manholes, 10 slants, 1,700 lin. ft. steel trestle, 82.5-ft. steel truss bridge, 100 cu. yds. concrete, 100 cu. yds. stone masonry, 1,000 cu. yds. trenching, 10,864 cu. yds. embankment for sewer, 3,000 cu. yd. embankment for filter beds, 10,000 ft. B. M. lumber, 5 10-in. cast-iron gates, 20 12-in. cast-iron gates; approximate average cut, 10 ft.

Plans and specifications can be seen at the office of A. C. Pancoast, City Engineer of San Antonio, Tex.

Each proposal must be accompanied by a cash deposit or certified check of \$5,000 as liquidated damages, conditioned that the party whose bid is accepted will execute the contract and give the required bond. HENRY ELMENDORF, Mayor.

TUNNEL.—Sealed proposals will be received at the office of the Metropolitan Water Board, No 3 Mt. Vernon street, Boston, Mass., until February 11th, 1896, building sections 2 and 3 of the Nashua Aqueduct, consisting of about two miles of tunnel and 1,000 ft. of masonry aqueduct in open trench, in the towns of Clinton and Berlin, Mass. The tunnel excavation is to be about 13.5 ft. wide and 12 ft. high, and the masonry aqueduct 11.5 ft. wide and 10.5 ft. high. A pamphlet containing further information for bidders, a form of proposal and contract, specifications and plans, will be ready about January 15th, and will be mailed to contractors who apply to the Chief Engineer for the same, or may then be obtained at his office, 3 Mt. Vernon street, Boston, Mass. Plans may be seen at the office of the Chief Engineer, or at the office of the Engineer of the Aqueduct Department of the Metropolitan Water Board in Clinton, Mass. The 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.

HENRY H. SPRAGUE, Chairman; WILMOT R. EVANS, JOHN R. FREEMAN, Metropolitan Water Board; FREDERIC P. STEARNS, Chief Engineer; WILLIAM N. DAVENPORT, Secretary.

PIPE.—Tenders will be received, by registered post only, addressed to the City Engineer, Toronto, the 15th of February, 1896, for the supply and delivery of 2,350 ft. of steel or cast-iron pipe, 6 ft. in diameter, with the necessary flexible joints. Specifications and plans may be seen at the office of the City Engineer, Toronto, on and after Wednesday, the 11th inst. A deposit in the form of a marked cheque, payable to the order of the City Treasurer for the sum of 2 1/2% on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained. Tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal. Lowest or any tender not necessarily accepted. DANIEL LAMB, Chairman Committee on Works.

PUMPING STATION.—Sealed proposals will be received at the office of Office Board Commissioner, Orleans Levee District, Masonic Building, New Orleans, La., until February 11th, for the erection of a pumping station, including machinery, foundations, buildings, etc., in conformity with plans and specifications on file in the above office. Other information as to the location and character of work and terms of payment, as also blank forms of proposals may be obtained at the office of the board. FRANK MARQUEZ, Secretary.

ENGINEERING AND MINING JOURNAL

ADVERTISING RATES. (NON-PAREIL MEASUREMENT.)

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NOTICE.

At the Chicago office of the ENGINEERING AND MINING JOURNAL, Room 737, Monadnock Building, Chicago, Ill., will be found all the books of the SCIENTIFIC PUBLISHING COMPANY, also files of the ENGINEERING AND MINING JOURNAL, convenient for reference, and it will afford us pleasure to furnish all possible information to our visitors. Strangers visiting Chicago will find there a convenient place for writing their letters. All are welcome.

MISCELLANEOUS WANTS.

WANTED—COPPER MATTE, 40 to 50 PER cent. copper. Give price in carload lots F. O. B., Philadelphia. THOMAS G. HUNTER, Venice Branch, Philadelphia & Reading Railroad, Manayunk, Philadelphia, Pa.

MEETINGS.

NEW YORK, Jan. 15, 1896.

THE ANNUAL MEETING OF THE STOCKHOLDERS OF THE

COLORADO SMELTING COMPANY

will be held at the company's office at Pueblo, Colo., on Monday, February 10th, 1896.

H. SUHR, Secretary.

THE ANNUAL MEETING OF THE BOWERBARFF RUSTLESS IRON COMPANY,

For the election of directors and other business will be held at the office of the company, No. 31 Nassau street, New York City, on Tuesday February 11th, 1896, at 12 o'clock noon. GEO. W. MAYNARD, Secretary.

DIVIDENDS.

ISABELLA GOLD MINING COMPANY.

COLORADO SPRINGS, Colo., Jan. 31, 1896.

DIVIDEND NO. 2.

A dividend of one cent per share (\$22,500) has been declared, payable February 20th, 1896, to stockholders of record February 12th, 1896. Transfer books will be closed February 12th, 1896, at 3 p. m., and will be re-opened on the morning of February 21st.

ARTHUR S. GOETZ, Secretary.

VICTOR GOLD MINING COMPANY OF

CRIPPLE CREEK, COLORADO, has declared a dividend (No. 34) of ten cents a share on its capital stock (200,000 shares), amounting to \$20,000, payable February 15th, 1896. Books close at the New York office, No. 65 Broadway, February 10th; reopen February 17th, 1896. Total dividends to date, \$505,000.

H. A. KIRKHAM, Transfer Agent.

NOTICE OF ASSESSMENT.

(Civil Code of California.)

SILVER KING MINING COMPANY.—Location of principal place of business, San Francisco, Cal.; location of works, Pioneer Mining District, Pinal County, A. T. Notice is hereby given that at a meeting of the Board of Directors, held on the 28th day of January, 1896, an assessment, No. 13, of 25 cents per share, was levied upon the capital stock of the corporation, payable immediately in United States gold coin to the Secretary, at the office of the company, No. 310 Pine street, Rooms 15 and 17, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of March, 1896, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 6th day of April, 1896, to pay the delinquent assessment, together with the costs of advertising and expenses of sale.

By order of the Board of Directors, J. W. PEW, Secretary. Office; No. 310 Pine Street, Rooms 15 and 17, San Francisco, Cal.

UNDERWOOD & WELLS,

Stocks, Bonds, and Investment Securities, New York Life Building, Chicago, RECOMMEND AND OFFER for public subscription a limited number of shares of stock of the

Ingold Placer Mining Company of Colorado, until Feb. 11, at 12 o'clock noon, at 15c. per share, lots 100 shares or more. Subject to allotment after Feb. 1. Prospectus with full information, highest endorsements, Engineer's reports, sworn statements, mailed upon application.

H. S. HACKBUSCH, J. A. V. PRICE, ALBERT SADTLER. HACKBUSCH-PRICE ASSAY CO., Assayers and Analytical Chemists, No. 20 N. Nevada Ave., P. O. Box 777, Colorado Springs, Colo. Umpire and Control Work a Specialty.

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On February 4th and March 3d the Monon Route will sell tickets from Chicago to all points in the South at exceedingly low rates: Abbeville, Ga., \$15.30; Decatur, Ala., \$16.65; Chattanooga, Tenn., \$10.75; Jacksonville, Fla., \$18.10; Memphis, Tenn., \$11.10; New Orleans, La., \$17.05; St. Augustine, Fla., \$18.65; Tampa, Fla., \$21.00; Mobile, Ala., \$16.05; and all other points at proportionately low rates.

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CONTRACTS OPEN.

Continued from Page 18.

PIPING.—Tenders will be received, by registered post only, addressed to the City Engineer, Toronto, until February 15th, 1896, for the supply and delivery of 2,356 ft. of steel or cast-iron pipe, 6 ft. in diameter, with the necessary flexible joints.

Specifications and plans may be seen at the office of the City Engineer, Toronto.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 2 1/2 per cent. on the value of the work tendered for, must accompany each and every tender, otherwise they will not be entertained. Tenders must bear the bona fide signatures of the contractor and his sureties or they will be ruled out as informal. Lowest or any tender not necessarily accepted. DANIEL LAMB, Chairman Committee on Works.

WATER-WORKS, Rockford, Mich.—Sealed proposals will be received until February 12th, 1896, for a system of water-works, including about 16,000 ft. of pipe from 4 to 8 in., 22 hydrants, a pair of pumps capable of pumping 1,000,000 gallons of water per 24 hours. Plans may be seen and specifications obtained by applying to the undersigned. J. M. SPORE, Village Clerk.

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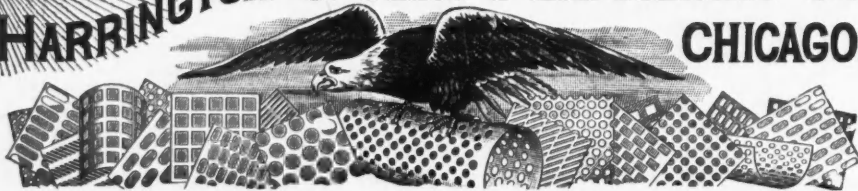
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