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A press despatch says that "Cecil Rhodes and Barney Barnato are turning their attention to the mining regions of British Columbia, and now have an expert at Rossland, who says there is ten times more wealth in the Trail District than South Africa ever saw."

As a matter of sensible business management the Exploration Company which has taken so large a part in the transfer of Anaconda interests to London, is going to be amalgamated with the Transvaal and General Association and the West Australian and General Association;

The new concern will have a capital of £1,250,000, and the present shareholders of the Exploration Company will receive four shares of the new company for each three held.

The Sale of Anaconda Stock.

The recently announced sale of the Hearst interest, 270,000 shares, in the Anaconda mine, to the London syndicate, represented by the Exploration Company, now places nearly, if not quite, one-half the stock, and perhaps the effective control of that company in foreign hands, practically those of the Rothschilds, who already control the Rio Tinto and some other Spanish mines, and who, with the Anaconda output, will control about 40 per cent. of the world's copper.

The purchase of these last 270,000 shares of Anaconda stock was made from the administrator of the Hearst estate and is the balance of that interest. The price was \$27 per share, realizing for the estate \$7,290,900. The former sale was made at \$25 per shares, and the Hearst estate realized more than \$2,000,000 out of it.

The Rigaud Gold Extraction Process.

There is just as much activity abroad as in this country, among metallurgists in the devising of cheap and complete extraction of gold from ore and tailings. The success that has been already met with in the reduction of cost of chlorination and the various successful modifications of cyanidation naturally tends to further developments on the same lines. Each inventor in turn claims that his, the most recent discovery, is the most perfect both in regard to cost and completeness, and so far as laboratory experiments indicate the result, the claims on the face of them frequently appear to be well founded.

Electricity in Coal Mining.

Mr. R. M. Haseltine, Chief Inspector of Mines for the State of Ohio, has issued in pamphlet form a very interesting paper on the "Use of Electricity in Coal Mining," which forms a part of his annual report. He states that the present industrial depression has caused greater consideration to be paid to the use of machinery.

After tracing the improvements and developments in the manufacture

of cutting machines down to the present time, Mr. Haseltine states that the early installations of mining machines in Ohio, beginning about 1877, were confined to the use of compressed air as a motive power. This continued until about 1889, when electricity was introduced by the Jeffrey Company on its rotary bar cutter, and the ease and economy with which this new power could be conducted about the mine commanded for it at once the attention of operators, and during the past six years the question of operating mines by electricity has received more discussion than any subject before the mining public.

Recognizing that no reliable data was published showing the decrease in power requirements and higher efficiencies of the later coal cutting machines, Mr. Haseltine personally conducted a series of tests on various practical plants, the results of which he has arranged in convenient tabular form. A great many interesting facts are shown, and as the names of the machines are given and their location, the table has a practical value to the operator. He finds that the lowest power to cut at the rate of one square foot per minute was 4.2 horse power, this machine being a chain machine. The highest requirement of a chain machine on the same basis was 8.5 horse power.

The lowest requirement for a rotary bar machine for cutting at the rate of one square foot per minute was 8.9 horse power and the highest 12.2 horse power.

The author gives attention to the subject of costs and economies of machine work, and in closing calls attention to a pertinent phase of machine mining, the lessening of casualties where machines are employed. Illustrating this in Hocking County, O., during 1894, 73 per cent. of the coal was mined by machinery, and but one fatal accident occurred in mining 1,453,391 tons. In three other counties, each producing about the same amount, but almost entirely by hand mining, 15 fatal accidents occurred. The difference is due partly to a less number of men being needed, and because in machine mining their intelligence is of a higher order.

The pamphlet adds an interesting and valuable chapter to the literature on the subject of electricity applied to coal mining.

#### The Burnham Syndicate's Process for Treating Zinc Lead Sulphides.

In our issues of March 7th and May 9th we gave some information relating to the Burnham Syndicate process now in operation at Swansea for treating zinc lead sulphides, and we mentioned that the patentees of this process would have difficulty in withstanding the claims of Captain Angell and Mr. Ellershausen. The dispute between the two parties is not so much a question of priority of discovery as of the construing of a contract made between them some time ago. Messrs. Angell & Ellershausen some years ago made experiments in connection with the treatment of zinc lead sulphides, and the process they used consisted of mixing the sulphides with iron oxide and carbonate or caustic soda. The lead and silver were reduced at once and the zinc went away in the slag. Owing to the cost of the soda, this process was never worked on a large scale, but at the time Messrs. Fry, Everett & Co., of Swansea, entered into an agreement with Messrs. Angell & Ellershausen whereby the experiments were to be continued, and any improvements discovered by either parties should belong to both. It transpires, however, that Mr. Fry conducted experiments on his own account without the knowledge of the other parties, and actually sent his own chemists, Mr. John David and Mr. Carl Le Doux, to Messrs. Angell & Ellershausen's works to inspect the process. Afterward Messrs. Fry, David & Le Doux took out a patent, No. 12,452 of 1895, for an improvement in the process, without letting Messrs. Angell & Ellershausen know anything of their action.

This patent has just been published, and its essence is exactly what we foreshadowed in our previous articles. Instead of using carbonate or caustic soda, they form carbonate or caustic in the furnace by the reaction of oxide of iron and carbonaceous matter with salt cake, *i. e.*, sulphate of soda. In the furnace the salt cake is first reduced to sulphide, and then the iron oxide, carbonaceous matter and the sulphide react to form caustic soda or carbonate of soda. To those who remember the old way of making soda, it will be clear that this method of preparing soda is by no means a new invention, but its application to the zinc-lead-sulphide process is certainly an improvement over the Angell-Ellershausen process. As, however, the matter in dispute between the two parties is not one of priority of invention, no further notice need be taken of this phase of the subject. It is evident that the Fry process is an improvement on the old one, and consequently it belongs by agreement to both parties. Consequently a reconstruction of the Burnham syndicate is inevitable.

The syndicate has contracted for 100,000 tons of ore from the British Broken Hill mine, and it is, therefore, in a position to obtain its supply of sulphate of soda at a very cheap rate. It would not be surprising if they obtained it for \$5 a ton at Swansea from the United Alkali Company. It must be remembered that much more salt cake is produced than is possibly marketable at a paying price, the over production being due to the

comparatively larger demand of the hydrochloric acid. Consequently salt cake partakes of the nature of a by-product, and its price is purely a matter of negotiation.

#### The Revival of Interest in Utah Mines.

We have lately had occasion to call attention to the remarkable activity now prevailing in many parts of Utah, and reacting throughout the whole mining industry of the new State, which, in putting on the honors of new born Statehood is taking a fresh start in life. From all quarters encouraging reports are coming in, and there is a manifest renewal of interest in Utah mines among outside investors.

The three best known camps in Utah are Park City, Tintic and Bingham. At the former the Ontario and Daly group are not only doing well considering the ruling price for silver, but new finds have been reported.

From the *Inter-Mountain Mining Review* we learn that there is a prospect of resumption of work in the Butterfield tunnel, which is one of the most important enterprises in the Bingham district, as it will drain a large territory in which are such ore producers as the Old Telegraph, Old Jordan, Galena and many other mines. In addition it will utilize the flow of water as power for generating electric current and for irrigation. The tunnel is already in 8,200 ft., and will cut some of the mines at a depth of 1,400 ft. below their present deepest workings.

In a special edition of the *Bingham Bulletin* Mr. A. F. Holden has an article on the geology of the West Mountain (Bingham) district, in which he points out that as to the depth at which mineralization continues a section can be shown from the discovery point of the Old Telegraph down to the 1,500-foot level of the Brooklyn, a total distance of over 2,500 feet, throughout which mineralization is continuous, and from which marketable ore has been taken; that there is ore below the Brooklyn 1,500, and that there has been no indication of change in character or grade of the ore since the sulphide zone was reached. Mr. Holden goes on to say that "few people realize the enormous quantity of low-grade ore exposed in the bedded veins," or lime zones such as the Old Telegraph-Jordan, while there are levels nearly a mile long on one of the fissure veins of Bingham, with marketable ore showing at different points along that distance. The ore shipments from Bingham in May showed an increased movement and it is expected that the June shipments will exceed those of any similar month for many years.

It is reported that an effort is being made to have another examination of the Mercur camp, or Camp Floyd mining district, by the United States geological survey. A report on the region by Messrs. Emmons and Spurr has recently been published; but as usual and perhaps inevitable in government surveys and reports the mine workings have outstripped the rock sharps and now a further geological investigation is called for in the light of the more extensive developments. The main value of such surveys is in affording useful guidance to the miners of the particular district under consideration, so that they may direct their work to the best advantage that the present stage of geological knowledge admits. Elaborate reports, taking years of time for field work, study and preparation, and a further indefinite delay in publication, are of use as scientific records, and throw light upon general theories of ore deposition, but don't help the miners on the spot and at the time where and when information is wanted. So instead of an obituary notice, a panegyric memorial of departed glories, after the great camp has been worked out—though that time it appears, is to be postponed long enough to allow for even the most interminable official examination and reports to be made—let Mercur and all other active districts receive due attention from the government geologists, and let the results be made known in time to be of the most service.

At Mercur there is talk of a heavy deal on the Golden Gate, about which property a good deal has been heard of late, and the figure at which the local press is saying that Mr. DeLamar expects to place the mine in London is \$4,000,000.

In last week's issue the recent transfer of Centennial-Eureka was referred to as illustrating the importance of the Tintic district, which has a record second to none in the whole country, worked steadily and profitably for many years, and has such mines as Eureka Hill, Caroline, Bullion-Beck, Mammoth and many others, as well as the Centennial-Eureka specially referred to.

Another attempt is expected to be made to revive the old Emma and Flagstaff mines, which have had so eventful a history, not only in the way of bullion records, but other matters. In the old days ore of great value and in no inconsiderable quantity came out of these mines. They are now under lease and new management, and an effort will be made to get ore supposed to be in the lower levels of the Emma. The other mines about Alta are said to be waking up.

Judging from the number of Eastern and English experts at present reported to be examining Utah mines, new and old, and especially the

rush to the Marysvale discoveries, there is a good deal of capital going into the State just now, or at least there are many "propositions" being looked into.

The mineral resources of Southern Utah also are attracting notice of late. Silver Reef, in the Harrisburg district, became famous many years ago, but there are other camps of more or less importance in that part of the State, with numerous occurrences of coal, iron, copper, gold and silver ores, sulphur, ocher, alum, gypsum, ozokerite, etc. The Bull Valley district, where there are claimed to be very heavy bodies of low grade ores, is looking forward to the advent of a railroad, when it will be put on an improved footing. Tutsegavit district, near St. George, is now being looked into by investors.

The newer concentrating plants have not altogether displaced older and simpler methods, even the primitive hand jigs continuing to be used with profit on mill tailings, the men working them being said to make good wages. The standard old-time methods and appliances for concentration have long been fairly developed in Utah, but there is room there, as throughout all the Western mining country, for improvement in facilities for making a shipping product from not only new but the older districts, which are brought by cheaper transportation into connection with smelting centers, and thus enabled not only to utilize lower-grade ores shipped in bulk after sorting without concentration and also ores from which very clean concentrates cannot easily be separated. In the out-of-the-way camps there is all the more necessity for making a product that will stand a long haul to smelter, so that many more concentrating plants are likely to be set up in the future. With milling ores not suitable for cyaniding there is a further need for concentration, as in the usual Colorado practice, and the many new discoveries of gold ores will doubtless lead to mills having a concentrating attachment to the amalgamation or cyaniding plant.

The cyanide plants which have been installed in Utah have long since passed through the experimental stage, and the actual merits of the process, as distinguished from the wild claims of its too enthusiastic backers a short time ago, and the opposite extreme of skepticism, have come to be justly appreciated. It is now recognized that there are well defined limitations to the availability of the cyanide treatment, and on the other hand that there are large quantities of gold ore, as in the Mercur camp, for instance, which are well suited to it. Now that the mills have settled down to business on well established principles the results are very satisfactory; indeed, much more so than disinterested millmen and others not having any stake in patent suits and royalties at first anticipated, for it cannot be denied that there was a good deal of imaginative gush indulged in prior to practical demonstration.

#### NEW PUBLICATIONS.

PRINCIPLES AND PRACTICE OF AGRICULTURAL ANALYSIS. A MANUAL FOR THE ESTIMATION OF SOILS, FERTILIZERS AND AGRICULTURAL PRODUCTS. VOLUME II. FERTILIZERS. By Harvey W. Wiley, Easton, Pa.; Chemical Publishing Company. Pages, 332. Price, \$2.00.

The first volume of this remarkable work was devoted to a study of Soils, and was reviewed in the *Engineering and Mining Journal*, May 18th, 1895. The second volume now before us maintains the established high standard of excellence, and will be perhaps even of more value than the first volume to a very numerous class of chemists whose means are limited, whose time is scanty, and who yet desire to keep abreast with modern progress. In it they will find a carefully digested abstract of all the analytical methods devised by co-workers of recognized authority, each method being commented upon with the impartiality of an experienced, unprejudiced and judicial mind.

The chief advantages that have accrued to agriculture from the applications of science are that, by its aid the farmer has become better acquainted with the nature and composition of his soils, and with the materials which should be introduced into them in order to make them more adaptable to special forms of culture. The teachings of science have already made great headway, and are forever growing more important in every civilized country, and although our knowledge will never be complete until we have found some more accurate means of unraveling the mysteries which surround the phenomena of plant growth, whatever work shall tend toward our enlightenment places us under obligations for which we have no prospect of making adequate financial compensation.

In our present prosaic age there are very few practical men who have the time to write books and equally few who have the time to read them. This probably explains why certain branches of our arts are always somewhat in advance of their science; why new commercial products are not invariably preceded by a correct theory of their synthesis or combination, and justifies the remark that our future scientists must needs be specialists, and our future literature largely, if not wholly, consist of "abstracts." If the highest ideal is not thus realized, we must throw the blame upon our too rapid progress, and must trust that with their "eternal fitness" all things will finally adjust themselves to the requirements of their time. The disciples of Chemistry have never been laggards in the direction of accepting new conditions, and we may probably regard Dr. Wiley's book as a type of the modern form. There are in this, as in every other country, two distinct classes who gain their livelihood as chemists. In the one we have the trained, intelligent, thoughtful and conscientious scientist; in the other we have the mere mechanic or "chemical carpenter" who is ground out of the schools to follow prescribed methods with no exact appreciation of their philosophy.

To the large of these two classes Dr. Wiley's book will be to a great extent unintelligible, and consequently of small importance; but to the first of them it will be of incalculable value, if only because of the immense field of practical observations which it covers, and of the introduction through its pages to specialists in all matters connected with agriculture all over the world. The occupation of the average analytical chemist does not permit him to be either a very extensive traveler or an omnivorous reader, and he finds the greatest difficulty in informing himself of the work done by his colleagues and contemporaries. At one time, not so very long ago, the children of differing races and countries were separated by insuperable obstacles and barriers which rendered their intercommunication at once tiresome and imperfect. Steam and electricity having beaten these barriers down, the natural and manufactured products of one nation are at the ready disposal of all the others, and the large number of these products whose commercial value is wholly determined by chemical analysis makes it essential that our analytical methods should be absolutely accurate, and that their results should be concordant, irrespective of place or individuals. No such absolute accuracy at present prevails, but on the contrary it is common to hear of great differences between the results of different chemists operating on the same sample. What, therefore, if not a more intimate knowledge of outside practice, such as that afforded to us by Dr. Wiley's work, can bring about the needed enlightenment and reform?

If A of Berlin communicates a new method of separating alumina from phosphoric acid it will come before B of Paris, who will discover some slight defect in it and suggest a modification. C of London will then probably criticize the work of A and B and point out some way in which it may be simplified or improved. Within the short space of time required to cross the Atlantic Ocean D of New York will review all that A, B and C have accomplished, will test their conclusions, and, after perhaps adding some items of his own, will perfect a method for the rapid separation and estimation of the two bodies. All this work being systematically grouped together will gradually become known to the routine operator and will be adopted in the majority of commercial laboratories. Other and older methods will thus be displaced, which, owing to hitherto undiscovered defects inherent in themselves, have always been sources of professional disagreement, as well as causes of financial loss.

Following the same general scheme of arrangement as that adopted in his first volume, Dr. Wiley has divided his discussion of fertilizers into four distinct parts. In Part First he deals with phosphates and phosphate fertilizers. In Part Second, with nitrogen in fertilizers and fertilizing materials. In Part Third with potash in fertilizers and fertilizing materials, and in Part Fourth with miscellaneous fertilizing materials of all descriptions and from all sources.

Dr. Wiley very aptly remarks that the methods of analysis which have been adopted by associations of chemists should be given the preference in the conduct of commercial work, although they may contain sources of error and may be in no respect superior to processes employed by chemists in their private capacity. If for no other reason than that it would result in more uniformity we are prepared to agree with him in this, but the fact remains that there are still many determinations for which associate methods have not been suggested or devised. The estimation of fluorine in natural phosphates is an example of this. Dr. Wiley gives two modifications of the old Berzelius method, one by Chatard and one by Wyatt, saying of the former that it is the more accurate and of the latter that on account of its brevity it may be recommended for commercial purposes. This is certainly very unsatisfactory, and some steps should be taken to include fluorine in the determination by official or associated methods. As described by Dr. Wiley the Wyatt method consists in reducing the ingredients of the original sample down to calcium phosphate and fluoride, separating and weighing the former, and estimating the latter by difference. This might be simplified by returning the residue to a platinum dish with 5 cu. cm. of concentrated sulphuric acid and applying heat, first gently and then very strongly, until all the fluorine is driven off and no more fumes are evolved. The dish is allowed to cool and the residue is treated with 100 cu. cm. of alcohol and filtered and washed with alcohol until the filtrate measures 200 cu. cm. This filtrate contains all the phosphoric acid, which must be precipitated and washed, and then calcined and weighed, as magnesium pyrophosphate. This being calculated to phosphate of lime—the weight of the latter subtracted from the original residue, leaves the calcium fluoride, which, multiplied by 0.4897, equals the fluorine sought for.

Another example that may be cited in which no official method has been adopted is that of the "bug-bear," iron and alumina, for the determination of which no less than 10 different processes are cited, and of which Dr. Wiley says that, while none are entirely satisfactory, they are the best that can be offered. The methods given may be broadly summarized in the following way:

1st. Methods based on the solubility of iron and alumina phosphates in a slightly acid medium.

2d. Methods based on the preliminary separation of the total phosphoric acid from all the bases.

Of all these, the one which appears to give the most uniformly reliable results, and which is the least tedious and costly, is thus carried out:

Fifty cu. cm. of the filtrate from the dissolved material equaling 1 g. of it by weight, are placed in a beaker, made alkaline with ammonia, and diluted to 150 cu. cm. with distilled water.

Pure concentrated acetic acid must now be gradually added to the mixture until a drop of the latter produces a distinct redness when placed upon fresh and sensitive litmus paper. The mixture is stirred and allowed to stand in a cool place until perfectly cold. It is then filtered on an ashless filter, and the beaker and residue are carefully washed twice with hot water. The substance on the filter is now carefully dissolved in a little hot 50% solution of hydrochloric acid, and the filter is washed with enough water to make up about 150 cu. cm. A few drops of a solution of phosphate of sodium are now added, in order to insure the presence in the mixture of phosphoric acid in sufficient quantity to form phosphates with the iron and alumina. The contents of the beaker are next made alkaline with ammonia in slight excess; then made acid with pure concentrated acetic acid as in the first operation; well stirred up, and again allowed to stand until absolutely cold. The flask containing the first filtrate is now placed under the funnel, the liquid in the beaker is filtered

into it, and the filter is well washed, placed in the oven and completely dried, then calcined, and weighed as phosphates of iron and alumina in one gramme of the material.

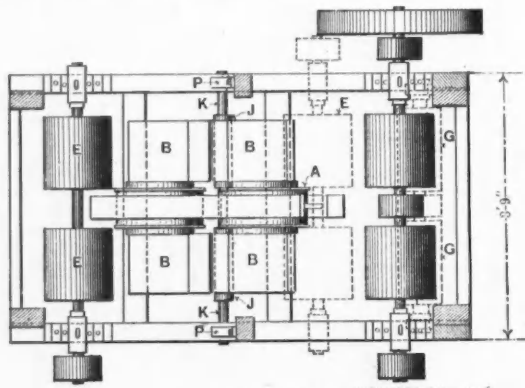
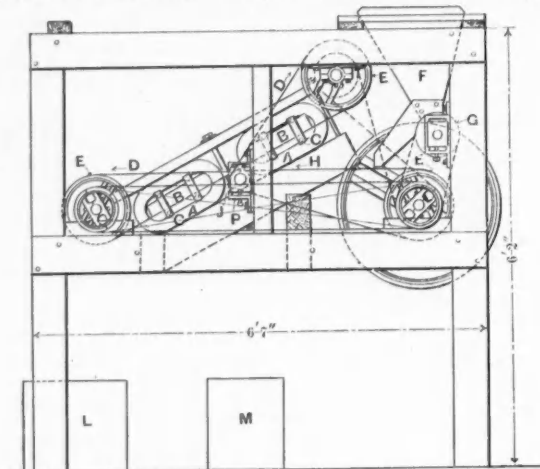
We might quote several other examples of a similar nature to those given, but to do so would be unfair criticism of a work which we have already pronounced to be admirable from every standpoint. It is quite evident that Dr. Wiley is one of the very few agricultural chemists who have realized that no more important duty devolves upon them than that of disseminating all their acquired practical and useful knowledge. He has had extensive opportunities for observation and has known how to turn them to account. We cordially commend his work to the consideration of analytical chemists, and we consider that he has done more good and essential service in its production than "a whole race of politicians put together."

## 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.

## Andra Copper Process.

Sir: Will you kindly inform me how low-grade copper ores are reduced by the Andra process I understand that electricity is employed, in combination with "plates of coal, coke or copper," and that the finely crushed ores are steeped in a weak solution of sulphuric acid; also that the posi-



PLAN AMERICAN BANK NOTE CO., N.Y.

tive pole works directly on the ores, and produces copper immediately, but I would thank you for any information you may have on the subject, as the description I have of the process is very indefinite. JOHN LUTZ.

158-160 CATOR AVENUE, JERSEY CITY, N. J., June 9, 1896.

## The Mining and Industrial Exchange of New York.

Sir: On page 556 of your issue of the 6th inst. is a statement to the effect that the Mining and Industrial Exchange of New York, "is being fathered by some of the old members of the defunct Mining Exchange which went into the hands of a receiver."

Permit me to correct this mis-statement. No member or promoter of the defunct Exchange has, or has ever had, anything to do with the formation of the Mining and Industrial Exchange of New York.

Another error into which your reporter has fallen is his statement that our governing members are to pay an annual fee.

ALEX. SEAMAN, Secretary.

NEW YORK, June 8, 1896.

[NOTE.—The following has been abstracted from the official circular No. 3 of the Mining and Industrial Exchange: "These governing members who make a single payment of \$100 each are the sole proprietors of the institution with its premises, furniture, books and business." Also, "Each associate member will pay a trading fee of \$5 monthly."—ED. E. & M. J.]

## Old Dominion Copper Company.

Sir: In reply to the inquiry contained in your issue of June 6th, I beg to state to your correspondent that it was a common and uncontradicted

report here that Leonard Lewisohn bought the old Dominion property for account of the Bigelow syndicate at the price of \$1,000,000, therefore the stock would not have cost more than \$7½ per share to the original syndicate. The estimated production of 10,000,000 lbs. per year is exaggerated.

The first three months in 1896 average only 600,000 lbs. per month; April and May about 650,000 lbs. This means, even if the officially predicted 800,000 lbs. were forthcoming, only 8,000,000 lbs. annually, and a dividend of hardly \$2 at the present price of copper.

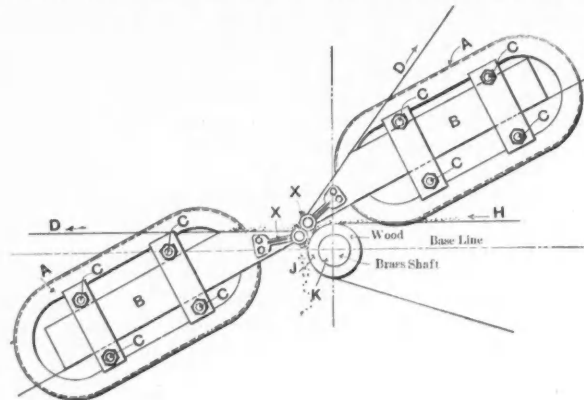
Whether the ore in sight is sufficient to run the plant for two years is doubtful. The management, following the usual Bigelow methods, shuns publicity and gives no information of development, production or cost of mining and smelting. The management of the mine itself is in the hands of Mr. Hyams and Mr. Parnall, neither of whom has had any large experience.

It has been reported to-day that the mines have been closed ostensibly on account of a strike of the miners, who want their old wages restored, which were reduced a few weeks ago. N.

BOSTON, June 10th, 1896.

## THE WETHERILL SYSTEM OF MAGNETIC CONCENTRATION.

One of the most interesting and important of recent inventions in concentrating is the Wetherill magnetic concentrator, in which extremely low currents by the use of magnets of great power are effective in magnetically separating minerals which have heretofore been considered as non-magnetic. This process is the invention of Mr. J. Price Wetherill, of Bethlehem, Pa., who developed it in separating the several minerals associated with zinc oxide in the franklinite of New Jersey.



## WETHERILL MAGNETIC SEPARATOR

## NO. 1.

There are a large number of minerals which have until lately been considered incapable of magnetic concentration, without a previous roasting to render them sufficiently magnetic to be acted upon by any practicable electro-magnetic separator. Among the number are red and brown hematite, siderite, chromite, menaccanite, rutile, franklinite, pyrolusite, psilomelane, tephroite, rhodonite, garnet and in fact almost all of the minerals containing iron or manganese, or both, as well as most of the chemically pure salts of these metals. It is for the purpose of concentrating these difficult substances that the Wetherill Concentrating Company, of South Bethlehem, Pa., have brought out the machines herewith illustrated.

The cut marked No. 1 shows a magnet especially adapted to the treatment of fine ore. It consists of two magnet cores and bobbins A and four pole-pieces B, which are pointed in the manner shown and are adjustable by the bolts C, so that they may be moved nearer or further apart as desired. For substances of low magnetic permeability two of the pole-pieces must be dispensed with and a solid yoke used instead. For substances of higher magnetic permeability, such as garnet, franklinite, siderite, etc., the yoke may be removed and two pole-pieces substituted for it, in the manner shown. About each pole-piece revolves a belt D (driven by a pulley E), in the direction shown by the arrows. To reduce the friction of the moving belts on the points of the pole-pieces, the edges of the belts are attached to ¼-in. cord, which runs in small guide pulleys at the side of the magnet points, as shown at X. The ore is fed from a hopper F by means of a feed roller G, upon a belt H, which carries it in a thin layer, say ¼ to ⅜ in. thick, to and about the pulley J, which is of small diameter and is upon a brass axle K, which may be raised or lowered by the adjustable bearing P. The feed can be accurately adjusted by means of a sliding shutter at the discharge of the hopper F. The ore is thus delivered near the space between the poles of the magnet and at such distance therefrom as may be necessary.

That which is magnetic is raised from the belt H, and if the attraction were high enough would adhere to the two poles. A proper adjustment of the current through the magnets, the distance of the poles from each other and the distance of the belt carrying the ore from the poles, cause the ore to be removed from the poles as fast as attracted by them, by means of the horizontal belt D, and delivered into the receptacle L. The non-magnetic portion falls from the belt H into the receptacle M. With 6 amperes and 16 volts the machine, with four pole pieces, removes franklinite from a mixture of franklinite and willemite, the treatment requiring three passes to be practically clean, and each pass is made at the rate of 3½ tons per hour. For hematite ore the yoke with two pole-pieces is

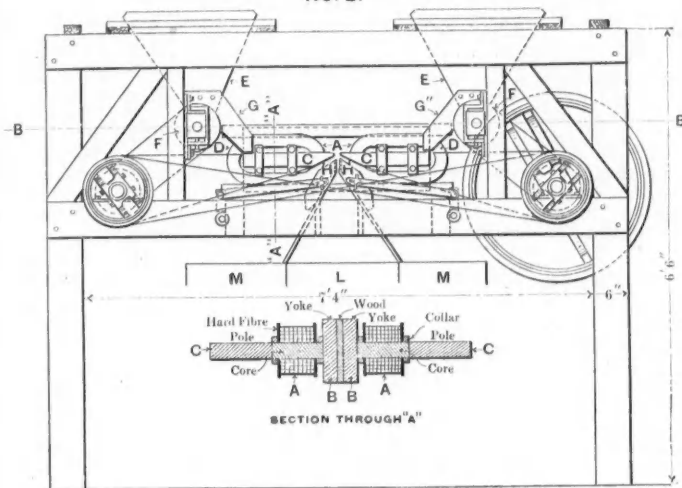
preferred, and 8 amperes with 22 volts is sufficient to make a separation, requiring three passes, as in the case of franklinite, at the rate of 1½ tons per hour.

A form of machine adapted for particles from through two and over 30 meshes to the inch is shown in drawing No. 2, and consists of magnets with cores and bobbins A, yokes B, pointed pole-pieces C, belts D, revolving about the pole-pieces in the manner shown, ore hoppers E, feed-rollers F and shutters G, by means of which the ore is fed in a thin layer upon the belts D. These belts travel in the direction shown by the pointed arrows and the ore is delivered directly into the opening between the two pointed pole-pieces; means are provided by which the pole-pieces may be set further apart or closer together, as desired. Two shutters H, one beneath the point of each pole-piece, are adjustable, so that the magnetic particles which adhere slightly to the pole-pieces are carried to one side by the moving belts D, into the receptacles M and M on either side of the shutters, while the non-magnetic fall into the central space between the shutters, and thence into the receptacle L.

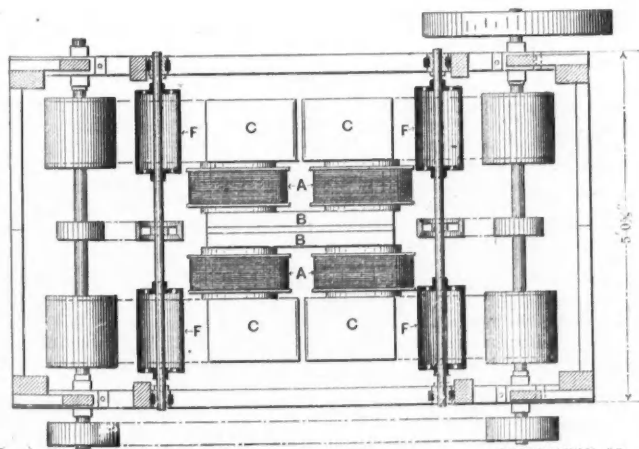
These machines are used for dry separation, but an adaptation to wet separation will evidently necessitate only a simple mechanical change.

The process is in use at the works of the Lehigh Zinc & Iron Company at South Bethlehem, Pa., where 1,000 tons of ore per month are treated by it—garnet, franklinite, tephroite, and fowlerite being removed from willemite, zincite and limestone, and the latter subsequently separated by

WETHERILL MAGNETIC SEPARATOR No. 2.



SIDE ELEVATION.



SECTION THROUGH "B"

jigging. A plant capable of handling, by this process, 300 tons per day, of the same ore, is in process of erection at the Sterling Iron & Zinc Company's mines at Franklin Furnace, Sussex County, New Jersey.

Among others the following classes of ore have been found adaptable to concentration by this process: Red and brown hematite and manganese ores in which the deleterious ingredients, such as quartz, limestone, etc., are in mechanical admixture; ores containing spathic iron (siderite); 1. when it is desired to separate the siderite as an iron ore; or 2. when it is an objectionable ingredient, in such ores as cryolite, zinc-blende, etc.; monazite sand, the object being to remove garnet, menaccanite, rutile, etc.; garnet schists, and rocks containing garnet, when it is desired to obtain the pure garnet for commercial purposes; corundum ore, when it is desired to separate the corundum from garnet, rutile and other ingredients. Among these cases are a number in which the difference in specific gravity is not sufficient to admit of gravity separation.

The essential feature of these machines is that the magnetic intensity is capable of delicate adjustment, thus admitting in many cases of several products showing slight differences in magnetic permeability; and it is claimed that it is also possible, by adjusting the magnetic intensity, to fix the degree of concentration desired. For instance, in the concentration of iron ores it is possible to work either for quality or quantity in the heads, as may be deemed more advantageous, depending upon the cost of the original ore or the uses to which the product is to be put.

The only substances in which iron is largely present that have not been attracted by the magnets constructed up to the present time are the higher sulphides and the cyanides of this metal. Magnets of greater power are in process of construction, and it is expected that these substances will then also be susceptible of magnetic separation.

NEW SOUTH WALES.

The information concerning the particulars of the mineral resources of New South Wales, as published by the Mines Department, is not yet officially before the public for the year 1895, the delay being caused in consequence of the reports being held over until Parliament meets. However, the principal statistics have been submitted for press review. The total value of all the mineral products for the year 1895 was £4,552,018, being a decrease of £504,118 on the value won in 1894. The following are the values of the principal items: Gold, £1,315,929; silver, £81,858; silver, lead and ores, £1,560,813; coal, £1,095,327; shale, £75,218; coke, £24,683; tin, £138,623; copper, £140,885; iron, £15,620; antimony, £7,251; chrome, £13,048; limestone (flux), £68,160; the noble opal, £6,000. The increases for 1895 were: Gold, £159,211; shale, £43,437; copper, £67,404; chrome, £712. The principal decreases were: Silver, £12,292; silver, lead and ores, £634,526. The decrease in the value of the output of silver is evidently due to a greater quantity of lower-grade ores being produced during the past year, the tonnage being nearly 40,000 tons in excess of 1894.

Coal shows a decrease of £60,426 in value, notwithstanding an increase in quantity of 66,500 tons. This is considered to be due to the low price prevailing.

The prospects for gold mining are very encouraging, as, notwithstanding the adverse circumstances met with on account of the drought, the returns show a substantial increase. The impetus given to gold mining in this Colony is due in a great measure to the scheme of sending the unemployed throughout the Colony to "fossick."

The Broken Hill Proprietary Company are still saving gold in connection with their silver-mining operations, the quantity last year being 4,650 oz., valued at £18,600. The report gives a table showing the yields and value of the quartz mines in the various districts as under:

District.	Tons.	Yield. oz.	Average. oz. dwt. gr.
Bathurst.....	17,541	83,958	4 15 17
Tambaroora.....	3,784	2,749	0 14 12
Lachlan.....	19,223	27,202	1 8 7
Southern.....	6,007	3,278	0 10 21
Fumut.....	5,488	5,210	0 18 23
Peel.....	43,137	28,878	0 13 9
Hunter.....	449	336	0 14 23
Clarence.....	3,068	2,652	0 17 7
Mudzee.....	15,088	9,169	0 12 7
Cobar.....	12,507	6,601	0 10 13
New England.....	2,139	3,769	1 15 5

In addition to the smelting works now being erected in the Illawarra District, under the management of Mr. J. Howell, it is understood a company is about to erect a smelting works for the treatment of sulphide ores in the Newcastle District, at a cost of between £50,000 and £60,000.

Cycle Madness in London.—Applications for £160,000 of stock of a cycle tire manufacturing company offered in London aggregated £9,000,000.

Suez Canal Traffic.—In 1895 a total of 3,434 vessels, with a tonnage of 8,448,385 tons, traversed the Suez Canal, paying tolls amounting to 75,934,357 fr. The toll for the 216,938 passengers produced 2,169,385 fr., and the accessory earnings 322,367 fr., making a total for transit of 78,426,110 fr. The number of vessels in 1895 that used the canal for the first time was 250. Three thousand two hundred and sixty-six vessels, or 95-1/2% of the total shipping, used the electric light, enabling them to continue their passage through the canal during the night. In 1894 the proportion was 94-9%. The average time occupied by vessels in the canal during 1895 was 19 hours 18 minutes, and the average duration of steaming through the canal 16 hours 18 minutes. Compared with 1894, that represents a diminution of 37 minutes in the time occupied by vessels in the canal, and of 23 minutes in the actual steaming through it. In 1895 the number of vessels drawing over 7 m. of water that passed through the canal was 1,250, and among those vessels there were 228 that drew from 2 m. 51 c. m. to 7 m. 80 c. m., the maximum permitted by the regulations of navigation. The average tonnage of vessels using the canal increased from 2,398 tons in 1894 to 2,460 tons in 1895.

Electric Furnace.\*—In the blast-furnace method of reducing iron, the metal takes up impurities such as sulphur and silicon, and these are not entirely removed in subsequent treatment by the Bessemer or Martin process. The present methods of smelting must hold the field for ordinary grades of iron; but when purity is of importance, and when special qualities of steel are required, it will probably prove advantageous to prepare pure iron by electrical methods of reduction and to carbonize this subsequently. A furnace suitable for this and similar purposes is described. It is lined with a basic lining, like a Bessemer converter; this is non-conducting and almost infusible, and keeps the iron free from impurities. In the Heroult furnace used at Neuhausen the positive carbon is vertical, and the material to be fused has to be introduced into the narrow space between this and the walls of the furnace. It is preferable to have a positive electrode consisting of four carbons arranged symmetrically about a vertical axis and inclined at about 20° to it. These can be raised so as to produce an electric arc, or lowered so as to dip into the fused mass; they can also be rotated backward and forward so as to ensure a uniform distribution of the heat. The bottom of the furnace is insulated and forms the negative electrode.

\* R. Urbanitzky. Zeits. f. Elektrochem, 1895-96, 2, 350-354.

ON THE TREATMENT OF NEW ZEALAND MAGNETIC IRON SANDS.\*

By E. Metcalf Smith, Member of the House of Representatives, New Zealand.

The principal ironsand deposit in New Zealand extends for about 13 miles along the sea beach at New Plymouth, in the province of Taranaki. The sea cliffs on this part of the coast consist of a combination of silica-sand and a rich magnetic iron sand. The gradual crumbling of these cliffs, together with the large quantities of iron sand brought down by the rivers and streams draining the slopes of Mount Egmont, result in a deposit of almost pure iron sand on the beach, a large proportion of the lighter silica-sand being washed out to sea. Excavations have been made on the beach showing a depth of iron sand of 14 ft., and the removal of any bulk of sand from the beach is replaced by the action of incoming tides. Iron sand has been dredged up at a distance of three miles out to sea from this shore, proving that the deposit extends over a large area, and that the supply is practically inexhaustible. This vast deposit of magnetic iron ore is in close proximity to extensive coalbeds, limestone containing 88% of calcium carbonate, timber for charcoal, and every requirement for the manufacture of iron. The results of an analysis of Taranaki iron sand given by Sir James Hector, the eminent geologist, are as follows: Peroxide of iron and protoxide of iron, 82%; oxide of titanium, 8%; silica, 8%; water and loss, 2%; total, 100%.

This, I believe, is the smallest proportion of titanium combined with the largest proportion of iron found in any iron sand in the world. By forming the iron sand in combination with certain clays into a compound brick and smelting it in a blast furnace, using the fluxes I will now describe, I obtain a soft gray pig iron containing by analysis 1% of titanium. From this is produced bar iron containing 0.21% titanium. The compound, of which the composition is stated below, is well pugged, pressed into bricks which are hard and compact and stand the pressure and grinding action in traveling through the furnace. The silica and alumina protect the fine particles of oxide of iron from being burnt, and allow the iron sand to be treated as a rich compact iron ore.

COMPOUND.		Ton cwt.	Parts of titanium.
Pugged and pressed into bricks.	160 parts ironsand.....	1 12	12
	25 parts blue clay.....	0 5	..
	25 parts yellow clay.....	0 5	..
210 parts.			
FLUXES.			
	25 parts limestone.....		
	25 parts yellow clay.....		
	25 parts sugar-loaf rock.....		
	20 parts lime and ashes residue from patent fuel.....		
305			12

Reducing proportion of titanium to 3.6%.

The yellow and blue clays used in the compound had the composition shown in the following analyses:

Analysis of tufa or yellow clay used in compound: Silica, 41%; alumina, 23%; manganese, traces; oxide of iron, 9.025%; lime, 1.025%; water, 24.014%; alkalies, 2%; total, 100.064%. Analysis of blue clay or papa rock: Silica, 54.21%; alumina, 31.64%; iron protoxides, 8.96%; manganese, traces; lime, 1.60%; magnesia, 1.42%; water, 2.17%; total, 100%.

In the year 1892, I smelted 45 tons iron from Taranaki ironsand in a small blast furnace, using the method above described with entire success, the iron running freely, the tuyeres being clean, and only 2 to 3% of iron oxides being left in the slag. The following are results of the analyses of the pig iron smelted by the process:

	Pig iron.	Bar iron.
Iron.....	94.09	98.94
Manganese.....	traces	traces
Titanium.....	1.00	0.21
Silicon.....	2.12	..
Sulphur.....	0.02	traces
Carbon.....	2.33	0.46
Loss of substance not determined.....	0.44	0.39
	100.00	100.00

The pig iron is fairly granular, and a fragment flattens out when struck on the anvil. The bar iron is very fine grained and malleable, and is of excellent quality. The following method of treating the fluid metal will, I think, commend itself. Having smelted the iron sand, tap it into a ladle containing tarred ironsand in the proportion of 4 cwt. to each ton of crude metal. The liquid metal will melt and absorb the ironsand, and the tar will give sufficient carbon to retain the metallic iron in a fluid state. The metal so treated retains its grayness and fluidity, and if used for direct castings, there is a result of a gain in weight of 3 cwt. per ton, instead of a loss of 3 cwt. per ton, as is the case when remelting pig iron for castings. In making wrought or bar iron, the tarred ironsand can be added in the puddling furnace in the proportion of 50%, and in making steel by the Siemens open-hearth furnace, 50% of tarred ironsand compound may be used, yielding, together with what was placed in the ladle, a clear gain of 10 cwt. per ton. The cost of manufacture of pig iron, superior in quality to the best Scotch, is £2 7s. 3d. per ton, made up as follows:

	£	s.	d.
Cost of fuel.....	1	4	0
Carriage, pugging, pressing, drying of compound ironsand clays.....	0	10	3
Fluxes.....	0	4	0
Labor.....	0	8	0
Sundries.....	0	1	0
	£2	7	3

By the special treatment described, bar iron equal in quality to the BBH can be produced for £7 per ton. The manufactured wrought iron, when reduced with charcoal, stood the extraordinary tensile stress of 52

\* A paper read before the Iron and Steel Institute, May, 1896.

tons to the square inch. Mokau coal yields on analysis the following results:

Fixed carbon.....	54.0
Hydrocarbon.....	34.0
Water.....	10.0
Ash.....	2.0
	100.0

When passed through gas retorts, 1 ton Mokau coal, costing 13s. 4d per ton at New Plymouth, will yield about 10,000 cu. ft. of gas, which gas will do as much work in heating the puddling or steel furnace as 23 cwt. of raw bituminous coal, costing 20s. a ton in New Zealand. By taking the carboniferous residue from the gas retorts and mixing it in the following proportions, I obtain the patent fuel employed.

10 cwt. Mokau coal residue.....	Pugged and pressed into bricks, costing about 12s. per ton.
6 " Raw bituminous slack coal.....	
2 " Slag cement.....	
2½ " Coal tar.....	
20½	

This forms a fuel of first-class character for smelting purposes, being almost pure carbon, hard and dense; it lasts a long time, produces a very high temperature, clear and bright, with little or no flame. An analysis of this patent fuel by Mr. W. Skey, Government analyst, gave the following results:

Fixed carbon.....	59.76
Volatile matter.....	20.48
Water.....	0.72
Ash.....	19.04
Total.....	100.00
	Evaporative power, 7.80.

The ash is obtained partly from the breeze and partly from the binding agent, the cement. After acting as a binding agent it is available as a flux. There are various by-products obtainable from the slag in the form of bricks, slag cement and slag blocks, all of which are of value in New Zealand. The slag when ground is of value as a fertilizer. It consists, as shown by following analysis, chiefly of lime and silica: Lime, 40.0%; alumina, 12.0%; silica, 42.0%; magnesia, 2.0%; titanium, 1.0%; iron oxides, 2.0; alkalies, 1.0; manganese, traces; total, 100.0%.

THE BUDAPEST CONGRESS OF MINING, METALLURGY AND GEOLOGY.

The people of Hungary are about to celebrate a great national festival. One thousand years ago the Huns, lead by Arpad, crossed the Carpathian Mountains and conquered the country. For ten centuries they have kept up a long, stubborn and sanguinary struggle against enemies within and without and against the invasions of Mongols, Turks and numerous other nations. Often successful, at other times overcome by reverses, the Hungarian nation has often been upon the point of destruction. However, by means of heroic resistance and by their patriotism, they have kept their freedom, and have preserved intact and independent their national character and traditions.

To celebrate this memorable anniversary Budapest has this year organized a national exposition of agriculture, of industry and of commerce, an exposition of history and of scientific congresses, both industrial and economic, and at the same time there will be held a series of commemorative fetes, historical corteges, etc.

The mining engineers and geologists of Hungary propose to take part in this national celebration and will take advantage of this time to make known to their fellow engineers and colleagues from abroad the progress which has been made in Hungary.

To accomplish this there will be organized on September 25th and 26th, 1896, a congress upon mining, metallurgy and geology, which will convene in Budapest upon the above-named dates.

M. A. Kerpely, president of the committee of organization, has extended an invitation to all who can do so to attend the congress and to take part in its proceedings by presenting reports and papers upon scientific, technical, economic and sociological questions which relate to mining, metallurgy and geology.

The congress will be subdivided into the following sections: Geology; Coal Mining; Mining and Metallurgy of Iron; Metal Mining; Mechanical Preparation of Ores; Metallurgy of Metals other than Iron; Salt Mining; Coinage; Sociological and Legislative Matters Relating to Mines.

The deliberations of the congress will be held in Hungarian, French, German and English. The members of the Congress will visit the national and historical expositions under the guidance of specialists. After the congress there will be organized a series of visits to the gold mines and to the coal and iron mines of Hungary. Several of these excursions will be held simultaneously and they will last for several days. The signatures of members expecting to attend the congress will be received until July 1st. The titles of all reports and papers which members propose to present before the congress should be transmitted to the committee in charge of the congress before March 31st and the papers themselves before July 1st in order that there may be time for their translation and printing.

All communications should be addressed to M. Kerpely, ministerial counsellor and central director of state forges, president of the organization commission, 6 Rue de Bulyovszky, Budapest, Hungary.—*Revue Universelle des Mines.*

German Iron and Coal Trades.—The German iron trade this year reports not only a great increase in the quantity of work but also a substantial advance in prices. In the Westphalian districts all the mills have orders for several months ahead, and are unable to contract for early delivery. Very much the same condition of affairs is reported from Silesia where a large order for bridge material recently offered could not be placed for anything earlier than September delivery. Wrought iron blooms which were quoted a year ago at \$11 per ton are now selling at \$13, while steel billets have advanced from \$11.50 to \$14 per ton, and there has been a similar advance in almost all kinds of iron and steel. The Prussian State railroads recently contracted with the Westphalian Coal Syndicate for 1,700,000 tons of coal at \$2.25 per ton, which is an advance of 25c. from the price paid last year.

EXPERIMENTAL DRIFT FOR TESTING EXPLOSIVES FOR COAL MINES.

An experimental gallery for testing the action of explosives for use in coal mines was erected about a year ago at the Consolidation Colliery at Schalke, Westphalia, by the Westphalian Miners' Provident Society. Under the management of Mr. Winkhaus it has proved a valuable means for studying the action of explosives in mines. Already many discoveries have been made by its means, and in the course of time, after the experiments have been continued further and made more complete, we hope to be able to give summaries of the results. The British Government recently sent over two of its mine inspectors to examine the gallery, and to their report we are indebted for the description of the gallery which we present here.

The gallery (see Figs. 1, 2, 3, 4) is arranged to accord as nearly as possible with the conditions which obtain underground. It is 115 ft. long and elliptical in section, being 6 ft. high and 4 ft. 5 in. wide inside. It is placed between two waste heaps and is partly imbedded in one of them. It is constructed of three layers of pitchpine planks, each layer arranged to break joint with the others. These planks are bound round with frames of H-iron, which are placed 16 in. to 25 in. apart. The gallery is open at one end and at the other is built into a masonry block, the face of which represents the working face of a colliery. The masonry block is 9.84 ft. broad, 12.30 ft. high and 9.84 ft. deep. The gallery is

liery. It is stored in the cylindrical receivers and is drawn off as required by means of water pressure. The storage cylinders are arranged in such a way that one can be filled while the contents of the other are being used. The gas pipes enter the gallery at (m) at one-fifth of the height of the gallery in the middle of the explosion chamber.

THE SUSSMANN ELECTRIC MINERS' LAMP.

The Sussmann electric miners' lamp has recently been introduced in England, and has been tested by both colliery engineers and electricians with very satisfactory results. There is nothing in its mechanical construction which is different from others of its kind; the novelty consists in the special form of accumulator which is used. In the first place the battery plates are made by incorporating India rubber and powdered pumice stone with the active material, by means of which additions the material is more firmly attached to the plate and at the same time greater porosity is obtained. In the second place a solid electrolyte is used which is said to have considerably less internal resistance than others hitherto employed. This is made by adding finely powdered and dried cellulose to the sulphuric acid, the effect of the mixture being that the cellulose swells up and forms with the acid a stiff, thick paste. The lamp as made measures over all 2½ in. square by 8 in. high and weighs 3½ lbs. It will take a charge of about seven ampere-hours at six volts,

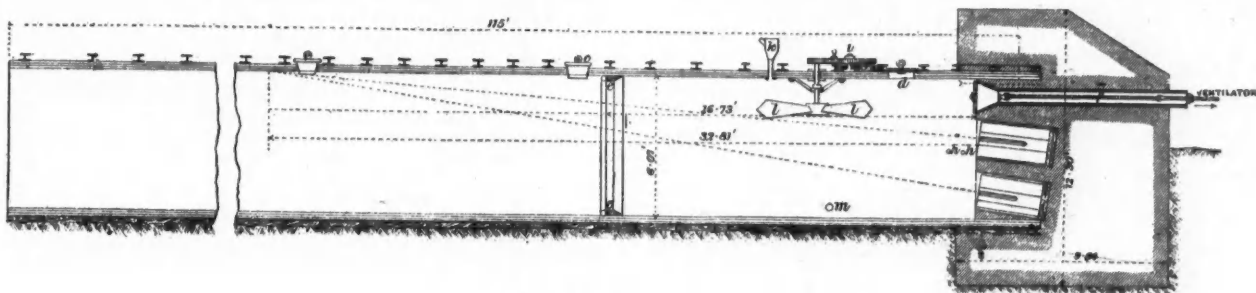


FIG. 1.—LONGITUDINAL SECTION.



FIG. 6.

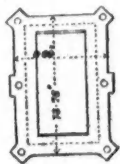


FIG. 7.

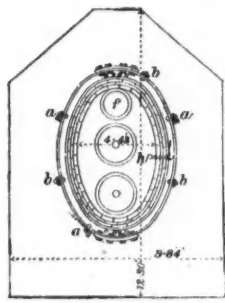


FIG. 2.—CROSS SECTION.

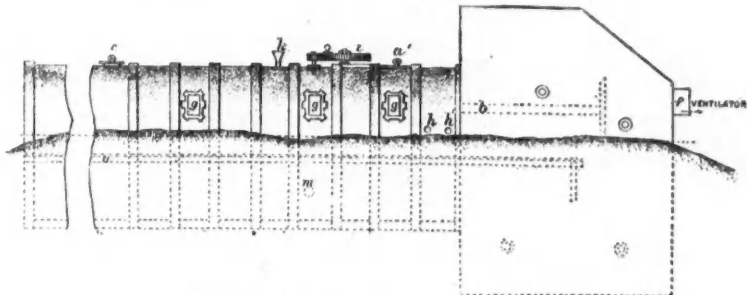


FIG. 3.—SIDE ELEVATION.

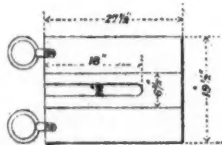


FIG. 4.

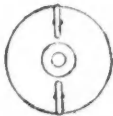


FIG. 5.

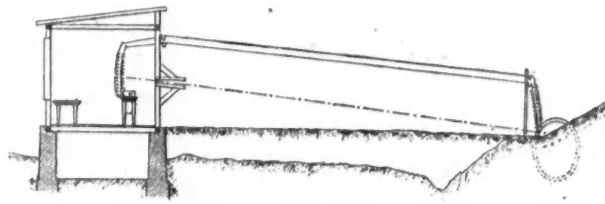


FIG. 8.

EXPERIMENTAL DRIFT FOR TESTING EXPLOSIVES FOR COAL MINES

imbedded 2 ft. 7 in. within it, and the connection between the two is secured by three angle-irons (a) and three bars (b). Two steel cannons are imbedded in the face of the masonry. They consist (see Figs. 5 and 6) of steel cores 6½ in. in diameter and outside shells 19½ in. diameter. The bore holes from which the shots are fired are 18 in. long and 2½ in. in diameter. The cannons are placed in such a position that the line of their axes intersects the roof of the gallery at about 33 ft. from the face. They are bedded in sand and are cushioned at the back with India rubber 1½ in. thick and willow wool boards 2 in. thick.

For observing the results of the explosions fifteen sight holes (g) Figs. 4, 7, 8 are made in one side of the gallery. These consist of glass panes 11 in. x 5 in. and 1 in. thick, held in iron frames with cushions of asbestos and India rubber. They are arranged close together near the face and at larger intervals elsewhere. In the observation house, there is a slit through which a single observer can inspect the whole length of the gallery. The explosion chamber for experiments with firedamp is enclosed by a sheet of brown paper stretched by a spring ring over the annular wooden frame. In this way a chamber containing about 350 cu. ft. is shut off from the rest of the gallery. For ventilating the gallery after the shot has been fired an iron pipe is led through the masonry to near the roof of the chamber, and a Pelzer ventilator draws off the gases. This pipe is closed internally by a conical plug which can be dislodged from the outside. The explosive gas and air is thoroughly mixed by means of the revolving fan, and the same fan is also used for diffusing coal dust, which is introduced when required through the opening (k). The shots are fired by magneto-electric currents generated in the observation house.

The gas used comes from one of the seams of the Consolidation Col-

making the energy of the charge 42 Watt hours. The average current during discharge is 0.53 amperes, and the variation in volts, even toward the end of the discharge, is hardly appreciable, being less than 5%. The lamp can, therefore, be depended on to give an excellent and steady light for quite ten hours. It is being made by the Edison & Swan United Electric Light Company, Limited, but the business will be conducted by a separate company specially organized.

American Enterprise in Russia.—Extensive locomotive building works at Nijni-Novgorod, Russia, by American capitalists have been arranged for. Contracts for machinery for the plant, amounting to \$500,000, have already been awarded, the bulk of the orders coming to Philadelphia firms. For several years the project of establishing an American locomotive plant in Russia has been under consideration by capitalists in this country. The firm of Edmund D. Smith & Co., of Philadelphia, and Walter F. Dixon, who was formerly connected with the Rogers Locomotive Works in Paterson, N. J., became interested in the matter, and, as a result of their visit to Russia, a company of American capitalists has been incorporated under the title of the Russian-American Manufacturing Company, which will build the works. The plant is to be built in connection with the Sormova works, an extensive establishment in Nijni-Novgorod, manufacturing cars, steamboats, steam boilers, etc., and employing 5,000 hands. Engineer Dixon will have entire charge of the locomotive works, which will be controlled jointly by the Russian and American companies. The locomotive plant will have a capacity of 200 engines a year, and will employ 1,000 hands.

## THE ELECTROLYSIS OF CHLORIDES.—I.

Written for the Engineering and Mining Journal by E. Andreoli.

Much merriment would have been created in the scientific world ten years ago if anyone had suggested the production of chlorine and soda by electrolysis on an industrial scale. At that time, "electric bleaching" was looked upon as a marvel, whereas it really was bleaching by means of hypochlorites produced by the old electrolytic process. Already in 1886, use was made of the stereotyped phrase "revolution in science and industry," and those who were ignorant of the fact that 50 years before a Frenchman had decomposed a solution of salt to produce hypochlorites, welcomed with enthusiasm this great discovery, whereas others were positive that no one would succeed in competing with ordinary chloride of lime by having recourse to electro-chemically produced hypochlorites. Much progress has been made since 1886, and we now consider the electrolytic production of hypochlorites not only out of date but also too expensive. This obsolete system has still some supporters, as always happens in the industrial world.

People would have hesitated very little 10 years ago to turn their backs irreverently on anyone who dared to suggest that the conversion of common salt into chlorine and caustic soda by means of the electric current was commercially possible. He would have been looked upon as a dreamer, an ignoramus or a lunatic, worthy of ending his days in a padded cell. It has, nevertheless, come to pass. What would in 1886 have been considered Utopian is a reality in 1896, and soda and chlorine are produced at the present time on a large scale by means of electrolysis.

It would be tedious to describe at full length all the attempts made, more or less successfully, within the last few years, to solve this great problem of the electro-chemical production of chlorine and the caustic alkalis. It would, nevertheless, be an interesting study, and moreover, very suggestive, and would give an idea as to what steps should be followed or improved upon, and more particularly what is to be avoided in order to ensure success. Not without regret, those electricians only will be referred to who have successfully worked their processes on a commercial scale, and who have erected electro-chemical works capable of turning out daily one or two tons of soda and chlorine, or several tons of chloride of lime.

Every one acquainted with the subject knows that when anodes and cathodes are placed opposite each other in a solution of sodium chloride, but without being separated by a porous diaphragm, the electric current gives rise to the formation of hypochlorite of sodium. If you place porous diaphragms between the positive and the negative plates in such a way as to form water-tight compartments, chlorine will be generated in all the positive compartments and caustic soda in all the negative ones.

Chlorine is of a destroying and corrosive nature; while the oxygen liberated at the positive electrode has a powerful disintegrating action on ordinary carbons. For these reasons great difficulties arise in obtaining an insoluble anode which is at the same time indestructible, or which is capable of resisting the action of these elements for a lengthy period. Ordinary retort carbon is the material which has given the most satisfaction for this purpose, and that which is to be obtained from gasworks is most suitable, after having been immersed in a bath of paraffin wax in order to fill up all its pores, and then heated to a high temperature.

The problem of obtaining a suitable diaphragm is more difficult. One might say, with a perfect right, that it cannot be solved, but the greater the difficulty in overcoming an obstacle the greater the merit. Porous diaphragms have been and will be discovered which fulfill all the conditions required for the decomposition of solutions of chlorides: that is, which are not attacked, corroded and destroyed by chlorine on one side and by the caustic soda on the other. What substance has not been tried in attempting to solve this problem? Each in its turn, porous partitions have been made of asbestos, with or without gelatine saturated with bichromate of potash, parchment (Lesueur), soap (Kellner), asbestos and sand, spun glass, blotting paper, porous membranes, of a special kind of cement, coagulated albumen, felt, asbestos porcelain, Kieselguhr, porous earth mixed with gelatinous substances, etc. Then it has been thought of putting a liquid between the two porous partitions of the positive and negative compartments. Even common salt has been tried, as also V-shaped pieces of glass separated by pieces of asbestos felt. The combinations which have been tried have outnumbered those which were made in the attempts to construct a good primary battery. But for some reason or other, the diaphragms turned out were a source of disappointment and of cruel vexation. This diaphragm was too porous, that one offered too high a resistance to the passage of the current; some dissolved away slowly; some, at the end of a certain time, became perforated with a great number of very minute holes, whereas others became incrustated and did not allow the diffusion of the caustic soda to take place. More generally, however, they did not stand the strain of continuous working and had to be renewed. It can be said, without fear of contradiction, that the diaphragm able to last and to fulfill the conditions required for the formation of chlorine and caustic soda has been the stumbling block to all those who have worked at the electro-chemistry of chlorides. To these obstacles was to be added another, from a commercial point of view. It is not sufficient, in industrial electrolysis, to have a lasting anode, a faultless diaphragm, a very low E. M. F. and a very high conductivity. The object sought is the maximum output of chlorine and soda, and, finally, as a *sine qua non*, the pure caustic soda obtained in the negative compartments should be so concentrated as to necessitate a little further expense as possible for the production of the material. It is not all milk and honey for the manufacturer of electrolytic chlorine and soda, and those who imagine that it is only necessary to send a current of electricity through a solution of sea water or of sodium chloride know little or nothing at all of the matter.

The characteristic feature of the Richardson-Holland process, which is worked by the Electro-Chemical Company at Parr, near Wides, in Lancashire, is that instead of porous partitions, use is made of one non-porous partition, which does not quite reach to the bottom of the tank so that the solutions in the two compartments are not separated from each other at the bottom of the electrolyzer. At first sight this appears to be quite original, but it is simply the reproduction of the electrolytic apparatus which Smith and Selnikoff adopted in 1886, and which, moreover, was copied from that used by Bunsen, Mathieson and others in

the first attempts made in the electrolysis of fused salts during the first half of the century. The anodes are merely blocks of retort carbon, the tops of which have caps of lead. These are borrowed from Lesueur's patent, and have, moreover, nothing new about them.

In the chlorine and caustic soda tanks, just as in those where hypochlorites are formed, hydrogen is a source of much bother. This gas is a regular bugbear, whose speciality is polarization. With a view to remedy this evil, an electrician had made use of various peroxides, among others peroxide of manganese. Richardson and Holland adopted copper oxide, which they use in close proximity to the cathode.

It is useless to criticise this process. Nothing is perfect in this world. The Electro-Chemical Company should not be misled on this subject; but, even as it stands, its lot is enviable, and there are many electricians who would like to have, like Richardson and Colonel Holland, a capital of £8,000 to back them up and a board of directors composed of persons holding important positions in the trade.

In the Richardson-Holland tanks, the solution of soda two or three years ago attained a maximum density of 14%. It was not wholly free from contamination with chlorine, which means that there was a loss of chlorine and of soda due to the formation of hypochlorite. The E. M. F. was 6 volts. Hence there was nothing very wonderful about this process either from the point of view of novelty nor from that of economical application. But Dr. John Hopkinson's report stated that for each horse power, 2 tons of salt would be decomposed per annum, and that each ton would yield 1.2 tons of chlorine and an equivalent quantity of caustic soda. He affirmed that each horse power would only cost £8 per annum, and that for this amount more than one ton of caustic soda, and 3½ tons of bleaching powder would be obtained. The managing director, Mr. Leith, announced that a plant capable of turning out 6,400 tons of caustic soda (of 70% strength), and 13,320 tons of chloride of lime per annum, would cost £100,000, and that the annual profit would amount to £110,000. There was sufficient in this to attract the most obturate people. It was given out that the future of this company would be as great and remunerative as that of the firm of Brunner, Mond & Co., who out of the manufacture of chemical products had realized profits which had enabled them to declare dividends of 20% in 1882, 35% in 1883, 27½% in 1884, 35% in 1890, 50% in 1892 and 100% in 1893.

The success of the Electro-Chemical Company was enormous. It could have had a capital four times, even ten times, as great as it obtained. Since that time (1894) the erection of the company's works has gone on uninterruptedly, and also the fitting up of the plant, which has been ready for some time. All that is known of this company is that it possesses 200 electrolyzers, 7 m. square and 50 c. m. high, and that each tank requires 700 amperes and 5 volts. It is said that the production amounts to 60 tons of caustic soda (70%) and 33 tons of chloride, equivalent to 100 tons of chloride of lime.

The Electro-Chemical Company is no friend of critics and only gives information to those who promise not to make any comments. That is, therefore, all that we know of this large installation. But these figures, which we have obtained from the *Electrical Engineer*, show a disparity as strange as it is considerable. Granted that the theoretical yield of chlorine is 1.34 g. per ampere per hour, and that of caustic soda is 1.49 g., and admitting that the Electro-Chemical Company obtains the theoretical maximum, how is it that as it produces 33 tons of chlorine it only turns out 60 tons of caustic soda? The proportions are not correct and there must be a mistake somewhere.

It is not intended to discuss here the merits of this or that method of producing electrically those two great industrial products, chlorine and caustic soda. Criticism would be out of place here. Instead of seeking for defects, let us encourage the pioneers who were the first to succeed in erecting works where their process would be carried out and from which the products would be exported to all the European and American markets. Our duty is to cordially applaud the success achieved by those who stepped from the laboratory where their experiments were carried out, into the factory where the work of transformation of salt, which was formerly done by the Le Blanc and Solvay processes, took place under the action of the electric current without making use of the immense furnaces, retorts and other complicated apparatus which seemed to be the *ne plus ultra* of chemical science, and which, no one can deny it, will have to disappear because electro-chemistry succeeds better than chemistry, and under undeniably better conditions of salubrity. Is the health of the operatives in an industry not to be considered?

Many would be astonished were we to give a list of those who have from 1886 to 1896 (without going farther back) devoted their time to this arduous and nevertheless fascinating task, viz., the decomposition of chlorides. Some failed because they were on the wrong track; others because when passing from experiments on a small scale to those on a large scale came across unforeseen difficulties which discouraged them. There have been some who could have carried the matter to a successful issue who have not succeeded in convincing the capitalists. The history of inventors is indeed a sad one.

It is not only the electrolysis of the solutions of chlorides which has benefited by the impulse given during the last few years to the research for chlorine and soda; all branches of electro-chemistry have profited thereby, and this science, this art, this world of magnificent experiments which grips the science of chemistry to place it at the disposal of electricity, has made slow but prodigious progress, which will, before the end of the century, make us witnesses of the prodigies which no one would, a few years back, have thought possible. Take up the books supposed, in 1886, to be up to date; take up the papers and electrical publications; read the special treatises on electrolysis. Was a word said about competing against chemistry by the decomposition of a saline solution by means of the electric current? That did not exist; the man who would have proposed it would have been taken for a dreamer, and yet such a thing exists to-day. It is a triumph of unceasing work which no discouragement can put a stop to. Not only have we to-day a factory where the Electro-Chemical Company has begun to place on the market chloride of lime and caustic soda, and has already sold in advance all the produce for 1896, i. e., thousands of tons, but there is another being built with the greatest possible speed, and where it appears better results are to be obtained.

The Castner-Kellner Alkali Company promises a yield of 88 to 90%, a result which no one had previously attained. The proportion of salt decomposed is so great and the energy absorbed is so small that according to



them it is impossible for anybody to do better. The process adopted by them works almost automatically, requiring very little manual labor. The solutions of caustic soda formed in the cathode compartments have a density of 20%, *i. e.*, 6% more than those of the Electro-Chemical Company, and yielding on evaporation solid caustic soda of 78% strength (8% more than that produced by the Electro-Chemical Company, which is only of 70% strength), a product which has not up to the present been heard of in the alkali industry.

This installation is to be of 4,000 H. P. and is estimated to cost £50,000. It will be capable of turning out daily 18½ tons of pure caustic soda, and 40 tons of chloride of lime, *i. e.*, 6,300 tons of caustic soda and 13,600 tons of chloride of lime per year of 300 working days. Even reduced to 5,000 tons of soda and to 12,500 tons of chloride of lime, this production would be enormous and wonderful. We wonder what those shining lights of the chemical industry would have thought of this, who, less than 10 years ago, were so wittily sarcastic at the expense of the poor devils who sought to utilize electrolysis and to attain practical results susceptible of making it appear likely to compete with the chemical industry. They are no doubt convinced now; at any rate they do not make themselves heard.

In England alone 160,000 tons of caustic soda and 150,000 tons of bleaching powder are the annual output. If the Electro-Chemical Company and the Castner-Kellner Alkali Company between them turn out 12,000 tons of caustic soda and 25,000 tons of chloride of lime, the start made by electrolysis in the chemical industry promises very well for the near future. The Castner-Kellner Company has sold its American patents to the big alkali firm of Messrs. Mathieson. A company has been formed in Austria to develop this process near Salzburg, and finally the remaining European patents have been handed over to Messrs. Solvay. When one sees people like Solvay putting themselves at the head of the movement for substituting electro-chemistry for chemistry it must be admitted that they know what they are about, and that if they adopt the electrical method it is because there is some good in it, that it must replace the old system of working, and that they do not want to be forestalled by other industrial people, who would thus take up a position from which it would be impossible to dislodge them.

We have already seen that Messrs. Richardson & Holland's Electro-Chemical Company promised a large profit, and that, for example, everything being included, 1,600 tons of caustic soda of 70% strength and 3,330 tons of chloride of lime will cost £27,000; and, taking the selling price of caustic soda to be £9 per ton and that of chloride of lime to be £8 per ton, this would give a total sum of £41,000, to be realized by the sale of the products, resulting in a net profit of £16,000. We do not in any way dispute the figures which have been given us; we simply cite them as being official and authentic statements, and what we have done for the Electro-Chemical Company we now do for the Castner-Kellner Alkali Company, who have stated that they are capable of turning out caustic soda at £4 5s. per ton, and chloride of lime at £3 per ton, which is equivalent to a profit of £1,000 weekly, or £52,000 per annum.

(To be continued.)

#### ON THE FUSIBILITY OF PLATINUM IN A CARBON BLAST BURNACE.\*

By Victor Meyer.

In the memoir from the pen of a thorough expert it has been recently pointed out that the oft-repeated assertion of the fusibility of platinum in a furnace fed with carbon and air has not been incontrovertibly demonstrated. As the vessels used are in general more or less injured at the high temperature of the experiment, or cannot be considered as perfectly fitting, it is not impossible that the flames of the furnace or burning particles of carbon may come in direct contact with the platinum. But, as is well known, in almost every flame there is a hot region having a higher temperature than the melting-point of platinum. A capillary platinum wire can be fused in the hottest part of the flame of a candle. The problem of fusing platinum in the carbon blast furnace in vessels perfectly closed on all sides does not seem to have been hitherto solved in a manner which excludes all doubt.

In the course of the pyro-chemical investigations which for some time have engaged me, in concert with Dr. von Rocklinshausen and Dr. Locke, we have undertaken the task, among other things, of obtaining a firebox in which platinum can be fused, whilst an alloy of 25% iridium and 75% platinum remains unattacked. We needed such a firebox for determinations of the density of gases and measurements of temperature, which are undertaken with the apparatus made for us by Hæraeus, of platinum-iridium.

For this purpose we used a furnace quite similar to the blast furnace used by C. Langer and myself, though of larger dimensions, and especially provided with a much larger wind-chest. As fuel we used retort-graphite, broken up in pieces of the size of a hazel-nut. The air was supplied by a very powerful blast. Under certain conditions this furnace answers the purpose required, as is proved by the following experiment:

We formed a block of perfectly refractory earth in which were two depressions, so that it might be regarded as a double crucible with very thick sides. In one of these depressions was laid a piece of sheet platinum, and in the other a sheet of metal of equal size of the alloy of 25 parts iridium and 75 platinum, which we had previously proved to be considerably less fusible than platinum. The block was then perfectly closed by means of a top of the same refractory earth, so that the whole formed a massive stone-like mass with two cavities.

On burning, the crucible thus formed was converted into a stone perfectly solid and hard. After it had been heated in the above graphite blast furnace, and allowed to cool, it was broken open. The platinum was melted into a ball, but the platinum-iridium alloy was perfectly unaffected.

Hence we must add to the above-quoted remark of H. Hecht, the supplement, that now the fusibility of platinum in thick-sided crucibles with a carbon blast furnace is indubitably established. The metal had neither

been contaminated with particles of carbon nor by any constituents of the crucible. The platinum-iridium alloy had retained its outer form and its lustre quite unaltered. The admission of furnace gases had been obviated in our experiment much more perfectly than with any previous arrangement of apparatus.

#### METAL TRADE WITH JAPAN.\*

During the year 1895 there was a continued demand from England for rails and railway material. Practically, all the rails for permanent way were obtained from England, but light rails for portable railways, though often ordered through England, were generally obtained from Belgium makers. Pig iron is exclusively obtained from England; but bar, plate and sheet-iron are supplied only by Belgium and Germany. The same remark may be made as to bar, plate and sheet-steel, 1,000 tons of which are imported annually for general consumption, and all of which is in the Besic process. The better classes of steel in the Siemens-Martin process, and nearly all that is required by the Government and great industrial companies continue to be obtained from England. Submarine telegraph cable to the extent of about £145,000, and cast-iron water pipes to the value of £80,000 were ordered from England in 1895. Neither of these items is included in the returns of imports for 1895, both being just now arriving in Japan.

The particulars given in another part of this report as to the development of the railway industry now in progress in Japan will enable manufacturers of rails to form some approximate estimate of what Japan's requirements in this respect may be during the next 10 years. During the past 15 years the aggregate import of rails has exceeded 300,000 tons, and perhaps only 10% of this total was not of English manufacture. German rails were tried and every possible effort was made by German makers and merchants to secure preference for them on the part of both the Government and private railways, but to so little permanent effect that, during the last 10 years, even when German merchants resident in Japan have secured contracts for the supply of rails, it has been under the condition that they should be of English make.

To this rule there have, however, been very recent exceptions, a tender which does not appear to have been accompanied by the above limitation having during the month of January been accepted from a German firm in Yokohama for the supply of 1,700 tons of steel rail for the Kiusiu Railway. And in specifications issued within the last few days, inviting tenders, to be handed in before March 2d next, for the supply of 2,200 tons for the Hokkaido Railway, it is stipulated that the rails are to be made by one of four firms of manufacturers, three of which are well-known British firms at Maryport, Barrow and Middlesborough, and the fourth a German firm.

Tenders lately accepted from the representatives of British manufacturers include 5,000 tons for the Sobu Railway, and 7,800 tons for the Hokkuyetsu Railway, besides large quantities of such supplies as fish-plates, dog-spikes, etc.

It is evident from the two instances quoted that British manufacturers of steel rails must once more reckon on German competition in Japan. And another element of competition from a very unexpected quarter has also been recently added.

In the middle of December last the Sanyo Railway, in point of wealth and influence the second private railway company in Japan, in point of enterprise probably by far the first, invited tenders for the supply of 10,000 tons of steel rail and over 1,000 tons of fish-plates, dog-spikes, etc. The unusually long period of six weeks was named as that within which tenders would be received, and another departure was made from the practice hitherto pursued by this company in that the tenders were invited only from a few chosen firms, and not publicly, and such privacy was observed that one of the largest Japanese contractors in Tokio was entirely ignorant of the whole transaction until some time after it was completed.

The specifications, as far as the description of the goods, material, workmanship, weight, etc., were of the usual precise nature, and the general conditions of the contract may be summarized as follows:

1. Free delivery to be made at the port of Hiogo, freight insurance, import duty and landing charges being all paid by the manufacturer, in two lots, half before June 30th, 1896, and the remaining half before February 28th, 1897. In case of delay, unless caused by wars, storms, strikes or lock-outs, a fine of 1/100th of the tendered value of the material undelivered per diem is to be paid for every day beyond the stipulated time.

2. The engineer-in-chief of the railway to have the power of rejecting any work of which he may disapprove on any ground, and his decision to be final and binding on any question whatever arising under the contract. The manufacturer to pay all expenses of testing, inspecting, or gauging.

3. Half-payment for first lot to be made on completion of shipment, and the balance one week after delivery, and the issue of the certificate of the engineer-in-chief as to the satisfactory nature of the material.

The makers to have the right of shipping the second lot whenever convenient, provided delivery is completed before the final date above mentioned, but no half payment on shipment is to be made until after October 1, 1896, nor of the balance until after January 15th, 1897, even though all material may have been delivered and passed before that date.

This contract has been accepted by the Illinois Steel Works, of Chicago, at £5 15s. 6d. per ton for the steel rails.

**Nanking (China) Mint.**—The new mint erected at Nanking, China, is to have a capacity of 100,000 silver and 1,000,000 copper coins per day. The silver coins will be dollars, and it is planned to make them exactly equivalent to the Mexican dollar. In order that there may be no doubt of the purity of the silver coinage, a foreign assayer is to be employed. In connection with this new enterprise, it is worthy of note, however, that some four or five attempts to substitute a new coin for the Mexican dollar in Chinese commerce have failed because of the unwillingness of the coast merchant to adopt the new standard.

\* Chemical News.

\* Abstract Consular Report.

## QUEENSLAND GOLDFIELDS.

Yield for the March Quarter.

Comparative statement of yield of gold for quarters ended March 31st, 1895 and 1896.

Goldfield.	Yield for March quarter, 1895.				Yield for March quarter, 1896.			
	Quartz crushed.	Yield.	Alluvial.	Total.	Quartz Crushed.	Yield.	Alluvial.	Total.
Charters Towers.....	Tons.	Oz.	Oz.	Oz.	Tons.	Oz.	Oz.	Oz.
Croydon.....	57,646	58,703	.....	58,703	42,847	46,219	.....	46,219
Clermont.....	111,467	16,250	.....	16,250	110,515	16,390	.....	16,390
Cloncurry.....	1 cwt.	3	343	346	.....	.....	2,875	2,875
Coen.....	340	580	.....	580	362	1,671	.....	1,671
Cooktown Fields.....	.....	.....	321	321	.....	.....	.....	.....
Etheridge.....	6,590	6,590	.....	6,590	5,339	5,376	1,200	6,576
Eidsvold.....	530	590	.....	590	492	664	.....	664
Gympie Fields.....	14,520	14,906	.....	14,906	13,488	13,573	.....	13,573
Gladstone Fields.....	1,185	975	265	1,240	1,120	1,489	116	1,605
Hodgkinson.....	919	634	.....	634	1,018	1,102	.....	1,102
Horn Island.....	.....	.....	.....	.....	.....	610	.....	610
Herberton Fields.....	2,221	1,130	465	1,595	1,474	336	210	606
Mackay Fields.....	101	159	.....	159	690	65	.....	65
Normanby.....	Nil.	Nil.	Nil.	Nil.	18	41	.....	41
Palmer.....	373	310	439	749	537	735	264	999
Paradise Fields.....	251	253	.....	253	.....	.....	.....	.....
Ravenswood.....	3,030	2,529	995	2,824	3,777	3,196	315	3,512
Rockhampton Fields.....	21,931	26,974	400	27,374	545	464	.....	464
Warwick Fields.....	145	158	118	276	.....	194	139	333
Tenniger Fields.....	.....	.....	.....	.....	.....	97	.....	97
Total.....	127,994 1c.	138,341	5,496	143,440	120,242	141,997	5,219	147,216

\* Also 3,964 tons tailings, yielding 3,725 oz.  
 † Also, for March quarter, 1895, 7,435 tons tailings, yielding 7,681 oz.; for March quarter, 1896, 9,431 tons tailings, yielding 7,816 oz.  
 ‡ Not obtainable at present.  
 § Crocodile Creek returns for 1895 included in Rockhampton yields. The returns for Crocodile Creek for the March quarter, 1896, are: Quartz crushed, 22,489 tons, yielding 37,772 oz. Mount Morgan is now shown in Crocodile Creek.  
 ¶ Tailings for March quarter, 1896, 578 tons, yielding 361 oz.  
 †† Yield for March quarter, 1895..... 143,440 oz.  
 ††† Yield for March quarter, 1896..... 147,216 oz.  
 Increase for March quarter, 1895..... 3,776 oz.  
 (Signed) P. F. SKILLING.  
 Under Secretary for Mines.

## RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

**CONSTRUCTION OF MINING LEASE AS TO ROYALTIES.**—A lease of coal lands required the lessee to mine annually at least 40,000 tons after a given date, the royalties thereon to be paid in equal monthly installments, and required 20,000 tons to be mined prior to that date, on which, as royalties, \$5,000 were reserved, payable in advance. The provisions of the lease showed that it was made with the fact in view that in ordinary coal mining different sizes of coal were produced, and the lease provided that royalties on prepared coal should be 25c. per ton on all sizes larger than pea coal, and on pea and smaller sizes they should be graduated according to the prices received for them at the mine, and that when coal was shipped without being prepared a royalty of 25c. per ton should be paid, but in no place was it provided at what rate or in what proportion the minimum number of tons to be mined after said date was to be paid for. The court held that the minimum number was to be made up of the different sizes of coal produced in the proportion that they were produced by the ordinary and careful mining and preparation of coal; and that the different sizes making up the whole number should be paid for at the rate fixed in the agreement for each size mentioned therein.—*Schooley vs. Butler Mine Company* (34 Atlantic Reporter, 639), Supreme Court of Pennsylvania.

**TAXATION OF MINING PRIVILEGE.**—A privilege or liberty or license to search and explore the land for oil or other minerals, coupled with a grant to dig and remove them and convert them to the grantee's own use, if in fee or for life, creates such a freehold right in the real estate, which may be assessed to the grantee separately from the land or its surface, and if the minerals be found and produced, creates a freehold interest, which should be assessed separately on the land books (under the laws of West Virginia). But such privilege, liberty or license, and such interest, if limited to a term of years, are not held and owned as the whole or a part of a freehold ownership, and should not be separately assessed to the mining licensee or lessee on such land books.—*State vs. South Pennsylvania Oil Company* (24 Southeastern Reporter, 688), Supreme Court of Appeals, West Virginia.

**Carbon Harder than Diamond.**—M. Moisson is reported (*Centr. Zeit. für Opt. u. Mech.*, xvii. 6) to have discovered a substance harder than the diamond in the form of a compound of carbon and boron, produced by heating boric acid and carbon in an electric furnace at a temperature of 5,000°. This compound is black and not unlike graphite in appearance, and it appears likely to supersede diamonds for boring rock, cutting glass, and other industrial purposes. It will even cut diamonds without difficulty, and it can be produced in pieces of any required size.—*Nature*.

**British Iron Trade.**—A meeting of the British Iron Trade Association was held in London on May 6th. A paper which attracted a good deal of attention was by Mr. Jacks on "Some Thoughts on Continental Competition." Mr. Jacks pointed out the great change in the proportion of the world's pig iron produced in different countries. For example, in 1871 Great Britain produced 6,627,000 tons, and in 1893 6,830,000. In the same years the United States produced 1,720,000 and 7,125,000; and Germany produced 1,278,000 and 4,700,000. In 1871 Great Britain supplied over one-half of the total quantity of pig iron, and in 1893 only a little over one-quarter. These figures, together with the steadily decreasing use of British coal in Germany, with the announcement that coal in Westphalia is being brought to London, and with the equally serious fact that American pig iron is now being regu-

larly sold in some parts of England, indicate an amazing and uncomfortable change in our industrial and commercial conditions. In seeking the cause of the change Mr. Jacks pointed out that wages in England are much higher than on the Continent. This, however, could not be accepted as the controlling cause, for German iron and steel were sold in Belgium, where wages are considerably lower than in Germany, and Alabama pig iron is sold in Great Britain. He appeared to think that a great cause for the change is in the superior activity and intelligence of the Germans in capturing the foreign markets. But beyond all this the English iron and steel industry is suffering from the paralyzing effects of frequent and prolonged strikes. In the discussion several speakers pointed out the importance of adopting the metric system of weights and measures, in order the better to enter foreign markets.

**Uses of Electricity in Metallurgy.**—Before smelting, many ores have to be submitted to processes of preparation, and we find that even in these preliminary operations electricity is of service. The magnetic and non-magnetic portions of a mixture can be separated by electro-magnetic contrivances, of which 170 have already been patented in the United States. Electro-magnetic preparation has been applied chiefly to ores of iron, lead and zinc. We first come to those under the head of reduction of oxides by heat; in these cases, however, electricity is only employed as a means of producing a high temperature. But it is important to notice that *alloxides* (naturally with the exception of carbon monoxide) can be reduced by this method in presence of carbon. The Cowles process of manufacturing aluminum-bronze was the first important application of this principle. The author has shown that chromium, manganese and tungsten can be prepared in the same way, although chromium and tungsten have a very high melting-point. In the chemical decomposition of sulphides and salts, electrical methods have found no application; but after this we come to processes which are entirely electrical. It will suffice to point out that the only metals not included in the columns for electrolysis of aqueous solutions and fused compounds are iron, mercury and tungsten. Even these can be prepared electrolytically, but as yet the electrical methods have not been able to compete with the others. Among present applications of electrolysis may be mentioned the refining of metals and the manufacture of metallic objects (Elmore, Klein), the reduction of aluminum, the separation of gold and silver, the extraction of gold by the cyanide process and electrolysis, electro-deposition of zinc, etc. Hitherto electricity has played but a small part in the great iron industry, but strenuous efforts are being made to apply it both in the preparation of the raw material and in the subsequent processes of manufacture.

## 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 JUNE 2D, 1896.

- 561,208. AUTOMATIC ACETYLENE GAS APPARATUS. Edward N. Dickerson, New York, N. Y. Filed June 5th, 1895. Combination of the vertically-moving cylindrical feeding-in valve with holder and connection from the holder for operating the valve, the valve being provided with a casing having connections, and with openings therein registering with the openings in the valve-casing, and the generating-chamber, suitably connected with the valve.
- 561,216. DISTILLATION OF PETROLEUM. Herman Frasch, Cleveland, O., Assignor to the Solar Refining Company, of Ohio. Filed July 14th, 1890. The improvement consists in taking the distillate obtained by cracking heavier oils, and after the so obtained distillate has been treated with sulphuric acid redistilling the same with diffusion of alkaline material such as lime, through the distillate, the diffusion of the material being effected through the whole body of the oil, while this is suitably below the boiling point of water, and continued through the subsequent rise of temperature to the boiling point of oil and the consequent evaporation of the oil, so that the material is exhibited to the compounds which resulted from the action of the sulphuric acid upon the cracked oil as the same are decomposing from the commencement throughout the progress of the decomposition.
- 561,250. MINING-DRILL. Marcus Wolfe and Michael Devlin, St. Clair, Pa. Filed February 14th, 1896. Combination of reversible coal or rock drill having a collar and bit-holder at each end of the drill-bar, and a feed-screw provided with a ratchet pawl and lever at each end.
- 561,355. VANNER. Edwin A. Sperry, Gunnison, Colo. Filed January 13th, 1896. Combination of a supporting-frame, an eccentrically rotatable movable table loosely mounted above the same, an eccentric driving-shaft for such table loosely mounted in the supporting frame, an encircling tire arranged to revolve the movable table, a vanning-table adjustably mounted on the movable table, and means for adjusting the vanning-table.
- 561,369. MINE TRAP-DOOR. George Bonenberger, Evansville, Ind., Assignor to the Automatic Mine Door Company, Terre Haute, Ind. Filed January 9th, 1896. Combination of a moving bar carried on cranks alongside of and close to the rail; connections whereby the depression of the bar opens the doors; a trip at that end of the bar toward which the cranks incline, which depresses the moving bar before it is struck by a car approaching in that direction, and means for raising such bar after it has been depressed.
- 561,428. MINER'S CANDLESTICK. Samuel Nash, Georgetown, Colo., Assignor to himself and Ernest Le Neve Foster, Denver, Colo. Filed April 11th, 1895. A wire candlestick formed with an arm for supporting it in position, the wire being formed into bends for receiving a candle, the wire further being crossed and formed into a yielding handle-loop which is complementary to the two opposite bends of the socket, a contraction of the handle serving to separate said opposite bends for releasing the candle.
- 561,501. APPARATUS FOR OPERATING MINING DRILLS AND REAMERS. Robert H. Elliott, Birmingham, Ala., Assignor to the Alabama Blasting and Mining Company, same place. Filed July 31st, 1895. Combination of a stand and an electric motor mounted on the stand; of an extended screw secured to the armature shaft, a holder for the drill-spindle adjustably mounted on the stand, and a worm-wheel rotating the drill-spindle and driven by the screw, and movable along the axis of the screw.
- 561,538. CRUSHING MILL. Clarence M. Carhart, Plainfield, N. J., Assignor to himself and Abram Amerman, Raritan, N. J. Filed August 21st, 1895. Combination of a base, a body-ring arranged thereon, a die of circular form inside the body-ring, a cushion of wedge-shaped cross-section held between the body-ring and die, and a flange secured to the body-ring and overhanging the inner edge of the same, the overhanging portion of the flange being arranged to engage the cushion and die to prevent the same from being forced out of position.

\* W. Borchers. Zeits. f. Elektrochem. 1895-96, 2, 368-372.

## PERSONAL.

Mr. HOWARD W. DuBOIS, of Philadelphia, will shortly leave on professional business to Colorado and the West.

Mr. FRED. COOK, mining engineer and late manager of the App mine in Tuolumne County, Cal., has gone on a visit to Cariboo, B. C., where he will remain some time.

Mr. W. E. NEWBERRY, M. E., sailed on June 10th for Peru, via Panama, to make an examination of a new mining district for New York capitalists, with the intention of returning September 10th.

Mr. ALEXANDER R. SHEPHERD, general manager of the Batopilas Mining Company, is now in the City of Mexico, where he will remain until the last of June, when he will go to Batopilas, Mex.

Mr. WILLIAM VAN SLOOTEN, mining engineer and metallurgist, of New York, sailed for Ecuador, S. A., on June 10th. He goes on professional business in the interest of an exploring syndicate.

Mr. J. B. HASTINGS, mining engineer of Boise City, Idaho, is at present in British Columbia on professional business. He expects to spend the greater part of the summer there, making Rossland his headquarters.

Mr. WILLIAM M. COURTIS, general manager of the Yorkville, Ga., gold mines, of Detroit, Mich., is taking a professional trip to Nevada and California to inspect some new mining plants and to make some reports on mines. He will visit several of the mining districts. Virginia City will be his longest stop.

PROFESSOR H. O. HOFMAN, of the Massachusetts Institute of Technology, has gone to Ironwood, Michigan, with students of the Institute, where he expects to remain until June 20th, and later will go to Norway, Michigan; after which he will go further west and visit all the leading smelting and refining works.

Mr. ALFRED E. ROPE, a member of the firm of Doubleday, Rope & Co., bankers and brokers of Colorado Springs, Colo., has formed a partnership with Mr. John J. Key, receiver of the United States Land Office, at Pueblo, Colo. The business of Doubleday, Rope & Co. will, in future, be carried on under the firm name of Rope, Key & Co., at Colorado Springs, Colo.

## OBITUARY.

J. C. NEWELL, who built many of the large coal breakers in the Wyoming and Schuylkill valleys, died suddenly at his home in Forty Fort, Pa., on June 7th, aged 56 years.

JOSEPH C. TYRELL, aged 61 years, died suddenly at his residence in Kingston, Pa., on June 7th. He was one of the largest contractors in the Wyoming Valley, having built nearly all the important coal breakers in the anthracite region.

W. B. BROOKS died at his residence in Columbus, O., on June 5th, aged 78 years. He was connected with many business enterprises, particularly that of developing the Hocking Valley District and in building the Hocking Valley Railroad. He was a large coal operator in Ohio at the time the railroad was built, and owned furnaces and mines.

J. B. SNEATHEN, one of the best-known rivermen in Pittsburg, Pa., died June 10th. For years he was the senior member of the firm of Sneathen & Wilson. He was also a member of the firm of Collier, Budd & Co., large coal dealers at Cincinnati. He was associated in business with Capt. John O. Phillips. Captain Sneathen was a director of the Marine Bank.

THOMAS TRACY BOUVE, who died in Boston, June 4th, aged 81 years, was for a number of years treasurer of the Glendon Iron Company. Mr. Bouve was for many years president of the Boston Society of Natural History. He was a member of the American Academy of Arts and Sciences, of the American Association for the Advancement of Science, and an honorary member of many other scientific societies.

## SOCIETIES AND TECHNICAL SCHOOLS.

WESTERN PENNSYLVANIA CENTRAL MINING INSTITUTE AND OHIO INSTITUTE OF MINING ENGINEERS.—Last week a joint meeting of these two Institutes was held in Pittsburg, Pa. The papers presented and the topics discussed were very interesting to those engaged in mining. Among these were the following: "A System of Working Coal to Comply with the Machine Mining in the Pittsburg Region," by B. Callahan, mine inspector; "The Effects of Trap Doors in Mines," by James Blick, mine inspector; "Progress in Coal Handling Machinery," by W. B. Hanlon, of Cleveland; "Useful Effects of Air Splits," by Chas. Connor, of Uniontown, Pa.; "Education in Mining Engineering," by W. J. Holland, of the Western University, and numerous others.

## INDUSTRIAL NOTES.

The Moore Manufacturing and Foundry Company made an assignment June 9th to the Wisconsin Trust Company. Assets, \$175,000; liabilities not known.

The new 15-gross-ton open-hearth steel furnace of the Franklin Steel Casting Company, of Franklin, Pa., is in active operation. The company also has two 10-ton furnaces.

The Hamburger Metall-Walzwerk, Hamburg, Germany, has appointed Messrs. Weager & Funck, 1 Whittington avenue, their London agents for the sale of their yellow metal and copper sheets, etc.

The Londonderry (N. S.) Iron Company has obtained the contract for the condensers and other parts of the by-product plant of the People's Heat and Light Company, of Halifax, in addition to the contract for the coke ovens' iron work which was obtained some weeks before.

It is stated that arrangements have been made under the agreement recently effected between the General Electric Company and the Westinghouse Electric and Manufacturing Company to discontinue about 300 patent suits pending between the two companies. Apparatus purchased from either one of these companies is delivered to customers, it is stated, with a guarantee against suits.

One of the largest single shipments of electrical apparatus was made a few days ago by the Westinghouse Electric & Manufacturing Company to Great Falls, Montana. The shipment filled 8 cars—the machinery being consigned to the Boston & Montana Consolidated Copper and Silver Mining Company to be used in the refining of copper and silver.

The Berlin Iron Bridge Company, of East Berlin, Conn., has a contract for furnishing steel trusses for the new building which is to be erected by the Holyoke Gas Company, of Holyoke, Mass. The building is 50 ft. wide and 60 ft. long. Roof trusses are entirely of steel, and the covering is slate. No woodwork or inflammable material will be used anywhere in the construction.

The new blowing engine which the Sloss Iron and Steel Company, of Birmingham, Ala., is having installed, will soon be ready for operation. It is a compound, non-condensing engine of about 3,000 H. P., with shaft 24 in. in diameter, and the whole weighs 300 tons. The highest speed will be 45 revolutions of the flywheel, which is 24 ft. in diameter, and is of wrought iron. The steam cylinders are 44 and 68 in. diameter by 60-in. stroke.

J. Weidman Murray, representing the E. P. Allis Company, Milwaukee, Wis., has just sold a Reynolds standard blowing engine to the Schoenberger Steel Company, also two Reynolds 1890 steeple type blowing engines to the Punxsutawney (Pa.) Iron Company. Each of the above engines has one 42-in. diameter steel cylinder, one 84-in. diameter air cylinder by 60-in. stroke. The steam cylinders are the Reynolds-Corliss type; the air-cylinders are equipped with Reynolds patent air valves.

The American Society of Mechanical Engineers has passed the following resolution acknowledging the courtesy of the Broderick & Bascom Rope Company, of St. Louis. Whereas, The Broderick & Bascom Rope Company has tendered the American Society of Mechanical Engineers cordial invitations to visit their works to give the members more opportunity of studying wire rope making, and has also presented each member with a handsomely mounted piece of wire rope, mounted as a paper weight; therefore, be it resolved, that a vote of thanks be tendered to the Broderick & Bascom Rope Company.

The Zingg Paint and Varnish Company with an office in New York and a factory at Stamford, Conn., has been dissolved voluntarily on account of the death of the inventor, Mr. Zingg, whose process the company has been using in the manufacture of its supplies. The officers of the company are Otto P. Amend, president; Herman Zingg, vice-president, and August Eimer, treasurer. The assets have been divided among the stockholders, Messrs. Eimer, Amend and William Zinsser, and the debts contracted by the company have been paid. The Zingg Paint and Varnish Company was incorporated in May, 1895, with a capital stock of \$35,000.

The Electro-Cyanide Gold and Silver Extracting Company, at an organization meeting held in New York City, recently, elected the following officers: Henry Weijen, president; Paul Dankwardt, vice-president; John Meyer, treasurer, and Arnold Jungblut, secretary. This company has been incorporated under the laws of the State of New York, with a capital stock of \$25,000. The Electro-Cyanide Gold and Silver Extracting Company purposes treating ores containing precious metals by a cyanide process, being a combination of barrel-cyanidation and electro-amalgamation. It is claimed that the process extracts up to 95% gold, and a high percentage of silver; the precious metals are obtained as amalgam, which has only to be retorted and smelted.

The M. C. Bullock Manufacturing Company, of Chicago, have recently installed in the power plant of the Pabst Heat, Light and Power Company, of Milwaukee, two engines for direct-coupled alternating current two-phase work. The engines are of the Willans central valve type, compound, automatic, non-condensing, 150 lbs. pressure, and are guaranteed to give an economy of less than 21 lbs. per indicated horse power per hour.

The two units are 200 I. H. P. and 400 I. H. P. capacity and form, with the Westinghouse alternators, a most compact and efficient plant. The plant was installed by the Pabst Company on the

basis of economy of operation, viewed from all the standpoints of central station work, including economy of space, attendance and continuous running for long periods of time with a minimum of attention. The results fully justify the time and labor devoted to this problem by the general manager, Mr. Parker, and his consulting engineers.

## 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.

NEW OIL WELLS.—The report of the Oil City Derrick for the month of May gives the completion in New York, Pennsylvania and West Virginia fields of 658 new wells having a daily production of 10,796 bbls. There were 1,117 wells under the drill at the end of the month. The Buckeye field in Ohio showed 504 new wells complete, having a production of 9,902 bbls. daily, and 577 new wells in progress. The Southeastern Ohio field records the completion of 71 new wells, having a daily output of 554 bbls., and 49 new wells under the drill at the close of May. There were completed in the Indiana field 148 new wells with a daily production of 3,149 bbls., and 178 new wells drilling at the end of the month.

## ALABAMA.

## JEFFERSON COUNTY.

ALABAMA-CONNELLSVILLE COAL AND COKE COMPANY.—This company's property, consisting of over 2,500 acres of coal lands and appurtenances for mining, a number of houses for employees and 50 coke ovens, was sold last week for \$20,000 to satisfy a claim held by the Farmers' Loan and Trust Company.

## ALASKA.

ALASKA TREADWELL GOLD MINING COMPANY.—This company reports its clean-up for the month of May as follows: Period since last return; 30 days; bullion shipment, \$55,273; ore milled, 22,276 tons; sulphurets treated, 372 tons; bullion from sulphurets, \$17,095. The average yield was \$3 per ton of ore milled.

## ARIZONA.

## GILA COUNTY—GLOBE DISTRICT.

(From An Occasional Correspondent.)

KASSER GOLD MINING COMPANY.—The pipe line to carry water from a mountain spring to the stamp mill of this company in Lost Gulch is about completed and the mill will be running again in a few days.

OLD DOMINION COPPER MINING AND SMELTING COMPANY.—For several months there has been discord among the officials of "The Old Dominion Copper Mining and Smelting Company," and great dissatisfaction among employees whose wages had been reduced, which resulted in a mass meeting to force Mr. Parnall, the superintendent, to an interview at 9:30 Sunday evening, and gave him the alternative of restoring wages to those paid when he took charge, August, 1895, and dismissing all Mexican laborers, or being escorted out of the camp on foot within one hour. He complied with the demands till the home office in Boston can be consulted. The miners will now form a union and unite with the Western Federation. Further developments are anxiously awaited. The three 40-ton water jacket cupolas are working more satisfactorily under the new smelter superintendent, Mr. Mathews. Sinking is soon to be resumed in the shaft which had to be suspended some four months ago because of the large inflow of water just below the eighth level.

WEBSTER GULCH CLAIMS.—The valuable copper claims, about seven miles from Globe, owned by William Baird and associates, is bonded to a Phoenix gentleman, who will take hold at once. W. W. Hill, late with the Jerome mines, will have charge.

## YAVAPAI COUNTY.

LAST CHANCE.—The mill on this property is running 24 hours a day. The strike in the mine is said to be very rich.

## YUMA COUNTY.

LA FORTUNA.—At this gold mine, 27 miles from Yuma, work has been done on three levels. The first is down 65 ft., showing 14 ft. of ore. A drift has been run east on the ore body 120 ft. On the second level, at a depth of 130 ft., the ore body is larger and shows 18 ft. The third level is at a depth of 215 ft., with a crosscut showing ore body to be about 30 ft. The estimated value of the ore is \$40 per ton. The mill consists of 20 stamps, erected on the mine.

NINETY-SIX.—The new mill on this mine started up June 1st. The ledge of ore is about 3 ft. wide and runs \$40 to the ton in free gold.

## CALIFORNIA.

## AMADOR COUNTY.

(From Our Special Correspondent.)

**CENTRAL EUREKA.**—At this mine, near Sutter Creek, sinking will be commenced in a few days, as the new hoist has been completed and the old shaft has been cleaned out and retimbered down to the 700-ft. level.

**WIELAND.**—This old mine at Clinton, which has been shut down for the past three years, is now being operated by the Union Consolidated Mining Company, under the management of D. Gutman. A large amount of money will be expended in repairing the old plant and erecting new machinery. This property paid largely in former years, but was not worked very deep. It is now proposed to sink at least 1,000 ft. and prospect the lower levels. About 30 men are employed.

## CALAVERAS COUNTY.

(From Our Special Correspondent.)

**BALD HILL.**—This mine is located one mile south of Angels on one of the branches of the mother lode. The croppings extend the full length of the claim width of 25 ft. The ore is free milling and carries a good percentage of sulphurets. This property has been bonded by Eastern parties and a payment of \$4,000 has been made.

**KEYSTONE.**—This mine at Railroad Flat is being developed by E. C. Loftus. The hoist and mill are operated by water power. The shaft is down 200 ft.

## EL DORADO COUNTY.

(From our Special Correspondent.)

**STARLIGHT.**—This mine, two miles south of El Dorado and west of Logtown, recently reported on favorably by Saville, MacLymont & Co., of San Francisco, is to be re-opened and developed in a systematic manner. The contract has been let for a 10-stamp mill which will be erected at once. This mine has a good record as a gold producer.

## KERN COUNTY.

(From Our Special Correspondent.)

**PIUTE MOUNTAIN DISTRICT.**—The Mayflower is developing a 20-ft. ledge which prospects well. A wagon road is being built to the mine. H. Herz has discovered a 16-in. ledge which assays rich. These ledges are about a mile from the Bright Star mine which yielded about \$500,000 in the sixties.

**RANDBURG DISTRICT.**—A good flow of water has been struck by boring at Cow Wells, sufficient to run the eight-stamp mill. A five-stamp mill at Kane Springs and a 10-stamp mill at Stockton will be erected at once.

## MARIPOSA COUNTY.

(From Our Special Correspondent.)

**ALEEN.**—This mine, located southwest of Coulterville, near the Malvina mine, has been relocated and work commenced by sinking on the vein, which is a spur of the mother lode about five feet in width. The ore assays well and carries a fair percentage of sulphurets.

**MERCED GOLD MINING COMPANY.**—No sinking is being done at the mines of this company, but drifting and stoping are being pushed and ore hauled to the mill, which is running steadily.

## NAPA COUNTY.

**ETNA QUICKSILVER MINING COMPANY.**—This company will pay a dividend of 10c. per share on June 1st. This is the sixth dividend. For the quarter ending May 1st, the gross earnings were \$35,000; expenses, \$14,510. The dividend calls for \$10,000, so there will be \$10,490 to be carried forward to profit and loss account from the quarter.

**NAPA CONSOLIDATED QUICKSILVER MINING COMPANY.**—This company will pay the usual quarterly dividend of 10c. per share on June 16th, together with an extra dividend of the same amount. These extra dividends have been paid on previous occasions. For the quarter ending June 1st, the gross earnings were \$45,500; expenses, \$23,457. The dividends call for \$20,000, so over \$2,000 will be carried forward.

## NEVADA COUNTY.

(From Our Special Correspondent.)

**CHAMPION MINING COMPANY.**—This company has brought suit against the Providence Mining Company to recover \$100,000 for ore taken out of the former's mine by the latter company. The courts have already decided that the land belongs to the Champion company.

**CROWN POINT.**—It is reported that a French syndicate, after working this property at Grass Valley, under a bond for a year, is satisfied of its value and has paid \$50,000 for it.

**PROVIDENCE.**—A 2-H. P. motor has just been installed at this mine.

**RED HILL.**—This mine has just put in a 30 H. P. electric motor. The power is furnished by the Nevada County Electric Power Company.

## SHASTA COUNTY.

(From Our Special Correspondent.)

**NIAGARA.**—This mine, in the French Gulch district, five miles northwest of French Gulch on the south fork of the gulch, comprises 22 claims, including 32<sup>0</sup> acres of timber land. The Dutch company, which now owns the property, is engaged in re-opening the mine and about 40 men are employed.

## SISKIYOU COUNTY.

(From Our Special Correspondent.)

**MABEL.**—In an extension of this mine seven miles east of Scotts Bar, a new ledge of high-grade ore has been discovered. The owners will push the development work as rapidly as possible.

## TUOLUMNE COUNTY.

(From Our Special Correspondent.)

**ALABAMA.**—This mine, on the mother lode, 1½ miles west of Jamestown, was recently bonded by an English company, which is now engaged in developing the property. About 12 men are employed.

**SHAWMUT & EAGLE.**—These mines, near Jacksonville, are being opened up and connected by tunnels. The compressed air for drilling is transmitted over 3,300 ft.

## COLORADO.

## CLEAR CREEK COUNTY.

**SENATOR GROUP.**—In this group of mines, near Idaho Springs, a body of ore has been opened up, showing large pieces of ruby silver, says the Denver Times. The edge of the ore chute has just been entered and it appears to be of good grade. Mudd, Estey, Bellan & Loose are working the property. They are from Leadville, and, it is reported, have secured a bond and lease on the 24 claims for \$275,000.

## EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

**ROSEBUD MINING AND MILLING COMPANY VS. WESTERN ASSURANCE COMPANY, OF TORONTO.**—The suit which has been brought by the Rosebud Company against the Western Company for the payment of an insurance policy amounting to \$6,500 has resulted in favor of the defendant company. It is stated that the suit grew out of the loss by fire of the Rosebud mill at Cripple Creek on July 11th, 1894. The insurance involved in various insurance companies amounted to \$50,000, the Western carrying a policy of \$6,500. It was discovered after the fire that false warranties had been made in the application for the insurance. Charles F. Hawkins, adjuster, and Sylvester G. Williams, attorney for the companies, to whom the loss was referred, advised the companies that no liability existed. All of the companies, however, except the Western, accepted a compromise of 95% of their policies, paying in all over \$40,000.

(From Our Special Correspondent.)

The railroad strife between the Colorado Midland Railway and the Midland Terminal Railway is not benefiting the camp to any great extent, and will doubtless result in the closing down temporarily of the El Paso Chlorination Works. One hundred tons of chemicals were on the way to the mill from the east, but were stopped in transit. The Midland Terminal Railway insist on receiving 65% of the freight rate for the use of their 35 miles of road and to allow the Colorado Midland and the Santa Fe 35% for hauling ore to the smelters at Pueblo or Denver. The leading contractors of the city were about to put on freight wagons to haul heavy merchandise, such as brick, stone, lumber, etc., from Divide to Cripple Creek, a distance of 18 miles, when the Midland Terminal railway reduced their rates on such goods 50%. The Denver & Rio Grande and the Florence & Cripple Creek, two of the most deservedly popular routes in Colorado, are kept extremely busy, and manage to handle all freights consigned to them.

**ANCHORIA LELAND.**—A new shaft on Gold Hill has now been sunk 400 ft. This is the best piece of shaft sinking that has been done in the camp. The shaft was commenced on January 16th last, it being a three-compartment shaft and size of timbers 10 x 12. The plant when in working order will be the best though not the largest in the camp. It consists of two 2 x 80 H. P. boilers, hand-made, a Corliss hoisting engine, a large size compressor, etc. The mine is yielding well. The output for May was 300 tons.

**BUENA VISTA MINE.**—This mine, on Bull Hill, owned by the Isabella Mining Company, shows steady improvement all the time. The shaft is now being sunk below the seventh or 500-ft. level. To show the continuity of the vein, one of the levels in the Buena Vista and Lee and Smuggler, owned by the same company, has been opened up for over 2,000 ft., whereas other levels have proved the length of the vein over 500 ft. more on the same vein; the Victor mine, on the same vein, has opened up the same vein for over 1,000 ft. The public will soon realize that even in Cripple Creek there are continuous veins for one mile in length. The shaft on the Lee is being prepared for the erection of a large hoist, the frame timbers for the plant being on the ground. When this work is completed the Isabella Company will be hoisting mineral from four shafts on the same vein. The mine employs 117 men. The Reith lease on the Smuggler is doing well and gives employment to 30 men, the value of the monthly output being about \$5,000.

**INDEPENDENCE EXTENSION.**—This mine, south of Battle Mountain, recently sent some fine specimens of telluride ore to Denver. The rock bore a very close resemblance to the rock found at the Independence. The specimens were found at a depth of 200 ft. in a drift south of the shaft. The owners are much encouraged over their showing.

**LOTTIE.**—This property, on Bull Hill is being worked, or rather the west 300 ft., by a Mr. Bryant on lease. Some months ago the lessee in sinking the shaft 15 ft. from surface made a net profit of \$2,800, he having found a small pocket of rich ore.

The shaft was sunk to a depth of 70 ft., but without mineral. The lessee has again struck a rich pocket of high-grade ore.

**MOON ANCHORS.**—This property, on Gold Hill, maintains a steady output of one car a day of shipping ore, and gives employment to 40 men. The new boiler with the additional machinery is adequate to a depth of 1,200 ft. The returns are expected to increase.

**PORTLAND.**—The directors have declared a June dividend of \$30,000. The mine is again in good working order, and shipments at the rate of 100 tons a day are being made.

**RED UMBRELLA.**—This fractional claim, directly north of the Moose, is about to put up a larger plant of machinery in order to sink their present shaft 235 ft. to a depth of 500 ft. The veins or pay streaks are very small yet very rich.

**VICTOR.**—The main shaft has been sunk 430 ft. The May output from this property was the greatest in the history of the mine. About 400 tons of ore were sent to the smelters, sampling from \$70 to \$230 per ton, and 1,500 tons of low-grade ore yielding from 1 to 2 oz. per ton were treated at the metallic extraction cyanide plant at Florence. New buildings are being built for the more economical sorting and handling of the ores.

## GILPIN COUNTY

(From Our Special Correspondent.)

**CENTENNIAL.**—This is a vein of specular iron. The ore is being hauled to Idaho Springs for treatment in the stamp mills, where it yields from 3 to 4 oz. to the cord.

**CURLEW.**—A steam boiler and hoist are being placed on this claim, also on Chesapeake Mountain. The vein is narrow, rarely so much as a foot wide, but of good grade.

**DENMARK.**—A new shaft-house, with boiler and steam-hoist, are being placed on this claim, which runs across the Gulf line, just above the Blackhawk depot.

**EUREKA.**—This mine is simply a hole sunk in a highly mineralized porphyry dyke, through which run strings of ferruginous gossan. The latter are picked out for smelting ore, the balance, assaying about ½ oz. gold, being hauled to a 5-stamp mill not far off.

**GUNNELL.**—No compromise having been arrived at with Messrs. Newall, who own the Concrete mine, pumping from the Grand Army shaft will shortly be discontinued. This step, involving the closing down of both mines, would be a serious misfortune to the whole camp.

**PURITAN.**—This mine, on Chesapeake Mountain, has been sold by Gow Brothers for \$8,000 cash. The vein is rich, but very narrow, widening in the shaft from 1 to 8 in. The late owners made a living out of it for at least a couple of years, merely gouging out a little of the ore each day, and bringing it down to their cabin, where they roasted it, and nanned out the gold.

**ROVER.**—This mill was burned down last week. There is no doubt of its having been fired by an incendiary.

**SHORT'S RANCH.**—A large body of milling ore, stated to be 30 ft. wide and to yield nearly ½ oz. to the ton, has been discovered on this ranch, situated east of Blackhawk. This and the adjoining ranches are bonded to Messrs. Potter and Lightbourn, well-known Central City business men.

## LAKE COUNTY.

(From Our Special Correspondent.)

**BIG SIX MINING COMPANY.**—Lessees are doing considerable work on the Nettie Morgan ground and are shipping 150 tons a month of good ore. A renewal of the lease has been secured from the company, and new work is planned.

**CLEVELAND MINING COMPANY.**—The new shaft is down 175 ft., and 20 ft. more should put it in ore. The rock is very hard and work has been necessarily slow.

**HULDA MINING COMPANY.**—These people are doing a great deal of work on the Garbutt property. The conditions are somewhat peculiar. In the porphyry, which appears to be pyritiferous, there is a well-defined vein of ore. It is from 2 to 4 ft. wide and some of it is of a very high grade. The vein would seem to be a feeder to the rich ore chute of the Ilex, but it seems impossible to locate the big ore body.

**LEADVILLE LEASING COMPANY.**—The directors are looking for a suitable proposition to lease and develop and hope to be ready to begin work July 1st. They thought somewhat of leasing the Lucky Weber, but this idea has been abandoned, as the Weber is a heavy water proposition.

**LONG & DERRY.**—The ore body has opened up nicely, but owing to the dip the lessees find it necessary to go down another hundred feet.

**LOWER HENRIETT.**—Steady development and opening up of the ore body is the order of the day, while 60 tons of good carbonate ore are being shipped daily.

**O'DONOVAN ROSSA.**—Lessees are in good contact and are pushing an incline toward the Bon Air. A drift has been run in 350 ft. from the 300-ft. level.

**ROBINSON SECTION.**—In this district there is considerable activity, while a fine strike has just been made in the Columbine property. In drifting about

100 ft. from the shaft a 3-ft. vein has been disclosed which assays from 400 to 600 oz. silver to the ton.

**THE FIRST NATIONAL.**—In this property, started up only a few weeks ago after long abandonment, a fine strike has just been made. At the 155-ft. level, in a drift going south, a body of ore has been encountered which carries 102 oz. silver and \$22 gold. Exploration work, so far, has failed to find the top or bottom of the ore body.

**WOLFSTONE.**—No development work is being done, and just what plans the Smith-Moffat people have is not known. Shipments from the Wolfstone have fallen off materially and now average about 25 tons daily of sulphides.

OURAY COUNTY.

**LLOYD.**—This mine is improving in the quantity of ore. The owners have sent 40 sacks of ore to Ouray to be tested.

SAN MIGUEL COUNTY.

**LITTLE ANNIE.**—The Milwaukee parties who recently purchased this mine at Summit Creek have 3 shifts of men driving a crosscut just under the lime formation now in over 200 ft.

**MAID OF ERIN.**—Ed. Springer and Dave McGill, owners of this mine in Saw Pit District, are pushing development work on that property. They have been driving a tunnel between two parallel leads about 100 ft. apart, and it is in 150 ft. Bunches of good mineral have been encountered in the last few days.

IDAHO.

SHOSHONE COUNTY.

**MAMMOTH MINING COMPANY.**—This company is still at work with about 30 men, taking out good ore.

**STANDARD.**—The Campbell tunnel in this mine is being advanced at the rate of about 8 ft. a day.

(From an Occasional Correspondent.)

**BOND.**—This property, owned by Dunn Bros., is showing up well in the shaft. The mill will soon be running on ore that is being extracted from the shaft. Up to the present time they have only mined the upper levels.

**CALEDONIA GROUP.**—The Caledonia Gold Mining Company, recently organized with a capital of \$750,000 to develop this property, is now getting into shape to commence active operations preparatory to putting in a stamp mill. The ledge is well defined and low grade and averages over 30 ft. in width. It is a contact between porphyry and granite.

**CALUMET & HECLA CLAIMS.**—These are claims owned by Thomas Kirby and Alexander Walker, and are showing up well. The Calumet is situated in Moore's Gulch. The ore is rich and free-milling.

**CLIMAX GROUP.**—This is a recent discovery, but still it cannot be placed in the category of ordinary prospects, as it shows ore from the grass-roots that will run high in free-gold. It is well developed by nature and is owned by A. Walker.

**PIERCE CAMP.**—General indications in the camp are favorable for an increased production this season. Hydraulic mining proceeds as usual, but owing to the backward season work was retarded.

Howes & Sutherland are rushing their bed-rock flume ahead with all possible haste and expect to reach their pay-bank in July. They have expended over \$25,000 in development work.

INDIANA.

JAY COUNTY.

**NORTHERN INDIANA OIL COMPANY.**—A strike was made by this company last week on the Bone farm, a mile east of Bryant. The well is good for 270 bbls. a day, and it opens a new field.

KANSAS.

CHEROKEE COUNTY.

(From Our Special Correspondent.)

**BLOOMINGTON LAND.**—G. W. Beasley has leased 18 acres of the Bloomington land near Murphy & Friel crusher, and has built a first class steam concentrating plant. There are three shafts down to pay dirt with steam hoisters. The ore in the upper run lies on a 65-ft level in open ground and no water. At 105 ft. a large body of zinc ore in open ground was met with and enough water to run the plant. He has been cutting air drifts and expects to start up the first of the week. At the Black Diamond shaft, on the Pine Bluff Company's lease, they are drifting at 65 ft. on a 17-ft. face of zinc ore in open ground with very little water. They have been unable lately to do much work on account of bad air, but this week will put up a steam hoister and blower and commence work in the ground.

**NORTH EMPIRE COMPANY.**—The North Empire Company have leased 70 acres of the Murphy land. They started the first shaft about a year ago and have about 20 large producing shafts and five large steam concentrating plants running in fine shape, and last week there was made and sold from the company's lease 953,890 lbs. of zinc ore and 144,810 lbs. of lead for which they received \$11,032.

The output of ore has increased every week and what is remarkable every shaft that has been sunk over 115 ft. has either struck lead or zinc ore or both in paying quantities. It is not hard sinking as the ground is open nearly all the way down and the water is not strong.

MICHIGAN.

IRON—GOGEBIC RANGE.

**NORRIE GROUP.**—Work has been resumed on this group with 1,000 men, and nearly this number will be kept steadily employed. The shipments are averaging nearly 70,000 tons a week.

IRON—MARQUETTE RANGE.

**JACKSON IRON COMPANY.**—This company has found a new deposit close by its old workings, and is now exploiting it.

MINNESOTA.

(From Our Special Correspondent.)

The total ore shipments from Lake Superior for the month of May were 1,110,000 tons, of which Minnesota furnished considerably over half, or 630,000 tons. Of this last total Duluth sent down 306,000 tons, Two Harbors 290,000 and Superior, from the Mahoning Ore Company's mines, 32,000. It was the first time on record that the mines shipping from Duluth have sent out more ore than those shipping via Two Harbors, and is an evidence of the growing strength of the Mesabi, not only in Minnesota mines, but as against those of other states as well.

The Bessemer Steamship Company, the Rockefeller fleet, whose first new steam vessel, the Sir Henry Bessemer, took her initial cargo this week at Duluth, will be increased by the addition of two more barges. These will be in addition to the 16 vessels already decided on and contracted for. The fleet will carry over 1,400,000 tons of ore this year, and when the vessels are all in commission for a full season, in 1897, will carry about 2,400,000 gross tons.

Ore shipments from Two Harbors for the first 4 days of June were 23 vessels, with a total of 72,000 tons.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

**ÆTNA IRON COMPANY.**—This company, which, under the name of the Lowmore, did some little work two years ago, has let a contract to Stevens & Crockett, by which they are to strip and mine the ore. The Ætna is a very large property, lying in the Mountain Iron deposit, consisting of 80 acres west of and adjoining the Rathbunfee, in section 4, 58-18, and south of part of the Mountain Iron. It is controlled by Duluth parties. An immense body of ore will probably be disclosed by proper stripping.

**COMMODORE MINING COMPANY.**—This company has laid off its night force and is operating for the present with about fifty men. It is stated that it will enlarge operations later in the season.

**FRANKLIN MINING COMPANY.**—This company has laid off its night shift since the latest reduction in the allotment of output, and has now only about 250 men at work. The new shaft at the Franklin has been sunk to the lowest level it will reach at the present and the sumps are being dug.

**MINNESOTA IRON COMPANY.**—This company has found ore in its drill operations on the Rouchelleau property, close to the Canton mine in 56-18.

**OHIO MINING COMPANY.**—This company is shipping about 1,100 tons a day, one shovel being worked in the ore.

**OLIVER MINING COMPANY.**—This company has recently put out a total of 50,000 tons in one week, and is now loading and shipping from 6,000 to 8,000 tons a day, when conditions are favorable. Most of the ore is coming from the Lone Jack, which is the fee property of the Lake Superior Consolidated Company under a 25c. lease, and but little off the State lands of the original Oliver under a double 25c. lease. The ore of the Lone Jack is bettering in quality very perceptibly as depth is attained. Two shovels are busy at the mine stripping. The company has two drills at work in the Sauntry, and the ore body there is coming up to all expectations.

**PENOBSCOT MINING COMPANY.**—A small stockpile is being formed at this mine, and the shaft is down into the ore. The machinery for the mine is to be on the spot next week, and it will do some shipping this year.

To the south of the town of Hibbing an ore body has been found, in which the drills have so far reached 115 ft. The land is under option for lease to A. M. Chisolm, of Hibbing, and others. It is the first find of consequence made south of Hibbing. There is a surface of 125 ft. over the ore body, which is of good grade.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

**MINNESOTA IRON COMPANY.**—At the annual meeting of this company, held in Duluth, Monday noon, last, the following were elected officers: D. H. Bacon, president; H. Seibert, vice-president; C. P. Coffin, secretary; A. J. Patterson, assistant secretary. There was no change in the directors. The Duluth & Iron Range road elected these: Directors, D. O. Mills, H. M. Flagler, C. W. Hilliard, Jos. Sellwood; J. L. Greatsinger, president; C. W. Hilliard and Jos. Sellwood, vice-presidents; C. W. Hilliard, secretary. The company announces that there has been no change in its probable output of ore since the agreement in April. Its quarterly dividend rate will probably remain unchanged. A number of its stockholders inspected its mines and equipment previous to the meeting.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

**JOPLIN ORE MARKET.**—The output of ore last week was very light, as a large number of the mines are still flooded, but most of the mines will have the water out in 10 days. The sales of zinc ore were less than last week, the price being the same, \$21.50 per ton top price, with an average \$18.50. The surplus ore is gradually being reduced, although quite a number of the operators are holding for higher prices. The sale of lead ore was 200,000 lbs. less, as some few lease owners are holding for higher prices. The price paid for lead ore was \$16 per 1,000 lbs., with 50c. added for hauling. The output by the different camps of the district was as follows: Joplin, zinc, 1,262,330 lbs.; lead, 175,650 lbs.; value, \$15,449. Webb City, zinc, 474,370 lbs.; lead, 15,540 lbs.; value, \$5,000. Cartersville, zinc, 891,850 lbs.; lead, 180,850 lbs.; value, \$11,800. Zincite, zinc, 15,940 lbs.; value, \$152. Oronogo, lead, 10,680 lbs.; value, \$120. Galena, Kan., zinc, 2,350,000 lbs.; lead, 382,000 lbs.; value, \$16,695. Totals for the district, zinc, 4,944,490 lbs.; lead, 764,720 lbs.; value, \$49,306.

**DISCOVERY OF NICKEL ORE.**—The McBride brothers and others have a lease on the Thomas Crowel land, four miles northwest of Joplin and are sinking a shaft which is now down 40 ft. They are taking out flint boulders that contain particles of millerite, and the discovery of this species of nickel ore is causing no little excitement in that vicinity. The men working at the shaft considered them extra fine specimens. J. B. McBride reported the fact to Professor Peck, a mineralogist who is gathering specimens in the district for several State universities. Professor Peck visited the shaft and obtained some of the specimens. The substance is often found in the center of a flint boulder which when broken open shows a bright knot of metallic colored substance resembling human hair, which is shot into the rock in such a shape as to produce a pretty effect. Some of the specimens resemble hair that has been tied up in a knot. Associated with the ore are fossil shells and a substance which might be termed hair pyrites occurring in capillary crystals.

**GOLD BUG.**—On the Free Coinage lease the Gold Bug plant has shut down while they are sinking their shaft deeper, preparatory to taking up a 14-ft. stope, that is rich in zinc ore and is in soft ground.

LAWRENCE COUNTY.

(From Our Special Correspondent.)

**KENTUCKY MINING COMPANY.**—This company owns in fee simple 20 acres of land, on which there are eight producing shafts. This land has been producing for the past five years and for the year ending January 1st, 1893, turned out 80,410 lbs. dry bone, 350,360 lbs. of silicate, 609,950 lbs. of lead and 1,218,810 lbs. of zinc ore.

**MINOR & ROGERS.**—The Minor & Rogers land, containing 80 acres, is just now attracting considerable attention owing to the big output from the discovery shaft at a depth of 127 ft. Here there is a complete steam concentrating plant which since March, 1895, has turned out \$28,000 worth of ore. Five new prospect shafts are going down, with every indication of getting ore in paying quantities. Mr. Minor also has had charge of the Rinker Lead and Zinc Company's land, consisting of 87 acres, which is equipped with a complete system of string pumps, which have been shut down for some time, but expect to start up again the first of next month.

**P. M. PFAW LAND.**—This tract consists of 15 acres, and there are eight shafts that have pay dirt, and they have been shut down since last Christmas, when the Rinker string pump shut down and let the water in.

**TERRE HAUTE LEAD AND ZINC COMPANY.**—The Terre Haute Lead and Zinc Company's land consists of 80 acres, and is under the management of Paul Schmoock, who also has a lease on four lots which he is operating. This land has been idle for seven months, owing to the high water, but Mr. Schmoock has put in a large pump and is successfully draining the land, and will sink a new shaft near the pump shaft to a large body of ore which is known to exist at a depth of 125 ft. This new shaft will be connected with the pump shaft and will give excellent ventilation. Since draining the land five of the abandoned shafts have been leased and several prospect shafts are being put down.

**WHEAT AND LOY.**—The Wheat and Loy mine is located on the Campbell Company's land and produces weekly from 40,000 to 60,000 lbs. of lead, 15 to 20 tons of zinc ore and some silicate. The plant is equipped with a crusher, steam power, and the owners are contemplating putting up a complete steam concentrating plant and a roaster to take out every particle of mundic.

MONTANA.

Governor W. J. McConnell, of Idaho, has recently communicated with Governor Rickards, of this State, and requested his co-operation in determining the boundary line between the States of Montana and Idaho bordering on British Columbia, which has not been established.

BEAVERHEAD COUNTY.

**BANNOCK MINING AND MILLING COMPANY.**—This company's 10-stamp mill is well under way and will be ready for operation in two or three weeks.

**CENTRIFUGAL DREDGE MINING COMPANY.**—This company, under the management of E. F. Smith, are pushing work on their property very rapidly. The dredge boat was launched last week and a force

of men is now engaged in putting in the machinery. It will take this company another month to get ready to begin operations. The old Golden Leaf placers will be worked by this new concern.

**GOLD DREDGE MINING COMPANY.**—The wheel recently ordered from Milwaukee by the Gold Dredging Company has arrived, since which time the company has been running its plant without interruption.

#### GRANITE COUNTY.

**BLOOMINGTON GROUP.**—A mill is to be erected upon this group shortly.

#### JEFFERSON COUNTY.

**BASIN & BAY STATE MINING COMPANY.**—It is reported that this company will resume work on the Katie mine at Basin within six weeks.

**OVERLAND.**—This mine continues to maintain its reputation of being one of the leading gold mines of Montana. The mining force and number of teams hauling has been increased. The old bucket has been replaced by one that will bring up 1,000 lbs. instead of 500, as heretofore, and two horses put on the whim to raise it. The grade of ore is said to be improving.

#### LEWIS & CLARK COUNTY.

**L. WOTTRICH.**—Thomas Hinds, M. P. Gilchrist and associates, of Butte, have purchased the L. Wottrich mines, which are claimed to be an extension of the Drum-Lummon claim at Marysville. A stamp mill will be erected and the property will be extensively worked.

#### MADISON COUNTY.

**BROADWAY.**—This mine, at Silver Star, is showing up well. A 10-stamp mill has been erected that will crush about 15 tons of ore per day. A 50-ft. winze has recently been sunk through solid ore, opening up a fine body of some 4,000 or 5,000 tons, says the *Butte Miner*. Water has necessitated the cessation of this work, however, and now it is proposed to sink the shaft about 450 ft. deep.

**LEITER.**—This mill was started this week after a shut-down of several months' duration.

#### MISSOULA COUNTY.

**CHARCOAL.**—It is reported that a rich strike has been made in this mine, eight miles north of Clinton. This property was bonded to John Long and others April 10th for \$50,000, payable at the expiration of 15 months. Already some \$13,000 worth of ore is said to have been taken out.

#### PARK COUNTY.

The mines and coke ovens at Horr now give employment to 201 men, says the *Helena Independent*. More men are needed at the camp, there being work for an additional force of 30 or 40 at good wages.

#### SILVER BOW COUNTY.

**BUTTE & BOSTON MINING COMPANY.**—This company, the lessees of the Snohomish, have cleared the shaft and will commence drifting at once.

#### NEVADA.

#### STOREY COUNTY.

**CONSOLIDATED CALIFORNIA & VIRGINIA.**—At shaft No. 2 of this company's property operations will hereafter be carried on jointly by the Consolidated California & Virginia, Best & Belcher and Gould & Currie companies.

#### NEW JERSEY.

#### MORRIS COUNTY.

**GLENDON IRON COMPANY.**—Work has been stopped in the Wood iron mine at Hibernia, which is owned by this company.

#### NEW MEXICO.

#### COLFAX COUNTY.

**UTE CREEK-BALDY MINING DISTRICT.**—A nugget was found recently in this district which is reported to weigh 38 oz. and worth \$760.

**ORTIZ.**—This mine is now yielding about \$300 in gold weekly.

#### TAOS COUNTY.

**EDISON.**—This mine, at La Belle camp, has struck at a depth of 50 ft. a 15-ft. vein with nearly 2 ft. of pay streak, which assays from \$140 to \$3,000.

**KEYSTONE TUNNEL COMPANY.**—This company has driven a 700-ft. tunnel at a depth of 250 ft. which cuts four leads of rich showing.

#### NEW YORK.

#### DUTCHESS COUNTY.

**SOUTH DOVER MARBLE COMPANY.**—This company has voted to increase its capital stock to \$200,000, for the purpose of extending the workings in its marble quarries at South Dover.

#### NORTH CAROLINA.

#### DAVIDSON COUNTY.

**SILVER VALLEY MINING COMPANY.**—This company has awarded contract to the Mecklenburg Iron Works, of Charlotte, N. C., for the erection of a mining plant and ore-treating machinery of 50 tons daily capacity. George L. Wellington, of Cumberland, Md., is president.

#### OHIO.

**MINERS' ANNUAL CONVENTION.**—The annual convention of miners of sub-district No. 5, composed of Belmont, Harrison, Jefferson and Tuscarawas counties, has been in session at Bridgeport. The scale adopted by the convention was as follows: For driving entry, \$1.25 per yd.; for "breaking in,"

95c. per yd. in Belmont and Jefferson counties, and 75c. per yd. in Harrison and Tuscarawas counties; for loading slate and stone in room, 10c. per car. A rule was agreed upon in regard to entry work wherein all entries less than 8 ft. in width only one man shall be employed. For turning rooms, 7 ft. wide and 21 ft. deep, \$6.50 is to be charged; for every yard less in depth, 92½c. is to be deducted, and for every foot more in width, 70c. The following officers were elected for the ensuing year: President, Thomas L. Lewis, of Bridgeport; vice-president, Wallie Phillips, of Bridgeport; secretary and treasurer, Sherman Glasgow, of Bellaire; member of State board, C. H. Smith, of Bellaire; member of sub-district board, John Holliday, of Long Run; W. H. Workman, of Minerva Point. The next convention will be held on Tuesday, December 8th.

#### BELMONT COUNTY.

**KNOB RUN.**—A new coal mine to employ about 300 men is to be opened at once at Knob Run, on the Wheeling & Lake Erie Railroad, 6 miles north of Martins Ferry. The mine will have 3 openings and one tippie. Thomas Stringer, of Portland Station, was awarded the contract last week and must have everything ready in 60 days.

#### GUERNSEY COUNTY.

**CONSOLIDATED COAL COMPANY.**—A deal has been closed between this company and Ellsworth & Morris, of Chicago and Cleveland, for a lease on a large block of coal land which has been owned by the former.

#### OREGON.

#### BAKER COUNTY.

**PERRY.**—This mine was sold in Baker City, recently, to C. C. Stratton, of Chicago, Ill., for \$11,500 in cash. The mine is about 6 miles east of Baker City, and is an extension of the Rachel mine.

(From an Occasional Correspondent.)

**EUREKA & EXCELSIOR.**—This property is situated 35 miles west of Baker City. The only mines of importance in the vicinity are the Columbia, which is the most southerly location; to the north of that claim comes the Eureka, then the Excelsior and the North Pole. Beyond these four claims both north and south the lode has been located for many miles, but other claims remain undeveloped or nearly so. The Eureka & Excelsior is operated to a much greater extent than any of the others, the deepest workings by tunnel being 550 ft. vertical from the surface and 2,200 ft. in length on the lode.

The vein is very large, being from 30 to 200 ft. wide, but the great mass is barren, the pay streaks being situated, more or less, nearly in the centre of the great lode. The vein has evidently been subjected to great movement at various periods, as is proved by the brecciated conditions of the various materials forming the lode. The original lode is composed largely of brecciated quartzite and slate imbedded in quartz which appears to have been deposited in and around the country rock that had fallen into the chasm when first opened. Later, a further movement took place by which the original vein was again opened, and more or less crushed, this crushed material being again consolidated by deposition of quartz with mispickel carrying the gold and silver in equal quantities, ounce for ounce. At the same period an immense view of slaty material was found on the foot wall, and this carries a good deal of graphite, the cracks and faces shining with that material. Later the vein carrying the auriferous pyrites was again disturbed, as evidenced by many angular pieces of pyrites imbedded in and surrounded by quartz. Many of the walls are polished like a slab of marble, and heavily grooved in most parts of the mine, these striations inclining northwards at an angle of about 10° from the horizontal.

The ore consists essentially of quartz and fractures of quartzite and slate carrying arsenical and ordinary iron pyrites. The metallic impurities are traces of copper, cobalt and nickel.

About 65 tons of ore are extracted daily and operated in a 20-stamp mill and then concentrated on 14 Frue vanners. The product is shipped to the Tacoma Smelting Works.

There is no gold in the ore visible by any means, but by decomposing the pyrites and panning carefully the gold can be seen as a yellow impalpable powder. Fifteen hundred tons of the ore were treated by the cyanide process and gave excellent results, in some cases 92½% of the gold having been extracted.

**NORTH POLE.**—This mine, adjoining the Excelsior, is similar in character to the oxidized ores of the shallow workings being treated by the cyanide process on a small scale, about 8 tons daily, but at present they have closed down on account of the immense quantity of snow, which covers the road 6 or 7 ft. deep. At the elevation of this mine the thaw has not yet set in. The mine is owned by the Cracker Creek Gold Mining Company, Limited, a London corporation.

#### PENNSYLVANIA.

#### ANTHRACITE COAL.

**SCHOOLEY COLLIERY.**—The Pennsylvania Coal Company has obtained control of this colliery in Exeter borough from the Butler Mine Company.

**WILLIAMS COAL COMPANY.**—A 7-ft. vein was recently struck by this company. The present breaker has been remodeled and enlarged and the capacity has been increased to 400 tons a day.

**WOODWARD COLLIERY.**—About 200 men employed

at the Woodward Colliery of the Delaware, Lackawanna & Western Railroad Company went out on a strike on June 3d over a cut in wages. They have widespread sympathy and other strikes may follow. The cut is of \$1.50 a yard on the 3-ft. rock, which has to be removed. The miners claim that under the old rule they could only make about \$45 or \$50 a month on their coal, and when the expense of a laborer and other incidents are taken out it leaves them about \$20 for their month's work. The miners have been working only about nine shifts a month for some time and the cut will make a difference of about \$1 a day in their wages. The cut went into effect on June 1st, but was not announced until the 2d. In the evening a committee waited upon General Superintendent Storrs, but failed to get any satisfaction. They then decided to strike.

#### CENTER COUNTY.

**SCOTIA.**—The large ore mines of the Carnegie Company, Limited, at Scotia, have been closed down for an indefinite period.

#### SOUTH DAKOTA.

#### LAWRENCE COUNTY.

**BRISTOL.**—Ore carrying from \$10 to \$150 has been struck in this mine in Strawberry Gulch, 3 miles from Deadwood.

**FREEMAN.**—On this property, about four miles from Deadwood, a tunnel is now in 140 ft., and has crosscut a vein that is 4 ft. wide, and is said to average \$100 to the ton.

**GOLDEN QUEEN.**—It is reported that this mine has encountered a body of ore running from \$40 to \$48 to the ton. Parallel to this gold-bearing vein is one carrying silver, the gage of which is fluor spar. The gold bearing rock greatly resembles hematite iron ore.

**LEW ELLEN.**—This mine, at Terry, has a 2-ft. chute of ore running above \$18 to the ton, which is a black iron manganese ore very rich in places.

#### PENNINGTON COUNTY.

**GOLDEN SLIPPER.**—This mine has been bonded, and is to be sunk to 230 ft. at once. The lessee has the right to all ore above the 230-ft. level. The ore averages over \$15 to the ton.

(From Our Special Correspondent.)

**GOLDEN SLIPPER.**—The lessees of this mine have recently taken out a considerable amount of ore in stoping which runs \$30 per ton in free gold. A 100-ft. shaft is being sunk as a part of the contract, the lessees taking ores in payment.

**GOLDEN SUMMIT MINING COMPANY.**—Dr. Rothermel, of Brooklyn, is now making a careful examination of the six patented claims included in the property of this company. Over \$60,000 were produced from limited workings in the Summit mine about ten years ago. The pay chute was lost, and after some fruitless exploration, work was discontinued.

**HOLY TERROR.**—The directors who levied a 5c. assessment while sinking a 100-ft. shaft from the 175-ft. station have offered to cancel the same if small stockholders will dismiss suits brought to enjoin the sale of stock on default. Since the levy, drifting upon the 275-ft. level has filled all available bins with ore, said to average \$9 per ton and to run as high as \$500. The contesting stockholders allege that the assessment was unnecessary and made for the purpose of depressing the value of the stock. They decline the offer made, and urge the appointment of a receiver. The assessment depressed the camp, and strange as it may seem, this litigation, resulting in proof that the mine is a producer, has given Keystone a buoyant tone.

**JUNIPER FRACTION.**—This "rich find" lying two miles west of Keystone, is to be developed. Eastern parties, who have been impressed by the 12-in. seam of rich specimen quartz lying on the foot wall of a 4-ft. vein, have bonded the property for \$60,000 on eight months' time. They have paid the owners \$3,000 in cash and banked \$4,000, to be used for development work. Operations have already begun, and the vein of dark granulated quartz is showing up well.

**KEYSTONE AND BULLION BEND.**—It is reported that the companies owning these mines now have under consideration an offer for their purchase from the Butte & Boston Smelting Company. Experts representing some large company have been in Keystone for several weeks recently, and it is said are favorably impressed. The Keystone mine and mill have been in continuous operation since the new mill was completed, about March 1st. Twenty stamps have been employed and arrangements made to put in the full eight batteries for which power and foundations were provided. The Keystone has refused custom ores, and is working exclusively upon its own output. The lease upon the Bullion made to the owners under which they have taken out some 10,000 tons by open cuts, extending across the apex of the hill, has now expired. The workings reveal an enormous ore body, the width of which can only be determined by crosscutting. This cut is 20 to 30 ft. wide and several hundred feet in length. The lines of the Bullion join those of the Keystone, whose ledge approximates 50 ft. in width upon the 30-ft. level. The two properties comprise an immense body of low-grade milling ore, cut by numerous dykes and "horses." They could best be worked as one property, and should be milled on a Home-stake scale.

#### TENNESSEE.

#### WHITE COUNTY.

**DIAMOND OIL COMPANY.**—This company met recently and adopted by laws and elected permanent

officers as follows: J. M. Overton, president; W. B. Young, M. D., vice-president; A. H. Wood, general manager, Frank Dibrell, treasurer, and J. B. Snodgrass, secretary. The company is regularly chartered and has about 30,000 acres of river lands leased for oil. The company is making preparations for sinking the first well and will commence operations in a short time.

UTAH.

CARBON COUNTY.

PLEASANT VALLEY COAL COMPANY.—This company has begun work in putting in more coke ovens at Castle Gate. There are in operation 84 ovens, from which about 70 tons of good coke is turned out daily. Twenty new ovens are to be added, and the number may be increased this summer to 40, or 124 in all.

JUAB COUNTY.

BULLION-BECK MINING COMPANY.—Another large ore body is reported to have been discovered on the 600-level of this company's mine.

MAMMOTH MINING COMPANY.—A large shipment was made by this company last week. It is said of it that the ore averages \$500 a ton, and that the shipment will probably yield \$50,000, or a dividend of over 10% on the capital stock of 400,000 shares. The ore is reported running high in gold, while a lot of 175 tons put upon the market recently showed a valuation of \$80 per ton in gold and a small amount silver.

SALT LAKE COUNTY.

NIAGARA MINING COMPANY.—In this company's ground prospecting is now going on in the great zone of mineralized lime in which the ores of that district occur, and a strike is expected during almost any shift.

YOSEMITE.—A new discovery was reported last week on the eighth level in the Yosemite No. 1 at Bingham, in which it is said that 2 ft. of very fine silver and lead ore has made its appearance, and that it is running in the direction of the Old Telegraph lode.

SWANSEA MINING COMPANY.—A 60-ton lot of ore from this company's property recently gave as a result, says the Salt Lake Tribune, 139 oz. in silver and 49% lead, and from the second class 80 oz. in silver and 18% lead.

TOOELE COUNTY.

ST. LOUIS GOLD MINING COMPANY.—An important strike has just been made on the East Mercur group, owned by this company, which is situated one mile east of the Mercur mine. Ore from \$8 to \$10, with picked samples running as high as \$65, has been found.

UTAH COUNTY.

OVERLAND.—The ore body was uncovered recently at about 170 ft., and the owners are, by crosscutting from this level, developing a nice body of milling ore. Mr. Walker says the Sunshine Mining Company has increased its working force 10 men.

VIRGINIA.

ALLEGHANY COUNTY.

E. M. Nettleton and J. L. Ham, who are developing iron-ore lands near Clifton Forge, will extend operations, erecting a tramroad, washer, etc.

WISE COUNTY.

VIRGINIA COAL AND COKE COMPANY.—This company is pushing its work on Callahan Creek, near Big Stone Gap. At present 75 coke ovens are in full blast. Twenty-five additional ovens will be in blast soon. It has been decided to build 300 additional.

WASHINGTON.

KITTITAS COUNTY.

POLEPICK.—The owners of this mine, in Peshastin district, have increased their mill plant from 10 to 15 stamps. Recent assays show \$27 gold, and the vein has a width of from 2½ to 5 ft.

LEWIS COUNTY.

VANDALIA.—This mine, in Silver Creek district, is producing a good grade of carbonate ore, and will be an active shipper this year, provided wagon roads are constructed from the Great Northern to the Silver Creek mines.

STEVENS COUNTY.

COLUMBIA RIVER GOLD MINING COMPANY.—Officers of this company, with headquarters at Kettle Falls, have been elected as follows: A. H. Gamel, president; Colonel J. Merritt Fish, vice-president; Elmer H. Vaughan, secretary; J. Merritt Fish, general manager. The company's properties are the Denver, Buffalo, Chicago and Columbia lodes, on a spur of Mount Corbin, in the Huckleberry Range.

WEST VIRGINIA.

MARSHALL COUNTY.

NORTH PENN OIL COMPANY.—This company struck oil at a depth of 650 ft.

PIERCE COUNTY.

TACOMA SMELTING & REFINING COMPANY.—This company's product for the month of May was 3,200 bars bullion, weighing 326,261 lbs., and containing 1,676 oz. gold at \$20.67 per oz., or \$34,657; 26,389 oz. silver at 68c. per oz., or \$17,945; 324,335 lbs. lead at 2c. per lb., or \$6,487; total, \$62,333. There were 62 men employed. The pay roll was \$5,030, and for wood choppers and teams, \$533; total, \$5,563.

TYLER COUNTY.

DEVONIAN OIL COMPANY.—Last week a good flow of gas and oil was encountered at this company's No. 3, on the John Bultman farm, in the Wick district. At latest reports the well was doing over 20 bbls. an hour.

WYOMING.

ALBANY COUNTY.

ALBANY COUNTY PLACER COMPANY.—It is reported that all the ground owned by this company, consisting of about 1,500 acres, was sold last week to a New York syndicate for \$75,000 cash.

BETSY JANE.—C. S. Crysler, western representative of the Breitung-Crysler syndicate, last week closed the deal with A. S. Peabody and Louis Miller for the Betsy Jane gold mine and 12 or 15 adjoining locations; also a large placer mine, the Peabody and Miller tunnel site and water right, situated at Cummins City, distance from Laramie 30 miles.

DOUGLAS MINING AND MILLING COMPANY.—This company owns the Copper King mine in the Warbonnet district, some 35 miles southwest of Douglas and 40 miles north of Medicine Bow station on the Union Pacific Railway and on the boundary line between Albany and Converse counties. Development work is being pushed as rapidly as possible and day and night shifts are employed in running a tunnel which is already in 193 ft. The ore body is 8 ft. wide between well-defined walls of granite, and assays made on the average ore are said to give 27% copper, \$2.30 gold and a trace of silver.

LITTLE ELLA MINING COMPANY.—A strike was made recently of the ore body on the foot wall in the 100-ft. level of this mine. The pitch of the vein and depth and position of the shaft indicate that the ore body is at least 50 ft. wide, and runs with the length of the claim. The work of crosscutting the ore body will be pushed as fast as possible.

(From Our Special Correspondent.)

Word was received from Mr. Crysler, manager of the Breitung-Crysler Syndicate, that he would leave Chicago on June 8th with a corps of engineers and experts in charge of Mr. John E. Rothwell, who will make Laramie his headquarters while directing the examination of the many different properties in which the company is interested.

Mr. John E. Rothwell, metallurgist, who has made great improvements in the chlorination of gold ores, passed through Laramie last week, on his way to Rawlins, Wyo., whither he has been called to make a thorough examination of the Penn company's mines in the Seminole district for the purpose of ascertaining the most practical method for saving the gold. For the past 12 years these mines have been worked, but thus far the company has saved but a small portion of the assay value of the gold in the ore.

CONVERSE COUNTY.

(From Our Special Correspondent.)

SPRING CREEK.—Mr. Hale, manager of this property, in the Douglas Placer district, reports that work is progressing finely, and that the prospect for a successful cleaning-up is good. The snow is rapidly disappearing in the mountains and the streams are a series of rushing torrents.

TREMONT COUNTY.

(From Our Special Correspondent.)

The successful working of the tailings by the cyanide process last season in the South Pass district has awakened a new interest in the mining industry in this section, and great activity prevails at the present time among the various mine owners here. Confidence in the mines is once more established, and a great many properties that have been lying idle for years will resume operations, and small cyanide plants will be erected at various points in the mineral belt. The ore bodies throughout this district are large and very extensive, but owing to their refractory character little has been done with them.

FOREIGN MINING NEWS.

BRAZIL.

OURO PRETO GOLD MINING COMPANY.—This company's return for April shows that during the month the mill worked 380 tons from the Raposos mine, producing 5.1 oz. gold, an average of 0.16 oz. per ton; and 4,000 tons from the Passagem mine, producing 1,552 oz., or 0.39 oz. per ton. The total output was 1,603 oz. from 4,380 tons of ore.

ST. JOHN DEL REY GOLD MINING COMPANY.—This company reports for the four months ending April 30th, a total production of 13,373 oz. of gold. The average yield was 0.62 oz. gold per ton of ore. The value of the product was \$215,755, showing that the gold was about 780 fine, the yield being equivalent to 10,431 fine ounces gold, or 0.48 fine ounce per ton.

CANADA.

BRITISH COLUMBIA.

The mining properties in the Kootenay district, known as Le Roi, War Eagle and Iron Mask mines, have been sold to capitalists in London, England. It is reported that the Le Roi mine brought \$5,000,000, the War Eagle \$2,000,000, and the Iron Mask \$1,000,000. Probably these figures are not in cash.

(From Our Special Correspondent.)

The activity in the Trail Creek country continues. The influx into this country of American capital,

which in the aggregate has been considerable of late, is an indication that confidence in the camp from that quarter is on the increase. A great number of small capitalists from the United States is a noticeable feature of late, though two fairly large transactions represented by English capitalists have taken place very recently here.

Mr. D. C. Corbin, of the Spokane & Northern Railroad, has, it is said, secured an option on the War Eagle for \$1,000,000, and for \$500,000 on the Iron Work—the option to extend to August.

The tendency to invest capital in some of the propositions, especially those on Red Mountain—which have hitherto remained in the shade—is a noticeable feature of the spring revival of business, and several agents representing English capital are here, it is said, with the intention of effecting purchases.

The mining brokers in Rossland appear to be doing a brisk business in selling stocks of the various companies which are on the market.

The figures given in the various bulletins at the offices of the mining brokers are as follows: Jumbo, \$1.05; War Eagle, \$1.80; Josie, 54c.; O. K., 33c.; Iron Work, 85c.; West Le Roi and Josie, 16c.; Poorman, 15c.; Virginia, 30c.; St. Elmo, 15c.; Good Hope, 10c.; Evening Star, 14c.; Phoenix, 10c.; Great Western, 15c.; Eureka Consolidated, 5c.; St. Mary, 9c.; Knight Templar, 12c.; Nest Egg, 11c.; Caledonian Consolidated, 7c.; Deer Park, 8c.; Gold Hill, 8c.; Lamp-lighter, 2c.; Vulcan, 3c. Though most of these properties are not known to the outside mining world, yet there is a great interest taken in them by local people and thousands of shares have been sold lately, the average in the less known properties being about 7c.

The present season is witnessing a large increase in the machinery of the great producers of the camp, and those which were not shippers last year, but have since found the paying streak, and which have now ample capital, will become regular shippers by the middle of the summer. The latter will include the Jumbo, Josie, Columbia and Kooteray, Center Star and Iron Work.

The Slocan Star recently declared a dividend of \$100,000, being 10c. per share on the capital stock of \$1,000,000. This company continues to lead the van of the 48 producers in Kooteray district and the 33 in the Slocan County.

ROSSLAND.—The activity in local mining stocks which I reported recently has been followed by a rest until the operation of the tramway in the Trail Creek country which promises to cause renewed activity all round.

The number of mining-stock bulletins in Rossland has now reached nine, representing as many brokers and mining firms doing business in the town.

When it is considered that a great number of sales of mining properties has recently taken place in the Trail Creek country and that these sales have aggregated in a few days a value equal to \$125,000 the growing importance of Rossland and its tributaries may to some extent be realized.

There has been a considerable influx of capitalists of moderate means as well as some others who are said to represent more, so that the future of the Trail Creek country is one in which much confidence is reposed. There is a large floating population in Rossland and although the supply of labor is greater than the demand, there is no one actually in want. During the next two weeks there will be set in motion much of the machinery received, which will greatly increase the activity of the camp.

There are already two development companies doing business at Rossland. These are the British Columbia Syndicate, with Mr. J. B. Johnson as manager, and the Kamloop Development Company, its manager being a practical assayer. Both of these companies are acquiring considerable property, and their especial business seems to be to purchase claims and develop them to a certain stage and then sell to other parties. However, there is nothing in their articles of incorporation to prevent them from owning and working a fully-equipped mine.

The Trail Creek tramway may be said to be in its final stages of completion. The construction engine has now reached a point on the lower level immediately in the rear of the Allan Hotel, and from this place it is now beginning the ascent which will eventually bring it to the high level of the Le Roi and the War Eagle, the two great gold producers.

Increased activity is particularly noticeable in connection with these mining propositions which it is expected will be added to the producers and shippers this year. These propositions are Jumbo, the ore body of which is said to be very large; the Evening Star, the Center Star, the North Star, the Columbia and Kootenay, besides the extensions of the War Eagle and Le Roi, together with three or four others in the South Belt.

NEW SOUTH WALES.

SMELTING COMPANY OF AUSTRALIA, LIMITED.—This company was recently incorporated with a capital of £500,000 for the purpose of erecting extensive metallurgical works to treat sulphide and other ores at Lake Illawarra, near Sydney, New South Wales. Mr. John Howell is supervising the erection of these works, which will be used as a general ore-reduction plant, though it is designed more especially for the treatment of the sulphide ores of the Broken Hill Silver Mines. The directors of this company are Messrs. A. Fowler, E. Manby, G. M. Inglis, William Keswick, Walter Savill and Arthur Wilson. The managing director in Australia is Mr. John Howell, whose assistant is Mr. G. H. Blake-

more. The offices are at Sydney and the secretary is Mr. C. H. Hayward.

TURKEY.

The mining industry in Turkey has hitherto been much neglected, and it is only during the last few years that permission to sink shafts has been granted, leading to a considerable increase in the output of ore of all kinds. This is especially the case with respect to chrome ore, which is worked on a large scale, says the *Montan-und Metall-Industrie-Zeitung*, in the vilayet of Kossovo, where it exists in considerable quantity, being chiefly exported to Germany and Great Britain, and in a less degree to Austria-Hungary, where it is treated especially at Hrastnigg in Carinthia. Up to 1894 the chrome mines were worked by the Ottoman Government without firman—that is, without special authorization from the Porte; and the small quantity of ore raised found a ready market. At the present time the changes in favor of working chrome mines are improved, on account of the concessions granted by the Turkish government, which authorizes the extraction, without firman, of 200 10-ton wagon loads on payment of a government tax of 9 Turkish pounds, about \$39 with an export duty of half a Turkish pound per wagon. When there is a firman the government tax is reduced one half, and there is no limit to the quantity which may be extracted. Last year Germany received from Turkey, through Hungary, more than 8,000 tons of chrome ore.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 12.

Statement of shipments of anthracite coal (approximate) in tons of 2,240 lbs., for the week ending June 6th, 1896, compared with the corresponding period last year:

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	58,809	1,485,559	1,542,574

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending June 6th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	47,519	1,038,527	687,288
Barclay, Pa.....	805	19,672	.....
Beech Creek, Pa.....	44,257	1,375,870	1,302,064
Broad Top, Pa.....	6,751	189,082	172,259
Clearfield, Pa.....	73,191	2,078,241	2,435,242
Cumberland, Md.....	36,797	1,274,104	1,226,774
Kanawha, W. Va.....	66,244	1,367,738	1,301,446
Phila. & Erie.....	4,159	30,583	23,614
Poconong Flat Top.....	.....	.....	.....
Totals.....	299,673	7,373,817	7,148,724

† Ten days ending May 31st.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	20,742	445,916	331,287
Pittsburg, Pa.....	30,156	828,284	725,873
Westmoreland, Pa.....	28,403	892,948	837,891
Totals.....	79,301	2,167,148	1,895,051

Production of coke on line of Pennsylvania Railroad for the week ending June 6th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 79,423 tons; 1896, 1,981,825; to corresponding date in 1895, 2,431,875 tons.

Anthracite.

The general paralysis of business due to fear of the financial policy of our next Congress and of the President of the United States affects the coal trade injuriously, as it does every other industry. The decrease in the make of pig iron, the holding back in starting new enterprises, the drawing in of credits and generally the "getting ready for the worst," are more noticeable in the financial centers than elsewhere, and are reflected in every office one enters. It is not surprising, therefore, that the general tone of the coal trade is far from buoyant.

It is true the anthracite producers, acting practically as a unit, are endeavoring to advance prices just as the steel rail makers, the nut and bolt and nail manufacturers, the powder makers and the other "trusted" industries have done or are doing, but the condition of public disquietude, in view of the threatened financial policy of each of the political parties makes the work of selling at the higher prices somewhat difficult.

The anthracite companies assure us that the May circular prices are, and will be, strictly adhered to, and the trade generally confirms this, but orders are scarce, except for some special sizes which appear to be scarce.

The May circular prices f. o. b. are as follows: Stove, \$4; egg and chestnut, \$3.75; broken, \$3.50. These prices are subject to the usual commission of 15c. Perhaps the business atmosphere may clear after the St. Louis convention has made a nomination for president.

Bituminous.

The soft coal trade is quiet. The mines generally are operating at about half capacity. The sales agents feel the loss of orders which at this time are not so numerous as usual.

The all-rail trade is quiet and tonnages continue small, probably due to the general business depression. From what we can hear there is not much change in the demand by manufacturers.

In "Association" matters, regular meetings are being held, though we cannot hear that anything

particular is done at them. The object of these meetings is to hear the views of the different parties who come together.

Transportation from mines to tide is good generally, and there are no complaints against any of the roads. There are no blockades reported and the stocks of coal on the way are fairly heavy.

The car supply is up to all requirements of the trade on main line roads and no trouble is experienced in this direction.

Vessels are in better supply and freight rates are slightly weaker. We quote current rates of freight from Philadelphia: To Boston, Salem and Portland, 65c.; Providence, New Bedford and the Sound, 60c.; Portsmouth, 65@70c.; Wareham, 80c., Lynn, 75@90c.; Newburyport, 75c.; Dover, \$1.10 and towage; Saco, 95c. and towage; Bath, 70c.; Gardiner, 65c. and towage; Bangor, 70c., with 5 to 10c. differential to lower ports.

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

NOTES OF THE WEEK.

Coal receipts at San Francisco by water in May were 96,657 tons, and for the five months ending May 31st they were 546,596 tons, showing a decrease of 2,544 tons as compared with the corresponding period last year. The sources of the supply were as follows for the five months: Eastern, anthracite and Cumberland, 9,020 tons; Oregon and Washington, 182,913 tons; British Columbia, 204,355 tons; Australia, 85,388 tons; Great Britain, 64,930 tons. This statement does not include coal from the Mount Diablo mines in California.

Buffalo.

June 11.

(From Our Special Correspondent.)

The anthracite coal trade is very quiet. Consumers do not apparently put any faith in the statement made by dealers that prices will be advanced in a few days, hence the dullness. Wholesale rates for delivery on board vessels and at the bridges advanced 10c. on June 1st. Lake movement westward is fair.

Bituminous coal of some varieties has advanced 5@10c. per ton. Business is only moderately active, for manufacturers are not laying in stocks, as collections are difficult and their bank accounts are low. Stocks are ample.

The shipments of coal from this port by lake westward from June 1st to 6th, both days inclusive, aggregated 75,750 net tons, distributed as follows: 38,275 tons to Chicago; 23,450 tons to Milwaukee; 2,000 tons to Duluth; 5,000 tons to Superior; 1,525 tons to Green Bay; 650 tons to Sheboygan; 2,700 tons to Manitowoc; 600 tons to Gladstone; 600 tons to Toledo, and 950 tons to Marinette. The rates of freights were: 60c. to Chicago, Kenosha and Racine; 65c. to Ludington; 55c. to Milwaukee, Manitowoc, Green Bay, Sheboygan and Marinette, and 25c. to Gladstone, Superior, Duluth and Toledo. Closing weak for Lake Michigan ports and with an advance of 5c. on Monday to Lake Superior ports.

The quotations ruling in this market since June 1st are as follows: For anthracite coal per 2,240 lbs. delivered free on vessels at Buffalo, \$4.55 for grate and \$4.80 for egg, stove and chestnut; delivered on cars at Buffalo and Suspension Bridge, \$4.25 for grate and \$4.50 for egg, stove and chestnut. Retail within city limits, delivered per 2,000 lbs., \$4.75 for grate, \$5 for egg, stove and chestnut and \$4 for pea. Blossburgh sells at \$4 per net ton, delivered.

For bituminous coal per 2,000 lbs., in car lots on track, as follows: Reynoldsville region, \$1.95 for select lump, \$1.85 for lump and nut mixed, \$1.75 for run of mines, \$1.70 for screened nut and \$1.40 for slack; Fairmont region, \$1.95 for screened lump, \$1.85 for lump and nut mixed, \$1.70 for run of mines and screened nut and \$1.35 for slack; Pittsburg region, \$1.95 for screened lump, \$1.85 for lump and nut mixed, \$1.75 for run of mines; Mercer County region, \$1.85 for screened lump, \$1.75 for lump and nut mixed, \$1.65 for run of mine and screened nut and \$1.20 for slack; Allegheny Valley region, \$1.80 for screened lump, \$1.70 for lump and nut mixed, \$1.60 for run of mines, \$1.45 for nut and slack mixed, and \$1.35 for slack, Brier Hill lump at wholesale, \$3.25; No. 1 cannel, at wholesale, \$3.75.

Coke is quoted at \$4 for Connellsville and \$2.95 for Reynoldsville.

Mr. Mark Packard, of this city, having failed to deliver run of mine soft coal at his contract of \$1.50 per net ton to the Buffalo City Water Bureau, the Board of Public Works have commenced ordering of the next lowest bidder Mr. Thomas Loomis, whose bid was \$1.65 per ton. No less than 30,000 tons of soft coal are in question. The bondsmen of Mr. Packard will be held for the difference of price. At the time the contract was awarded to Mr. Packard, the trade wondered where he would get the coal from at the figures named.

Chicago.

June 10.

The anthracite coal situation remains very fair and a considerable amount of coal is being placed. There is no doubt but that the anthracite trade has had a few weeks of very large business for these times, but the improvement is only temporary, as there is absolutely nothing in the present condition of affairs that would suggest a continuance of the present brightened prospect. Consumers have undoubtedly jumped at the opportunity to lay in supplies before the higher circular rates went into

effect, and now that the higher rates are in vogue and the dealers apparently sticking to the circular prices, a decreased business is in order right along. The amount of hard coal received in Chicago via the lakes from the opening of navigation this year to May 20th was quite 82,000 tons, being an increase of over 50% over the same period of last year's shipments. All rail shipments of hard coal are rather lighter than last year. Prices are for anthracite coal, grate, \$5.10; egg, stove and chestnut, \$5.35. Retail prices are \$6.25@6.50.

Bituminous coal is yet very quiet, and its prices have hardly ever been more irregular than those of to-day. There are some large contracts to be placed soon. Freight rates have been lowered 25 cents on soft coal from the Hooking Valley, Pittsburg and other points to Chicago.

Pittsburg.

June 11.

(From Our Special Correspondent.)

Coal.—Coal production has been greatly restricted the past two weeks. Many mines have been shut down almost entirely and miners and operators are in a state of apprehension. The coal buyers in the Northwest have decided not to place any contracts for coal until after July 1st. They are reported to believe that lower prices will prevail by that time, and that is what has held off contracts. Prices this year are 20c. a ton higher than last year; on the gross amount of coal shipped from the Pittsburg District, based on the shipments of last year, this means \$600,000 more money than was paid last year to the operators of the Pittsburg District. Under the terms of the joint contract between operators and miners the officials of the latter say that any reduction of prices in coal cannot be taken off the miners unless the contract is violated. The cut inaugurated by the Chesapeake & Ohio, in connection with the Big Four system, on coal from West Virginia to Chicago has been met by the railroads running from Pittsburg west and north; rates to Chicago are reduced 25c. a ton, with a corresponding reduction to other points. Many mines are suspended on the Monongahela, there being no empty barges to load.

Land in the Connellsville District is getting to be quite an object; the quantity on the market is limited. An offer of \$625 an acre for a large tract has been refused, the owner asking \$500, from which he would not budge. Last week 100 acres were sold at the rate of \$700 per acre; the quality was not the best. Two years ago \$400 to \$450 an acre was considered a big price. Since then considerable eastern capital has been invested in the Connellsville District. There are buyers for every acre on the market at good prices.

Connellsville Coke.—The outlook in the coke trade is not very bright at present; since our last about 600 ovens have been shut down, the majority being owned by the Frick Coke Company. The Cambria Iron Company has also one large plant shut down, and several smaller plants are partly suspended. The Mahoning plant of 100 ovens, of the Cambria Iron Company, was put into full blast, and the management of the Atlas Works is preparing to fire up. The summary of the region for the week showed 10,814 ovens in blast with 7,133 idle. The production of the region for the week estimated upon the ovens drawn amounted to 106,844 tons; decrease compared with preceding week, 4,135 tons.

In the running order of the ovens in blast 2,601 ovens made six days, 8,661 ovens made five days and 70 ovens made four days, an average of 5.06 days as against 5.54 days the preceding week. The shipments of coke from the region for the week amounted to 6,055 cars, against 6,823 for the preceding week, a decrease of 770 cars, distributed as follows: To Pittsburg, 1,931 cars; to points west of Pittsburg, 3,140 cars; to points east of Pittsburg, 982 cars; total, 6,053 cars. Shipments in tons amounted to 108,954, showing a decrease of 13,860 tons. The new rates of freight went into effect on Monday, June 8th; new rates to Pittsburg, \$0.55 per ton, to Mahoning and Shenango Valleys, \$1.10; to Cleveland, O., \$1.40; to Buffalo, N. Y., \$1.75. Prices are nominal, unchanged.

Shanghai, China.

May 8.

(Special Report of Wheelock & Co.)

Coal.—There has been no alteration in the state of the market for Japan coal since our last; transactions have been confined to small lots to suit purchasers. Rates of freight have improved, but we anticipate no probable appreciation in our coal quotations. A few sales have taken place of Cardiff coal, but buyers are scarce. In Sydney Wollongong there have been no arrivals, and nothing has been done worthy of record. We give the following quotations per ton: 10.50 tael for Welsh Cardiff; 9.00 tael for American anthracite and 9.00 tael for Australian Wollongong. For Japan we quote: 5.75 tael per ton for Takasima lump; 4.25 tael for Namazata lump, and 3.00@3.25 tael per ton for other sorts.

Kerosene Oil.—Business has been large during the past fortnight, especially in Devoc's, and fair quantities have changed hands at current quotations. In Russian case parcels the market closed strong, and there is also a steady inquiry for bulk oil at the quoted price. Deliveries of all kinds have been exceptionally large. There was an arrival of 62,000 cases, and two others are reported just outside. Including the above arrival our stocks are now estimated to be 102,000 cases American and 57,000 cases Russian. Quotations are as follows per case: For American Devoc's, 1.72@1.75 tael; Rus-



Asian, Batoum, 1.67 taels, and Batoum bulk, 1.57 1/2 taels.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 12, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	June 11, 1895.	June 12, 1896.	Jan., '95.	Jan., '96.	Tons.	Tons.
Anthracite.	32	20,124	41	25,900	495,526	678,038
Coke.	122	131,800	135	161,170	3,246,640	3,980,139
Charcoal.	18	3,961	19	6,130	95,640	121,020
Totals.	172	155,885	195	193,200	3,837,806	4,782,197

The iron market seems to have settled down into the condition known as "waiting," and there is very little doing. There has been some talk to the effect that the steel combine would soon "stimulate business" by putting up the prices of billets; but this is not official, though it is very possibly circulated to test the temper of the market. It has certainly failed to move buyers, who are not coming forward. The manufacturers who use purchased billets say that the sale of finished products is not large just now; demand is not urgent and any increase in prices would cut it off entirely. Under the circumstances they cannot pay higher prices for billets, and it would be better for them to shut down than to turn out work at a loss, or store their products.

The fact is that the market is ridden to death by pools and combines, and there is a general disposition among those outside to do as little as possible and to wait until the various trusts break up, as many hope they will do, under the weight of dull times and poor business. The general business uncertainty adds to this tendency.

The Eastern furnace men are still talking of a combination, but there are too many conflicting interests involved to make it probable that one of any force will be made, though it is quite possible that some sort of an agreement may be made—which no one will pay much attention to after it is concluded.

The blast-furnace production has decreased, though not as much as was expected. Quite a number of furnaces have blown out, but others have started up, and we are still making pig iron at the rate of over 9,500,000 tons yearly. In spite of the large production the increase in unsold stocks of iron reported was only about 16,000 tons in May. This is the best news the market affords, and the absence of accumulating stocks is encouraging.

NOTES OF THE WEEK.

The first of the big Duquesne furnaces of the Carnegie Company went into blast June 8th. A great deal is expected of these furnaces.

The placing of orders amounting to \$500,000 for tools and machinery to equip new locomotive works in Russia is a matter of considerable interest and shows what could be done if business conditions were favorable.

New York. June 12.

The local market continues very quiet, and buyers are not coming forward in any department. Even in structural iron and steel, which has all along been the strongest and most active section of the trade, there is little doing just now. There are plans enough ready, and building would be active, but the financial uncertainty stands in the way, and even on city property there is some hesitation about making loans. The general disposition is to wait until after the conventions, at least, with the probability that this waiting will be continued till after election. Some dealers have given up all hopes of business this year and made up their minds to take matters as quietly as possible and to make no efforts for business.

Small orders are no more plentiful than last week, and beyond a little bridge work and the usual amount of repair work, the shops are quiet, and many are running with small forces. The only people who are really busy are the bicycle makers, and they are beginning to complain that competition is taking all the profits out of the business.

**Pig Iron.**—No large sales are noted. The pipe foundries are all pretty well stocked, and the other foundries in this district are not especially busy. There is less iron going East by water than a year ago, and the New Jersey Central docks at Elizabethport have been almost bare for some weeks—an unusual case at this season. The Newark foundries are fairly busy, but some of them say that orders on their books will not hold out much longer. There is less talk of reducing prices on Southern iron, and word comes from Birmingham that the furnaces have resolved to maintain prices. It looks as though some Northern furnaces have decided to meet the Alabama competition and good iron can be had for less than a week or two ago.

We quote for large lots, tidewater delivery. Northern brands: No. 1 foundry, \$12.25@13; No. 2 foundry, \$11.25@12; gray forge, \$11@11.50. For Southern irons, same delivery, we quote: No. 1 foundry, \$11.50@12; No. 2 foundry, \$11@11.50; No. 1 soft, \$11@11.50; No. 2 soft, \$10.75@11.25; forge, \$10@10.50.

**Cast Iron Pipe.**—No new contracts are noted this week. There is still a good deal of speculation

about the big Brooklyn order, but nothing will be known till next week.

**Spiegeleisen and Ferro-Manganese.**—Some small sales of ferro-manganese are reported. Prices are unchanged at \$19.50@20.50 for imported spiegeleisen and \$47@47.50 for ferro.

**Steel Billets and Rods.**—There is no business doing here. There is some talk of higher prices, but buyers do not seem to care. The pool price continues \$21.75 for New York delivery. Rods are quoted \$27.

**Merchant Iron and Steel.**—Business is of too small a kind to report any change in prices and the only variation we can quote is that soft steel bars are offered at lower rates. We quote for common bars 1"0@1"20c; refined bars, 1"25@1"50c; soft steel bars, 1"25@1"35c. Other quotations are: Steel hoops, 1"50@1"60c.; steel axes, 1"65@1"80c.; links and pins, 1"65@1"75c.; tire steel, 1"80@1"95c.; spring steel, 2@2"20c.; open-hearth machinery steel, 1"45@1"60c. All prices are for deliveries on dock, New York.

**Plates.**—There has been a little more inquiry for boiler plates, but otherwise business is dull and prices are about the same as for some weeks past. Universal mill plates are 1"45@1"55c. For other sorts we quote: Tank 1"40@1"50c.; boiler shell, 1"45@1"55c.; good flange, 1"65@1"75c.; firebox, 2@2"40c. Charcoal iron plates are 2"25c. for shell, 2"75c. for flange, and 3"25c. for best firebox. Rivets are 2"15 @2"25c. for steel and 3@3"25c. for iron.

**Structural Iron and Steel.**—One or two small buildings are on the market, but several large contracts are held back. We quote for angles, 1"45@1"50c.; channels, 1"65@1"75c.; tees, 1"60@1"70c.; beams, 1"70@1"80c. for large orders and 2@2"20c. for small lots.

**Nails.**—While full particulars of the meeting of the wire-nail pool last week have not been made public, it is announced that terms have been made with the outside firms, the Pittsburg Wire Company agreeing to come into the pool, while Baackes & Co. will stop making nails altogether. It was decided to make no change in prices and the rates continue based on \$2.55 per keg, Pittsburg delivery, for car-load lots; \$2.65 per keg, for smaller orders. There is a good deal of talk over the high prices, and hardware men insist that they are injuring the trade very much.

**Steel Rails and Rail Fastenings.**—Nothing is doing at the pool price, which continues to be \$28.75 per ton at tidewater. Girder rails are \$28@32 per ton at tidewater.

Little is doing in rail fastenings. We quote for fish and angle-plates, 1"25@1"35c.; spikes, 1"60@1"70c.

It is reported that a good-sized order for standard sections for delivery at a Gulf port has gone to an English mill at about \$22 per ton f. o. b. Liverpool.

**Old Rails.**—Some sales of old steel rails are reported at \$11.75@12.75, Jersey City delivery. One sale of old steel rails, suitable to relay for light work, is reported at about \$20 per ton, delivery at a Sound port.

**Scrap Iron.**—There is less demand, but scrap does not accumulate. We quote \$10@11.50 per ton for good machinery scrap; \$9@10 for ordinary cast scrap, and \$6@7.50 for stove-plate and mixed.

Buffalo. June 10.

(Special Report of Rogers, Brown & Co.)

There is nothing new to report this week. Sales have been light. Consumption, if anything, is on the increase. Quite a few gray iron foundries are comfortably full of work and the malleable iron works running on castings for car shops are busy. It is quite noticeable that very few foundries are carrying any more than a few days' supply of pig iron. Therefore the slight increase in consumption is quickly felt by furnaces depending on this territory to consume their output. We quote on cash basis f. o. b. cars Buffalo, as follows: 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, \$13.50@14; Ohio strong softener, No. 2, \$13@13.50; Jackson County silvery, No. 1, \$15.25@15.50; Southern soft, No. 1, \$12.40; Southern soft, No. 2, \$11.90; Hanging Rock charcoal, \$18; Lake Superior charcoal, \$14@14.50.

Chicago. June 10.

(From Our Special Correspondent.)

Business in this market has improved but very little and there is but small indication that there will be any betterment to speak of for some time to come. The uncertainty as to conditions and prices keeps a great many out of the market. Inquiry in all lines is small and prices with a few exceptions are fairly held. A few buildings requiring about 1,500 tons of material are all the new work in the structural trade. Pig iron is selling very slowly and there is no change in billets or rails.

**Pig Iron.**—Most of the iron sold was from the Northern furnaces. Prices on both Northern and Southern are quite well maintained at the reduced figures. We quote Lake Superior local coke, \$13.50@14; local coke foundry No. 1, \$12@12.25; local coke foundry No. 2, \$11.50@11.75; local coke foundry No. 3, \$10.75@11; Southern coke No. 1, \$11.85; Southern coke, No. 2, \$11.60; Southern coke No. 3, \$11.10; Southern No. 1, soft, \$11.60; Southern No. 2, soft, \$11.35; Jackson County silvery, \$14.50@16; Ohio strong softeners, \$15@15.50; Alabama car-wheel, \$16.85@17.35.

**Structural Material.**—General business is very

quiet with prices held rather firmly. About all the business in sight is the new building for the Chicago University requiring 600 tons and which contract will probably be let within a few days. The new Illinois Trust and Savings Bank building will require about 1,000 tons. Bridge material has fallen off somewhat, there being only a few very small contracts on the market at present. Quotations are as follows: Beams and channels, 1"70@1"75c.; angles, 1"45@1"50c.; plates, 1"50@1"55c.; tees, 1"65@1"70c. Small lots from stock are quoted 1/4 c. to 1/2 c. higher.

**Bar Iron.**—Bars for use in the making of railroad cars for one of the big Western roads were sold during the week. Other business is limited, but prices are firm. Common iron is quoted 1"30@1"35c. and guaranteed 1"35@1"40c.

**Billets and Rods.**—Several thousand tons of billets were sold, but little demand for rods is noted. Inquiry is better in both lines. Billets are quoted \$21.25.

**Steel Rails.**—The Illinois Steel Company is selling rails, but the quantity is not very large. Rails are quoted \$29 and up according to size.

**Merchant Steel.**—There has been some business transacted with implement manufacturers. Quotations are as follows: Open hearth spring, tire and machinery steel 1"85@1"95c.; smooth finished machinery steel, 1"80@1"85c.; smooth finished tire, 1"55@1"65c.; tool steel, 5"50 to 7"50c., specials, 11c. and upwards.

**Old Rails and Wheels.**—A few small sales are noted in both lines at fair prices. Old iron rails are quoted \$14@14.50, and old wheels \$13.50.

Cleveland. June 10.

(From Our Special Correspondent.)

**Iron Ore.**—Although the iron ore market is quiet, the prices remain firm, and it is said there are absolutely no indications of a change in the near future. A few transactions have been reported for the week. Standard Bessemer still brings \$4, and the general feeling is that it will not be any less valuable soon. There has been no change in the standard non-Bessemer hematite market, and \$2.60 is the prevailing price; it was expected that there would be an increase during the past week, and sellers were disappointed. Mesabi non-Bessemer are held at \$2.40 @2.45.

The report that an Escanaba rate of 45c. had been made by one vessel-owner this week, caused considerable comment among shippers, and it was thought for a time that the regular 55c. rate would be pounded down. It developed, however, that only one charter was taken at that rate, and extraordinary circumstances of a temporary nature prompted it. The present rates to Ohio ports are: Marquette, 80c.; Escanaba, 55c.; upper lake ports, 95c.

**Pig Iron.**—The pig iron market is steady and buyers are conservative. No large sales were reported for the week. Foundry iron sells for \$12.25@12.75; Bessemer pig, \$12.50; Ohio Scotch is firm at \$12.75 and \$12.25 for Nos. 1 and 2 respectively; Northern strong is quoted at \$12.75. Lake Superior charcoal sells readily at \$13.50@14.

Philadelphia. June 11.

(From Our Special Correspondent.)

**Pig Iron.**—Expectations of big business are expressed in iron trade circles. This is due to the placing of a few big orders for material and machinery among seven or eight of our large establishments. Actual sales are light, but buyers, makers and agents are all on the alert expecting something to happen. No. 1 Foundry is \$12.50@13; No. 2, \$12 @12.25; Forge, \$10.75@11.25; Bessemer, \$13.50.

**Steel Billets.**—The usual quotations are given at \$21.50, and the canvassing that is being done for business shows no results. There are several consumers, however, who will buy freely in July.

**Merchant Iron.**—There is no change yet in demand. Agents and storekeepers are expecting some improvement soon. Consumers are short of iron, but are not anxious to buy much, even though they can get what they want at 1"20.

**Skelp.**—Skelp is stronger, though there are no contracts to record for the week; ground, 1"25; sheared, 1"35.

**Sheet.**—A good business has been done every day this week, and all mills are pretty well supplied with orders. More business is in sight, but the quotations made show that manufacturers are very anxious for business.

**Merchant Steel.**—Mills are making up a larger stock than usual at this season.

**Wrought Iron Pipes and Tubes.**—Only small business is coming in.

**Plates.**—Business is mainly of trifling dimensions. Two or three big orders are being struggled for that manufacturers think they will send to mill by the last of this month. A bridge order for 600 tons went to a local firm. Tank plate and universals are: 1"40@1"50; shell, 1"50@1"60; flange, 1"60@1"70; firebox, 1"80@2.

**Structural Material.**—Bridge builders are in good heart this week over the inquiries from certain railroads concerning bridge work. Business will soon be done, they say, and before mid-summer the mills will be, they think, in a position to ask better prices on quick delivery orders. Angles are 1"45c.; beams, 1"70@2"10c. The Phoenix Company took contract for 4,000 tons, local delivery, bridge over Schuylkill.

Steel Rails.—Orders are for small lots. No definite information can be had concerning rumors of large orders to be placed in July.

Pittsburg. June 11. (From Our Special Correspondent.)

Raw Iron and Steel.—Business since our last has continued generally unsatisfactory. In all departments of trade a tendency to extreme conservatism is still manifest; the hesitancy of dealers to extend obligations is largely due to the uncertain monetary future. During the past 24 hours there was a slightly better tone in the iron and steel trade, but there has been no important change in any direction. It seems pretty well settled that consumers of iron and steel will not order to any extent until the political situation becomes clearer, and all that can be looked for is a limited demand, but this inquiry is certainly no smaller than it was a week ago. The general opinion seems to be that bottom prices have been reached, and any further decline would not be entertained and that the next change will undoubtedly be in favor of producers. Still the market is so narrow that any considerable advance in prices is not to be looked for until the demand improves. Production still continues in excess of consumption; we hear of furnaces going out of blast and furnaces firing up. The reduction in freights by rail in coke and ore comes at an important time and cannot fail to have a beneficial effect. The low price of structural and bridge material at the present time has undoubtedly stimulated the placing of contracts for new bridges.

Latest.—The demand is confined to limited amounts for immediate wants. Business men are disposed to wait and see how the money question will be settled at St. Louis the coming week. Prices of Bessemer are about the same as last week; there seems to be more inquiry. Gray Forge is very dull, without change. In steel billets the contest between the pool and the middlemen still goes on, and as both sides seem to be well supplied with material, sales are very much restricted.

Table with columns: COKE SMELTED, LAKE AND NATIVE ORK, Tons, Bessemer, Aug., Bessemer, June and July, Bessemer, July, Bessemer, June, Bessemer, Aug., Bessemer, July, Bessemer, June, Southern Mill Iron, Bessemer, June, Chilled Basic Bessemer, Bessemer, June, No. 2 Foundry, Gray Forge, Bessemer, June, No. 1 Foundry, No. 1 Foundry, No. 2 Foundry, Bessemer, Spot, CHARCOAL, No. 3 Foundry, High Grade, No. 4 Foundry, Cold Blast, No. 3 Charcoal.

Cartagena, Spain. May 28. (Special Report of Barrington & Holt.)

Iron Ore.—Nine cargoes of manganiferous and three of dry ore have been moved in the month. The exports of these ores during the last few weeks have fallen off as compared with the exports during the first quarter of the year; but this may be accounted for by the rise in Mediterranean freights and the scarcity of steamers following the opening of Baltic and Black Sea navigation. The activity in this Sierra continues, however, and miners are taking advantage of the competition to demand higher prices than they have been receiving for some years past. In consequence merchants are not benefiting by the higher prices they are obtaining just now; this is particularly the case with dry ores. We quote for ordinary 50% Portman ore, 5s. 6d. @ 6s. per ton; special low phosphorus ore, 5s. 8d. @ 6s. 2d.; extra quality low phosphorus, 6s. 4d.; specular ore, 60% iron and under 0.03% phosphorus, 8s. 9d. Manganiferous ores are as follows: No. 1, 20% iron and 20% manganese, 14s. per ton; No. 1, B., 25% iron and 17% manganese, 11s.; No. 2 ore, 30% iron and 15% manganese, 10s. 6d.; No. 3 ore, 35% iron and 13% manganese, 9s. 7d. All prices are f. o. b. shipping port.

Other Minerals.—Exports for May of minerals other than iron ore and lead have been 986 tons copper ore to Marseilles; 60 tons copper matte to Newcastle; 1,550 tons zinc ore and 45 tons galena to Antwerp; 62 tons ocher to United Kingdom. We quote for superior yellow ocher, 35s. per ton. For iron pyrites, 40% iron and 45% sulphur, 10s. 6d. per ton.

METAL MARKET.

NEW YORK, Friday Evening, June 12, 1896. Gold and Silver.

Prices of Silver per Ounce Troy.

Table with columns: June, St. Ex., London Pence, N. Y. Cts., Value of sil. in \$1. Includes data for gold and silver prices.

There have been some purchases of silver on domestic speculative account growing out of the political situation; these have tended to stiffen the price, and as the foreign inquiry continues good the price remains firm, without any special change. The United States Assay office in New York reports the total receipts of silver at 61,000 oz. for the week.

Gold and Silver Exports and Imports.

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

Table with columns: Specie and bullion, Exports, Imports, In ores, Exports, Imports, Total excess, Exp. or Imp. Includes data for Gold and Silver.

These figures are furnished by the Bureau of Statistics of the Treasury Department and include the exports and imports at all United States ports.

Gold and Silver Exports and Imports, New York

For the week ending June 12th, 1896, and for years from January 1st, 1896, 1895, 1894, 1893 and 1892:

Table with columns: Gold, Exports, Imports, Silver, Exports, Imports, Total Excess, Exp. or Imp. Includes data for New York exports and imports.

Of the gold exported during the week this year, \$450,000 went to Germany and the remainder to South America; of the silver \$10,090 went to the West Indies, \$2,450 to Germany and the balance to London. The specie imported came chiefly from Central and South America.

Average Monthly Price of Silver

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

Table with columns: Month, 1896, 1895, 1894. Includes data for monthly silver prices in New York and London.

FINANCIAL NOTES OF THE WEEK.

The comparatively small losses in the gold reserve during the past two weeks are strengthening the opinion at the Treasury that business improvement might be looked for if it were not for the effects of political agitation. The official statement of the gold reserve on May 29th was \$108,663,269. The figures were \$106,545,291. This is a net loss of \$18,943,218 since April 30th.

The proceeds of the bond sale of February have substantially all been covered into the United States Treasury. The amount paid on the principal of the \$100,000,000 issue has been \$99,913,300. The amount paid in premiums has been \$1,156,065 and in accrued interest \$188,102. This total of \$111,257,467 is about \$90,000 in excess of the Treasury estimates.

From June 1 the Government receipts have been \$10,104,944, and the expenditures \$10,285,000, leaving a deficit of \$180,056. For the fiscal year to date the receipts amount to \$39,909,740 and the expenditures \$37,071,680, deficit \$2,838,060, as against \$48,705,471 for the like period one year ago. The receipts yesterday were made up as follows: From customs, \$593,700; internal revenue, \$453,368, and miscellaneous, \$35,539.

\$2,500,000 gold is expected to be shipped tomorrow.

The statement of the United States Treasury on Thursday, June 11th, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

Table with columns: June 4, June 11, Changes. Includes data for Gold, Silver, Legal tenders, Treasury notes, etc.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$131,089,280. Against these are held in the Treasury 11,833,994 coined standard silver dollars, and the silver bullion purchased at a cost of \$119,255,226, making a total of \$131,089,280.

The statement of the New York banks—including the 65 banks represented in the Clearing House—for the week ending June 6th, gives the following totals, comparisons being made with the corresponding weeks in 1895 and 1894:

Table with columns: 1894, 1895, 1896. Includes data for Loans and discounts, Deposits, Circulation, Specie, Legal tenders, Total reserve, Legal requirement, Surplus reserve.

Changes for the week this year were increases of \$1,692,700 in loans, and \$120,200 in circulation; decreases were \$1,694,000 in deposits, \$647,500 in specie, \$3,520,400 in legal tenders, and \$3,744,375 in surplus reserve.

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

Table with columns: Gold, Silver, Total. Includes data for Asso. Banks of New York, Bank of England, Bank of France, Imp. Bank of Germany, Austro-Hungarian Bank, Netherlands Bank, Belgian National Bank, Bank of Spain, Bank of Italy, Imp. Bank of Russia.

The return for the Associated Banks of New York is of date June 6th; all the others are of date June 11th, except the Bank of Italy, which is dated May 10th, and the Bank of Russia, whose return is dated May 1st-13th. 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.

Shipments of silver from London to the East for the year up to May 28th are reported by Messrs. Pixley & Abell's circular as below:

Table with columns: 1896, 1896, Changes. Includes data for India, China, The Straits, Totals.

Arrivals for the week this year were \$178,000 in bar silver from New York, and \$30,000 from the West Indies; total of \$208,000. Shipments for the week were \$12,500 in bar silver to India, and \$42,500 to Japan; also \$30,476 in Mexican dollars to China—a total of \$72,976.

The demand for Indian exchange increased largely, chiefly owing to the announcement that the India Council purposed shortly placing a new 3% rupee loan in India. The 60 lakhs of Council bills offered in London were all taken at an average of 13.87d. per rupee, and some 18 additional lakhs were sold on special applications. The new rupee loan, which is the first which has been placed at as low an interest,



Soda ash is slow of sale, but quotations are without change, the nearest spot range for tierces, according to market, being about as follows: Le-blanc ash, 48%, £4@£4 5s.; 58%, £4 5s.@£4 10s.; Ammonia ash, 48%, £3 2s. 6d.@£3 10s.; 58%, £3 7s. 6d.@£3 12s. 6d. per ton, net cash; bags 5s. per ton less. Soda crystals are in fair request, but not active at £27s. 5d. per ton, less 5% for barrels and 7s. less for bags. Caustic soda is in limited demand. We quote spot range, as to market, as follows: 60%, £6 5s.@£6 10s.; 70%, £7 5s.@£7 10s.; 74%, £8 5s.@£8 10s.; 76%, £9@£9 5s. per ton, net cash.

Bleaching powder is stagnant and £7@£7 5s. per ton, net cash, is nominal range for hardwood packages, according to destination. Chlorate of potash is idle, at nominally 4½d.@4¾d. per pound, but nothing doing to test the market. Bicarb. soda keeps very firm at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is better and is now quoted at £8 7s. 6d.@£8 10s. per ton, less 2½% for good gray and 24s. for 25% in double bags f. o. b. here. Nitrate of soda is quietly steady at £8 5s.@£8 7s. 6d. per ton, less 2½% for double bags, f. o. b. here, according to quality. Carb. ammonia, lump, 3d. per pound; powdered, 3¼d. per pound, net cash.

### MINING STOCKS.

Complete quotations will be found on pages 582 and 583 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.
Chicago and Cleveland, page 586.		

NEW YORK, Friday Evening, June 12.

The volume of business transacted on the Consolidated Stock and Petroleum Exchange and the New York Stock Exchange has been somewhat larger this week than it was last.

The Comstocks were quiet during the week, and prices show but little change. Sales were as follows: 7,300 shares of Comstock Tunnel at 8@9c; 1,000 shares of Consolidated Imperial at 4c.; 700 shares of Consolidated California & Virginia at \$2.80@3.50; 600 shares of Hale & Norcross at \$2.50@3; 500 shares of Mexican at \$1.20@1.40; 400 shares of Yellow Jacket at 70@75c.; 300 shares of Union Consolidated at \$1.20; 900 shares of Ophir at \$2@2.40.

The Colorado stocks were a little more active, and the following sales have been recorded this week: 3,000 shares of Pharmacist at 8c.; 1,200 shares of Mt. Rosa at 10@11c.; 1,100 shares of Little Chief at 14@19c., and 1,300 shares of Isabella at 59@62c.

Of the California stocks Brunswick Consolidated was the most active with sales of 5,700 shares at 15@18c.

At the annual meeting held recently by the Consolidated Stock and Petroleum Exchange the following officers were elected: President, Charles G. Wilson; first vice-president, Thomas L. Watson; second vice-president, James E. Vail; treasurer, John Stanton; chairman, A. W. Peters; secretary, Rudolf Huben; assistant secretary, William H. Lewis; arbitration committee, H. M. Cooke, George D. Munroe, H. L. Brazeau, W. J. Currie, William T. Callaway, W. Jenks Merritt, W. B. Hotchkiss, W. J. Alpers, Frank Wilson; directors (term, two years), G. Weinberg, A. R. Hawley, H. E. Montgomery, H. G. Romaine, J. F. Scott, H. E. Jenkins, I. Honigman, W. C. Stout, S. C. Williams, S. A. Luther, C. E. Thorburn, Clarence R. West, C. C. Jacobus, M. H. Wagar, H. L. Joekel; directors (term, one year), T. A. Ennis and J. E. Harrington.

The Consolidated Stock and Petroleum Exchange states in its annual report for the fiscal year ending May 31st, 1896, which has just been issued, that there were sales of 996,180 shares of mining stocks during this period, of which 554,100 shares are credited to the first five months of 1896. The number of sales made in each month were: 128,520 shares in January, 121,180 in February, 126,440 in March, 80,020 in April and 97,940 in May, a total of 554,100 shares. It is apparent that these comparatively heavy transactions have been due to the large reported sales of some of the Cripple Creek stocks, many of which were low-priced and some without value at any price.

### Boston.

June 11.

(From Our Special Correspondent.)

The dealings in copper stocks in the early part of the week were very light, but prices held quite firm until yesterday, when a general desire to sell Boston & Montana forced the price of that stock down from \$86½ to \$82½ on sales of about 9,000 shares. A rally followed to-day and it sold back to the highest price of yesterday and closed firm. The highest point touched during the week was \$87½, and the lowest, \$82½. Old Dominion Copper broke badly on the statement that the management had ordered a shut-down, in consequence of the miners' strike and large blocks of the stocks were thrown upon the market, causing a decline from \$20½ to \$16½, with recovery to-day to \$17½. It is believed that the differences between the management and the miners will be satisfactorily adjusted within a few weeks. Calumet & Hecla declined \$5 to \$305 on small sales. Tamarack sold, ex-dividend, at \$84, declined to \$80, rallied to \$90, went off again to \$85½ and sold to-day at \$86 and \$80, closing at the latter figure.

The reduction in the dividend from \$4 to \$3 was somewhat of a surprise and the stock was pressed for sale, causing the decline. The treasurer stated that the company had earned \$3 this half year, but not \$4, and it was deemed best not to pay over \$3. The outlook with the present price of copper is good for \$4 the last half of the year. Quincy declined from \$119 to \$116, with later sales at \$118. The scrip sold at \$80½ to \$82, last sales at \$81. Atlantic declined from \$20½ to \$18½, and Osceola from \$29 to \$27. Kearsarge opened at \$13 and declined to \$11. Franklin sold at \$11 to \$11½, but was not active. Butte & Boston steady at \$2½ to \$2¼ and Wolverine declined from \$7½ to \$7.

Gold stocks, with the exception of Pioneer, have been neglected. The legal complications in regard to Pioneer have led to free selling, and the stock declined from \$5 to \$4, rallying to-day to \$5 again. Gold Coins sold at 55c. to 60c., mostly at the former figures. A small sale of Santa Ysabel at \$12½ is reported. Merced, dull, with a declining tendency—sales in the early part of the week at \$14½; yesterday it sold down to \$11. Napa quicksilver sold at \$7, same as last week.

Chicago. June 10.

(From Our Special Correspondent.)

The trading has continued light throughout the present week. Prices have been held firm and in some cases material advances have been scored. Sunnyside Gilpin, which closed last week at 10c., has been again the favorite and advanced to 12c. This stock has gone up steadily from 5c. to 12c., and those who are on the inside are predicting still higher prices. Imperial preferred is meeting with considerable favor, and several unrecorded sales of its shares have been made. The May dividend on this stock of 1% was paid to-day at the office of the secretary of the Chicago Mineral and Mining Board; and the monthly dividends hereafter of not less than 1% will be payable through the same channel on the 10th of each month.

Another Montana Company, entitled the Chicago and Montana Gold Mining Company, has to-day listed its property on the Chicago Board. Their mine is situated near Butte, and a splendid vein of gold ore, 3 ft. in width, has been opened up on it, the smelter returns on which show a net value of \$38 per ton after payment of freight and treatment. The officers of this company are well-known business men of Chicago and New York, and they expect to achieve a great success.

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

Stocks.	June 3	June 4	June 5	June 6	June 8	June 9	Sales.
Alchemist							
Boston & C. C.							
Capzone							
C. C. & C. C.	.08%						2,000
C. C. Golden Group	.10%	.10%	.10%	.10%	.10%	.10%	21,000
C. C., G. M. B. & L. Co.	.04%						1,000
Chl. & G. Mt.							
Chula Vista	.06%	.06%	.06	.06	.06	.06	13,000
Cosmopolitan	.06	.06	.06	.06%	.06	.06	38,500
Delaware Cf.	.30%		.30%	.30%	.30%	.30%	19,700
Finance	.03	.04				.04	5,000
Great Fissure	.12	.11%	.12	.12	.12%	.12%	21,000
Hawkeye							
Imperial	.23%	.22%	.23%	.23%	.23%	.23%	14,500
Investors and Prospectors						.06	2,000
Little Gem					.10%	.10%	24,000
Lucille	.10%	.10%					
Medina G. M. Co.		.07%	.07%	.07%		.07%	13,500
Peerless G. M. Co.	.13	.12%	.13%	.13%	.13%	.13%	38,500
Rhyolite	.08						3,000
Royal Age					.01		1,000
Sumpster	.04%	.04%	.04%	.04%	.04%	.04%	42,500
Sunnyside							
Gilpin	.10	.11	.11	.11%	.11%	.12	52,300

Total shares sold, 310,500.

Cleveland. June 10.

(From Our Special Correspondent.)

The demand for iron ore stocks has been weak in Cleveland during the past week, according to the statements of brokers who handle them. The fact that a presidential campaign is coming on and the discussion of financial topics has much to do with this condition of affairs, it is said. Following are the quotations:

Name of Company.	June 10.		
	Par val.	Bid.	Ask.
Aurora	\$25	88	88
Chandler	25	34	35
Cleveland-Cliffs Iron Co.	100	45	..
Jackson Iron Co.	25	70	75
Lake Superior Iron Co.	25	30	31
Lake Superior Consolidated	100	20	21
Pittsburg & Lake Angeline	25	75	..
Republic Iron Co.	25	17	18

### Salt Lake City, Utah.

June 6.

(Special Report of James A. Pollock)

Taken as a whole the stock market during the past week made a good showing, orders both local and outside being numerous and for fair amounts. The

close found nearly all the securities considerably stronger and several of them on the up-grade.

Ajax remained practically unchanged, there being less business done in the stock than during the previous week. Anticipation of labor trouble at the mines caused some uneasiness, but to date nothing of a serious character has developed. The shipments of ore continue, the grade being fairly high. Alliance, Gas and Anchor were all weak and featureless. There was some inquiry for Anchor, but not at holders' figures.

More important developments are reported from the Bullion-Beck. The ore shows now some very heavy reserves on the 600 and 800-ft. levels.

Galena will pay its usual dividend of 5c. per share on the 10th. The stock displayed good strength, with the demand fairly active. Another continuance has been granted in the Geyser-Marion suits, and the hearing will not take place for some time now. The Geyser stock was somewhat stronger than during the previous week. The company made a good record of production during May. Horn Silver did little. Lucky Bill remained unchanged in regard to quotations, with some little business done in the stock. The 2c. assessment is now nearly delinquent. Little Pittsburg did some business at the previous week's quotations.

Mammoth regained most of the strength it lost during the previous week, selling back above the \$3.60 mark at the close. The fear of labor troubles in connection with the new eight-hour law caused the slump, and the practical removal of this fear resulted in the change for the better. It is now anticipated that the company will pay at least a 5c. dividend in July. Mercur did not change materially, although the business done in the stock was quite heavy. The directors will meet on the 10th to declare the usual monthly dividend. Malvern and Overland both display good strength, recent developments having been of an extremely favorable character. Ontario was comparatively inactive. Silver King pays its June dividend of 25c. per share either to-day or Monday. The stock was very strong. Sunshine improved materially, nothing but good reports coming from the properties. It is anticipated that within the next 15 days the company will have decided upon the increase in the capacity of its plant. Swansea did well, although the closing quotations were practically unchanged from the previous week. Utah pays 2c. per share on the 10th.

### Colorado Springs, Colo. June 12

Messrs. Gardner & Co. furnish the closing quotations of the Colorado Springs Mining Stock Exchange for the week ending June 11th, as follows:

Name of Company.	June 5	June 6	June 8	June 9	June 10	June 11
Alamo	.04%	.04	.03%	.03%	.03%	.04%
Anaconda	.60	.61	.61	.60	.59	.60
Argentum-Juniata	.53%	.55%	.55	.55	.55	.55
Blue Bell	.05	.05	.04%	.04%	.04%	.04%
Cripple Creek Con.	.15%	.15%	.15%	.15	.15	.14%
Golden Fleet	1.65	1.65	1.63	1.61	1.63	.66
Isabella	.59%	.59%	.59%	.59	.59%	.61
Mollie Gibson	.68	.69	.70	.69	.69	.68
Mount Rosa	.10%	.10%	.10%	.10%	.10%	.10%
Pharmacist	.08%	.08%	.08%	.08%	.08%	.08
Portland	1.82	1.77	1.73	1.77	1.77	1.81
Silver State	.01	.01	.01	.01	.01	.01
Union	.32%	.33%	.34	.35	.34	.33%
Work	.10	.10	.10	.10	.10	.10

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

Name.	June 5	June 6	June 8	June 9	June 10	June 11
Bankers	.12%	.12%	.13	.12%	.12%	.12%
Des Moines						
Gold & Globe	.20	.20%	.21%	.22	.21	.21
Gold Standard	.09	.09	.09	.09	.09	.09
Isabella						
Jefferson	.18	.18	.18	.18	.18	.16
Keystone						

### San Francisco. June 6.

(From Our Special Correspondent.)

The market opened actively on Monday, but quieted down a little toward the middle of the week. Upon the whole, however, prices were pretty well supported, and business would have been considered very good at any time this year before the big spurt in May. Up to the end of the week about the same state of affairs continued, and there was no general fall, though some stocks went down under heavy offers. Generally speaking, prices were firm at the close, with a prospect of good business continuing for some time at least.

Some closing quotations were: Chollar, \$3.20@ \$3.25; Consolidated California & Virginia, \$3.05@ \$3.10; Hale & Norcross, \$2.65@ \$2.80; Ophir, \$2@ \$2.10; Occidental, \$1.60@ \$1.70; Best & Belcher, \$1.55; Gould & Curry, \$1.55; Potosi, \$1.50@ \$1.60; Savage, \$1.65@ \$1.70; Mexican, \$1.15; Sierra Nevada, \$1.05@ \$1.15. The Bodies were rather neglected; Bodie Consolidated sold at 70c. and Bulwer at 33c.

The sales on regular call at the San Francisco Stock Board for the first five months of the year were as follows:

	1895.	1896.
January	254,315	296,415
February	196,700	183,790
March	286,530	240,165
April	262,810	264,735
May	274,030	818,610
Total	1,274,385	1,808,655

The sales last month were the largest in many

years. The most active trading was about the middle of the month. Since then the volume of sales has been falling off.

The following companies report having cash on hand June 1st, 1896, as per their sworn statements: Alta, \$1,062; Andes, \$10,751; Alpha Consolidated, \$4,236; Bullion, \$7,229; Belcher, \$6,432; Bodie Consolidated, \$10,939; Bulwer Consolidated, \$7,651; Best & Belcher, \$3,125; Caledonia, \$4,699; Crown Point, \$14,844; Confidence, \$2,591; Consolidated New York, \$2,560; Chollar, \$4,136 in cash and unsold bullion the assay of which is \$10,900; Consolidated California & Virginia, \$42,292, with monthly expenses, amount unknown, unpaid; Church, \$14,355; Challenge Consolidated, \$1,899; Consolidated Imperial, \$1,433; Exchequer, \$2,671; Gould & Curry, \$11,328; Hale & Norcross, \$5,932 in cash and 52 lbs. of crude bullion, the returns from which have not yet been received; Julia Consolidated, \$559; Justice, \$1,273; Lady Washington Consolidated, \$311; Mexican, \$18,135; Mono \$631; Ophir, \$14,311; Occidental Consolidated, \$1,289, with \$1,000 due on note, besides monthly expenses; Overman, \$2,366; Potosi, \$19,081; Savage, \$3,134; Segregated Belcher, \$7,077; Syndicate, \$626; Sierra Nevada, \$11,753; Standard Consolidated, \$11,012; Union Consolidated, \$10,437; Utah Consolidated, \$3,650.

A local paper says that Peck Brothers, who have been working the tailings at the Eureka mill site on the Carson River, reported profits for the past three months of \$42,000, on which they paid taxes of \$330. The firm has a secret process for the extraction of the precious metals from slimes and tailings. Peck Brothers are under contract to work the tailings of the Holmes mine at the Belleville and Candelaria mills.

THE NEW EXCHANGE.

Business on the call board this week has been very good and there is a general appearance of activity. A good many shares are sold, though the number of stocks dealt in is not large.

Some quotations this week have been: Amalie, \$2.50@2.60; Sebastopol, 4@50c.; Savannah, 4c@45c.; Edna, 40c.; Lockwood, 34@35c.; Grant, 13c.

Sales on the board during the month of May foot up a total of 139,364 shares. Lockwood showed sales of 33,850 shares and Savannah of 33,500 shares.

The experts of the Exchange continue busy examining properties, and several deals are said to be under negotiation.

The first of the lectures on mining given under charge of the Exchange was delivered on Wednesday evening by Prof. H. W. Fairbanks. His subject was "The Mother Lode," and there was a large attendance.

London.

May 30.

(From Our Special Correspondent.)

The mining stock market has been very active during the past week. The sections which have recently been booming, such as West Australians and Indians, have continued to show the same strength, while South Africans have commenced to stir out of their recent lethargy.

In the South African section the decision of the Transvaal authorities to release the majority of the political prisoners has had the expected effect of bringing back buyers to the market, while the suppression of the Matabele revolt has induced the public to look at Chartered and Rhodesian companies again. Chartered and Consolidated Goldfields have strengthened and led the way to improvements all round in gold and exploring companies. Appearances point to a gradual improvement in South Africans, and it would not be surprising if a little boom came along in the market during the next week or two. From trustworthy sources I find that the black labor is coming back to the mines and that there will be no scarcity henceforward.

The West Australian section has been very busy all week, but it had a little set-back in the announcement that the first fortnight's crushings at Hannan's Brownhill was only 96 tons for 462 oz. The smallness of the tonnage shows that there is something wrong with the plant, and many excuses and explanations are given. Other stocks, however, have shown considerable advance all round.

Perhaps the most prominent stock on change during the whole week was Consolidated Gold Fields of New Zealand. This company is under the direction of the same circle as the Exploration Company, and the promoters have boomed quotations up to 4 1/2. They have already ten good gold properties in New Zealand ready for work, and as time goes on they will float separate companies to work each. The speculative value of the stock is therefore considerable and quotations will advance rapidly. When the subsidiary companies are formed the boom in New Zealand will be definitely commenced. Whether or not the New Zealand boom will be a widespread one is by no means certain. Probably the distance from England and the difficulty of reaching the goldfields will exercise a dampening influence.

The Indian section has been very active. Mysore and Champion Reefs have been running a neck-to-neck race for first position, and the quotation of each is about 48 5/8. Coromandels have followed Mysore, while a number of the small and unknown companies have struggled into prominence. There is very little professional booming done in the Indian market and the advances are all caused by genuine buying on the part of the public. Copper companies have been strong all week, owing to the continued increase in the demand for the metal. There is a great demand for shares in copper companies in France and it is chiefly French buying

which has caused Rio Tintos to go up to £22. The block of 300,000 shares in Anaconda for which Mr. Hamilton Smith is now negotiating will be absorbed at once in Paris, in fact the remaining 600,000 would be readily taken if the opportunity offered.

As far as America is concerned interest is entirely centered in British Columbia. All the promoting houses are getting to know the value of the mineral deposits of that province and are sending men over to acquire properties.

A Scotch syndicate has acquired the Gold Basin mines near Hackberry, Arizona, situated at the north end of the Houlapai Valley. They have sold the properties to the Gold Basin Mining Company, Limited, which is to be floated in Scotland. The properties are gold quartz veins of fair width and of considerable extent, the extraction averaging \$15 at a cost of \$4. The mines have been reported on by Mr. Charles Rickenbach, of Los Angeles, Cal., and the promoters are Mr. Charles Urquhart Stuart, of Chicago, and Mr. Charles Edward Orr, of Glasgow. The capital of the company is to be £150,000 divided into 60,000 preference and 90,000 deferred shares. The purchase price is £120,000, payable, £30,000 in cash and £90,000 in deferred shares, while £30,000 will be the working capital.

Paris. May 31.

(From Our Special Correspondent.)

The point where speculation continues to be most active this week is in the copper shares. The demand for the metal in Europe has been most extraordinary, and though the imports from our side have been very large, the stocks continue to decrease and prices to rise. All the world is buying copper, one would suppose. Really the consumption in war material and in electric work has been very large, and apparently is going to continue so, and there are good prospects for all the producers, though some of the stocks have been pushed up to a high point, Rio Tintos especially. Boleo this week reached 1,395 fr.

The lead and zinc companies are strong, though their stocks are not in such active demand as the copper shares. Nothing definite has been announced about the proposed new agreement among the zinc producers. I hear reports of some importations of zinc from your country, but have been unable to ascertain anything as to their truth. Any considerable shipments would certainly bring down the price of the metal here, where the market is already well supplied.

Huanchaca (silver) shows a heavy fall this week. There have been reports of a dividend lately, but no announcement has been made.

The metallurgical stocks are still strong. There was a slight reaction this week in Creusot and in Acieries de la Marine, but other shares were not affected, and are nearly all higher.

The market for the South African gold shares is dull. There was a further fall this week, but the quotations are entirely nominal. No one will buy until the situation in the Transvaal clears itself; but also no one wishes to sell at present prices, and the dealings have been very small.

The effort to force West Australian gold shares on our market has been renewed; but we have never taken very much interest in these mines here, and it is probable that no large amount of the stock has been bought. There is some inquiry about New Zealand gold mines, but no purchases, although the shares are very popular in London.

The Russian shares are all in demand, especially the iron and steel companies. Mines d'Or de la Russie have fallen nearly 200 fr. in the past two weeks. The other stocks are higher and there has been a special demand for Briansk, Huta-Bankowa, and to a lesser degree for Dombrowa and Forges du Donetz.

Politics have been rather quiet lately, but a new cause of trouble has arisen in the Cretan insurrection. Already our greedy and hypocritical neighbors are remarking that the island would be much better off under British rule. It is not at all likely that they will be allowed to take it; but they may succeed in forcing the people to remain under the barbarous rule of the Turk, instead of becoming a part of Greece, to which they properly belong. Meantime there is some anxiety lest Crete may mean the reopening of the whole Eastern question.

At home here the chief point of political interest is the decision the new Ministry may make as to the income tax project which they have inherited from their predecessors. That there is to be an income tax appears certain, but the uncertainty is on the point whether income from rentes and other public securities will be included in the tax or exempted.

It is reported that M. Magnin, who has been Governor of the Bank of France since 1891, is to retire shortly.

The imports and exports of gold in France for the four months ending April 30th are reported as below.

Table with 3 columns: Imports, Exports, and values for 1895 and 1896.

Excess, imports..... 85,767,000 24,931,374

The decrease in the net imports of 60,835,926 fr. is largely due to the payments on the Russian Chinese loan and some other investments. We are still much in the dark as to your political movements, but can only hope that they will end in your learning that the currency is not a political question, and that you can have no permanent prosperity until you rebuild your system on a rational foundation.

MEETINGS.

Table with columns: Name of Co., Location of office, Date, Time. Includes Big Johnny Gold, Con. Night Hawk & Nightingale Gold, Leon Gold, Roessler & Hasslacher Chemical, Silver Bow Gold & Precious Stone.

ASSESSMENTS.

Table with columns: Name of Co., Loc'n., No., Divq., Sale., Amt. Lists various companies like Alta, Bogam Silver, Burlington, Camp Floyd, Central Eureka, Eureka Con., Gibraltar Con., Horseshoe Bar, Lady Emma, Leo, Lucky Bill, Mexican Gold & Silver, Mohawk Con, Mono Gold, Mt. Diablo, New Era, North Banner, North Eureka, Occidental Con, Overman, Peabody, Peruvian Con, Ruby Bell, Savage, Silver King, Siskiyou Con, Skagit Cumb'd Coal, Surprise, Thorpe, Wide Awake, Ybarra Gold.

\*New assessment.

DIVIDENDS.

Table with columns: NAME OF COMPANY, Current Dividends (Date, Amount), Paid since Jan. 1, 1896, Total to date. Lists companies like Altna Con, Alaska-Mexican, Alaska Treadwell, Anaconda, Aurora Iron, Big Six, Boston & Mont, Bullion Beck & Ch, Calumet & Hecla, Cariboo, Centennial Eureka, C. O. D., Dalton & Lark, Dominion Coal, Elkton Con, Florence, Galena, Gold Con, Golden Fleece, Gold & Globe Hill, Hecla Con, Highland, Homestake, Horn Silver, Iron Mountain, Isabella, Le Roi, Mercur, Minnesota Iron, Mont. Ore Pur. Co., Moon-Ancher, Moose, Napa Con, Ontario, Osceola Co, Ottaqueachy, Portland, Quincy, Silver King, Slocan Star, Small Hopes, Smuggler-Union, Union, Utah, Victor, Victor M. & L., War Eagle.

\* May dividend paid.

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

STOCK QUOTATIONS.

BOSTON, MASS.\*

Table of stock quotations for Boston, Mass. listing companies like Allouez, Arnold, Atlantic, etc., with columns for location, par value, and dates from June 5 to June 12.

NEW YORK.\*

Table of stock quotations for New York listing companies like Adams, Ajax, Alamo, etc., with columns for location, par value, and dates from June 6 to June 12.

INDUSTRIAL COAL AND COAL RAILROAD.\*

Table of stock quotations for Industrial Coal and Coal Railroad listing companies like Balt. & Ohio, Ches. & Ohio, etc., with columns for par value and dates from June 6 to June 12.

ST. LOUIS, MO., STOCKS. Week ending June 9.

Table of stock quotations for St. Louis, Mo. listing companies like Central Lead, Con. Coal, etc., with columns for company name, office, par value, and bid/ask prices.

SAN FRANCISCO, CAL.\*

Table of stock quotations for San Francisco, Cal. listing companies like Alta, Belcher, Best & Belcher, etc., with columns for location, par value, and dates from June 6 to June 12.

\* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.\* Week ending June 10.

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

\* Official quotations Baltimore Stock Exchange.

MISCELLANEOUS SECURITIES. June 11.

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

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

LONDON.

May 29.

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

DENVER, COLO.

Table with columns: NAME OF COMPANY, Par val, June 1, June 2, June 3, June 4, June 5, June 6, and Sales. Lists companies like L'd Mines, Anacoda, Bangkok, etc.

PARIS. Week ending May 29.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Prices (Op'ning, Closing). Lists companies like Acieries de Creusot, Ansin, etc.

PHILADELPHIA, PA.

Table with columns: NAME OF COMPANY, Location, Par Val, June 4, June 5, June 6, June 8, June 9, June 10, and Sales. Lists companies like Acety. L.H. & P., Bethlehem Iron, etc.

MEXICO. Week ending June 4.

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

SALT LAKE CITY, UTAH. Week ending June 6.

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

PITTSBURG, PA. Week ending June 9.

Table with columns: NAME OF COMPANY, Location, Par val, Bid, Ask, Selling price, NAME OF COMPANY, Location, Par val, Bid, Ask, Selling price. Lists companies like Coal, Mansfield, etc.

VALPARAISO, CHILE. May 28.

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

HELENA, MONT. Week ending June 3.

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

SHANGHAI, CHINA. May 8.

Table with columns: NAME OF COMPANY, Country, No. of shares, Value, Par, Paid up, Last dividend, Date, Amount, Price. Lists companies like Jelebu Mfg. & Trad., Panjong Mfg. Co., etc.

DULUTH, MINN. Week ending June 6.

Table with columns: NAME OF COMPANY, Par value, Bid, Asked, NAME OF COMPANY, Par value, Bid, Asked. Lists companies like Adams Iron, Blwabig, etc.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Date and Amount of Last. Includes 130 entries for dividend-paying mines and 130 entries for non-dividend-paying mines.

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 \$42,390,000. NOTE.—Corrections to this table are made monthly. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.



CLASSIFIED LIST OF ADVERTISERS.

Table listing various engineering and mining companies and their products, organized by category such as Compressors, Drills, and Machinery.

advertising out in the wrong direction—missed the Engineering and Mining Journal.

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.

1456 WANTED—A DRAUGHTSMAN WHO has had experience in designing and building blast furnaces. State qualifications, references, etc. Address P. Z., ENGINEERING AND MINING JOURNAL.

1459 WANTED—A FIRST-CLASS ASSAYER and thorough ore sampler to take charge of a branch office in the Mexican Republic, through which ores are purchased and bullion sold, and a general mining and milling supply business done. Promptness, system, accuracy and thoroughness essential qualities. Address CARBON, ENGINEERING AND MINING JOURNAL.

1461 WANTED—A MAN WHO HAS HAD practical experience in treating gold and silver ores and is competent to make accurate assays. Address Luzerne, ENGINEERING AND MINING JOURNAL.

1462 WANTED—BY A FINANCIAL COMPANY, to represent them in Western Australia, a thoroughly qualified mining engineer, with a large experience in gold mining. Liberal terms will be arranged. Address, giving copies of testimonials as to character and ability, MINING, ENGINEERING AND MINING JOURNAL.

1463 WANTED—A GENTLEMAN FAMILIAR with railway supplies and specialties, knowing the manufacturers and comparative merits of their products. Address H. G., ENGINEERING AND MINING JOURNAL.

1494 WANTED—COMPETENT MAN TO go to Sidon, Syria, to introduce artesian well-boring apparatus. Must have good references, and be willing to stay a year or longer if necessary. Address ISLAM, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

POSITION WANTED BY A YOUNG MAN, 25 years old, 16 years' experience in mining and milling in Arizona, California, Nevada, etc., at present employed in Central America. Is an assayer and surveyor. Good references. Address ARIZONA, ENGINEERING AND MINING JOURNAL. No. 17,434, June 27.

CHEMIST DESIRES POSITION AT BLAST furnace, steel works or mine. Address L. P. N., ENGINEERING AND MINING JOURNAL. No. 17,435, June 29.

A NO. 1 MILLMAN WISHES POSITION. Nine years' experience. Pan amalgamation or concentration. Address F. K. S., 38 South Grant avenue, Denver, Colo. No. 17,436, June 20.

WANTED—POSITION AS RESIDENT manager or superintendent; 15 years' practical experience; now with the largest company in Northern Mexico as mine superintendent; Spanish American country preferred; highest recommendations. Address AMERICANO, ENGINEERING AND MINING JOURNAL. No. 17,432, July 4.

YOUNG MAN, GRADUATE C. E. '91, WITH experience, Ph. D. in chemistry '96, Yale, desires position in chemistry or chemical engineering. Best references as to ability and energy. Address CHEMICAL ENGINEER, ENGINEERING AND MINING JOURNAL. No. 17,433, June 27.

POSITION WANTED—CHEMIST, AGE 30, four years in German universities, degree, Ph. D., nine years of practical experience in chemical works, mines and smelting works, now in position in St. Louis, wishes to make change. Can do chemical work of every description. Best of references. Address AC-CURATE, ENGINEERING AND MINING JOURNAL. No. 17,425, June 20.

A SUPERINTENDENT OF AN ACID WORKS of long and successful experience, desiring change of location, would like to correspond with manufacturers desiring such service. Unexceptionable reference. Address S. A. M., ENGINEERING AND MINING JOURNAL. No. 17,439, June 27.

WANTED—BY A CAPABLE MINING ENGINEER, a position by the 1st of August as manager with a first-class gold, silver or copper mining company in Mexico or elsewhere; age 52 years; 27 years' practical experience; also a thorough knowledge of chemistry and bookkeeping in English and Spanish. Presently engaged with the largest mining and metallurgical company in the Republic of Mexico. Object change of location. Address, for 30 days, MEXICO, ENGINEERING AND MINING JOURNAL. No. 17,438, July 4.

A METALLURGIST, LEAD AND COPPER, in charge of large works in Mexico, wishes engagement with reliable company in the States. Successful experience. Best references. Address MEXICO, ENGINEERING AND MINING JOURNAL. No. 17,437, June 27.

YOUNG MAN, THIRTY YEARS OF AGE, desires position as foreman or assistant superintendent of copper or lead-silver smelter. Has practical knowledge of reverberatory and blast furnace work; practical builder of both furnaces. Address COPPER, ENGINEERING AND MINING JOURNAL. No. 17,423, June 20.

ASSAYER—POSITION WANTED BY young man practically experienced in assaying gold ores, sweeps and bullion; also with general knowledge of chemistry, analysis of metals and alloys. Address MARTIN SCHWITTER, 382 Third St., Brooklyn. No. 17,424, June 20.

YOUNG MAN OF SIX YEARS' EXPERIENCE in copper mining and smelting, as assayer, chemist and metallurgist, desires position. Speaks Spanish. References. Address CAPABLE, ENGINEERING AND MINING JOURNAL. No. 17,427, June 27.

ELECTRICAL ENGINEER, AGE 21, TO graduate in June from Lehigh University, wants work after July 1st, electro-metallurgy preferred. Address ELECTRIC, ENGINEERING AND MINING JOURNAL. No. 17,425, June 20.

POSITION WANTED BY MECHANICAL engineer and draftsman, expert in steam-hydraulic mining and steel-plant machinery; has had charge of shops and offices before. Address P. O. Box 217, Baltimore, Md. No. 17,441, June 20.

Contracts Open.

WATER-WORKS.

Board of Commissioners.

DECKERTOWN, N. J., June 8, 1896.

Sealed proposals will be received at the office of this Board until July 6th, 1896, for building water-works complete, or for any of the following parts thereof:

- (a) For furnishing about 1,078 tons of cast-iron pipe and specials of sizes between 8 and 4 in. diameter.
(b) For furnishing forty-five hydrants, sixty 4-in., twenty 6 in., and seven 8-in. valves with boxes, also relief and reducing valves, and one 8-in. meter.
(c) For distributing and laying about 47,000 ft. of cast-iron pipe, sizes 8 to 4 in.

Distributing and setting 57 valves with boxes, sizes 8 to 4 in.

Distributing and setting 45 hydrants, also setting relief and reducing valves, building manholes, etc.

For building an intake reservoir and appurtenances and a rubble and concrete dam at storage reservoir.

Persons may bid on one or all of the above divisions, but must keep prices separate for each division.

No extra allowance above the contract price agreed upon will be made under any pretext whatever.

A certified check for three per cent. of the total amount of bid, payable to the President and Treasurer of the Board of Water Commissioners, must accompany each proposal.

The bidder whose proposal is accepted must be prepared to enter into a contract within five days thereafter, giving bonds acceptable to said Commissioners for an amount equal to one-half the bid.

Plans and specifications may be seen, and forms of proposals can be procured on application at the office of the secretary of the Board of Water Commissioners, Deckertown, New Jersey, or at the office of C. C. Vermeule, Civil Engineer, 71 Broadway, New York City.

Proposals must be endorsed "Board of Water Commissioners, Proposals for Water-Works." The said proposals will be publicly opened by the Board and announced on the 6th day of July, 1896, at the hour of 12 o'clock noon. George A. Wilson, William S. Vanderhuff, Charles C. Kyte, Board of Water Commissioners. Attest: William F. Vanderhuff, Secretary.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., June 10th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 15th day of July, 1896, and opened immediately thereafter, for all the labor and materials required for the joinery work, marble work, iron stairs, plastering, etc., for the U. S. Court House, Post Office, etc., at Detroit, Mich., in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Detroit, Michigan. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids or to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes sealed and marked, "Proposal for the Interior Finish for the U. S. Court House, Post Office, &c., at Detroit, Michigan" and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., June 10th, 1896.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 8th day of July, 1896, and opened immediately thereafter, for all the labor and materials required for the terra cotta fire-proofing, floor arches, miscellaneous iron work, etc., for the U. S. Post Office, Court House and Custom House building at Milwaukee, Wis., in accordance with the drawing and specifications, copies of which may be had at this office or the office of the Superintendent at Milwaukee, Wis. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposal for Terra Cotta Fire-proofing etc., for the U. S. Post Office, Court House and Custom House at Milwaukee, Wisconsin," and addressed to WM. MARTIN AIKEN, Supervising Architect. Orig.

COAL.—Sealed bids, addressed to the board of water commissioners, Atlanta, Ga., and indorsed "Bids for coal," will be received until July 1st, 1896. The bids invited are for, approximately, seven thousand (7,000) tons, or as much as is needed for a year's supply, delivered to Chattahoochee station No. 1, and Hemphill station No. 2, as ordered (not over ten (10) cars at one time at either station). Coal to be paid for as per weights of our track scales at the stations and weights certified to by the engineer in charge. Bids submitted must be for both run of mine and screened coal. PARK WOODWARD, Supt. Atlanta Waterworks.

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### DIVIDENDS.

#### ISABELLA GOLD MINING COMPANY.

COLORADO SPRINGS, Colo., June 10th, 1896.  
DIVIDEND NO. 6.

A dividend of ONE CENT PER SHARE (\$22,500) has been declared, payable June 25th, 1896, to stockholders of record June 18th, 1896.  
The stock transfer books will be closed June 18th, 1896, at 3 o'clock p. m., and will be re-opened on the morning of June 26th, 1896.

PERCY HAGERMAN,  
Vice-President and Treasurer.

#### ONTARIO SILVER MINING CO.

MILLS BUILDING, 15 BROAD ST.,  
New York, June 19, 1896.  
DIVIDEND NO. 203.

A dividend of TEN (10) CENTS PER SHARE has been declared, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 30th inst.

Transfer books close on the 25th inst.  
LOUNSBURY & CO.,  
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#### SMUGGLER UNION MINING COMPANY,

804 BOSTON BUILDING, Denver, Colo.

A dividend of ONE (\$1) DOLLAR PER SHARE has been declared, payable at the office of the company July 1st.

Transfer books will be closed on the 20th inst for 12 days.

A. H. FOWLER, Secretary.

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**FIRST-CLASS ACCOUNTANT WANTS** position with mining company, reduction works or manufacturing corporation. Has a fair knowledge of machinery and some experience in mining propositions. All references. Will go anywhere for fair salary. Address "Accountant," ENGINEERING AND MINING JOURNAL. No. 17,443, June 27.

**CHEMIST AND ASSAYER, SIX YEARS** in responsible positions now in charge of a Lake Superior laboratory, desires position in Southwest. Refers to present employers. Address "V," Box 399, Ironwood, Mich. No. 17,437, July 25.

**MINING ENGINEER, GERMAN, GRADUATE** Academy of Mines, Berlin, 17 years' experience in mining (also gold), good millman and assayer, wants position. References. Address SURVEYOR, ENGINEERING AND MINING JOURNAL. No. 17,442, July 4.

## Patent Specifications.

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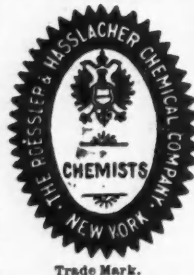
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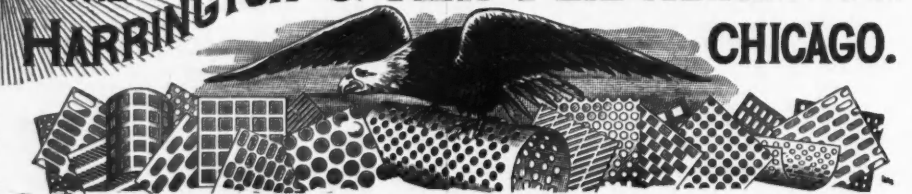
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