

THE ENGINEERING AND MINING JOURNAL



Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. LXII. SEPTEMBER 12. No. 11.

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 SOPHIA BRAEUNLICH, Business Manager.
 THE SCIENTIFIC PUBLISHING CO., Publishers.

Subscriptions are PAYABLE IN ADVANCE. For the United States, Mexico and Canada, \$5 per annum; all other countries in the Postal Union, \$7.
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Main Office: 253 Broadway (P. O. Box 1833), NEW YORK.

(Cable Address, "ROTHWELL," New York. Use McNeill's or A B C 4th Edition Code.)

Branch Offices: Chicago, Ill., Monadnock Building, Room 737.
 Denver, Colo., Boston Building, Room 206.
 San Francisco, Cal., 12 Montgomery Street, Rooms 11 and 12.
 London, Eng., E. Walker, Man'g., 20 Bucklersbury, Room 366.

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Gold mining is almost the only attraction for prospectors and investors nowadays. All through the known gold-bearing area of the western slopes of the Sierras, in places which were thought to have been pretty thoroughly explored and mined out there is a renewed interest in prospecting. In Oregon, Nevada and California they are now hunting for new Mercurus, and in the southern tier of States and Territories there is the same search for new gold camps. Just now British Columbia takes the lead, as Alaska did a few years ago, but the chances are that good finds are still to be made in the neighborhood of known mines; that is, in the last places ever thought of by prospectors, who always wait to climb up to the top of a mountain, or struggle and parch through a desert before locating.

Advices from Leadville, Colorado, continue to be extremely discouraging. The famous camp is idle, and the withdrawal of the pumps from the Penrose and the Bon Air mines, which we noted last week, seems likely to be followed by similar action at other mines. Both the mine owners and the miners have rejected offers of mediation, and seem resolved to fight it out. An offer of the operators at the Bohn mine to compromise and resume work on the basis of \$3 per day for miners and \$2.50 for trimmers was rejected by the Miners' Union, which insists upon the minimum of \$3 for all underground labor. The two smelters have been running, but with the prospect that they will soon be compelled to close on account of the exhaustion of their ore supplies. In short, there seems to be no probability of a resumption of work, and Leadville may cease for an indefinite time to be a producer. Our latest telegraphic advices, September 11th, are that more pumps have been stopped, and that one of the smelters, the Bimetallic, has been obliged to stop.

The arrival of a cargo of Tonkin coal at San Francisco, which has been referred to in some quarters as an extraordinary event, is not, in reality, without precedent. Some coal from the Hongay mines was sent to California two years ago, but did not find much favor, as it would not stand handling well and there was a large proportion of dust. The shipment of coal across the Pacific to a country which produces so much as ours does, seems at first sight an anomaly; but Australian coal competes successfully with other coals on the Pacific Coast, in spite of the duty, and it forms from 15 to 20 per cent. of the receipts at San Francisco. At times also a considerable quantity of Japanese coal finds its way to California, though it does not sell well or find much favor there as a rule. Supplies from Alaska have frequently been promised, but so far the Alaska coal has been wanting both in quantity and quality. A cheap supply of fuel is the great industrial need of the Pacific Coast south of Oregon at the present time.

A despatch has been going the rounds of the daily papers announcing the discovery of tin ore in unlimited quantities near the city of Guanajuato in Mexico. The discoverer announces that there is "at least 100,000,000 tons of ore in sight, ranging from 2 1/2 to 6 per cent. in tin." This is the usual announcement of tin finds, which makes its way into the news despatches on an average about once a year. In the present case the only difference is in the amount of ore viable, which is a little more than usual. Our contemporary, *El Minero Mexicano*, admires the modesty of the prospector, who might just as well talk of 1,000,000,000 as of 100,000,000 tons while he was about it.

The fact is that small quantities of stream tin, have been found in certain localities in the State of Guanajuato from time to time, but never in sufficient quantities to pay for working, or even to encourage systematic search for more. The despatch referred to, if it was not wholly a fiction, was probably based upon a new find of this sort—combined with the vivid imaginations of a prospector and a reporter. There is no immediate prospect of the closing of the tin mines of the Straits or Banka under the stress of competition with Mexican tin.

A good deal of interest has been aroused in the iron trade recently by some heavy purchases of pig iron made for the avowed purpose of holding the metal for the expected rise in demand and prices. It is also reported that some purchases of steel billets have been made for the same purpose, though the latter report is doubtful, unless the steel was bought below the combination price. Pig iron, however, is not supported by a pool and can be had now at very low prices. So far as the probable result of the speculation is concerned, there is very little to be said, and the chances are certainly in favor of a future profit.

With regard to the trade itself, these purchases have been welcomed by some as indications of confidence in an early revival of trade, and as removing from the market the surplus which has been keeping it down, besides placing the selling furnaces in an easier position. Allowing these arguments all possible force, a speculative movement seems in the long run to be far from beneficial to the producers. In the possible event

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of continued depression it may happen at any time that the necessities of the speculators may force the sale of the iron at the worst time; and if business improves, these large blocks remain a weight upon the market, and very often seriously check the advance of prices. The only real help to the iron-makers comes from actual consumption; and there is no real advantage to be expected from any other kind of buying.

The Mississippi River Coal Trade.

The Alabama coal operators have been for some time working to extend their trade to the southward. Shipments of coal to Mobile and Pensacola for steamship use and for export to the West Indies and South America have been made regularly for some time, and are reported to be increasing. At present they are making an effort to secure a share, if not the whole, of the trade of the lower Mississippi, which is of considerable importance. The Southern Railroad has arranged to carry coal from Birmingham to Greenville, Miss., at moderate rates, and a barge line has been organized to run from that point to New Orleans. There seems to be no reason why this plan should not be successful. The rail haul from Birmingham to Greenville is 290 miles; but the Alabama mines are as well situated in this respect as most of those in Kentucky and West Virginia, which have heretofore supplied this market, and in certainty and regularity of navigation the Greenville shipments have much the advantage of the Pittsburg, and even of the Kanawha, W. Va., District, since there is always water enough for coal tows below Greenville, and the river is not closed by ice in the winter.

The Pittsburg District, which years ago had the monopoly of the coal trade of the Mississippi, has been gradually losing it. The uncertainties of navigation in the Upper Ohio and the opening of new districts have seriously interfered with the markets, and its share of the business has been, with some variations from year to year, decreasing. It looks very much as if the Pittsburg miners would soon be confined to the cities on the Ohio for their river sales; and even there they must meet the competition of the Kanawha operators and of the rail-borne coals of Ohio and Kentucky, which are free from the contingencies of low water.

The Size of Wire Cloth.

From a people who persist in the use of an antiquated and inconvenient system of weights and measures when a better one is standing ready for adoption many absurdities are to be expected. One of these, which is fully as misleading as any other, is the system of rating the size of wire cloth in meshes per square or linear inch, more commonly the latter. The multiplicity and confusion of wire gauges, the list including such a variety as the Birmingham (or Stubbs'), the Old English (or London), the English legal standard, the American (or Brown & Sharpe), the Roebling (or Washburn & Moen, sometimes known as the Worcester), the Trenton Iron Company's, together with the Russian and United States standard for sheet and plate, and others that may possibly have slipped our memory, is perplexing enough in itself; but when in addition to this wire cloth of the same mesh is made with a variety of gauges of the same system the result is an expression which conveys practically no information. For example, 24-mesh wire cloth may be obtained out of stock from large dealers with No. 25, No. 26, No. 27, No. 28, No. 29, No. 30, No. 31 and No. 32 wire, according to quotations in the catalogue of a leading merchant in metallurgical supplies. Similarly 20 mesh wire cloth woven with wire from gauge No. 24 to gauge No. 30, both inclusive, is regularly carried in stock. It is nowhere mentioned in the catalogue in question what gauge system is employed, wherefore the actual size of the cloth is a matter of doubt, but assuming it to be the Roebling-Washburn & Moen gauge (for our purpose it is immaterial whether or not we are correct in our assumption), the aperture of 20-mesh cloth made of No. 24 wire is a square 0.0270 inch in diameter, while that of the same mesh with No. 30 wire is 0.360 inch diameter; omitting entirely the dimensions of 22-mesh wire cloth, a standard size, 24-mesh of No. 25 wire will be found to give an aperture of 0.0217 inch, and 24-mesh with No. 32 wire, 0.0287 inch; that is, 24-mesh wire cloth made of the finest wire used commercially for this grade has greater capacity than 20-mesh cloth made of the coarsest wire. A comparison of 30, 35 and 40-mesh cloths would show still more striking differences. The question is one of considerable importance in mills engaged in fine crushing, with which we may, in passing, mention it is not an uncommon experience to gain in capacity by substituting a nominally finer wire cloth for a coarser one, though, of course, the gain is actually made at a certain sacrifice in degree of pulverization. Obviously the only rational method of rating wire cloth is according to the diameter of aperture, as is already the custom with punched-steel plate. Preferably this would be in millimeters, but even decimals of an inch would be an advantage over the present mysterious system. We hope to see the day, moreover, when our long list of wire gauges will pass into oblivion with the adoption of a uniform method of measurement, which we have already at hand in the metric system.

Co-operative Sampling and Assaying for Small Mines.

In order to work intelligently and profitably the great majority of mines, constant sampling is needed at all working faces which are not in hopelessly barren country. There are a great many gold and silver mines in which the vein filling or material forming the deposit does not show to the eye whether it is pay or too low to be worth taking out. This is especially true of wide deposits of low average grade, considered in mass. It is too often the custom in stopping out ore bodies of this class to send to the surface everything between walls and then to mill or ship it, after perhaps a little hand-sorting. This no doubt saves trouble, and any loss from the practice is generally concealed, the real ore standing the brunt of the general average. In the old days on the Comstock it was the custom to handle ore in bulk in this way, lots of sugar quartz away below the paying limit, and at times plenty of indubitable country rock, also going to mill—especially if the directors were interested in the mill company or somebody got a commission per ton on ore milled. The same thing is often done honestly, but inexcusably. So long as the whole lot shows a profit in the mill, it looks satisfactory.

It not seldom happens that the miners do not know very definitely what particular streaks or spots the pay really comes from, the ore minerals being obscure, masked by base mineral, or too finely disseminated in the gangue. In such cases hand-sorting is a rather happy-go-lucky operation, though assaying of each of the different kinds of rock handled would be a guide. The trouble grows if it is attempted to make more than one class of ore.

Again, in drifting in vein matter showing very little ore, and known or supposed to be barren for all practical purposes, constant sampling and assaying are very necessary—and very seldom attended to, everything going by sight, whereas approach to a pay-shoot is often indicated by imperceptible improvement. There are extreme cases, as in some impregnation districts and irregular limestone-porphry regions, where close assaying of even the country rock gives valuable indications in underground prospecting.

In working iron and manganese mines the question is not as to richness of ore, for that is readily seen, but rather as to its phosphorus and sulphur contents, which often vary largely in the same deposit, making all the difference when it comes to sales. In mines of many other sorts, too, constant assay or test of samples is necessary. But the general rule is neglect. The cause of this neglect may be ignorance or indifference, but it often is indisposition or inability to stand the small additional expense.

All well-managed mines have their sampling kept up from day to day, whether they have their own reduction works or not. These samples are assayed either by the company's assayer or by a custom assayer in the camp. All big mines—by which are meant mines worked on a large scale and with plenty of money rather than very profitable ones—can afford, and should have their own assayers. But there are a great many little mines, either making small profits, just paying their way or in the development stage, for which a separate assayer for each would be absurd; and while assays are badly needed it is either inconvenient or impracticable for such mines to send the samples to a custom office.

Now the suggestion is made that it would be a very good idea on all sides for groups of such mines to combine, set up a small assay office and testing outfit and employ an assayer to attend to all the samples from the group. Some such arrangement could doubtless be made with a neighboring custom assay office, if there is one. The plan proposed implies much more assay work, and consequently more, not fewer, assayers. It would not cut into the patronage of the regular custom offices, but bring them contract work to replace any small odd jobs lost. Encouraging the practice of assaying as a benefit to the mines would accordingly help out the assayers.

Combinations to sink joint shafts, to run joint tunnels or to operate joint reduction works are very common. Often, too, the same superintendent oversees several mines under different ownerships, and has time to do this satisfactorily. Why not extend the practice one step farther, to the assay office?

The individual cost of assays is rapidly reduced as the number put through increases. When the number regularly handled is large, the cost of each is correspondingly small. It is about as easy to run through a batch as a single assay, hence it is no more than right that the custom assayer should charge proportionately, as he does. On a larger scale the same rule holds.

As a further step, it would be well that our proposed joint assayer should either personally take the mine samples, or if that is impracticable, at least instruct the men in the proper method and supervise its carrying out. It is a melancholy fact that the number of men who can properly sample an ore dump or the face of a heading, or anything else, is decidedly small. Almost everybody about a mining camp thinks he knows all about sampling—and almost everybody is mistaken.

NEW PUBLICATIONS.

THE STORY OF A PIECE OF COAL. By Edward A. Martin. New York; D. Appleton & Co. Pages, 168; illustrated. Price, 40 cents.

This is an attempt to describe in a popular way the theories generally adopted of the formation of coal, the geological occurrence of the mineral and the ways in which it is mined. It has been written for general reading and the use of technical terms has been avoided as far as possible. Written in England, it has had some changes made to adapt it to the American reader, though a little more work in this direction might have been done with advantage. The work has been generally well done, though the information given is not in all cases quite up to date. It is for the most part good, however, and will serve to interest many people and to give them some ideas in relation to coal which they would never receive through a more elaborate and scientific treatise.

THE MANUAL OF STATISTICS AND STOCK EXCHANGE HANDBOOK, 1896. New York: Charles H. Nicoll. Pages 488; with maps. Price, \$3.

This book gives condensed statistics of a large number of railroad, street railroad, telegraph and industrial corporations whose stocks are dealt in on the different exchanges of the country. It also gives the range of quotations of stocks on the New York, Boston and other exchanges and some general statistics. The greater part of the space is devoted to railroads, since their stocks are the best known and most generally bought and sold. Only a few mining companies are included, and nearly all of those are copper companies. The statements given are closely condensed and are almost entirely financial, the accounts of property owned lacking generally in detail. They appear to have been carefully prepared and brought up to the latest possible date. The book is compact and convenient in form, and will be useful to many business men and investors.

BRITISH COLUMBIA BUREAU OF MINES: BULLETIN No. 2. REPORT ON THE TRAIL CREEK MINING DISTRICT. By William A. Carlyle, Victoria, B. C.; published by the Bureau of Mines. Pamphlet; pages 32.

This timely bulletin contains a general report upon the Trail Creek District, which is now attracting a good deal of attention, giving a condensed account of the geology of the region, and also referring to the nature of the ores, the present conditions of mining, the transportation facilities and the progress made in the reduction of the ores.

Besides there is a page devoted to the history of the district; an account of the principal mines so far opened concludes the report. While the geological examination has been only a preliminary one, a very good idea of the structure and surroundings of the district is given. The facts have been brought carefully up to date, the production of the district being given up to July 1st of the present year. The future of the district depends, in the opinion of the writer of this *Bulletin*, largely on the transportation facilities and the possibility of working the lower-grade ores cheaply. The ores of all grades are chiefly smelting, very little free-milling ore having been found so far.

We cannot too highly commend the practice of the British Columbia Bureau of Mines in issuing its bulletins promptly. The work may be less elaborate, but it comes when it is needed and of service to miners and investors, and it is not published—like some reports which could be mentioned—long after the interest in the district has subsided or perhaps even when its mines are exhausted. Timeliness often gives much greater value to such a work than any degree of elaboration or any number of illustrations.

THE CHEMISTRY OF POTTERY. By Karl Langenbeck, Easton, Pa.; the Chemical Publishing Company. Pages, 198; illustrated. Price, \$2.

The chemistry which deals with pottery and the clay industries is a subject upon which practically nothing has been written in English. Indeed very little has been done in chemical work in this direction beyond the analysis of clays, and there is abundant room for systematic work, both in research and in writing. Even in France the literature on practical ceramics relates chiefly to the mechanical part of the work, the chemistry having a very small place. The best work has been done in Germany, where alone the scientific side of the potter's art has been much considered. The consequence is that while chemists can analyze clays, very few know the application of the results, and there is really nothing to guide them.

This book gives directions for the analysis of pottery materials and products for physical and empirical tests; for the analysis and preparation of glazes and enamels. It has also chapters treating of the different kinds of ware, their composition and treatment; a chapter on pyrometry; one on burning ware, and one on refractory materials. In preparing these the author has given largely the results of a wide personal experience, and has endeavored to adapt the book to the needs of the working potter.

Probably the most extensive series of analyses of clays ever made in this country was that collected by Mr. Ries and published in *The Mineral Industry*, Vol. II. This, however, applied to the general properties of the clays only, and to their application to all purposes, and not specially to pottery. Mr. Langenbeck has taken up his special branch and made a most careful study on this point of analysis and adaptability.

The book is one which enters a field almost unoccupied, and will be of great service to the practical potter, who is, perhaps, too much inclined to rely upon experience and to follow old methods, when a little science and theory might be a great help to him.

BOOKS RECEIVED.

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

Transactions of the Institution of Mining and Metallurgy, London. Fifth Session, 1895-96 Vol. IV. London, Eng. Published by the Institution, Pages, 300; with diagrams and illustrations.

The Cyanide Process of Gold Extraction. By James Park, Auckland, New Zealand; Champtaloup & Cooper; Melbourne, Australia; George Robertson & Co., 1896. Pages, 142; with diagrams and illustrations.

British Columbia Bureau of Mines. Bulletin No. 2. Report on the Trail Creek Mining District. By William A. Carlyle, Provincial Mineralogist. Victoria, B. C.; published for the Bureau of Mines. Pages, 32.

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.

Zinc Ore Exports from Missouri.

Sir: In your issue of August 22d, page 182, there appears an item, "Ore Shipments to Wales." The item is taken from a local paper and is entirely in error. I have no authority whatever to purchase ores for Vivian & Sons. I am, however, purchasing ores for shipment to Messrs. Ricketts & Banks, of New York, who are buying for Messrs. Vivian & Sons.

A. O. IHLENG.

CARTHAGE, Mo., Sept. 3, 1896.

The Percentage of Zinc in Slags.

Sir: For the benefit of your readers who are interested in the percentage of zinc in slags, I give the following analysis of a slag produced at Argo from smelting large quantities of copper-silver ore rich in zinc. The slag is olive-green color and highly crystalline:

SiO ₂	36.52	PbO.....	1.50
FeO.....	30.08	Al ₂ O ₃	1.29
ZnO.....	20.78		
MnO.....	4.46	Total.....	98.10
CaO.....	3.57		

The analysis was made by Mr. O. J. Frost in the laboratory of the Johns Hopkins University, in December, 1885. RICHARD PEARCE.

ARGO, Colo., Sept. 2, 1896.

Gold Mining in the South.

Sir: Questions of title, and the opportunities these give for blackmailing litigation, have, as far as my experience extends, a very marked influence in the generally difficult task of inducing capital to consider Western mining properties. The South Atlantic States, for this reason, may present some inducement to investigators of their gold resources. Such literature as I have been able to obtain does not paint a very glowing picture of Southern gold fields. Can the *Engineering and Mining Journal* say what is the real truth? Where are the Southern gold fields that will pay investigation and what are their features? The question is asked on behalf of persons who might act on the information. M. F.

CHICAGO, Aug. 30, 1896.

[The *Journal* has from time to time presented facts in relation to Southern gold mines; and will be much pleased to present further communications and information on the same topic.—ED. E. & M. J.]

Treatment of Zinc-Lead Sulphides.

Sir: Mr. F. L. Bartlett's letter in your issue of August 22d throws new light on this subject and on the operations he is conducting at Canyon City. The process is really copper matte smelting, the lead and zinc being obtained as by-products. It can readily be understood that in smelting such ores with copper material as a medium for carrying the precious metals, the temperature and other conditions employed can be easily varied from those obtaining in the lead-smelting process in such manner as to volatilize most of the metals in question. The difficulty presenting itself is, what can be done with the thousands of tons of zinc-lead fume which would be produced daily, if the Broken Hills ores were all treated by this process, as the manufacture of pigments could consume only a very small fraction of the quantity produced.

It may be interesting to some of your readers to learn that a large cargo of the Broken Hills sulphide ore is now on the water and will be smelted by the enterprising company at Everett, Washington. The result will doubtless be watched with interest and I trust the operation will prove sufficiently remunerative to establish a permanent business in that line.

BOURNE, Ore., Sept. 4, 1896.

JOHN LONGMAID.

Emmens' Transmutation of Silver Into Gold.

Sir: When statements such as those of Dr. Emmens are made, the jaded half—the scientific part—of the world is accustomed to apply a few preliminary tests to it as a whole before going more deeply into the profound problem, just as the chemist first blowpipes the substance of which he is about to make an ultimate analysis. In the first place, then, it appears strange to the average original research man that Dr. Emmens should seek as a medium of announcing his discovery to the world a daily journal; but acknowledging that people's taste in all matters cannot be discussed, it remains difficult to understand why the communication to the press was made so nearly on the model of the astrologers' and clairvoyants' "ads." It goes without saying that a sensation of this kind to awaken even a show of curiosity must appeal to some vague belief in the minds of men as to what the future will show to be a law of nature now beyond our ken. The tendency of modern thought for several scores of years has been toward the possibility of one day establishing the unity of force and the unity of matter. Such strides in that direction were made by the discoveries of Meyer, Joule, Graham, Helmholtz, etc., that every school-boy now regards heat, light, electricity and magnetism as "modes of motion." Similarly the masterly address of Crooke in the chemical section of the British Association for the Advancement of Science (in '84?) on the "Genesis of the Elements" established on very careful scientific grounds the extreme probability that all the elements were condensed from an original "hyle" or ether at successive

periods corresponding to descending temperature and oscillating conditions of electrical state. With his pregnant words, and with the allotropism of organic and many inorganic compounds in mind, he would be a dull and worthless thinker who would not conclude that had we the power to subdue this hyle or ether anything might be possible. Nevertheless, even here in the riot of the imagination we may observe a circumstance which will help us to judge whether or not the claim of Dr. Emmens is genuine, just as certain circumstances of the same kind enable us to judge of the sincerity of Keely. It is this: Dr. Emmens' story is, in brief, that having found that he could produce out of pure cobalt or pure nickel "a substance with extraordinary physical properties, differing from anything mentioned in the text books," his associates and he "agreed" that the substance must be common to all "the elements in Series 4 of Group 8." As to the grounds for this assumption we are forced to accept the judgment of the unnamed associates as to the unstated facts. Let us assume that the real, legitimate conclusion was that some substance was evolved common to cobalt and nickel. Nothing seems more probable from the fact that besides having already a host of properties in common these two twins have the same atomic weight. The general probabilities of a transmutation of one into another would therefore be indefinitely greater in their case than in that of two metals differing in properties and atomic weight. Again the underlying conception of transmutation from the work of the masters is the dissociation of the atom of an element into the more attenuated matter of which it has been made, and the re-association of this latter into an "atom" containing either more or less of it, and thus constituting an element of greater or less atomic weight. Now if a genuine success had been made in handling the stupendous forces which must be invoked to deal with matter in its ultimate state, it would be much more credible that one or more elements of a lower had been evolved from one of a higher atomic weight than the reverse.

If dissociation and re-association are the means by which the new element is to be made, why seek two in the same group? The production of some more attenuated substance than hydrogen, if not of hyle or ether, must precede the recombining into a new atom; why, then, take elements in the same group or series? Any—the most easily dissociable—would do if the difficult synthetical part of the problem be understood. For the same reason, all analogy would suggest that it were easier to disintegrate than to reintegrate; easier to make an element of lower out of one of higher atomic density; easier, therefore, to make silver out of gold than gold out of silver. The "vast pecuniary interests" would then not be menaced, whereas science would be just as well served. It is odd that that in the course of the experiment the representative of the 11th series, 6th period of the 1st group (gold) should have happened to be transformed into the representative of the 7th series and 4th period of this group (silver) rather than into any of the others yet discovered. If it be not a coincidence, it manifests a power over these hitherto untameable forces of nature obtained in strict privacy by a small body of men which history may be searched in vain to match.

The announcement only needs a few embellishments of "harmonics," "ninth spheres," etc., to read familiarly. Our advice to the busy world would be to go right along with its business, just as if Dr. Emmens were not holding its destinies in his hands. He is safe.

P. F.

PHILADELPHIA, Sept. 8, 1896.

Sir: I have read with much interest the editorial remarks in your issue of this date upon the work in which I have been engaged relating to the allotropic forms of matter, and I trust you will permit me to make the following reply:

1. I thank you for your vigorous endeavor to impress upon your readers a conviction that gold *cannot* be made from silver. In my letter to you of August 25th I expressed a desire for this conviction to prevail.

2. I thank you for suggesting the possibility of politics or improper money-making being the "word of the enigma." This gives me the opportunity of saying what otherwise I could not have volunteered, namely, that in my arrangements with the friends who are co-operating in the establishment of the argentaurum laboratory, I have expressly declined to receive any personal remuneration. I do not, however, profess to be "a disinterested seeker after truth" of the kind alluded to in my previous correspondence with you. If it shall happen that profitable results are arrived at in our laboratory, I shall, of course, receive my fair share of the same.

3. I note with satisfaction that you do not adopt the omniscient attitude usually assumed by editors in criticising philosophical views of a tendency repugnant to their own preconceived notions. You are careful to say "so far as our knowledge goes there is nothing yet known that gives any firm ground for a belief in the transmutation of the elements; in fact, the tendency of scientific investigation seems to lead to the opposite conclusion." The most thin skinned of discoverers cannot object to so modest a peal of editorial thunder and so innocuous a flash of editorial lightning; especially when, as in the present case, a refutation of the utterance appears in the self-same number of the journal that contains it. I, of course, allude to the statement by Messrs. Von Schulz & Low that my "remarkable results claimed" are "entirely within the bounds of reason. The periodic law and other considerations have long led chemists to anticipate some such results as are now claimed."

4. I am delighted to read your statement that "neither is there anything in Dr. Emmens' statement that would convince any careful investigator that he has succeeded in converting silver into gold." In my letter to you of August 25th, I said: "To bring conviction home to the scientific minds of the day would, to my thinking, be a wholly unjustifiable proceeding."

5. I observe that you give notice of your intention "in an early issue" to "refer at more length to the assumptions of Dr. Emmens as to what are the accepted teachings of science and to the discrepancies in his statements of the basal facts in his own work." This notice leads me to venture upon another "assumption." I assume that you are desirous of dealing with what is (apart from my own poor personality) a momentous subject in a spirit of rigid accuracy, and of dealing with myself in a spirit of absolute fairness. It therefore seems to me proper to point out to you that the article which, in your issue of to-day, you have reprinted from the *New York Journal* of August 16th is incorrectly described by

you as being a "letter." The article was, in fact, a series of notes written by a reporter during an interview with me. When asked by Messrs. Von Schulz & Low as to its accuracy I replied that it was "substantially correct." It was moreover of a "popular" rather than an "academic" character. Accordingly, I suggest that, in the interests of truth, it may be well for you to tell me what you regard as the "assumptions" and "discrepancies" upon which you propose to publicly comment, in order that I may supply such explanations and qualifications as I have already (by my use of the words "substantially correct") declared to be necessary.

6. I suggest, also, that before you publicly commit yourself to any final pronouncement based upon "the accepted teachings of science," you should well weigh what is to be learned from the silence of science. Dr. Lardner is said to have offered to eat his hat if a steamship should ever cross the Atlantic. Cyrus Field found little in the "accepted teachings of science" to convince men of business or even Mr. Carlyle's "able editors" that an Atlantic cable was practicable. What did science know of argon—a substance that every philosopher and fool has been inhaling by the ton from time immemorial—until the other day? Did the X rays exist any the less because the "accepted teachings of science" said nothing about them? In view of these and the numerous similar questions that any Vassar student could ask, I may, perhaps, "give you pause" by making another "extraordinary statement." I have invented a "force engine," by means of which I can attain and utilize a pressure of over 500 tons per square inch. In saying this I remain fully conscious of the fact that there is no material at present known to man capable of forming an apparatus able to resist such a strain. Yet I adhere to my "extraordinary statement," and at no distant date, when the patent rights are duly secured by our syndicate, I will do myself the pleasure of showing you the engine at work and of furnishing drawings and a description for your columns. What accepted teachings of science exist as to the molecular changes possible or probable in substances submitted to the action of such a force engine? And when I tell you that this new development of energy is only one of the tremendous and hitherto unemployed powers at the disposal of the workers in our argentaurum laboratory you will, I think, feel less inclined than ever to follow the example said to have been set by Dr. Lardner.

7. It may not be irrelevant for me to remind, or inform, you that I long ago publicly predicted what I am now engaged in actually performing. In 1883 a London monthly magazine—*To-day*—published two articles written by myself, viz.: "A Vision of Space," and "The Modes and Might of Electricity." If you will refer to these you will find that my current "extraordinary statements" are the logical sequence of very many years of philosophical work which began and was continued long before the present Presidential contest appeared above the political horizon.

STEPHEN H. EMMENS.

NEW YORK, Sept. 5, 1896.

UNDERGROUND ELECTRIC HAULAGE AT CLEVELAND LAKE MINE.

At the recent meeting of the Lake Superior Mining Institute at Ishpeming, a paper was read by Mr. J. E. Jopling, on the electric haulage plant of the Cleveland Lake mine, at Ishpeming. The plant was installed during the years 1893-94, the great lateral extent of the ore body having made necessary some system of mechanical haulage. The electrical equipment was installed by the General Electric Company. The generating machinery is located in the engine-house, and consists of a direct current machine of the multipolar type; it makes 650 revolutions; gives an electro-motive force of 220 volts without load and has a capacity of 420 amperes. Two main wires, No. 0 copper, take the current down the shaft, one wire for each level, and are insulated with rubber inside of lead pipe, which is covered with asphalt paint. In the levels the wires are held by the usual mining insulators, at a height of 6 ft. 6 in. above the rails.

The haulage plant on the first level consists of a 65 H. P. motor machine on four 24-in. wheels, and 20 iron tramcars. On the second level the motor is smaller and of higher speed; it is 30 H. P., on four 30-in. wheels; the cars are of iron, stiffened with wood. With this plant the cost of tramming ore, including the proportion of engine-house expenses and maintenance, and the wages paid to motormen and chute men, has been as follows: In 1894, 3-9c. per ton; in 1895, 4-5c. per ton; in 1896, to August 1st, 4-8c. per ton.

A German Lignite Syndicate.—A syndicate of lignite mine owners has just been formed at Magdeburg. The syndicate comprises all the lignite mines with the exception of five concerns.

Russian Coal for the Russian Navy.—The Russian Minister of Marine has decided in future to supply the Baltic fleet with coal from the Donetz basin, and, in order to enable him to do so, the Minister of Finance has, it is said, arranged to cheapen the railway freights from the south. Hitherto it has been impossible for the coal of Southern Russia to supply the place of English imported coal in Northern Russia, owing to the distance over which the former has to be brought by rail. It appears that this action has been taken in consequence of a direct order from the Czar, given as the result of representations made to him while visiting the National Exposition at Nijni-Novgorod.

Coal in Norway.—On the Norwegian island of Andon there are considerable deposits of coal, which extend over an area measuring some 5 to 6 miles in the one direction and 3 miles in the other. Over the coal is a layer of peat, and under the coal one comes upon solid granite. Between the layers of coal, sandstone is occasionally come upon, as are also deposits of iron ore, slate, etc., which also may yield materials of value. Some 25 years ago, at the instance of the State, a number of borings were undertaken, but these researches were again abandoned, until some five years ago, when they were resumed by private initiative. An influential syndicate having been formed for that purpose. Subject to working having been started by the year 1901, and subject also to a percentage being paid to the State, the syndicate has secured a concession for working these coal deposits.

MINING IN NEW ZEALAND.

The statement for the year 1895 of the Minister for Mines, which has just been submitted, begins by saying that the revival in gold mining, commented on in the last annual statement, has continued and at present shows no signs of abatement. The gold returns show a very large and gratifying increase, proving that the revival is based on very substantial grounds. The results of mining operations during the past few years have clearly demonstrated that, with judicious selection, many of the large low-grade lodes, already partially developed by local capital, will prove remunerative when worked on a comprehensive scale and in a systematic manner. The last mines statement referred to gold-bearing stone being found in a bore put down from the bottom of the Kapanga Company's shaft at Coromandel. On sinking the shaft to a depth of 980 ft. to test the value of the discovery at this depth (the greatest yet reached in New Zealand) a quartz vein was discovered containing payable gold. This discovery must rank among the most important and encouraging features of the mining operations of the year. Extensive areas of gold-bearing drifts still exist in Otago and the West Coast of the Middle Island, and when water is available to work these drifts a large number of miners will receive profitable employment. In a country so favored with never-failing streams it is certain, the report states, that electricity as a motive power is destined to play an important part in the advancement of the mining industry in working dredges, rock drills, pumping machinery, and crushing batteries at places where water is not available and the ore too low grade to pay heavy charges for transport and treatment. For the year ended December 31st the total production of gold and silver was in value £1,172,843, compared with a value of £894,536 for the preceding year. Of other minerals, including coal, 748,866 tons were produced, representing a value of £833,134, as against 728,594 tons, of a value of £802,706 for the previous year. The production of kauri gum was 7,425 tons, valued at £418,766, as compared with 8,338 tons, valued at £404,567 for 1894. The total value of gold, silver, coal and other minerals, including kauri gum, exported up to the end of 1895, was £64,775,629.

Last year the total number of miners employed was 13,226, the year before 11,412, the increase being principally in the Auckland District. In Otago, Nelson and West Coast many of the miners employ part of their time in farming pursuits.

ABSTRACTS OF OFFICIAL REPORTS.

Victor Gold Mining Company, Colorado.

The latest report of this company covers the year ending August 3d, 1896. During that period the ore statement shows a total of 13,735 tons, of which 3,073 tons were sold to smelter and 10,662 tons to mill. The gross value of the product was \$435,183. The average assay at smelter showed 6.18 oz. gold and 2.96 oz. silver per ton; the cost of freight and treatment was \$14.50 and the net value \$110.86 per ton. The average assay at mill was 0.95 oz. per ton; the cost of freight and treatment \$9.23 and the net value \$8.86 per ton. The gold at smelter was rated \$20 and at mill \$19 per ounce.

The financial statement for the year is given below:

Capital stock.....	\$1,000,000	Assaying and sampling.....	\$4,610
Ore sales.....	435,183	Attorneys.....	1,167
Profit and loss, Aug. 6, 1895.....	41,505	Office expense.....	3,587
Total.....	\$1,476,688	General expense.....	6,823
Mining property.....	1,000,000	Fuel.....	4,045
Acquisition of new property.....	4,695	Maintenance of teams.....	1,040
Dividend account.....	240,000	Permanent improvements.....	4,719
Mining costs.....	183,880	Mining supplies.....	14,091
Cash, Aug. 3, 1896.....	48,213	Wages.....	121,159
Total.....	\$1,476,688	Machinery.....	3,853
		Insurance.....	1,618
		Dividend expense.....	374
		Engineering.....	1,752
		Timbers.....	2,272
		Hauling.....	12,501
		Total mining costs.....	\$183,880

After paying the dividends noted, the balance on hand increased by \$6,708 during the year. The costs given show an average of \$13.39 per ton of ore reported.

The vertical shaft was sunk 218.5 ft. during the year, making a total of 418.5 ft. in depth. From this shaft stations were cut and timbered on the second, fourth, fifth, sixth and seventh levels. On the East Vein there are reported 1,221-ft. of drifts and 277-ft. of crosscuts; 17,940 ft. were stoped. On the West Vein there were 393-ft. of crosscuts; the total amount of ground stoped was 14,550 ft. The total length of winzes sunk was 249 ft.

The general manager's report says that additional surface improvements have been made as follows: Assay office and laboratory building, 16 x 40 ft., fully equipped; three new floors added to the ore-house, each floor being 28 x 60 ft. and increasing the capacity for handling ore three times what it formerly was, with four new grizzlies or screens; large ore-bins built below the new ore-house the entire length of the building, 60 ft.; scale-house, 14 x 16 ft., covering scales; new ore-bin, 14 x 16 ft., connected by trestle with large ore-house; building for boiler-house and coal-bin, 24 x 37 ft., iron roof; water-tank house, 12 x 24 ft., iron roof. The new machinery put in includes one No. 5 plunger pump, one No. 7 Cameron sinking pump, one Buffalo engine and blower, one Westinghouse air-compressor, one 54 x 14 ft. boiler, one new steel cage, three new 50-bbl. water tanks and 12 new steel ore-cars. In addition to the above improvements, new roads have been built above and below the buildings at the mine and old roads have been widened out. A new wagon road has been built from the mine to the town of Goldfield, a distance of 6,000 ft.

The report says: "The conditions existing in the mine have changed since the last annual report was issued. At and prior to that time all the values had been found in small veins of from 1 to 6 and 10 in. thick; since then, during the past year, as depth has been attained, the veins have become much stronger and are now in the fifth, sixth and seventh levels, from 3 to 6 and as high as 8 ft. thick, and while the ore on the

average is not so high grade, the quantity more than makes up for the difference in the quality. The mine is now producing and shipping about 50 tons of ore per day, whereas it was formerly shipping only about 100 to 130 tons per month. Large sums have been expended during the past year in development work and it is the intention of the management to continue this work indefinitely, sinking the main shaft constantly, one shift out of the three and driving from four to six headings continually. So far no condition in the mine has arisen to cause us to change our good opinion of it, while, on the contrary, the changed character of the veins above referred to, only serves to strengthen our opinion of the permanency of the mine."

Broken Hill Proprietary Company, New South Wales.

The report of this company for the half-year ending May 31st, 1896, shows that the total receipts from the mine were £745,927; wharfage, etc., £2,800; a total of £748,727. The mine expenses were £466,492, leaving a balance of £281,735 profit. To this are to be added £4,303 for interest, etc., and £661,358 balance from previous account, making a total of £947,396. Deductions were: Depreciation account, £25,705; office and general expenses, £15,419; dividends, £288,000; total, £329,124, leaving a balance of £618,272 forward to the current half-year. The stock of the company continues unchanged at 960,000 shares of 8s. each, making a total par value of £384,000.

The total yield and results reported for the half-year was: 3,817 oz. gold, 4,107,578 oz. silver, 11,958 tons lead and 284 tons copper. The average price realized for silver was 33.7d. per ounce; for lead £11 1s. 8d. per ton. The yield per ton was £3 8s. 5d. (\$16.37); cost, £2 6s. (\$11.04); profit, £1 2s. 5d. (\$5.33).

From the beginning of the present company in 1895 up to May 31st last, 11 years, the total product of the mine has been 2,884,930 tons of ore, from which have been obtained 19,653 oz. gold, 79,882,321 oz. silver, 107,958 tons lead and 2,887 tons copper. The total amount paid in dividends up to May 31st was £6,128,000, and the reserve fund amounts to £125,000.

The working costs, as given in detail in the report, were, for the half year:

Mine wages and expenses.....	£50,412	Stores, Port Pirie.....	£ 538
Smelter wages and expenses.....	55,349	Firewood.....	2,889
Amalgamation wages and expen.....	229	Horsefeed.....	578
Lixiviation wages and expenses..	8,831	Ore account.....	3,366
Electric light wages and expenses	1,831	Smelter account.....	2,132
Chloridizing wages and expenses.	11,937	Water account.....	5,537
Concentration wages and expen..	4,713	Fire account (Block 11).....	2,913
Refinery wages and salaries.....	9,981	Freight and charges on bullion..	18,137
Mine contracts.....	30,022	" " " " " lead.....	2,552
Quarrying account.....	37,317	" " " " " silver.....	729
Prospecting account.....	10,578	" " " " " ore.....	33,301
Assay expenses.....	1,434	" " " " " matte.....	2,606
Experimental account.....	384	Insurance on bullion.....	355
Coke account.....	75,122	" " " " " lead.....	247
Coal.....	32,530	Fire insurance.....	64
Limestone account.....	34,579	Total.....	\$466,902
Ironstone account.....	3,713		
Mine timber.....	21,906		

The total amount of ore treated during the half year was 230,451 tons, of which 79,634 tons were from the open-cut and 150,817 tons from underground workings. The disposition of this ore was as follows: To ore-dressing mill, 21,259 tons; chloridizing furnaces, 28,378 tons; mine smelters, 132,763 tons; British smelters, 6,830 tons; Port Pirie smelters, 41,221 tons.

The 15 mine furnaces have been running steadily, but the three furnaces leased from the British Broken Hill Company have been closed since January. The concentration of oxidized ores has not been resumed since the stoppage in October, 1895, principally because suitable ore for this treatment has not presented itself in sufficient quantities to keep the plant in continuous work. The portion of the mill devoted to the concentration of sulphide ore has been in operation since November 21st, 1895. The lead concentrates obtained have been fair, but the dressing of the zinc middlings and slimes has not, so far, been attempted, except on a small scale.

In the mining department the following figures are given showing work done: Total ore raised, 277,881 tons; crosscutting and driving, 8,849 ft.; rises and winzes, 1,479 ft.; shaft sinking, 492 ft. In the open-cut branch, although the tonnage of ore raised exceeds that of the previous term, the quantity would have been much greater but for various causes, among which was the cessation of work at the concentration and amalgamation plants, owing to the diminished available supply of suitable ores. The chief cause of the restricted record, however, was the stoppage of operations by the fire in the deep and extensive ironstone quarry at Block 11, where large quantities of easily smelted and fair-grade iron ores were being quarried. Work has already been resumed, however, in the overburden on the western side of the lode at this quarry. The requisite iron flux for the smelters has been obtained from the quarry between McBryde and Drew shafts. Extensive work has been going on continuously in the open cut, between Jamieson Old Shaft on the south, and Darling Shaft on the north, producing large quantities of smelting and chloridizing ores. The waste removed amounted to 427,334 cu. yds.

In the smelting department the following amounts (net) of the different classes of ore were smelted: Lead ore, 49,373 tons, or 20.73% of total; siliceous iron, 62,066 tons, or 26.06%; iron ores, 38,390 tons, or 16.12%; kaolin ore, 81,336 tons, or 34.15%; sulphide ore and concentrates, 7,017 tons, or 2.94%; total, 238,182 tons. The chloridizing plant attached to the leaching department has been increased by the addition of two revolving roasters, making the total number 10. During the past year, except for stoppages caused by repairs, from six to eight furnaces have been running continuously. The amount of ore treated has been 54,782 tons net, an average of 1,053 tons per week, the output being 347 tons lead, and 516,423 oz. silver. The average extraction of silver was 9.42 oz. per ton of ore.

All the products from the mine now pass through the refinery, and the publication of future yields will be based on the output of this establishment. The prices of all metals increased during the half year. The fine silver was all sold in London by tender, at full prices. Sales of lead to China show a gratifying increase, and at satisfactory prices, amounting to about 8,500 tons during the six months, which is the largest total yet

recorded for a similar period. A fair quantity of this metal was disposed of in London by open tender, and the colonies have absorbed considerably more than usual. Sample lots have been sold to India, Japan, America, and the Straits Settlements, with a view of opening up new markets. The parting plant for extracting gold from the bullion is now working, and will shortly produce pure gold, the percentage of which in the smelter bullion is increasing. There were treated during the half-year 12,580 tons of bullion, at a cost of \$6.92 per ton, the products being 3,817 oz. gold and 4,209,186 oz. silver. The refinery, besides desilverizing the whole production of bullion, has parted and refined 62 tons of silver-lead precipitate, a product of the leaching mill.

In March last 24 acres of land on the Hunter River, Newcastle, N. S. W., were purchased from the Waratah Coal Company. This property was formerly leased to the Wallaroo & Moonta Mining and Smelting Company, and is situated immediately to the north of the Government wharves, with which it is connected by rail, as well as with the adjoining coal mines, and has a large water frontage, permitting extensive wharf accommodation. As it appeared probable that the treatment of the sulphides on an extensive scale, and particularly the ultimate recovery of the zinc, would call for a large consumption of fuel, this site was secured as being the most favorably situated for economic working.

In June last the available quantity of payable oxidized ore, averaging approximately 15 oz. silver and 1½% lead, was calculated at about 1,250,000 tons. An estimate of the proved bodies of sulphide ore was 2,619,000 tons, averaging 18.5 oz. silver, 24.3% lead and 21.9% zinc. A further quantity of 600,000 tons is estimated, but not yet fully determined.

As to the future prospects of the great mine, the report says: "The exploratory or prospecting work, which last half-year was greatly hampered by the fire, and by the want of competent miners, has during this half-year been prosecuted vigorously, and on a larger scale than in any similar period. The expenditure has been heavy, but the results are gratifying, and it is intended to push on the work, until a proper estimate can be made of the extent and value of the great bodies of sulphides which underlie the present workings. Shareholders were informed by circular of a possible reduction in the output, in accordance with the recommendation of the general manager, and of the board's intention to erect an extensive concentration plant of not less than 5,000 tons weekly capacity, on lines which experience of the past few years has proved to be the most efficient, in order to obtain a suitable product from the sulphides for smelting in conjunction with the remaining oxidized ores. The necessary plans, which provide for an enlargement up to 10,000 tons, have been prepared, and the work of erection will shortly commence, and should be completed before the end of the year; meanwhile it is not intended to interfere with the present reduction plants or with the ordinary course of operations either at the mine or Port Pirie. Two Ropp roasting furnaces are now in course of erection at Port Pirie and will be utilized as an auxiliary to the smelting works and also for the further treatment of matte. During the half-year, as in the past, various processes for the economic treatment of low-grade sulphides have been submitted and were carefully tested and examined by the company's technical officers and other experts, but although some of these are of an encouraging nature your directors do not consider that the promised results have been obtained upon a sufficiently large scale to warrant their adoption by this company."

THE NEED OF GOOD UNDERGROUND SURVEYS.

Written for the Engineering and Mining Journal by P. H. Van Diest.

Some time ago (April 18th, 1896) the *Engineering and Mining Journal* in a short article called attention to the value of "good mine surveying" in deciding important litigation cases. Correct underground surveying can do much more; it can prevent accidents involving the lives of men.

Two striking instances have occurred in Colorado in which the lives of several miners could have been saved if correct and complete surveys of the mines had been made and kept up.

The shafts of the Red Cloud and Cold Spring mines, in Boulder County, are separated by an eruptive dike, which is, at the surface, between 35 and 40 ft. wide. When the Cold Spring shaft was sunk to a depth of about 400 ft. a blast in the foot wall of the vein broke through the dike into the old workings of the Red Cloud mine; this latter mine being flooded, the water rose in the Cold Spring mine so rapidly that the two men who were working the night shift could not escape and were drowned.

If at intervals surveys had been made of both mines and been posted, such surveys would have revealed that the thickness of the dike diminished rapidly with depth, and measures could have been taken to prevent the water of the flooded mine from breaking into the workings of the other mine.

In August of last year two lives were lost in the Americus mine and 12 in the Sleepy Hollow mine, Gilpin County, through flooding these mines by water coming from the Fisk mine. The accident happened as follows: Owing to the great flow of water and expense of pumping, the lower levels of the Fisk mine had been allowed to become flooded. This water, rising to a height of 215 ft. above the 490-ft. level in the Americus mine, attained enough pressure to dislodge and force upwardly, over an extent of 5 ft., the vein matter standing between an old stope of the Fisk mine and the 490-ft. level of the Americus at a point where stope and level are only 4 ft. apart. The column of water standing above this point in the extensive stopes of the Fisk mine rushed through the 490-ft. level of the Americus, poured down its shaft, rose in the shaft to and above the 390-ft. level and found its way through that level into the Sleepy Hollow mine. Said level of the Americus was, a short time before the accident occurred, extended beyond the west line of the old Sleepy Hollow claim, and thus connection was made with a stope of the Sleepy Hollow mine above its 400-ft. level. The water rushed through that level down the Sleepy Hollow shaft to its bottom, 300 ft. below that point. The accident has demonstrated that the Fisk, Americus and Sleepy Hollow mines are working upon the same vein, which may have been the impression of many, but is certainly not suggested by the courses of the locations of these claims at the surface.

If good underground surveys had been made in those mines the Americus would probably not have continued its 390-ft. level beyond the west line of the older Sleepy Hollow claim, while unguided by maps and in uncertainty about the position of its end and side lines underground, also of the widening of the vein in the Sleepy Hollow ground. The Americus continued the drift, thinking to be on a vein within its adjoining Blyth claim. If the Americus had thus not continued its 390-ft. level for about 30 ft. into the Sleepy Hollow ground no connection would have been made with the Sleepy Hollow workings, and at least the lives lost in the Sleepy Hollow mine would have been saved.

But, furthermore, if the keeping on record of correct maps of underground workings in metalliferous mines were mandatory, as is required for coal mines in Colorado, the flooding of the Americus could have been prevented in all probability through that means, because the comparison of such maps of the Fisk and the Americus workings should have revealed how dangerously near the 390-ft. level west of the Americus was driven over previous workings in the Fisk mine.

Although the miners in the Americus seem to have been aware that a stope existed below their 390-ft. drift, a correct survey alone could have shown how near they were, certainly much nearer than anticipated, and means could have been taken in time, when the lower levels of the Fisk mine began to be flooded, in order to prevent a breaking through of the water, by filling up the drift or by the placing of a bulkhead in that level.

It is surprising to observe how few of the mines in Colorado, and especially in the older districts, have complete maps of their workings. They all have a sketch on a more or less correct scale, showing on a longitudinal section the extent of the drifts and of the stopes, but very few can show from surveys a cross-section giving the dip of vein at different depths or the changing courses of its drifts. Such surveys are made when a suit in court compels it, but after the case is settled surveys and maps are very rarely kept up to date.

Colorado and several neighboring mining States could learn in that respect a good deal from mining practice in South Africa, and adopt the regulations passed June, 1893, by the Volksraad of the Transvaal Republic. These regulations stipulate, among other things:

Sec. 2. Boundaries of mining properties underground must be protected by a 10-ft. pillar to prevent the flooding of one mine by the water from another.

Sec. 6.—The drawing and maintaining of accurate detailed plans of the surface and of underground workings is enjoined on all mining companies. The plans must be drawn according to the true meridian. Mine plans must be posted every six months. All bench marks and fixed survey points must be shown, also strike and dip of reefs, etc., and faults and dikes. All underground workings about to be abandoned must be surveyed before they become inaccessible. Misrepresentation in plans is subject to a penalty of £500 or one year's imprisonment.

Iron Production in New South Wales.—According to the *London Colliery Guardian*, overtures have been made to the Colonial Government by Messrs. Lambert Brothers, of Sydney, for the supply of Government ironwork, including steel rails. They stipulate for no protection or bonus whatever, and intimate their willingness to deposit a substantial sum of money as a guarantee of their ability to carry out any work with which the Government may intrust them.

Japanese Versus Australian Coal.—The extent to which Japanese competition has affected the coal trade of Australia is shown by the figures for 1895 given in the report of the New South Wales Mines Department, and those of the foreign trade reports of Japan. In 1891 the exports of coal from New South Wales were 2,244,729 tons, while in 1895 they were 2,166,230 tons. On the other hand, exports from Japan increased from 895,320 tons in 1891 to 1,376,068 tons in 1895. Competition affected prices seriously also, the value of New South Wales coal exported having fallen from 10s. 4d. per ton in 1891 to 7s. 1d. in 1895. Japanese coal, which was first introduced at a low price, has risen, the average reported in 1891 being 3½ yen per ton, while in 1895 an average of 4 yen per ton was realized.

Business of the United States Patent Office.—Commissioner of Patents John S. Seymour has submitted to the Secretary of the Interior his report on the business of the Patent Office for the fiscal year ending June 30th, 1896. It shows 48,105 applications and caveats received, 24,585 patents granted and trade-marks, labels and prints registered, and 15,580 patents withheld and patents expired. Receipts from all sources during the year were \$1,307,090, and expenditures, \$1,097,368; leaving a surplus of \$209,721. The balance in the treasury of the United States on account of the patent fund on June 30th, 1895, was \$4,566,757, making a total, with 1896 surplus, of \$4,776,479. Applications awaiting action number 8,943. At the end of the fiscal year all but four of the examiners had their work within one month from date, two were between one and two months and the other two were between two and three months in arrears.

A French Electric Power Plant.—The important power transmission plant to be installed on the Rhone near Lyons, France, will be worked on the triphase system, the potential of the current being 3,500 volts. The three conductors are to be formed into a single cable, the whole being finally covered with lead and steel. The insulation is to be of prepared celluloid, rubber being excluded, and a resistance of 1,000 megohms per kilometer as tested at the factory, and of 100 megohms as erected, has been specified. The low-tension distributing cables will be made on the same general plan, but will be designed for 115 volts. The contractors guarantee that after three years' working the insulation resistance shall not fall below the figure named above. The transformers, to be made by Messrs. Schneider & Company, of Creuzot, are guaranteed not to reach a temperature of more than 140° Fahr., after 12 hours' working under full load. The efficiency will be 92% at full load, and 96% at half load for the smaller sizes, and somewhat less for the larger ones. Running light, the transformers are not to waste more than 5.5% of the total designed load in the case of 2,000-watt transformers, nor more than 0.6% in case of the 100,000-watt machines.

TESTS OF A PUMPING ENGINE.

By H. B. Startevant.

The tests in question were made on the pumping engines at the Pioneer Iron Mine in the Lake Superior region. The pumps are of the duplex compound plunger type, made by the Fred. M. Prescott Steam Pump Company, of Milwaukee. The condensers are the single acting independent type. One of these pumping engines throws water 780 ft. vertically from the bottom of the shaft, and this is the one tested. The other is stationed 150 ft. higher, and is used as a relay pump, a smaller duplex pump throwing up to it. The results were stated at the recent meeting of the Lake Superior Mining Institute.

An attempt was made to determine the actual slip of the pumping engine, but owing to the irregular shape of the sump the test was not satisfactory. The slip was, therefore, assumed to be 5%, which is reasonable, as the engine has been running but six months and is in fairly good condition. On each of the caps of the discharge valves is a small air chamber, made of 4-in. pipe and 12 in. long, connected with the valve chamber by 1-in. pipe and valve. The effect of these air chambers is to make the valves seat themselves easier, as is manifested by the absence of sound; and also to start the valves with less steam pressure; or, in effect, to increase the valve area, on the theory that the air in the water rises to the top of the chambers and affords a cushion. This device is the work of Mr. R. J. Williams, master mechanic at the mine.

The main steam pipe is 6 in. diameter and 1,100 ft. long, covered with Manville covering. There are two expansion joints in the shaft. The

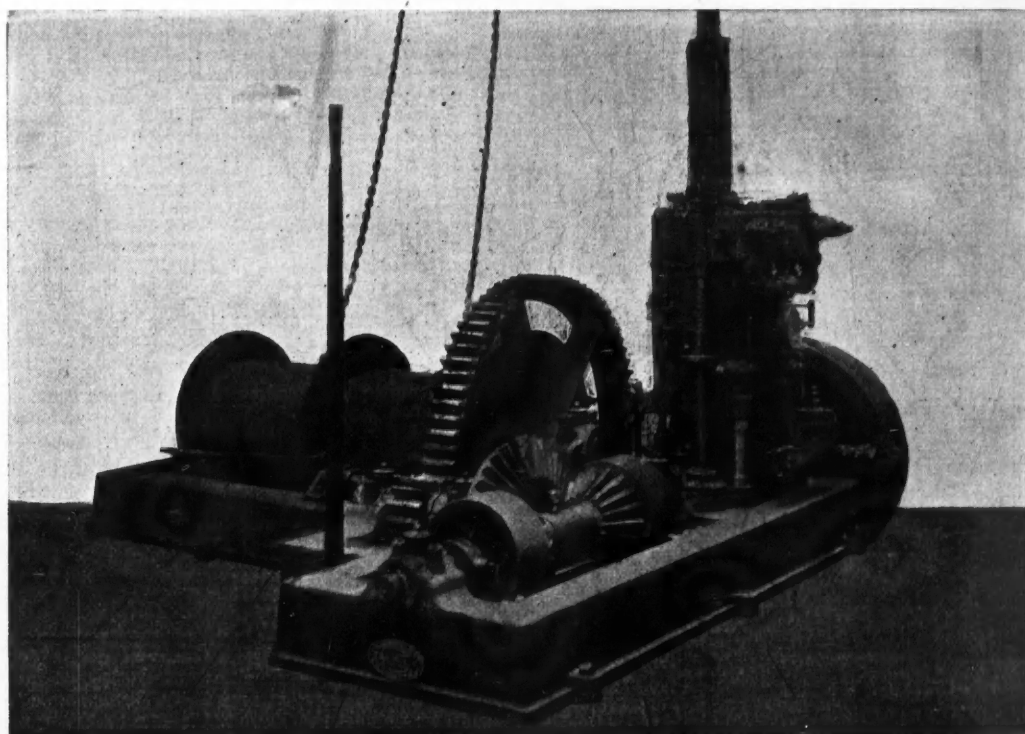
were: Charters Towers, 54,752 oz.; Crocodile Creek (which includes the Mt. Morgan), 34,336 oz.; Croydon, 20,545 oz.; Gympie Fields, 16,683 oz. In several of the districts the working of tailings furnishes a considerable part of the production, this source supplying 4,581 oz. in the Charters Towers and 4,416 oz. in the Croydon district. The total tonnage of quartz milled for the June quarter is reported at 131,527 tons; for the six months at 252,152 tons.

A GAS ENGINE HOISTING PLANT.

We have frequently referred in the columns of the *Journal* to the advantage presented by the gas or gasolene engine for mining use. The absence of a boiler, less weight of parts, economy in running and the possibility of successful work where the water supply is scanty or of bad quality are among the points presented. In the case of the gasolene engine it may also be said that the compact form of the fuel permits it to be transported to mines in mountainous regions at a smaller cost than any supply possible for a steam boiler.

A practical illustration of the use of a gasolene engine is shown in the accompanying illustrations of a hoisting plant recently completed and now in operation at the Santa Rosalia mine near Arizpe in the State of Sonora, Mexico. This is one of the gold mining properties recently opened, the number of which is rapidly increasing in Mexico.

The hoisting plant shown was built by the Union Gas Engine Company, of San Francisco, and is capable of raising one ton of ore at a speed of 125 ft. per minute. It is self-contained and so arranged that one car of



HOIST WITH GASOLENE ENGINE, SANTA ROSALIA MINE, MEXICO.

pump has high-pressure steam cylinder 16 in., low pressure 30 in. diameter, both 24-in. stroke. The plungers are 9 in. diameter with 24-in. stroke. The size of column is 8 in. inside. During the test, which was made July 9th last and continued for 8 hours 35 minutes, the pump was running at 80% of its rated capacity. The boiler pressure was 110 lbs., but at the pump this was throttled down to 75 lbs. The results of the tests were as follows: Revolutions per minute, 18½; displacement per minute, 481 gals.; slip, 5%; steam pressure, 75 lbs.; vacuum, 27 in.; coal consumed per minute, 11.8 lbs.; ash, 10%. The averages figured out showed 25,100,000 ft.-lbs. per 100 lbs. coal, or 28,000,000 ft.-lbs. per 100 lbs. combustible.

GOLD PRODUCTION IN QUEENSLAND.

We are indebted to Mr. P. F. Sellheim, of the Mines Department of Queensland, for advance proofs of the official statement of gold production of that colony for the quarter ending June 30th. We are therefore able to give the total production for the half year ending June 30th, as below:

	From Quartz.	Alluvial.	Total.
	Ounces.	Ounces.	Ounces.
March quarter.....	142,311	5,353	147,664
June quarter.....	142,992	7,436	150,428
Six months.....	285,303	12,789	298,092

At the usual estimate of Queensland gold the total for the six months is equivalent to 245,926 fine ounces. The figures indicate a small decrease from last year. The proportion of alluvial gold is small, only 4.9% of the total, which is less than in most of the Australian colonies.

For the June quarter the chief producing districts and their output

ore is raised, and at the same time the empty car is lowered. With one vertical lever the drum is revolved in either direction, or by placing the same lever in a vertical position, and by pressing down a foot lever, the load can be stopped at any point and safely held. The plant is a compact one, occupying small space, and well fitted for a mine of moderate size.

Phosphates in French Africa.—A letter in *La Politique Coloniale* of Paris describes the discovery of deposits of phosphate of lime at Kayes in Senegal! M. Mouffet, who reports the discovery, says that outcrops occur over a considerable extent of country, and that the phosphate rock examined is of high grade.

Comparative Chemical Intensity of Daylight.—Herr Wiesner has communicated to the Academy of the Sciences at Vienna a note on the comparative chemical intensity of daylight at Vienna, Buitenzorg (Java) and Cairo. His observations were made by the Bunsen-Roscoe method, in which the activity of the light is estimated by its power of causing the combination of hydrogen and chlorine. Mr. Wiesner finds that at Vienna the greatest chemical intensity of daylight is represented by 1,500 Bunsen-Roscoe units, while in Java it was 1,812 units. At Vienna the intensity at noon is on the average less than the maximum for the day in the ratio of 1 to 1.08, while in Java the corresponding figures are at 1 to 1.22. The annual range of light intensity at noon is, under similar conditions, 1 to 2.14 at Vienna, while in Java the range is only between 1 and 1.24. In both places the light is less intense in the afternoon than in the morning. At Cairo with a perfectly clear sky a considerable reduction in the photographic intensity occurs near noon, the maximum being never at that period of the day.

THE GREAT MOTHER LODE OF CALIFORNIA.*

By Harold W. Fairbanks.

The careful study which geologists have given to the great range of the Sierra Nevada has proved the fallacy of many views formerly held in regard to geology as well as the occurrence of ore deposits. Granite used to be considered the primitive crust of the globe and to be the most ancient of all the rocks, but in the Sierra Nevada it appears to be comparatively recent, geologically speaking. In the older text-books on the subject of ore deposits it is stated that gold in particular was formed in the most remote geological times. Careful observation has shown, on the contrary, that its deposition is still going on in localities where the conditions are favorable. The geological processes which have been at work modelling and remodelling the outer surface of the globe have never ceased for a moment and are still at work in an energetic way, as any careful observer can readily perceive.

The Sierra Nevada is not an ancient range of mountains geologically speaking. During the earlier geological times water covered the whole of the region now occupied by that mountain range. At the close of the period which we call the Jurassic there was an unparalleled disturbance along Eastern California and the bed of the sea was uplifted, the strata folded together and involved in an enormous area of molten granite. After this had cooled, and following the formation of an extensive system of faulting, which we notice occasionally even to-day in the shape of earthquake shocks, the gold-bearing quartz veins were formed. In all

of the present streams, which are often one to two thousand feet deep. They cross and recross the ancient gravel channels or flow by their side.

Gold-bearing veins are found in the mountainous portions of nearly the whole State of California. They occur in association with all the different kinds of metamorphic and eruptive rocks, but are particularly abundant in what has been termed the auriferous slate, or bed-rock series. Of all the many districts of the State, interest has centered most about that great mineral belt known as the Mother lode. So great has been and is still the charm of this name that people have sometimes refused to look at mines which were not on the Mother lode, while all mines thus located have often been considered valuable by those not familiar with the actual conditions.

Let us see first what is meant by the term Mother lode. So various have been the applications of the name that it is rather difficult to form a definition which shall please everybody. By many it has been held to embrace the whole of the mineral belt lying along the western slope of the Sierra Nevada, and some have even extended it into Mexico on the south and British Columbia on the north.

If we examine a geological map of the Sierra Nevada we shall see that, beginning in Mariposa County and extending northward until covered by the volcanic rocks in Plumas County, there is a widening belt of slates with associated dikes of eruptive rocks which have been referred to before as the bed-rock series. Gold-bearing quartz veins occur over much of this area, and an examination reveals the fact that they can be separated into three general divisions, the lower, the middle and the upper



THE MOTHER LODE OF CALIFORNIA.†

probability they were due to the agency of hot springs, whose number as well as volume must have been enormous.

At this time the Sierras were a high and rugged range, perhaps more elevated than at present. Through long ages the action of atmospheric agencies was exerted upon the mountains. Rain and frost disintegrated the rocks and the rushing rivers carried the detritus down to the valleys. Thus the mountains were gradually reduced to a level much below the present. The cañons widened to valleys and the high peaks gradually wasted away until the great range of mountains was reduced to a comparatively low, gently sloping elevation. While the most of the detritus had been transported to the San Joaquin and Sacramento valleys, much of the heavier material had gathered in the broad beds of the sluggish streams. The numerous quartz veins were, of course, also broken up and the freed gold being so heavy collected in the beds of these rivers. These constituted what are termed to-day the "auriferous gravel channels." They owe their richness to the enormous amount of erosion which had taken place, an amount undoubtedly equal to a layer of rock several thousand feet in thickness. After the auriferous channels were filled disturbances began to take place in the higher parts of the mountains, and streams of molten lava flowed down the beds of some of the rivers, while in others volcanic ash and boulders of the same material were brought down by the water. In this manner the auriferous gravel channels were buried by what we call the lava cap. Our study of the mountains has shown that after this event a change took place in the Sierra Nevada region. The mountains began to rise through the formation of a fault line along their eastern side until a great height was reached. The streams again began to cut into their beds, and owing to the hardness of the lava cap often formed channels by the side of the ancient beds. The new streams everywhere made use of the lowest depressions and the most easily eroded surfaces until to-day we see the result in the cañons

belts. The middle one is the most regular and continuous, and by far the most productive through most of the counties on the western slope of the Sierras. It is the one to which custom is almost unanimous in bestowing the term Mother lode.

The Mother lode might be defined as a mineralized zone of varying width sometimes reaching over a mile and extending continuously through the counties of Mariposa, Tuolumne, Calaveras, Amador and El Dorado, and possibly farther north. Through a portion of this distance it is characterized by the presence of a single remarkable fissure, while in others where the conditions are favorable it consists of a number of parallel fissures occupied by quartz veins. The lode is associated with a narrow and almost continuous belt of black slate called the Mariposa beds, while the veins occur either in the slate or on the contact between it and the diabase dikes, which are called by the miners greenstone.

The remarkable regularity and continuity of the fissures of the Mother lode are due in great part to the geological structure. This regularity in structure has been caused by the fact that the slates have not been crushed and broken, but uniformly tilted at a steep angle when the mountains were formed. The bedding of the slates as well as the contact between them and the eruptive dikes offer lines of weakness and fracture which allowed access of the mineral-bearing solutions.

As far as can be learned the term Mother lode was first applied to the veins worked at Nashville, 12 miles south of Placerville, in the latter part of 1850 or earlier part of 1851. In the use of the term Mother lode it is not intended to convey the idea of a genetic relation to other lodes or veins, although it is likely that from the size, extent and richness of this series of veins the early miners first used the expression partly with that significance, and partly, perhaps, meaning the source from whence came the great wealth of the surface placers.

The magnitude of the operations on the Mother lode gold belt since the earliest days of mining in California, and the importance of a thorough knowledge of the occurrence of its ores, are best illustrated by the fact that over the whole length of the lode, a distance of more than 100 miles, there

* Abstract of a lecture delivered before the San Francisco Gold Mining Exchange.
† The map here given is reproduced, by permission, from Mr. R. F. Morton's Mining Maps of California.

is an almost continuous series of mineral locations, comprising more than 500 patented claims and almost as many unpatented ones. The lode follows in a general way the northwest and southeast trend of the mountains, the veins conforming as a usual thing to the course of the stratification of the inclosing rocks, with a dip of 40° to 75°. None of the other belts begin to compare in extent or regularity with the mother lode.

A peculiar feature of many portions of the Mother lode is the presence of a green vein matter called mariposite. This is associated with the carbonates of lime, magnesia and iron. The large amount of iron is the cause of the red croppings over which one can sometimes walk for many miles.

As an example of the magnitude which the Mother lode sometimes assumes, Quartz Mountain, Calaveras County, affords a good illustration. The mountain is about 600 ft. wide, nearly half a mile long and 250 ft. high. It is composed wholly of quartz and vein matter, the latter consisting of mariposite and dolomitic material. In the middle and forming the summit is a great body of massive quartz. On the west side is another vein of quartz nearly as large, and on the east a smaller one. The vein matter between the large quartz veins is filled with a network of small veins.

The greatest exposure of quartz is on the Mariposa grant, in Bear Valley, Mariposa County. It is 20 ft. thick at the base, 150 ft. long and rises 80 ft., with a dip of 70°.

In Mariposa County the lode is characterized by two main veins; first, the one extending north from Princeton, through Bear Valley and along the Merced River, constituting the west vein at Coulterville; the other, beginning north of the Merced River, outcrops almost continuously through Coulterville to Moccasin Creek. The fissure continues into Tuolumne County, though containing but little quartz for a number of miles. It is widest at Quartz Mountain, and here, as well as north and south for several miles, there are two or more veins lying side by side.

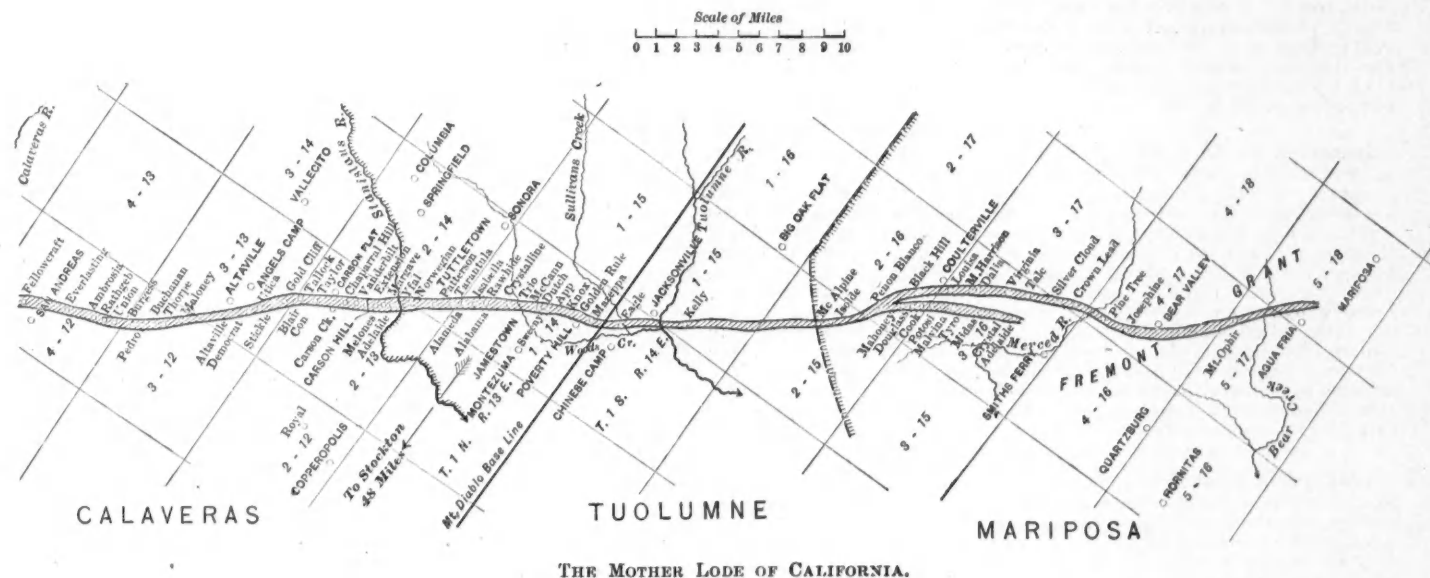
In Calaveras County it is most prominent at Carson Hill, Angels Camp and in the vicinity of the Mokelumne River. Through the center of the county it is considerably scattered. Through Amador County it is

I do not believe that in the case of the Mother lode the mineral character of the walls has influenced the deposit, that is, in the sense of the mineral contents having been derived directly from them. The mines of the lode are equally rich whether in slate or at the contact of slate with the greenstone or in any of the other rocks which occur. Good mines as well as poor mines can be found with any of these conditions. I do not think that any combination of wall rocks will insure a rich vein, but that the deposit of the metallic particles is dependent more upon certain chemical reactions taking place in the solutions circulating in the fissure. This is proved by the fact that of two veins lying side by side in the same mine, one may be barren and the other constitute the pay rock. What appears as walls on the surface or at any depth which can be reached is no indication whatever of the character of those deep-seated portions from which the circulating fluids abstracted their mineral contents. The real conditions are certainly complex, differing greatly in different locations; the same character of ore is rich in one spot and poor in another, without any apparent reason for it.

Any one mining district is apt to be characterized by certain peculiarities, and a study of these is the best guide to go by in that district, but they may be misleading in another.

An erroneous idea, which is common among prospectors, is that a vein should improve as the depth increases. Veins are very irregular both in depth and lateral extent; they pinch to mere seams and then swell to a thickness of many feet. These changes take place without any system, and are due to the very irregular manner in which the wall material has been removed by the mineral solutions, or possibly in some cases to the movements of the walls bringing two protuberances together.

It must be clearly borne in mind that the present surface of the Mother lode was not the surface at the time of the formation of the gold-bearing veins. Since that time several thousand feet of rock with the inclosed veins have been worn away. Consequently it is a mere accident what portion of the vein is at present exposed on the surface. As all veins swell and pinch, having shoots of ore between which are barren spaces, erosion may have left on the surface merely the lower end of a chute, which perhaps less than a hundred feet might exhaust, or it may equally



nowhere confined to a single vein, but instead consists of a series of them occupying a width of nearly a mile at times. The same condition of things exists in El Dorado County. The veins are scattered through the strip of black slates, though the main vein is usually found near the eastern edge.

The veins of the lode almost invariably dip a few degrees less than the inclosing rocks, and it is usual to find the foot-wall rocks, especially when they consist of slate, bent away from the normal dip, corresponding with that of the vein; hence it is probable that the hanging wall has been pushed up. If this is the case it would indicate an upward strain along the mountain range which tended to relieve itself in the fissure of the lode.

That the lode is a true fissure is amply proved by the universal presence of gouge seams. The movement of the walls of some of the fissures has been immense. This is made easy because of their length. The great width of the ground-up wall rocks, sometimes over 30 ft., indicates a long continuance of the movement, probably more or less oscillatory, and with a general rise of the hanging wall. The greatest depth to which the lode has been opened, 2,200 ft., shows no weakening of the vein or deterioration of the ore. It is not likely that any high degree of heat will be encountered at any depth that can be reached, for no great increase has yet been noticed.

The depth to which gold-bearing veins extend is an open question. It is probable that they will be found to hold out along the Mother lode to the greatest depths at which the expense of handling the ore will permit them to be worked. They may extend to those depths at which the pressure is so great that the rocks move through plasticity rather than by faulting.

In studying the occurrence of gold and its ores along the Mother lode, no relation has yet been found to exist between the character of the walls and the poverty or richness of the quartz. It is recognized that a vein lying at the contact of two different formations is more regular and the mineral contents more evenly distributed than one lying in a formation which does not easily afford a regularly defined fissure.

well have reached merely the upper end of such a chute. In the former case the vein would grow smaller or poorer, and soon a barren stretch be reached, which might be nothing more than a seam of clay or broken rock. In the latter case, on the contrary, the phenomenon would seem to support the view that veins grow richer in depth. In the case of the veins which soon pinch out a little perseverance would be rewarded in almost all cases by again encountering the ore body. This condition of things has been illustrated very often along the Mother lode. Many mines have been abandoned because it was supposed that the vein had given out. Some of these were reopened years later, and with more careful exploitation have been found to be valuable still. A thorough knowledge of the occurrence of ore deposits would have prevented a large number of these failures.

Many failures also occur in mining because the lack of a thorough study of the kind of treatment which the particular ore requires in order to save the gold. Probably as many failures have occurred for this reason as for any other.

There is a change of importance in the character of the ore of many mines as the depth increases, which is frequently overlooked in determining the kind of mill to erect. The upper portion of most ore deposits is more or less completely oxidized, leaving the gold in a free state, that is, uncombined with other minerals; while below the oxidized zone, which varies in depth in different places, the conditions are different. The depth of the alteration is conditioned by the extent to which the deposit has been affected by atmospheric agencies. Below the line of oxidation, which is sometimes called the water line, the precious metals are often wholly or in part combined with base metals, from which they have to be separated by either roasting and chlorination or by the cyanide process. Along the Mother lode much of the gold is found in the free state at the greatest depths reached, but in other portions of California there is often very little free gold to be found after getting down a few hundred feet.

There is, without doubt, no such series of gold-bearing veins as the Mother lode to be found elsewhere in the world. While the number of

patented mines already exceeds 500, mining here is yet in its infancy. With more careful exploitation and better means of saving the gold many more mines can undoubtedly be operated. It is a fact that wild-cat speculation has had, and is still having, a baneful effect upon the industry, so that many people have come to look with suspicion upon all mining ventures because of the number of failures. I believe the time is coming when mining will be considered as legitimate a business as any other and that it will demand less risk for the investment of money than is required in many other pursuits.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

ADVERSE CLAIMS TO MINERAL LANDS.—The law of the United States (Sec. 2,326) providing that one filing an adverse claim during the period provided for publication of an application for a patent for mineral lands shall "commence proceedings in a court of competent jurisdiction" to determine the right of possession, authorizes either an action at law or a suit in equity, as may be appropriate.—*Perego vs. Dodge* (16 Supreme Court Reporter, 971); United States Supreme Court.

TESTIMONY AS TO QUALIFICATION OF MINE SUPERINTENDENT.—A witness who testified that he had been engaged in mining 2½ years; that the duties of the superintendent of the mine in question were, together with his laborers, to take down from the roof of the entry of the mine, and load, slate or rock, and that he was familiar therewith; and that he had known the superintendent 4½ years, and had seen his work often, was competent to testify as to whether the superintendent was qualified to act as such.—*Buckalew vs. Tennessee Coal, Iron and Railway Company* (20 Southern Reporter, 606); Supreme Court of Alabama.

Iron Production in Belgium.—For the six months ending June 30th the total output of wrought iron in Belgium was 390,236 tons, showing an increase of 26,171 tons over last year. The total this year included 64,677 tons of plates and 192,661 tons of bar and other finished forms. The steel production for the half year included 279,841 tons of steel ingots. For the seven months ending July 31st the production of pig iron was 514,010 tons, showing a decrease of 27,090 tons as compared with the corresponding period in 1895.

Strength of Welds.—Some experiments made at the engineering laboratory of the University of Michigan to determine the strength of welded joints are especially interesting. Of a number of the specimens tested not one broke in the weld; as some of these were slightly larger at the weld, a new set of specimens was prepared and a cut taken from each in the lathe to reduce the piece to a uniform diameter throughout its length between the jaws of the testing machine. Common round iron was used. Three bars were taken at random, 1½ in., 1 in. and ¾ in. in diameter. From each bar four specimens were prepared, one solid, one lap-welded, one butt-welded and one split-welded. The results show that only two specimens, both lap-welded, broke at or near the weld; the fracture in one case was slightly crystalline and in the other fibrous. The strength in no case departed widely from the strength of the solid parts. It would seem from these tests that with skillfully made welds we may expect to realize nearly the full strength of the original bar.

A By-Product Plant in Scotland.—At the Glengarnock Iron Works, in Scotland, says the *London Iron and Coal Trades Review*, the gases are carried from the blast-furnaces to the ammonia plant, where the ammonia and tar are sucked out of them by three sets of coupled horizontal engines specially provided for that purpose. After being so treated the gases are returned to the steel-works by a large culvert of 96 in. diameter and 500 ft. in length, at a pressure of 1½ to 3½ in. At the steelworks the same gases raise the steam in a battery of 21 horizontal Lancashire boilers (independent of the ironworks boilers), at a very trifling cost, all the coal used being a little dross with which to cover the fire bars. Between the blast furnaces and the ammonia plant there are about three miles of condenser tubes, the pipes being 2 ft. in diameter. The ammonia plant is on the Dempster system, and comprises the usual arrangement of dust boxes, condensers, washers and scrubbers. The scrubbers are of large capacity, and 105 ft. in height. The average yield of by-products is about 21 lbs. of sulphate, 112 lbs. of pitch and 7 to 8 gals. of oil per ton of coal used. The by-product plant is carried on by another concern, known as the Glengarnock Chemical Company, which pays to the Glengarnock Iron and Steel Company a certain agreed percentage of the proceeds realized from the sale of the by-products.

Straightening of a Chimney Stack.—The accomplishment of a job of this kind in a very ingenious way, at the brick and tile works of the Standard Concrete Manufacturing Company, Earnest, Pa., under the supervision of Mr. B. W. Seamans, the company's superintendent, is described by *Engineering News*. The stack is 122 ft. high, 11 ft. square at the base, tapering somewhat at the top, and weighs 400 tons. The walls are 36 in. thick. The top was found to be leaning 45 in. from a vertical line. To sink the side 4½ in., 10½ in. of brick work was removed from the foundation on three sides. As the bricks were removed square blocks of wood were inserted, one after the other, until three sides of the stack rested on the blocks. Between the blocks, supporting the stack temporarily, substantial brick piers 6 in. high were built, leaving a space 4½ in. between the top of the piers and the bottom of the undermined brickwork. The blocks were then set on fire and all were kept burning briskly. If one burned faster than the others the fire on that particular block was checked, so that all were made to burn uniformly, and as the blocks were being reduced to ashes the stack slowly righted. As the top gradually swung back through the 45-in. arc small fissures appeared near the base. Into every crevice a steel wedge was driven, maintaining the solidity of the walls. The entire work consumed one day, and the reduction of the wooden blocks to ashes required an hour.

The Zinc Industry in Poland.—Among the different branches of the mining industry in Poland the working of zinc occupies, after that of coal, the most important place. It is exclusively concentrated in the environs of the town of Olkusz. The ore which is found in the greatest abundance is calamine, which yields from 7% to 30% of zinc. Zinc-blend is also found but in smaller quantities. The ore is carried either by carts or by the Ivangrod-Dombrowa railway to the Bendrin and Pauline works, a distance of about 25 km. There are only two rolling mills—one at Sosnowice and the other at Slawkow. There is also a factory of oxide of zinc. A great increase in the production took place in 1895, compared with 1894. The number of work-people employed in the zinc industry in Poland amounts to 2,100, of whom 1,400 are engaged in the mines and 700 in the workshops.

A Large Hydraulic Press.—*London Engineering* describes a 1,200 ton hydraulic wheel bossing and forging press, which Messrs. Fielding & Platt, of Gloucester, England, have recently built, and which is now being used by the Gloucester Railway Carriage and Wagon Company. The press is worked from the 1,500-lb. standard accumulator, pressure which, by means of a pair of intensifiers, is increased to 3,000 lbs. or 5,000 lbs. per square inch according to the necessities of the work in hand. The press is of massive construction and proportions, the tables being of cast iron, while the cylinders are of steel. The press is provided with cylinders in both the top and bottom tables, the upper ram being used for firmly holding the dies together, while the lower ram does the actual pressing of the forging. Provision is made for enabling the upper cylinder to be filled with water from an overhead tank, thus making a great saving in pressure water, as a consequence of which the amount of high-pressure water used when pressing the wheel is relatively exceedingly small. As the valves in use are of large proportions, the press is worked quickly, the wheels having been made at the rate of 12 per hour.

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 SEPTEMBER 1ST, 1896.

- 566,736. **HYDRAULIC NOZZLE.** Francis M. Bookwalter, Springfield, O. The combination with a stationary section divided into branches, each branch being substantially equally curved, of a movable section rotatably mounted between the branches, and having its parts adjacent to the branches also substantially equally curved.
- 566,794. **SCREEN AND SEPARATOR FOR COAL.** ETC. Calvin W. Parsons, Scranton, Pa., Assignor of one-half to Thomas J. Foster, same place. The combination of a series of upper, and a series of lower longitudinal grading-bars, the distance between the bars of the one series being greater than the distance between the bars of the other series; an apron provided with transverse bars traveling over the series of longitudinal bars in opposite directions, and means for moving the apron.
- 566,834. **CONCENTRATOR.** Reuben D. Woodward and Willard C. Brown, Leadville, Colo. The combination with a frame sieve, of means for operating the sieve, of a rock-shaft having a crank at one end, a pan loosely mounted on the rock-shaft and below the same, an arm rigid with the pan and projecting upwardly therefrom, the length of the arm being increased over that of the crank, agitator-knives carried on the rock-shaft and within the pan, a link pivotally connected to the arm, a second link pivotally connected to the crank, and means for driving the links.
- 566,848. **CABLE-HOIST.** Wilhelm Dusedau, Trenton, N. J. A carrier for the hoisting-rope comprising a main frame, upper and lower sheaves bearing upon the cable and gripping-sheaves bearing upon both sides of the hauling-rope and pivoted frame.
- 566,880. **APPARATUS FOR COATING METALS.** Wyndham P. Thomas, Penarth, and Robert Davies, Whitechurch, England; said Davies assignor to said Thomas. The combination in a trough for flux or other material mounted over the adjoining edges of a coating-pot and a dipping-pot both filled with metal, of a curved bottom to form a lower guide, slots in such bottom sealed by the metal in the pots, upper guides above such bottom passages through such guides and a sliding rod above the entering slot. A coating-pot filled with metal, of a sealed fluxing-chamber at the entering end thereof, fixed guides in and adjustable guides partly in the metal therein, a pair of rolls at the exit end thereof, guides to lead the plate thereout to the next stage of its treatment, and a sealed chamber for grease or other material placed therein between the chamber and the rolls.
- 566,894. **APPARATUS FOR EXTRACTING GOLD AND SILVER FROM ORE.** Paul Danckwardt, New York, N. Y., Assignor to the Electro-Cyanide Gold and Silver Extracting Company, same place. The combination of a revolving barrel having an amalgamated copper lining to form a negative pole, with a pair of heads, and with a series of insulated inclined blades secured to such heads and having overlapping edges to form the positive pole.
- 566,901. **ACTYLENE-GAS GENERATOR.** Henry F. Fuller, Chicago, Ill., Assignor to Walmsley, Fuller & Company, same place. The combination of an outer tank, an inner tank seated in the outer tank and containing a seat for the solid material, a gas-holder rising from and opening into the inner tank and an expansion-chamber formed between the holder and the outer tank.
- 566,921. **APPARATUS FOR SEPARATING METALS.** Jonathan A. Mays, London, England. Patented in England May 4th, 1893, No. 8,964, and in Germany April 3d, 1894, No. 78,706. The combination of a revoluble vessel, a molten menstruum carried thereby, means for feeding the material to the vessel in such relation to the menstruum as to be forced through by centrifugal force, and an eduction passage or passages through which the purified lead passes out.
- 566,992. **MACHINE FOR PULVERIZING AND AMALGAMATING ORES.**—James Manes, Colo., assignor of one fourth to William James Girvin, same place. The combination of three pairs of rolls arranged one pair above the other, the rolls of the upper and lower pairs contacting with each other, and with the rolls of the middle pair, whereby six crushing-points are formed between the six rolls.
- 567,068. **MINER'S KNIFE.**—George M. Bergen, Leadville, Colo. The combination of a handle having in its upper edges, upon each side of the knife seat or groove, two transverse semicircular notches, one notch being of less diameter than the other, and a pin projecting into the knife seat or groove in line with notch, in combination with a hinged blade having near its heel a semicircular notch adapted to register with the slots and the pin projecting through the blade into the notch.
- 567,099. **MINER'S LAMP.**—Charles H. Hubson, Mount Carmel, Pa., Assignor of one-half to William S. Thiriwell, same place. The combination with the main body thereof forming the oil-receptacle, of a spout or wick-tube communicating with the receptacle at or near the base, and an air-supply tube connected with the lamp and passing from the body of the lamp into the wick-tube or spout in such manner as to serve the double purpose of a brace for the spout and a conduit for supplying fresh air to the flame.

PERSONAL.

MR. R. G. NEWBURNE, of Kinston, N. C., has accepted a position as chemist with the Virginia & Carolina Fertilizer Company, of Richmond, Va.

MR. RICHARD WHITE, an experienced miner of Grass Valley, Cal., formerly connected with the Bullion and North Banner mines, has gone to Oregon to accept a position as foreman at a mine there.

MR. DANIEL MACLAREN, of the Creston Gold Mining Company, of Creston, Colo., is on his way to Colorado from the Rainey Lake gold district in Minnesota, where he had been for a number of weeks.

MR. HOWARD W. DUBOIS, of the firm of MIXER & DUBOIS, of Ishpeming, Mich., and Philadelphia, Pa., has just returned from Colorado and Wyoming, where he had been investigating gold mines for Eastern people.

MR. W. L. HONNOLD, for the past three years assistant superintendent of the Manoning Ore Company at Hibbing, Minn., has resigned to become superintendent of mines for the California Exploration Company in Calaveras County, California.

MR. ALFRED MANNESMANN, president and general manager of the Mannesmann Tube Company, of Adams, Mass., has been in Chicago for several days on business in the interest of his company. The works of this company at Adams are being enlarged, and it is the intention to introduce more of the Mannesmann specialties in tubing into this country.

MR. JOHN W. PEW has been appointed secretary of the Mono Mining Company, vice M. E. WILLIS, resigned, and the office has been removed from the Nevada Block to rooms 15 and 16, 310 Pine street, San Francisco, Cal. Mr. Pew is now Secretary of all the leading Bodie mining companies, viz.: Standard Consolidated, Bodie Consolidated, Bulwer, Mono and Summit.

PRINCE HILKOFF, Russian Minister of Ways of Communication, is now on his way to Siberia. He will travel by train, post-horse and steamboat through Eastern Russia and Siberia to Vladivostok. From there one of the new cruisers of the Russian Navy will take him to Japan and thence to San Francisco, where his arrival is expected about October 1st. He will spend a short time studying our system of rail and water transportation, and will probably return to Russia by way of New York.

MR. HERMANN THOFERN has returned to New York from Anaconda, Mont., after an absence of some duration. He has completed the construction of the electrolytic copper refinery now being operated by the Anaconda Copper Mining Company, which is built in the most improved style, and is one of the best now in operation in this country. Mr. Thofern has had an audience with Li Hung Chang concerning copper matters, during which the Viceroy said that he had considerable interest in copper mining in China, and that a large part of the product is being sent to Europe for treatment, but no allowance is made to the Chinese copper shippers for the gold and silver contained in their product. Li Hung Chang made overtures to Mr. Thofern in relation to building a plant in China for the treatment of this copper. Negotiations will be continued, and if the result is satisfactory, Mr. Thofern expects to go to that country within a few months.

DR. PORTER, a graduate of the Columbia School of Mines, New York City, has, it is reported, been appointed to fill the vacant chair of mining and metallurgy at McGill University, Montreal, Canada. After graduating he spent two years in the field study of the economic geology and mining and metallurgical possibilities of certain of the Southern States. For his investigations during this period he, in 1884, received from Columbia the degree of Doctor of Philosophy. Dr. Porter was then requested to establish a department of mining and metallurgy in the University of Cincinnati. His work was most successful and he gradually built up a practical laboratory for milling and metallurgical investigations. After an experience of four years in the university he entered upon the active practice of his profession and for the next two years was engaged in the expert examination of mining properties and in carrying out metallurgical tests. During the last seven years he has been engaged in general engineering, his time having been occupied in field work in copper and lead, in hydraulic mining, in the mining and milling of gold and in work on iron, steel and coal.

OBITUARY.

WILLIAM H. HOPKINS, the pioneer in the wholesale coal trade on Narragansett Bay, died September 2d in Seekonk, Mass., aged 80 years.

H. FRANK DAVIS, owner of the Davis coal mines in the northern part of Christian County, Ky., died at his home at Empire August 31st, aged 50 years.

THOMAS A. BROUGHTON, of Chicago, formerly vice-president and general manager of the Crescent Coal and Mining Company, and more recently president of the American Coal Mining and Transportation Company, died September 3d. He was born in Simcoe, Ontario, Can., in 1863.

JOHN GARDNER WHITE died September 7th at his home in Old Cambridge, Mass. He was born in Boston in 1833. He graduated from Trinity College in 1854, and in 1857 received from the college the degree of Master of Arts. After leaving college Mr. White became a civil engineer, and was engaged in surveying the Florida & Alabama Railroad. He left this business to engage with the banking firm of Brown Bros. & Company, Boston. Several years later he formed the firm of White & Howe, one of the leading coal-mining firms of Boston, and was a member of this concern for many years.

DR. GEORGE BROWN GOODE, assistant secretary of the Smithsonian Institution, and in charge of the National Museum, in Washington, died September 6th, at his residence, at Lanier Heights, a suburb of Washington. He was born at New Albany, Ind., February 13th, 1851; was graduated at Wesleyan University in 1870, and was in 1871 placed in charge of the college museum. He went to Washington in 1873 as one of the staff of the Smithsonian Institution. During his connection with the institution, he had been in charge of various divisions requiring great scientific knowledge and was sent to the Philadelphia Exhibition in 1876 as director of the natural history division. Later he was appointed United States Commissioner to the International Fishery Exhibitions held in Berlin in 1880 and in London in 1883. Dr. Goode was also a member of the Government Executive Board for the New Orleans, Cincinnati and Louisville Expositions in 1884. The State Department had his services in 1877 as statistical expert in connection with the Halifax Fisheries Commission. He represented the Smithsonian Institution at the Columbian Exposition, and was a member of the Board of Awards at the Cotton States and International Exposition at Atlanta last year. His published papers on ichthyology, museum administration and fishery economy number more than 100.

JOSEPHUS F. HOLLOWAY, whose death was briefly noted last week, was born at Uniontown, Stark County, O., in 1825. As a lad he was apprenticed to the machinist's trade, at Cuyahoga Falls, O., but finished his trade in an Eastern shop. He then went to Cleveland and worked for some time on the engines built for the side-wheel lake steamers, and then was employed setting up and running Rogers' locomotives at Sandusky. Later at Cleveland he, with another, built the engine of the propeller *Niagara*. Soon after he took charge of the engine construction for some Ohio River steamers and then did similar work at Wilmington, Del. A later engagement was at coal mines near Frostburg, Md., building machinery for hauling coal, building railroads and superintending mining operations. Early in 1860 Mr. Holloway became connected with the Cuyahoga Steam Furnace Company, Cleveland, as superintendent and engineer, and in 1872 was made president, and for 27 years was connected with the establishment. In 1887 came its transfer to other hands. Then Mr. Holloway connected himself with Henry R. Worthington, New York, and has since devoted himself to hydraulic engineering. For the last two or three years he was consulting engineer of the Snow Steam Pump Company, Buffalo, N. Y. In 1884 and 1885 he was president of the American Society of Mechanical Engineers, and for a number of years was a vice-president of the American Institute of Mining Engineers, holding that office at the time of his death. While a resident of Cleveland he was president of its Civil Engineers' Club.

SOCIETIES AND TECHNICAL SCHOOLS.

HUNGARIAN MINING AND GEOLOGICAL CONGRESS.—A meeting will be held in connection with the Millennial National Hungarian Exhibition on September 25th and 26th, 1896. The following sections have been constituted:—(a) Geology, (b) Coal-mining, (c) Metal-ore Mining, (d) Dressing of Ores, (e) Metallurgy, (f) Iron-ore Mining and Metallurgy, (g) Rock Salt Mining, (h) Mintage, (i) Mining Legislation. Excursions of two or three days' duration will be made to some of the most interesting mines, iron-works and gold districts.

CANADIAN MINING INSTITUTE.—The meetings of the Ontario Branch of this Institute were held at Rat Portage, Ont., this week, commencing Tuesday, September 8th. A number of papers were presented on various topics, and excursions made to the Sultana, Regina and other gold mines now in active operation in the Lake of the Wood region. A public meeting was held under the auspices of the Institute to discuss suggested amendments to the Mines Act (Ontario), and Customs regulations respecting machinery and explosives.

KINGSTON SCHOOL OF MINING.—The prospectors' classes carried on in mining centers under the supervision of this school are increasing in popularity. Some 130 students have already attended the three classes held in Western Ontario by Mr. Wm. Hamilton Merritt, lecturer on mining engineering at the school. This form of practical instruction was inaugurated four years ago, and since that time the government of the Province has given a grant to carry on the classes. The direct object of the instruction is to enable the prospector to make field tests of the value of the ore he finds, and to recognize the common rocks and ores he may come in contact with. The indirect benefit is more often to save him unnecessary trouble by enabling him to satisfy him-

self when he finds something good enough to leave alone.

INDUSTRIAL NOTES.

The Bethlehem Iron Company has shipped a turret weighing 40 tons for the Iowa to Cramp & Sons, Philadelphia.

The Kelley Nail and Iron Works, Ironton, O., and the Bellefontaine Works have resumed operations in full, after an extended shut-down. The two plants give employment to 1,200 men.

The Lake Superior Iron Works, of Hancock, Mich., have contracted to furnish four 16-ton bed plates for the compressor engine of the Superior engine-house of the Calumet & Hecla mine.

The Sterling Emery Wheel Works, at Tiffin, O., which shut down a few weeks ago, will resume operations shortly with a full force of hands, enough orders having been received to warrant this action.

The Bethlehem (Pa.) Iron Company's steel mill shut down September 9th, for want of orders. Over 600 men are thrown out of work. The company is also laying off men at the blast furnaces, and they will shortly be run on half time.

The American Tin Plate Factory, at Elwood, Ind., resumed operations September 8th with 11 out of 16 mills, and 1,000 men went to work. The other mills will resume operations within a short time, when the other 250 men will be given employment.

The Hollidaysburg (Pa.) Iron and Nail Works resumed operations September 7th after a long period of idleness. The plant has been enlarged and fitted with improved machinery during the shut-down. Two hundred and fifty men will be employed.

Herr Krupp, of Essen, Germany, has bought the Germania Shipbuilding Works for 6,325,000 marks (\$1,480,000). The entire plant will be transferred to Herr Krupp October 1st, and the capacity for building ships will be increased considerably.

The Cambria Iron Works shut down September 5th in practically every department for an indefinite period, throwing at least 2,000 men out of employment. About 3,000 men will be given a few hours' work a week. Lack of orders is given as the cause of the suspension.

The Abner Doble Company has moved its offices, warehouse and engineering works to the southwest corner of Fremont and Howard streets, San Francisco, Cal. This building was recently purchased by the company and altered and enlarged to meet the requirements of their increasing business.

The Acetylene Light, Heat and Power Company held its first annual meeting in the company's offices in Philadelphia, Pa., September 8th. The old Board of Directors was re-elected, as follows: T. Morris Perot, Charles C. Adams, Edward C. Napheys, Joseph A. Vincent, W. W. Ingram, Samuel L. Kent and Rudolph M. Hunter.

The Robert Aitchinson Perforated Metal Company, of Chicago, has within the past three months placed on the market a new battery screen in which a patented hardening process has improved the screen wonderfully. A very pretty catalogue has been issued by this company showing various designs of perforated metal used for mining purposes.

Messrs. Chas. H. Besly & Company, of Chicago, have recently disposed of a number of their Gardner grinders, the latest purchaser being Tiffany & Company, of New York, who have taken the machines for use in their manufacturing department. Mr. Besly reports a steadily increasing demand for his specialties from the mines, and regards that class of trade as being worthy of much attention.

The Dow Pump Company, of San Francisco, Cal., has about finished a complete pumping plant for Sunol, consisting of electric motor, Dow triplex pump, wiring, poles, pump-house, tank, etc.; a combination air and circulating pump for steamer *Barclay Golden*; sinking pump of 300 gals. per minute for a mining company at Placerville; underwriter's fire pump for Red Bluff; complete outfit of pumps for Sierra Lumber Company; an electric driven pump for Banner mine, Oroville, Cal.; large sinking pump for Blanchard mine and an air-pump for Guatemala.

The Eureka Cast Steel Company, of Chester, Pa., has had a receiver appointed in the person of Samuel Lees, of Philadelphia. The receiver's bond is \$25,000. The bill in equity, which was filed by H. B. Faunce, a stockholder of the company, alleges that in addition to a floating indebtedness of \$50,000, there are liabilities of about \$17,000, with assets amounting to \$12,500. No opposition was made to the application for the receivership. The company only recently resumed, after having been in the hands of an assignee.

The American Clay Working Machinery Company is the title under which the two largest concerns in the country devoted to the manufacture of clay-working machinery were consolidated in Bucyrus, O., on September 2d. The firms entering this combination are the Frey-Scheckler Company, of Bucyrus, and J. W. Penfield & Sons, of Willoughby, O. Both companies have extensive plants, and are the leaders in their lines.

The officers of the new company are as follows:

President, J. W. Penfield; first vice-president, R. C. Penfield; second vice-president, C. W. Fisher; secretary, W. W. Reehl; treasurer, J. B. Gormly; general manager, W. C. Lemert; directors, C. W. Fisher, J. B. Gormly, George Donnenwirth, W. C. Lemert, J. W. Penfield, L. W. Penfield.

The Denver Engineering Works, of Denver, Colo., has shipped to the Kansas City Smelting Company of Argentine, Kan., three revolving barrels for chemically treating ores. The barrels are 6 ft. diameter, 12 ft. long, made of California Redwood 6 inches thick, held together with copper bands and bolts, and also provided with copper manholes and covers. These copper castings are the largest and heaviest ever cast in the west. They are also shipping five Bruckner Revolving Cylinders to the Germania Lead Works of Utah. The cylinders are 8 ft. 6 in. diameter, 22 ft. long, weighing, complete, about 17 tons each, and contain many new improvements over the old style Bruckner. The company reports business better than this time last year, particularly in the electrical department, having lately installed several electric plants with their new automatic high-speed engine, and having booked orders for several more plants in this country and Mexico.

TRADE CATALOGUES.

Messrs. Fraser & Chalmers, Chicago, Ill., have issued a number of leaflets and catalogues bearing on the mining and milling machinery manufactured by them. The subjects of the leaflets are as follows: Hydrometric sizers and Frue Vanners, Steel Moulds for Copper and Lead, Notable Performance of a Triple Expansion Corliss Engine built by Fraser & Chalmers, Advantages of Superior Adjustment in Fraser & Chalmers' Comet Crusher, A Great Pumping Engine at a Great Gold Mine, A Milling Record Obtained by Good Management and Good Machinery, Methods of Handling Ground for Woods' Dry Placer Miner, Woods' Dry Placer Prospecting Machine, Bessemer Forged Steel Shoes and Dies, Huntington Mill Rings, Alex Gray's Patent Cage Chairs, Cast Steel Shoes and Dies, Testimonials of Reidler Pumps and Compressors, Portable Hoisting Engines.

The catalogues recently published are the following: New No. 35 on the Otto Aerial Tramways, which consist of two carrying ropes forming tracks on which the carriers run, the ropes being carried by standards of wood or iron of varying lights. They can be constructed and successfully operated regardless of the contour of the surface and physical conditions of the ground. By their use such materials as ores and merchandise in bulk, bags, boxes or barrels can be readily transported.

Catalogue No. 51 is on Woods' Dry Placer Miner, a machine designed to save not merely the coarser particles of gold, but also the finer, including that known as flour gold. The material treated must be only so dry as not to coagulate after leaving the disintegrator or to adhere to the riffles or other parts of the machine. It will effect a separation of the gold from heavy material such as black sand, which always contains a large amount of metallic iron.

Catalogue No. 24 treats of the Reidler Pumping Engines, whose peculiarity lies in the valves. Reidler valves are made to operate with a liberal lift to avoid throttling and are worked by a positive valve gear similar to that of an engine.

Catalogue No. 46 takes up the Reidler Air and Gas Compressors, whose valves work on the same principles as in the Reidler pumps.

Catalogue No. 32 is in reference to ore sampling machinery, more particularly the H. L. Bridgman type. The machine gives entirely independent double (duplicate) samples on every lot of material; it gives three or more (quarterings) on each sample during a single passage of the material.

Catalogue No. 52 is on the Alsing Patent Continuous Feed and Discharge Pulverizing Cylinder. The grinding is produced by the sliding, tumbling and rolling inside the cylinder of a great number of spherical flint pebbles mixed with the substance to be ground, the movement being caused by revolving the cylinder at a regulated speed.

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.

ALASKA.

BERNER'S BAY AND JULIAN MINING COMPANY.—The 10-stamp mill is completed and is to be put in operation at once. The ore is said to be high and showing free gold.

MEXICAN MILL.—Work on the addition to this mill, on Douglas Island, is gradually drawing to an end. The mill gives an additional 60 stamps, mak-

ing the full complement 140, and it is anticipated that all these stamps will be dropping within a few days on ore from the Alaska-Mexican mine. This improvement will nearly double the output of the property.

NOWELL GOLD MINING COMPANY.—It is reported that this company has purchased the Aurora lode for \$19,825.

SILVER QUEEN COMPANY.—The payroll of this company at Sheep Creek now amounts to \$9,000 a month. Mine and mill are running very satisfactorily.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

BLUE LAKES WATER COMPANY.—This company, which is now furnishing power to several mines near Jackson, is about to erect a large electric power transmission plant at Big Bar Bridge, on the Mokelumne River. Power and light will be furnished at low rates.

CENTRAL EUREKA.—This mine, on the mother lode, is now equipped with a fine plant, consisting of an air-compressor, two pumps, etc. A month's work was required to lay the pipe extension and to place the machinery in position. The shaft is to be cleaned out and repaired, when development work will be commenced.

DEL RAY.—The ledge in this mine, at Middle Bar, near the Mokelumne River, shows 3 ft. at a depth of 50 ft., with fair grade ore. This property is being worked under bond by San Francisco parties.

BUTTE COUNTY.

(From Our Special Correspondent.)

BUTTE COUNTY MINERS' ASSOCIATION.—This association met last week for the purpose of reorganizing to conform to the new constitution and by-laws of the California Miners' Association. Julian Sonntag, secretary, assisted the Butte miners in reorganizing. Butte County will probably send a large delegation to the California Miners' Association Convention, which will be held in San Francisco on November 10th.

GOLDEN FEATHER CHANNEL.—The property of this company is located on the Feather River, just above the Oroville Bridge. A great deal of money has been spent to bring water on the ground. The two elevators run by water power raise 18,000,000 gals. of water each, in 24 hours more than 50 ft., or 200 tons of gravel per hour the same distance.

CALAVERAS COUNTY.

(From Our Special Correspondent.)

ESMERALDA.—This mine is being re-opened. The old shaft has been retimbered to a depth of 160 ft., and the water is being hoisted out by means of a large iron bucket.

THORPE.—Another rich strike is reported to have been made recently in this mine.

EL DORADO COUNTY.

GENTLE ANNIE.—This quartz mine, near Placerville, is reported to have been bonded by its owners, John Melton and G. B. Parlow, to Thomas T. Lane. The bond is to run for two years. Mr. Lane has the privilege of purchasing it at a price exceeding \$200,000. At present there are on the premises a mill of ten stamps of 750 lbs. weight, improved vanners and other reduction machinery. There are two veins from 50 to 80 ft. apart, and from 10 to 40 ft. wide, running between the porphyry hanging and the slate foot-wall. The quartz is reported to carry from 2 to 2½% of sulphurets. The development consists of two tunnels both on the ore body, one on the mill level, 70 ft., and the other at the north end of the claim, 400 ft. in length. A working shaft intersects the tunnel at the 100-ft. depth and continues 140 ft. below it, partly on the incline and partly vertical.

KERN COUNTY.

(From Our Special Correspondent.)

Near Summit, four miles east of Goler, a coal vein said to be 6 ft. thick and 80 ft. in width has been discovered.

MONO COUNTY.

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

BODIE CONSOLIDATED MINING COMPANY.—200-ft. level—Gildea raise advanced 5 ft., being cut by a fault. Have stope south to old works and north 8 ft. 300-ft. level—Old raise on Fortuna vein west of shaft cleaned out for 35 ft.; ground very badly broken. South drift Burgess ledge advanced 11 ft., showing 2 in. of good ore on foot wall. North stope from south raise above this drift driven 12 ft., breaking through to old north stope and showing a few inches of good ore. 400-ft. level—Old fills in Fortuna have been stope out about 15 ft. above the level from drift running west of old incline station. It will continue to yield a few tons of fair-grade ore weekly. Surveying work is being constantly continued. Have been running ore steadily through Standard mill during the week; this work in addition to cleaning up the old mill is being continued.

BULWER CONSOLIDATED MINING COMPANY.—200 ft. level—Stopes above No. 2 crosscut south have broken into three seams, making the whole stope 5 to 6 ft. wide and the whole grade of the ore is better. Tunnel level—Nos. 1 and 2 raises are looking the same as heretofore. The raise above the old stope intermediate drift is advanced 3 ft., showing 6 to 10 in. of ore, but much broken up. Crosscut east from south drift from crosscut No. 3

was driven 5 ft., showing 4 in. of ore assaying \$92 per ton. Extracted during the week 14-2 tons of ore assaying from \$12 to \$85 per ton; true average, \$26 per ton.

MONO MINING COMPANY.—400-ft. level—South drift Fortuna advanced 12 ft., showing 6 in. of low-grade quartz.

NEVADA COUNTY.

CADMUS.—A rich strike has recently been made in this mine. Thirty pounds of the ore is said to have yielded over \$100 in free gold. Energetic work is now going on at the mine under the superintendency of Mr. Cahill.

RED DOG MINING COMPANY.—Good progress is being made at this company's gravel mine near You Bet. The incline shaft is down about 90 ft. and in bedrock.

PLACER COUNTY.

(From Our Special Correspondent.)

MAYFLOWER.—At this mine, near Forest Hill, the working force has been increased to 75 men and the mill is running steadily. Good gravel is being taken out.

MAYFLOWER GRAVEL MINING COMPANY.—The stockholders of this company held an adjourned meeting. A special committee appointed to examine the property reported that since January last all the work done has been by tributaries. Recently, however, pay gravel was found in the West Orono channel, which crosses the main channel, and the company has terminated the leases and resumed work. The first bullion shipment from the new find, \$2,000 in amount, has just been made.

SAN DIEGO COUNTY.

(From Our Special Correspondent.)

GOLDEN CROSS.—This mine, at Hedges, is being opened up rapidly. On the 300-ft. level work is being pushed by machine drills. About 100 tons of ore are being hoisted from this mine every day.

SISKIYOU COUNTY.

AUSTRIAN BAR.—This gravel mine, on the north fork of the Salmon, owned and operated by Daugherty Brothers, has yielded rich returns this year.

(From Our Special Correspondent.)

CLASSIC HILL.—At this mine, near Happy Camp, the water supply has been good the whole year and the mine has paid extremely well for the season.

YUBA COUNTY.

(From Our Special Correspondent.)

FLAG.—At this mine, near Brown's Valley, the work is progressing rapidly and arrangements are being made to erect a five-stamp mill.

WEBB MINING COMPANY.—This company has bonded the old Pennsylvania mine, near Brown's Valley, and has commenced to pump it out. As soon as possible a thorough examination will be made of the old workings, some parts of which have caved in, and it may be possible that the whole mine will have to be retimbered. The Pennsylvania No. 1, Pennsylvania No. 2 and the Jefferson are all connected by tunnel. The Jefferson alone paid \$3,000,000 in dividends 22 years ago, before the owners were obliged to close down on account of the water. The company has just completed a \$60,000-mill.

COLORADO.

CLEAR CREEK COUNTY.

BEAM MILL.—A beam process mill will be constructed at Empire. Although at first the capacity will be small, provision will be made to enlarge the same if operations are successful.

(From Our Special Correspondent.)

ALBRO.—The mines working on this hill have received an influx of capital, and consequently are resuming operations. The Albro has a shaft to a depth of 460 ft. and it is to be sunk another 100 ft. New levels being driven in virgin territory have opened up some large bodies of mineral.

EAGLE.—Boston parties have taken charge of this mine, and are cleaning out the levels preparatory to carrying forward extensive development work.

LAMARTINE.—This mine, at Idaho Springs, is perhaps one of the best producers in the district. In extending levels, three different bodies of ore were cut within two days of each other, and tests have shown the mineral to carry both gold and silver, the latter running into hundreds of dollars to the ton.

MILTON.—This mine, with its low-grade ore, has just resumed work, and Nebraska State officials are putting up money for its development.

NAVAL TUNNEL COMPANY.—Eastern people have organized this company for putting a bore through Albro Hill. Work with air compressor and drills has already commenced. Omaha capital is being invested in a group of claims on the west side of the hill and recent work has been inaugurated on a crosscut tunnel to reach the veins at a great depth.

SHAFER.—A pool of prominent New York City merchants has charge of this property. It is becoming one of the heaviest producers of ore in the country. A contract has just been let for sinking the shaft another 100 ft. In the bottom of it the ore body measures 4 ft. in width.

STANLEY.—This mine is being developed by its eastern owners, and while it is known that immense bodies of ore have been encountered, the management declines to give out information. The workings comprise about 12 mills, and 11 air drills

are constantly at work in drifting and blocking out ore.

SUN.—This mine is being opened by the sinking of two shafts, one to be used in case of emergency. In what is called the Moon shaft 46 in. of solid galena has been cut.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

(From Our Special Correspondent.)

BRODIE CYANIDE MILL.—During August this mill treated 1,050 tons. The ore was of a higher grade than the previous month, with 1,800 tons of a grade not above \$15. Last month the ore averaged \$22.50. The 40-ft. Pearce Turret furnace is now complete and would be at work were it not for the delay in the elevator belt at the works, which is expected to arrive shortly. The furnace will be at work next week. This furnace will be watched with interest, as it will be the first time that roasted telluride ores are subjected to potassic cyanide. The mill is now considered in first-class shape to bid for ores yielding up to \$100 per ton. The tank capacity is 425 tons, consisting of two 75-ton tanks, four 50-ton tanks and three 25-ton tanks. The recent improvements cost over \$13,000.

CHRISTMAS.—This property, on Bull Hill, has its shaft sunk 230 ft. The major portion of the ore is produced from the 175 ft. level north, where the vein is fully 6 ft. wide, carrying telluride ores, 2 ft. of which assays 5 oz. per ton. The future of this property looks encouraging, as the output for last month was about 100 tons.

DANTE.—This claim, on Bull Hill, is almost exclusively worked on lease, employing 42 men. The Bennett lease recently shipped a small car of ore which is estimated to net \$40 per ton. The shaft has been sunk 130 ft. The Gerhardt lease is not yet a shipper, but has a prospect of soon becoming one; one shaft has been sunk 130 ft., and No. 2 120 ft. On this claim there are four horse whims and one steam hoist at work.

ELKTON.—This mine is the most prolific shipper on Raven Hill. The output for August was close to \$40,000 and the output for the past week ten narrow gauge and one standard gauge, estimated value \$18,000; four cars of 1½ oz. sent to the Florence Works; four cars of second-class smelting ore, yielding 4 oz., and two small cars and one standard car of first class, sampling about 18 oz. per ton. The mine still employs 80 men. Recently the company has put in its own electric plant at the first and second levels and uses the light at the surface, thereby saving the expense of 12 lbs. of candles daily and the electric bill, which amounted to \$44 per month. The expense of running the dynamo is 50c. per day.

GOLD COIN.—This claim, located right in the center of Victor, is fast becoming a mine. The output last month was a little over \$12,000, but on September 3d a new strike was made which it is thought will increase the output twofold. The shaft has been sunk 230 ft.

MAY-BELL.—This is the latest strike of merit. The claim is situated on the north of Wilson Creek in the town of Lawrence. Work has been done in a desultory manner on this claim since the early part of 1892. A tunnel was driven in the hill 220 ft., when the ore chute was found, which is not only rich but large. The present width of the vein is 7 ft. and the lowest assay \$70. The formation is granite and the vein largely chlorite, quartz and fluor spar. The telluride is scattered through the rock and not in seams. It is impossible to know the extent, as the ore chute has been opened up for only 10 ft. The course of the vein is north and south, the dip west, the ore chute dips north. This property is 3,000 ft. south of any of Cripple Creek's producing mines, and the discovery has renewed active prospecting in this section.

MOON ANCHOR.—This shaft has been sunk 400 ft. The water gradually increases, the quantity pumped being now about 500 gals. per minute. The grade of ore steadily improves, the average of shipping ore being over 4 oz. This week a new pay streak, 2 ft. wide, was found at least 15 ft. from the hanging wall. The east and west vein at the 400-ft. level is now 14 ft. wide. The number of men employed is 40.

MOUNTAIN BEAUTY.—This claim, on Bull Hill, is being worked on lease, and one set of lessees is about to erect a steam hoist, as some high class ore has been found in the shaft. The Rapp lease on the same claim has a shaft sunk 75 ft., and the prospects for mineral at an early date are very encouraging.

RAVEN.—This mine last month shipped over 400 tons of ore. The low grade averaged \$30 per ton. The shaft has been sunk 142 ft. and sinking will be at once resumed, as the engine is now ready for working. The shaft has two compartments and will be sunk continually until the tunnel level is reached, which is 800 ft. deep. The tunnel has pierced the hill from the north 1,100 ft.

ROSS & HURD TUNNEL.—This tunnel, situated in Rega Guich, has pierced Gibbons Hill 300 ft. The rock is a hard white granite. The tunnel is equipped with a three-drill compressor plant, of the Rand make. The rate of progress is about 8 ft. per day. The objective point of the tunnel is Raven Hill, and is the only tunnel that penetrates it from the south. The management think a short distance further will bring it into the breccia, where good veins are expected to be found.

SPECIMEN.—At this mine, on Bull Hill, a horse

whim was recently put up at the new shaft. At the depth of 70 ft. the vein is 16 ft. wide, interlaced with rich seams of ore, but not all shipping.

SQUAW MOUNTAIN TUNNEL COMPANY.—This company has not worked its rock drills for some time, but uses the compressor for pumping water from a winze, from which a little ore is being mined.

VICTOR.—This mine last month shipped more ore than at any previous month. In 12 days \$78,000 of ore was shipped. The new shaft is now 425 ft. deep. The mine employs 108 men.

VINDICATOR.—The output for August was nearly 200 tons. The ore is not high grade, varying from 1½ to 3½ oz. The drifts still maintain their value.

LAKE COUNTY.

(From Our Special Correspondent.)

THE MINERS' STRIKE.—In a recent issue the *Engineering and Mining Journal* editorially called attention to the grave conditions existing here, to the possibility of a partial destruction of the smelter industry, and to the curtailment of the production of gold and silver from this state, all on account of the miners' strike which was inaugurated here on June 19th and which is to-day apparently further from settlement than when the men walked out. Not only are the predictions made by this *Journal* likely to prove true, but (as stated in my special telegram last week) it looks now as if millions of dollars worth of work is to be destroyed and in some cases properties abandoned not to be opened again in years. To those who are familiar with mining in this camp it is but necessary to say that stoppage of the Bon Air and Penrose pumps is likely to be followed by the closing down of the Maid pumps; they understand what the results will be—a flooding of all of the Carbonate Hill properties. Last week Mr. Eben Smith, the head of the big Smith-Moffat combination of this camp, saw no signs of a settlement in sight and stopped pumping operations at the Bon Air and Penrose. This means the filling up very soon of the "downtown" properties with water, and places many of the shafts in the same condition as they were before pumping was commenced in the lower section some six years ago. The big blow to the mining industry here, however, would come from the stoppage of the Maid pumps. Mr. Smith has already stated that he is simply running these pumps as long as the Small Hopes and Mahala people desire. The last named companies are paying a large sum of money for these pumping operations, and as they have done no work since the inauguration of the strike, it is momentarily expected that they will notify Mr. Smith that they need the Maid pumps no longer. When this notice is issued and the pumps stop, the doom of Carbonate Hill is sealed for years to come. Among the mines that would be affected by the stopping of these pumps are the Maid, Small Hopes Consolidation, Mahala, Mikado, Wolfstone and about 30 good leases in addition to a large number of other properties that, though not worked at present, are not suffering as long as they are not flooded with water. In the downtown area the stoppage of the Penrose and Bon Air pumps, which has already occurred, will cause workings to be flooded in the properties of the Leadville Basin Mining Company, the Newell, the Bohn, the Bon Air, the Penrose, the Coronado, the Turbot, the Chin, the Weldon, the Sixth Street and many others. While these are the results of the strike I have not called attention to the amount of the work that is being delayed. When the strike began the camp was just opening into an era of new and extensive development work, all of which has been brought to a standstill. So far the smelters have been able to pull through, but if conditions continue as they are to-day it is but a matter of time before they too will find it necessary to curtail their forces. From the mine-managers who have closed their pumping operations I learn that they have simply quit mining here for the time being and in some cases they state that they will seek new fields. From the miners one learns that nothing but \$3 a day will settle the strike. The Coronado is working a few men under police protection and within a barricade. Such work cannot be carried on satisfactorily and the managers assert that the miners and the officers of the law are against them. It has been intimated that the Governor intends sending troops to Leadville, but up to this time no such action has been taken. A number of the leading business men attempted to have Mr. Smith renew pumping operations, offering to pay the expenses for 60 days; in the meantime they hoped to persuade the miners to settle the strike. Mr. Smith, however, refused to resume on any such proposition, stating that it would do no good to start the pumps as long as there were no men to go to work. Thus it appears at this writing that nothing is to be done except to await the inevitable and see the destruction of property which it has taken years to place in its present excellent condition.

BOHN.—At this writing the Bohn people give notice that they will start up this week, paying \$3 to miners and \$2.50 to trammers. The miners' union, in its demands, asks for \$3 for its trammers as well as for miners. Just what effect the Bohn move will have is uncertain. If they can get men here to go to work at their scale, it undoubtedly will mean that other properties will start on the same scale.

CHEMUNG SUIT.—This case, which has been in the Land Office for many years, has finally been set

tled. Over 12 years ago the Hamburg Consolidated Mining Company made application for a patent on the Chemung lode, and Mary A. Dollis entered a protest, alleging that the company had abandoned the lode and failed to do assessment work, after applying for the patent. In the trial the company proved some work in 1883 and 1887. The case was decided against Mrs. Dollis, but was appealed last year to the General Land Office in Washington. The decision of the court here was sustained. It was then appealed as final to the Secretary of the Interior, who has rendered a decision against the company and in favor of Mrs. Dollis, the patent to the Hamburg people being refused.

FLORIDA.

ALACHUA COUNTY.

B. ARENTZ & COMPANY.—The Daisy mine, one of the largest phosphate plants in the vicinity of Newberry, owned by this company, of Ocala, is being removed a quarter of a mile south of its present location to richer and larger deposits of phosphate. J. T. Hearn has charge of the work.

HILLSBORO COUNTY.

TAMPA PHOSPHATE COMPANY.—It is stated that this company, of Tampa, has resumed operations at the extensive works on the Alafia River. Burton E. Coe, of Tampa, is the manager, and the work of development will be pursued with vigor.

MARION COUNTY.

ALACHUA PHOSPHATE MINES.—The new washer at these mines has been completed and started up. The plant was erected and is run under charge of Mr. M. Cullen, as superintendent.

GEORGIA.

CHEROKEE COUNTY.

GLOBE MINING COMPANY.—This company, capital \$100,000, has been chartered at Atlanta, by E. G. Roberts and F. J. Rothpeltz, to develop gold and silver and other mining property in Cherokee County.

BARTOW COUNTY.

C. M. Jones is opening up a new iron-ore mine on the line of the Western & Atlantic railway, near Emerson.

IDAHO.

SHOSHONE COUNTY.

AMERICAN PLACER MINING COMPANY.—This company, on the Orc Fino, with a 2,800-ft. of flume, after two years of hard work and an expense of about \$30,000, has commenced washing pay dirt.

CRESCENT MINING COMPANY.—A rich strike was made recently in this company's mine at Pierce City, the property of Dunn Bros., of ore which will run high in gold. The owners are working two drifting and two stoping crews and will soon put in a 5-stamp mill, a new steam hoist and a steam pump and air blast.

MICHIGAN.

COPPER.

ATLANTIC MINING COMPANY.—This company reports an output of 270 tons of copper in August, against 259 tons in July and 216 tons in August of last year.

OSCEOLA.—Ground is being broken for the foundation for an engine-house for No. 6 shaft. This is a new shaft, about 1,700 ft. in depth, and appearances indicate that copper ground is dipping south to the Tecumseh property, where Superintendent Pope is busy with a large force of men doing considerable exploratory work. It is stated that the new engine-house will be of the same dimensions as that at No. 3 shaft and will be ready for commission about December 1st.

WOLVERINE MINING COMPANY.—The production of copper reported for August is 107 tons, which compares with 106 tons in July and 86 tons in August, 1895.

EATON COUNTY.

THOMAS JINKINS & SON.—At Grand Ledge, near Charlotte, a coal mine has been opened by this firm. The seam runs from 32 to 36 in. thick, and the coal is of excellent quality and only 75 ft from the surface. Entries have been driven, and coal is now being hoisted.

IRON—MARQUETTE RANGE.

LILLIE.—Mining operations were suspended at this mine, on the Teal Lake range, on September 1st. The shut-down is temporary, but may continue a month or more. The company has not disposed of any ore for some time past, consequently the management has decided to suspend operations until sales are made. There are 50,000 tons of ore in stock at the mine and considerable is also piled up on the docks at lake ports awaiting sale. Nearly 200 men are thrown out of employment by the shut-down. The pumps will be kept in operation so that work can be resumed on short notice.

MINNESOTA.

(From Our Special Correspondent.)

Iron ore shipments out of Lake Superior last month were, according to the report of the two Sault canals, 1,209,710 gross tons, and for the season to September, 6,717,700 tons. To this being added the shipments from Lake Michigan ports, Escanaba and Gladstone for the season to date the total from the entire lake district is found to be about 7,000,000 tons or nearly 1,600,000 tons more than at the corresponding time a year ago, and 2,800,000 tons more than for the same time two years ago. The indications are

that from this time on there will be very light shipments, and the total for the year will not be much above 9,000,000 tons, if it reaches that figure. This week there has been an unexpected addition to the number of mines to close, several of those of the Minnesota Iron Company, as well as some independent properties, being added to the list. On other ranges the condition is going the same way, and at Bessemer, on the Gogebic Range, where are the Tilden, Colby, Palms, Anvil and Eureka, the Colby has shut down, leaving only the Palms at work. It is expected that several shipping mines will reduce forces the next week, and a number of heavy vessel contracts will be cleaned up with the end of this month. The Minnesota Iron Company is considering the advisability of laying up several of its steel ships, which is the most emphatic commentary on the times that can be imagined, as this company would be apt to keep its own ships in commission to the last point, were there any possibility of doing so with a profit, or any chance of coming out even.

Shipments for the month from Minnesota made a total for the season of 3,000,000 tons, of which Duluth had shipped 1,575,000 tons and Two Harbors, 425,000 tons; 167,000 tons going from Mesabi by way of Superior, Wis. Two Harbors shipped in the month 347,000 tons, against 416,000 for the preceding month, and a dock and railway capacity for at least 500,000 tons.

Men are again being laid off by the Duluth & Iron Range and the Duluth, Missabe & Northern roads.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

ÆTNA.—This mine, at Mountain Iron, has been closed indefinitely, though there are chances that it may resume before many months. It was the sole industry at the town, the Mountain Iron having been shut down some time since. All the work at the Ætina was by hand, and the close down is severely felt.

HALE MINING COMPANY.—This company has shipped steadily, and in August sent out 20,000 tons, much more than many more pretentious properties. It is expected to continue in operation till the close of navigation, when some extensive improvements will be made for next year. The Hale is showing up better and better as a mine as depth and development is continued.

MINNETTA IRON COMPANY.—This company has decided to close its Fayal and Auburn mines of this range, and they will be shut down this week. Some underground work will be carried on at both, and they are quite likely to resume late in the year. Its Canton and Norman mines are also closed, the latter lately, leaving nothing under control of the company operating on the Mesabi. The Fayal had about 150 men employed and the Auburn a much smaller number. The former is an underground property, requiring many men, and the latter a milling mine.

OHIO MINING COMPANY.—This company has closed down altogether, all the men employed by Drake-Stratton Company being laid off. It has been shipping about 1,000 tons a day, with one steam shovel.

OLIVER MINING COMPANY.—This property continues its shipments and will continue, as indicated, till October, for the reasons given in late issues of the *Journal*. Its total shipments now reach 665,000 tons, or 160,000 more than for the entire season of 1895.

SELLERS ORE COMPANY.—At this mine a reduction of 10% in wages was made last week; the mine is not to close at present, it is stated by the manager, despite rumors to the contrary.

IRON—VERMILION RANGE.

(From Our Special Correspondent.)

CHANDLER IRON COMPANY. It is expected that this mine will close for the season this week, with total shipments of about 400,000 tons, or 150,000 less than was expected. It will continue underground work to some considerable extent. There is some ore in stock, and the situation is not bright for the winter. There is nothing at work at Ely.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—The output of ore last week was larger than the week before, and the sales of zinc ore were larger in those camps that sold. There was no zinc ore shipped last week at any of the camps outside of Jasper County, Mo., and Cherokee County, Kan. The top price paid for zinc ore was \$20 per ton with an average of over \$18 per ton. The price of the first grade ore was the same, but the price of the lower grades was increased \$1 a ton. The price of lead ore was the same all week at \$13.75 per 1,000 lbs. with 50c. added for hauling. The sales of lead ore last week were the smallest that have been made for several years. A large amount of lead ore is being held for higher prices. The following was turned in by the different camps in the district: Joplin zinc, 1,257,560 lbs.; lead, 192,560 lbs.; value, \$14,696. Webb City zinc, 420,800 lbs.; lead, 30,110 lbs.; value, \$4,209. Cartersville zinc, 909,690 lbs.; lead, 149,520 lbs.; value, \$10,319. Galena, Kan., zinc, 2,490,000 lbs.; lead, 368,000 lbs.; value, \$25,172. Oronogo zinc, 40,840 lbs.; lead, 15,170 lbs.; value, \$560. Zincite zinc, 13,720 lbs.; value, \$122. Totals for the district: Zinc 5,132,780 lbs.; lead, 755,650 lbs.; value, \$55,078.

BUNKER MINING COMPANY.—This company bought Guengerich, Gregg & Company's lease of 40 acres in Cottonwood Hollow, about three miles west of Joplin. They have taken the water out and in two weeks will be hoisting good pay dirt, as they have a large body of zinc ore in sight. This lease cleared over \$25,000 the last year it was worked. They shut down in 1893 after the plant burned down and the panic came, and did not start up again as the partners were developing land they owned.

DUNWEG MINING COMPANY.—On the Dunweg land at the pump shaft they are cutting a drainage drift at 160 ft. and are opening up a good prospect. In another week the other shafts will have been drained. They can then take up a large stope that is very rich in zinc ore and will start up the plant. This land has been one of the largest producers of both lead and zinc in the district; heretofore they worked the land themselves, but now are leasing lots to miners to work on a 25% royalty.

GROUNDS & IRWIN LEASE.—Davey, Staley & Company's plant is running steadily on rich dirt and making from 5 to 6 tons of zinc ore each 10-hour shift. They are drifting at 120 ft., and last week cut through a flint rib into a rich face of ore 35 ft. high.

HEROLD MINING COMPANY.—Mining at this plant is at present being done about three days in the week on dirt taken from the two new shafts, which have not been opened up enough to keep the plant running steadily. They will run on rich tailings when not running on dirt from their shaft. In one shaft they are drifting at 130 ft. on a good face of zinc ore in shooting ground, and in the other they are drifting at 150 ft. on a good run of zinc ore in soft ground. This company has been a large producer of ore, but for some time was idle until the opening up of this new prospect. The property is owned by Commodore Herold and other St. Louis capitalists.

HILL & COMPANY.—At 140 ft. they are drifting on a 14-ft. face of zinc ore in flint ground, with rich ore in the bottom of the drift which they will work as soon as the company lowers the water. They were working only two men in the ground last week, and made 15 tons of free zinc ore and 20 tons of crush ore. They have two veins of lead, one at 102 ft. in limestone and one at 115 ft. in flint ground, but are not working either, as the price of lead ore is too low.

JUNIETTA.—This plant is running steadily on rich dirt and is producing more than 30 tons of high-grade zinc ore every week, working single shifts. They are drifting at 114 ft. on a 12x14 ft. face of zinc ore in timbering ground and only enough water to run the plant. They have over 150 tons of zinc ore in these bins waiting for better prices.

McKINLEY LEASE.—The company has leased 40 acres of the Connor land near the famous Mound City mine, south of Cartersville. They have four producing shafts on the lease and a pump shaft down 145 ft., in which they have one pump, and will put in another. They will then sink the shaft below 160 ft., as the steam drill shows a large body of zinc ore from there down. In the pump shaft they have a large face of zinc ore at 140 ft., which they are not working. At the company's shaft No. 2 they are drifting at 140 ft. on a 15-ft. face of zinc ore in flint ground, and with three men in the ground obtained 20 tons of high-grade zinc ore. They have rich ore in the bottom of their drifts which they are unable to work at present on account of the water, which will easily be lowered as soon as they start up the second pump. They have a fine, large run of lead at 115 ft. in black limestone, which they are not working on account of the price of lead ore.

SADDLER MINING COMPANY.—This company owns over 200 acres of land about a half a mile southeast of the Grounds & Irwin lease and is prospecting part of the land. They started to drift in a new shaft that is 110 ft. deep, at 103 ft. to catch a large ore body. This they developed by drilling three holes near the shaft, where they have moved their pumping machinery and built a plant 38 x 50 ft. It is large enough to put in a steam jig plant, which the company will do as soon as they develop the ground. In the first drill hole, 60 ft. north of the shaft, at 68 ft. they struck silicate ore and went through 6 ft. of it into hard ground which they had to 89 ft. They then went through 11 ft. of very rich pebble jack and then through 5 ft. of flint ground into rich zinc ore, and had it to 113 ft., when they stopped drilling. In the second drill hole, 83 ft. west of the shaft, at 30 ft. they went through 10 ft. of rich lead dirt and from 40 ft. to 96 ft. had open black ground. At 60 to 100 ft. they had good zinc dirt. In the third hole, 125 ft. northeast of the shaft, it was about the same as the second hole with the exception of having no lead, but silicate ore from 76 ft. down to the zinc ore. This land is owned and operated by Pennsylvania capitalists. Dr. Saddler, of Philadelphia, is the President.

SPOT CASH COMPANY.—This company will put a force of men to work this week after a shut-down of two weeks waiting for the company's pumps to drain their ground. They will drift at 140 ft. on a small face of zinc ore that was getting larger the farther the drift advanced. Good ore is being left in the bottom because they cannot go deeper until the water has been drained. They have a rich vein of lead ore at 115 ft. that produced over 50,000 lbs. of lead ore every week, but is not now being worked on account of the low price of lead.

WHITE ALLEY.—At this plant they are running steadily on rich dirt and are making about six tons of high-grade zinc ore each shift. They are drifting at 115 ft. on a 14 x 16 ft. face of ore in soft ground and have enough water to run the plant.

MONTANA.

FERGUS COUNTY.

GILT EDGE.—This mine is said to have produced \$4,000 in a 12-day run recently.

GRANITE COUNTY.

BI-METALLIC DRAIN TUNNEL.—This tunnel, which was commenced in January, 1894, was completed last week. The total cost of the tunnel has been \$200,000. It will drain the Bi-Metallic mine at the 1,000-ft. level and the Granite Mountain mine at the 1,400-ft. level. It is estimated that there are about 80,000,000 gals. of water now in the mines. From the mouth of the tunnel to the Bi-Metallic shaft is 8,200 ft. The average flow from the mines after the main body of water is gone will be several hundred gallons per minute.

GOLD COIN MINING COMPANY.—There is now being put up at the mine a 10-stamp mill, with arrangements for adding 10 more stamps later on. The ore is said to assay from \$16 to \$29 per ton.

JEFFERSON COUNTY.

Basin Mining and Development Company.—At the annual meeting of this company the following officers and board of directors were elected: President, Charles S. Muffly, of Helena; vice-president, S. G. McWade, of Cleveland, O.; secretary, Lynn D. Kent, of Basin; treasurer, Charles S. Muffly, of Helena; general manager, G. Hughes, of Basin; board of directors, Charles S. Muffly, of Helena; S. G. McWade and A. J. Houck, of Cleveland, O., and G. Hughes and L. D. Kent, of Basin.

MADISON COUNTY.

CLIPPER.—The present output of this mine, near Pony, is reported to be \$8,000 to \$10,000 per month. The mine is operated entirely through tunnels to a depth on the vein of over 1,000 ft.

GARNET GOLD MINING COMPANY.—This company has a 40-ton mill of modern design nearly completed to work the ores of its mine.

NEVADA.

ELKO COUNTY.

ROSE GROUP.—It is reported that Captain DeLamar has taken an option on this group of gold claims near Tuscarora.

ESMERALDA COUNTY.

PALMICO MINING COMPANY.—This company, near Hawthorn, has mined 6,200 lbs. of ore. Mint returns show a value of \$475.50 per ton and the gold value of the bullion \$17.42 per ounce.

STOREY COUNTY—BRUNSWICK LODGE.

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

CHOLLAR.—Shaft No. 1 has been sunk 15 ft. on the incline; total depth, 597 ft. Have started to raise on the chutes preparatory to opening the 400-ft. level station. 200-ft. level—The south drift has been advanced 35 ft. during the week, and is now out 306 ft. from the north line. The face is in porphyry following the footwall. 300-ft. level—The south drift has been advanced 39 ft. and is out 202 ft. The face is in soft porphyry. The chute in the raise having been completed, work there was discontinued, but can be resumed at any time without interfering with the work in the south lateral drift.

CONSOLIDATED CALIFORNIA & VIRGINIA, BEST & BELCHER AND GOULD & CURRY.—Shaft No. 2—This shaft was sunk 15 ft. on the incline; total depth, 345 ft.; bottom in hard porphyry. 150 level—The main south drift started from east crosscut No. 1, was extended 9 ft.; total length of drift, 145 ft.; face in porphyry and stringers of quartz. Gould & Curry Tunnel.—Have been repairing the main tunnel during the week.

HALE & NORCROSS Shaft No. 1 has reached a depth of 567 ft., passing through porphyry and quartz. On August 26th commenced cutting out for a station and chute at the 400 ft. level. 300 level—Started No. 1 east crosscut from the north drift, 100 ft. from incline, on August 20th, and extended the same 22 ft. and stopped. Face in porphyry. No. 2 east crosscut, which was started from north drift on same date as No. 1, at a point 190 ft. from incline, is now in 60 ft. Face in porphyry. Are continuing this cross cut. The ground is more favorable than in No. 1.

SAVAGE.—Shaft No. 1; 300 level—The joint north drift has been advanced 2 ft., making its total length from the shaft station 252 ft.; face in soft porphyry. The drift has reached the south boundary line, and it has been timbered up to the line.

STOREY COUNTY—COMSTOCK LODGE.

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

CHOLLAR.—In the stope above No. 2 crosscut on the 450 level, they are working south on the 9th and 10th floors east of the old stope on a stack of pay varying from 3 to 4 ft. in width of fair grade. The fillings at this point are too low in grade to save. In the south stope on this level there is little change in appearance or yield, except that the streak of pay east of the old stope is smaller and poorer. Have saved during the week 115 tons and 1,300 lbs.

of ore, which has been shipped to the Nevada mill. Average battery sample for the week, \$22.89 per ton.

CONSOLIDATED CALIFORNIA & VIRGINIA.—1,000 level—West crosscut No. 2, started at a point in north drift 550 ft. north from Consolidated Virginia shaft station, or 85 south from north boundary line of mine, has been extended 29 ft., passing through porphyry and clay, with a slight seepage of water; total length, 617 ft. 1,650 level—On 9th floor (first floor above sill floor), east crosscut started from south drift at point 500 ft. in from its mouth, or about 50 ft. north from south boundary line, was advanced 15 ft., passing through porphyry, clay and quartz, assaying \$1 per ton. 1,750 level—From 13th, 15th, 16th, 21st and 24th floors above sill floor of this level, at the north end of stope in old ground of former workings, have extracted during the week 109 tons, the average assay value of which, per samples taken from cars in mine, was \$7.84 per ton. From the 16th floor from the upraise which connects with the 24th floor an east drift has been started and advanced 37 ft. through porphyry and some old stope workings, assaying from \$10 to \$15 per ton. Total extraction of ore for week amounted to 109 tons, the average assay value of which, per samples taken from cars when raised to surface, was \$36.48. Have shipped to Morgan mill 703 tons of ore, assaying, per railroad car sample, \$50.56 per ton. Average assay value per battery samples of all ore worked at that mill during week (600 tons) was \$47.33 per ton.

NEW JERSEY.

MORRIS COUNTY.

RICHARDS IRON MINE.—Superintendent Arthur, of this mine, operated by the Thomas Iron Company, has commenced sinking a new slope near No. 3 shaft, which it is expected will occupy nearly two years' time to complete, but when completed will greatly facilitate the mining of the ore.

OREGON.

BAKER COUNTY.

COLUMBIA.—Minneapolis people have bought this property, at Baker City, and propose putting up a 20-stamp mill on the premises.

LANE COUNTY.

GOLD MILL AND MINING COMPANY.—J. W. Cook, superintendent of this company, reports a cleanup of \$1,200 as the result of seven days' run in free-milling ore.

UNION COUNTY.

GRAND RONDE MINING COMPANY.—A mining deal of considerable importance was consummated last week by which the placer mining ground on Snake River, near Sturgill's Bar, belonging to Al Stevens and others has been sold to the French syndicate of this name. The first payment is said to have been \$25,000.

SOUTH DAKOTA.

LAWRENCE COUNTY.

GOLDEN SLIPPER.—Ore from the 200-ft. level of this mine treated at mill shows it to be worth about \$10 more than in levels above, the ore running about \$35.

OMEGA.—L. P. Gibbs, of Deadwood, has bought the Hildebrand 20-stamp mill and this mine, and has started half the former on Omega ore. The mine made good profits years ago, when costs of treating were over \$10, and with costs reduced to less than \$3 it is expected to pay well again.

PENNINGTON COUNTY.

APEX CONSOLIDATED MINING COMPANY.—A large body of ore was recently discovered in the workings of this company that is said to average \$10 per ton, and to be of a free-milling character. One-half the usual number of stamps are dropping night and day and an average of 100 tons of ore is crushed every 24 hours. The concentrators, five in number, of the Rice pattern, are handling the tailings and doing good work. An air compressor will soon be put in to operate the power drills which are now run by steam. This property was formerly known as the Standby, and is situated near Rochford.

KEYSTONE MINING COMPANY.—This company is dropping 20 stamps constantly upon ores from a 25-ft. body on the 200-ft. level.

SUNNYSIDE MINING COMPANY.—Articles of incorporation have been filed with the Secretary of State at Pierre for this company at Hill City, with a capital stock of \$600,000; incorporators, Philip M. Raney, Hill City; John J. Fayel, Keystone; Charles M. Kipp, Geo. W. Marling, John S. George and C. H. George, of Milwaukee, Wis.

WYOMING.

CARBON COUNTY.

CARBON COUNTY GOLD MINING COMPANY.—On the Albion mine, owned by this company, tunnel No. 1 has been run for a distance of 270 ft., and tunnel No. 2 a distance of 185 ft. The ore body is galena and carbonate of lead, carrying gold. There is a large amount of ore on the dump and a contract for the erection of a 30-ton concentration plant, the same to be completed within 60 days from the signing of the contract, is about to be made.

On the Croesus mine, owned by the same company, a tunnel has been run for a distance of 600 ft. At the bottom of the 30-ft. shaft the ore body is reported to be 18 ft. wide and carries gold and copper pyrites, with average assays giving \$8 in gold and 14% copper. Three shifts have been working on

this tunnel since April 1st. Considerable development work has been done on the Producer and Kansas City properties, also owned by this company.

On the Emma G. property, owned by the same company, a shaft has been sunk to the depth of 60 ft., and a tunnel is now in 300 ft. The ore on this property is said to carry \$12 per ton gold and to be free milling.

An 8½-ft. vein of copper ore is reported to have been found at the head of Lake Creek, near Elk Mountain, which runs on an average of 50% in copper.

COOPER HILL DEEP MINING COMPANY.—It is reported that this company has arranged to run a tunnel into the mountain for a distance of 1,300 ft. The entrance of the tunnel will be on the Little Johnnie. It will pass through the Laura and enter the May Flower, properties owned by the company. The erection of the necessary buildings for the carrying out of the enterprise are already under way.

DOWNY MILL.—Messrs. Hinman & Sheldon, of Atlantic City, have purchased this stamp mill in the Gold Hill mining district, near Saratoga, and will remodel and refit it for the treatment of ores by the cyanide process. Messrs. Hinman & Sheldon have had tests of the Gold Hill ore made at Denver and are convinced that a paying proposition exists in treating the ores by the cyanide process. Four mines in the district are taking out ore.

INTER-OCEAN MINING COMPANY.—This company has completed 1,400 ft. of fluming at its placer property on North Spring Creek, and are sluicing with considerable success.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

CARIBOO DISTRICT.

CARIBOO MINING COMPANY.—This company is ready to ship 500 lbs of gold dust, valued at \$125,000. This is surface gold, as bed-rock has not been reached, and the greater portion comes from gravel and clay wash.

NELSON DISTRICT.

(From an Occasional Correspondent.)

NOBLE FIVE.—The consolidation of the Noble Five and its adjoining group of claims with the Deadman and Wild Goose into a limited liability company is announced. There were 300,000 shares of treasury stock placed on the markets at 25c. and taken at once. A large quantity of these shares went to St. Paul, where attention has recently been directed to the Slocan. The Kaslo-Slocan Railway, was built by St. Paul people connected with the Great Northern Railway. The Noble Five is a mine largely developed; it has been shipping valuable ore for years and has large quantities in sight. The Deadman, which adjoins it, is also a shipper.

STALL MINES.—These mines at Nelson are adding largely to their smelting plant, and the additions will include a refinery. The new works will also necessitate an additional tramway from the Silver King mine, as the furnaces will require from 400 to 500 tons of ore a day instead of 100, which they now consume. Recently the smelter has been treating ore of lower grade than it started on, but it is claimed there is plenty of higher grade stuff in the mine.

ROSSLAND DISTRICT.

(From Our Special Correspondent.)

JOSIE MAC.—Mr. W. L. McLachlan, who is the original locator of this mineral claim and the Dufferin and Occidental, and who has recently made arrangements with Spokane parties for the promotion of these claims, has completed arrangements for the development of the Josie Mac. These properties derive importance from their being located in the center of a group of promising properties of which the Homestake, Lillie May, Phoenix, Bluebird, Nest Egg, and Hattie Brown may be considered the circumference. Mr. McLachlan is one of the oldest practical miners in the province, having had considerable experience in Cariboo and other mining camps on the Continent, as well as having been on the Frazer River in 1858.

The shaft of the Josie Mac is 76 ft. deep with a crosscut of 20 ft. The lead matter of this shaft is well mineralized. No. 2 shaft is now down 20 ft., and ore was struck close to the top, which has assayed \$5 in gold and 20 oz. 3 dwt. in silver with some percentage of copper. The lead appears to be a very strong ore at least 10 ft. wide. It is not decided by the management whether the second shaft will be continued, or whether a tunnel will be run in at the foot of the mountains giving a depth of 130 ft. The ore is described as an iron and copper sulphide. The Josie Mac has been capitalized to the amount of \$600,000, of which \$200,000 is treasury stock. The balance of the stock has been pooled or placed on deposit with reliable parties for 6 months in order to protect the treasury stock, a guarantee of good faith on the part of the management. Everything connected with the Josie Mac is regular and has been paid up and there are no debts. S. T. Arthur, of Spokane, is president, P. E. Fisher is secretary and W. L. McLachlan is superintendent and manager.

O. K.—This mining company has just received a Gates crusher and much of their new machinery will be in place in a few days. All of their com-

pressor plant is on the ground and Mr. Newman, the foreman in charge, says that with the new mill and machinery the output from the mine will quadruple that of last year.

TRAIL CREEK DISTRICT.

(From Our Special Correspondent.)

The opinion prevails among many men in the Trail Creek country that one of the problems of the near future in the camp is cheaper smelting. There are millions of tons of ore in sight in the camp, but it will not pay to smelt it until the smelting facilities are increased and methods of treating low-grade ore are devised. The opinion is fast acquiring force that this question will be fully settled within another year.

Rapid progress is being made with the construction of the Red Mountain branch of the Nelson & Fort Shepherd Railway. Many large gulches have yet to be filled and the work of filling in is slow and tedious. The advance party of graders is now within half a mile of Rossland, and depot and station grounds have been surveyed on the upper level, close to the Nickel Plate Mining Company's property.

The construction of this road by November 1st is now a foregone conclusion, and the impetus which it has given to Rossland is very marked. A building boom greater than any which has yet preceded it has already set in, and the demand for carpenters is now greater than it has ever been since the camp was started.

The wood-cutting industry near and around Rossland has assumed immense proportions. There is little or no coal consumed in the town, the wood supply consisting of cedar, white pine, hemlock and tamarack. Good white pine and tamarack have been sold on the ground for \$1 per cord. The various mining companies usually get their wood under contract with choppers, who in most cases have had to pay stumpage to Mr. Corbin's railway company, which has a large land grant in this district. The question of the Trail Creek country's future fuel supply is not one of great concern, though much valuable timber has been destroyed by fire. Whatever concern there is belongs to the technical rather than the commercial, and it will be met by the further opening up of the country with projected railways.

The direction taken by the prospector is a very good evidence of the way which development will take with the investment of capital. The present summer has witnessed the influx of a great many experienced prospectors into the Boundary Creek country and westward, along what is known to mining men as the gold belt. The North Forks of the Kettle River, Grand Forks and westwardly to the Similkameen Territory wholly within the Province of British Columbia, where there are believed to be placer ore localities which are very popular with miner and rancher alike. The proximity of this district to the international boundary line makes it a popular resort for experienced Western mining men, who declare that the greater portion of the activity which prevails in the Trail Creek country is due to its continental situation, for it has three distinct peoples working for its advancement, viz., English, American and Canadian. It would indeed be surprising if under such circumstances the advancement should not be very great.

The reported purchase of the War Eagle, Iron Mack, Virginia and Poorman for the sum of \$1,000,000 has been revived with the arrival of the present month. It is stated that the bond on these properties has been taken up by an English syndicate and that the money is in the bank awaiting the signatures of the parties. As there is no authentic way of verifying these reports unless the contracting parties can be personally interrogated, the reports are merely presented as common rumors to which the local press has given credence. A change in the proprietary of these properties has been regarded as certain for some time. If the reports be true the sale will give a great impetus to the camp, for the capital at the disposal of the syndicate is said to be adequate to meet all probable requirements.

VANCOUVER DISTRICT.

Manager W. R. Rust, of the Tacoma smelter, has gone to Vancouver, B. C., to meet representatives of British and American capitalists who are to locate large smelting works there, of which Mr. Rust will be manager. A four-stack smelter is to be built, having a capacity of 400 tons of ore per day and giving steady employment to 250 men. British Columbia, Alaska and South American ores are to be smelted. London, Montreal and New York capitalists, it is said, are interested in the enterprise, at the head of which is C. D. Simpson, a coal-mine operator of Scranton, Pa. Work will commence at once, that the plant may be in operation within six months.

VAN ANDA.—At this mine, on Texada Island, in the Straits of Georgia, they are drifting on the 80-ft. level, and are also sinking, the ore constantly growing richer. Assays have shown high values in gold, 19 oz. silver, and 38% copper. On the surface and at a depth of 40 ft. there was not a trace of gold in the ledge, and it was regarded strictly as a copper proposition.

MEXICO.

SONORA.

(From Our Special Correspondent.)

SANTA ROSALIA.—This mine is about eight miles from the old town of Arizpe, in the district of

Arizpe. It has a record of production of several million dollars in gold, but has been practically abandoned for the past 50 years. Several attempts to work it of late years were made by different parties, but the water in the shaft and saved state of the workings prevented any successful operations until within the last two years. A fine old church in the town of Arizpe was built by former owners of the mine as a sort of votive offering for their success, and in the mine itself are the "niches" where stood the solid silver statues of the Saints, such as were formerly placed in mines of great productiveness.

These facts and the legends of the former richness of the mine, were informed by officers of the company, induced two Americans to "denounce" and take up the property, and come to San Francisco to raise money to re-open the mine.

A company was formed called the Santa Rosalia Gold Mining Company and 51,000 out of 100,000 shares of the stock sold, the other 49,000 shares being given to the locators as the purchase price of the mine.

The 51,000 shares were mainly purchased by persons connected with the San Francisco Mint. They were bought at a stated price of 18 cents per share, to be paid for in monthly installments of 1 1/2 cents per share, no stock being issued until the final of the 12 monthly payments were made, and the stock fully paid for. This was to avoid any stock speculations, the company having been organized as a legitimate mining development proposition. No salaries were paid to any one the first year.

The two locators who sold the mine to the company agreed to act as superintendent and assistant superintendent without salaries, they being paid only \$30 a month each for a year for their expenses, therefore, the entire income from the monthly assessments was applied to the actual development of the mine.

The property had to be freed from water and the old drifts, etc., cleaned out. Many tons of rubbish, etc., were removed before any work of moment could be done. The upper part of the mine had all been worked out by the Mexicans a hundred or more years ago and they were only stopped in their work by an influx of water to a depth of about 250 ft., which was doubtless the cause of abandonment of the mine.

In cleaning out the mine 8 or 10 tons of rich ore were found and this was eventually shipped. The ledge averages about 12 ft. in width, and running through it are hilos or seams of very high-grade ore. The ore from these hilos is all that is shipped, the sorting being done by hand on tables. The rest of the ore that is worth \$100 per ton is saved and the balance cast aside. The sorted ore which is shipped is packed on mules about 75 miles, and then sent by rail to Nogales, whence it is shipped to San Francisco or Denver in cartload lots; that so far shipped has paid at the smelters from \$1,075 to \$1,650 per ton. In the future, however, sorting will not be done so closely and the grade of ore for shipment will be kept down to \$600 or \$800 per ton.

The mine has been expensive to work thus far, as no machinery has been used for pumping or hoisting. It has taken 24 men to keep the mine free of water by the use of common hand-pumps. Now, however, a gasoline hoist has been provided and bailing tanks will be used to keep down the water. An old tunnel was found blocked up by huge rocks and this has now all been cleared out and car tracks laid in it. The hoist will be placed in the mine in the end of this tunnel and the water raised to the tunnel level. The shaft has all been straightened and retimbered, and the mine put in good condition to be operated more economically.

The company owning the mine is a private one, and no stock has been placed on the exchanges or open market. Before the end of the year in which assessments were paid the mine was all paid for and there was a good balance in the bank. There are no debts, all the plant has been paid for and there is still a balance of about \$12,000, also 8 or 10 tons of very rich ore ready for shipment. A warehouse for ore and gasoline has been put up at Imusez, on the railroad line. The mine is now well equipped in a small way, but there is no reduction plant. With the new machinery they will be able to sink deeper than the Mexicans ever did and expect to find the same character of ore as above. If the developments warrant, reduction works will be provided, but at present they are not contemplated, as the ore pay so well to ship. The whole ledge could be worked at a handsome profit if there was a mill on the property. The expenses of operating the mine are about \$3,000 per month.

WESTERN AUSTRALIA.

HARQUAHALA GOLD MINING COMPANY.—The following report of work done in the mines of this company, now being developed at Kalgoorlie during the month of June, is given by Manager Robert M. Raymond: Main Shaft—West crosscut on 175-ft. level advanced 103 ft.; total, 400 ft.; no vein encountered. East crosscut advanced 76 ft.; total, 235 ft.; nothing discovered. Dodd's Shaft—South drift advanced 25 ft.; total, 65 ft.; no improvement. Prospecting in west crosscut on 83-ft. level resulted in cutting east and west vein that showed only a few colors. Harvey's Shaft—East crosscut advanced 110 ft.; total, 175 ft.; west crosscut advanced 88 ft.; total, 195 ft. A little gold encountered at 150 to 175 ft. The expenditure for the month was as follows: Labor, £826; mine supplies, £180; total, £1,006.

LATE NEWS.

MR. R. RECKNAGEL, mining engineering, who was recently general manager of the North Pole mine at Bourne, Oregon, sails from San Francisco, September 17th, for Auckland, New Zealand, where he will represent the New Zealand Mines Corporation, Limited.

BY TELEGRAPH.

(From Our Special Correspondent.)

LEADVILLE, Colo., September 11.—Since my letter the Resurrection Mining Company, a big gold consolidation, has pulled its pumps. The Newell and Capitol shafts were also flooded and pulled their pumps. The Bohn mine had closed down again because it could not get men to work at 2.50 per day, which it offered. The Bimetallite Smelter was forced to give up the struggle for ore on Tuesday, and has closed down, letting out about 200 men. The Arkansas Valley Smelter is running with only half its stacks going.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 11. Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending September 5th, 1896, compared with the corresponding period last year:

	1896.		1895.
	Week.	Year.	Year.
Pennsylvania Railroad.....	95,269	2,371,807	2,464,720

PRODUCTION OF BITUMINOUS COAL, in tons of 2,000 lbs. for week ending September 5th, and for years from January 1st, 1896 and 1895:

	1896.		1895.
	Week.	Year.	Year.
Shipped East and North:			
Allegheny, Pa.....	39,515	1,558,967	2,284,149
Barclay, Pa.....	1,174	29,035	.....
Beech Creek, Pa.....	43,968	2,019,369	1,980,303
Broad Top, Pa.....	.....	1255,964	262,807
Clearfield, Pa.....	71,959	3,178,595	3,179,558
Cumberland, Md.....	75,041	2,232,188	1,906,085
Kanawha, W. Va.....	.....	12,036,541	1,822,153
Phila. & Erie.....	965	53,691	33,352
Pocahontas Flat Top.....	59,444	2,356,673	1,063,102
Totals.....	292,066	13,721,023	13,131,509

* For two weeks ending Aug. 29th.
† For year ending Aug. 21st.
‡ For year ending August 29th.

	1896.		1895.
	Week.	Year.	Year.
Shipped West:			
Monongahela, Pa.....	18,714	871,044	496,858
Pittsburg, Pa.....	27,242	1,310,433	1,125,114
Westmoreland, Pa.....	24,678	1,299,869	1,127,974
Totals.....	70,624	3,481,946	2,749,946

Grand totals..... 362,690 17,202,969 15,881,455
Production of coke on line of Pennsylvania Railroad for the week ending September 5th, 1896, and year from January 1st, 1896, in tons of 2,000 lbs.: Week, 52,249 tons; year, 2,878,770; to corresponding date in 1895, 3,845,881 tons.

Anthracite.

The first full week has passed since the advance of 25c. per ton was made on all domestic sizes of anthracite coal, and the trade during that time shows anything but an improvement. The advance in price had been expected by dealers and consumers, so that the few who had the room to take on more coal did so at July prices. Stocks are now, as a rule, as large as the dealers have room for, so that deliveries are chiefly on old orders accepted months ago. The market develops more and more of a waiting character each week and probably only those places which later will be difficult of access, because of snow and ice, will do business in the near future. Much of the coal mined continues to go West to take advantage of low lake rates, as usual. There is little prospect for better trade for the present.

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

Bituminous.

The Atlantic seaboard soft coal trade shows little change this week; it seems to be composed of shipments upon the season contracts in hand and the few single orders that come into the market for prompt shipment. Competition is a little keener now than it was for this business and the chief effort seems to be to get the orders shipped at low ocean freights, reducing the delivered cost to the lowest figure. Prices are generally made nominally f. o. b., but it is said that actual reductions are sometimes covered up in freight rates, and in some cases in discharging charges. Ocean freights have a slight influence in restraining business, as there has been some scarcity of vessels of particular sizes. On vessels that were to be had rates have slightly increased, except to certain points.

There has been some talk in the trade against Baltimore & Ohio shippers who, it is averred, have been cutting under the market, though absolute proof is lacking. The tonnage is going forward to the various consuming territories in about usual proportions, though ocean freights have restricted shipments to Sound ports a little.

All-rail trade is unchanged; the tonnage seems to be less than that of last year.

Transient trade local to the shipping ports is practically dead, and South American business has made no showing as yet.

Transportation from mines to tide is excellent to all points, as it also is on local rail shipments. Car supply is also good.

The Flemington Coal and Coke Company, whose mines are at Flemington, W. Va., some time ago closed contracts with the New York, New Haven & Hartford Railroad Company for the delivery of 150,000 tons of coal in proportionate monthly shipments, running to July, 1897; also contracts with the American Sugar Refining Company, of Boston, for 10,000 tons, and scattering orders for 50,000 tons. The mines will be kept running for the entire year at the rate of 1,000 tons output per day.

In the coastwise ocean freight market there seems to be some shortage of tonnage and vessels can choose their ports. In consequence there is a tendency toward an advance.

We quote current rates of freight from Philadelphia as follows: To Boston, Salem and Portland, 55¢@60c.; Providence, New Bedford and the Sound, 50c.; Wareham, 70c.; Lynn, 65¢@70c.; Newburyport, 65c.; Portsmouth, 50¢@60c.; Dover, 80¢@85c. alongside and towage; Saco, 75¢@80c. alongside and towage; Bangor, 75c.; Bath, 65c.; Gardiner, 65c. and towage. Five and ten cents above these rates are asked from Norfolk, Newport News and Baltimore.

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

NOTES OF THE WEEK.

Coal receipts by water at San Francisco were 102,576 tons. For the eight months ending August 31st, they were 833,480 tons, a decrease of 33,705 tons, or 3.9% from last year. The sources of supply this year were as follows: Eastern (anthracite and Cumberland), 11,676 tons; Oregon and Washington, 305,795; Alaska, 800; British Columbia, 300,556; Great Britain, 94,478; Australia, 118,688; Tonkin, 1,487. A cargo received from Alaska in August was the first this year. A cargo also arrived from Tonkin; this is the second consignment of this coal, some having been received two years ago.

Buffalo.

Sept. 10.

(From Our Special Correspondent.)

The weather has been very changeable for the past few days, alternating from 54° to 66°. Families have mostly returned from their annual vacations, and demand for anthracite coal is now in order. Trade has certainly improved and dealers are hopeful that fall and winter orders will henceforth be more plentiful. Prices are unchanged.

Bituminous coal continues in light request, as many manufacturers are far from busy, and quite a large number of concerns have closed temporarily. Stocks are ample and quotations favor the buyer.

Lake freights on coal continue very low, with no prospect of improvements yet. The fact is that there are too many vessels afloat this year for the commerce, and owners do not care to unite and lay some of them up until the late fall.

The shipments of coal westward by lake from Buffalo, from August 30th to September 5th, both days inclusive, aggregated 76,775 net tons, distributed as follows: 24,500 tons to Chicago, 22,425 tons to Milwaukee, 8,950 tons to Duluth, 600 tons to Benton Harbor, 11,800 tons to Superior, 1,800 tons to Toledo, 500 tons to Gladstone, 2,500 tons to Marquette, 1,000 tons to Bay City, 1,700 tons to miscellaneous ports and 600 tons to Sheboygan. The rates of freight were: 20c. to Chicago, Milwaukee, Duluth, Marquette, Gladstone, Green Bay, Superior and Toledo; 50c. to Benton Bay, and 25c. to Bay City, Sheboygan and Portage. Closing quiet and steady.

The following statistics of the coal trade of Buffalo, N. Y., were compiled by Mr. William Thurstone, the secretary of the Merchants' Exchange of that city: "Railroad receipts and shipments of coal are not reported by request; receipts by lake this year and for several years past none; shipments westward by lake for month of August, 343,236 net tons, as compared with 319,860 net tons in 1895 and 253,988 net tons in 1894; for the seasons to September 1st, 1,237,034 net tons as compared with 1,149,680 net tons in 1895 and 1,298,067 net tons in 1894. The receipts by canals for the month of August, 10,449 net tons as compared with 3,509 net tons in 1895 and 11,102 net tons in 1894; for the season to September 1st, 19,346 net tons as compared with 5,432 net tons in 1895 and 16,086 net tons in 1894. The shipments by canal for month of August, 24 net tons as compared with 807 net tons in 1895 and 3,011 net tons in 1894; for the season to September 1st, 755 net tons, as compared with 4,289 net tons in 1895 and 5,413 net tons in 1894. The aggregate shipments of coal by lake this year to September 1st shows an increase of 87,345 net tons as compared with 1895 and a decrease of 62,033 net tons as compared with 1894.

The rates of freight during the month of August were as follows: 30¢@20c. to Chicago and Milwaukee; 25¢@20c. to Duluth, Lake Superior ports, Green Bay and Toledo; 40c. to Saginaw; 25c. to Detroit and Bay City. A year since the rates were 50c. to Chicago and Racine; 45c. to Milwaukee, Sheboygan and Green Bay; 35¢@40c. to Saginaw; 25¢@30c. to Duluth and Lake Superior ports, and 25c. to Toledo and Detroit.

The distribution of the coal shipped thus far this season to August 29th was to the following places: 496,175 net tons to Chicago, 338,445 tons to Milwaukee, 141,660 tons to Duluth, 13,925 tons to Racine,

17,800 tons to Green Bay, 4,490 tons to Kenosha, 200 tons to Osceola, 8,795 tons to Bay City, 12,245 tons to Saginaw, 38,250 tons to Toledo, 700 tons to Detroit, 400 tons to Marine City, 225 tons to St. Ignace, 2,050 tons to Menominee, 6,875 tons to Marquette, 110 tons to Pequaming, 10,610 tons to Lake Linden, 600 tons to Grand Haven, 8,488 tons to Fort William, 2,100 tons to Port Arthur, 2,670 tons to Sault Ste. Marie, 800 tons to Cheboygan, 103,300 tons to Superior, 7,750 tons to Ashland, 4,100 tons to Hancock, 1,750 tons to Marinette, 16,134 tons to Manitowoc, 9,200 tons to Gladstone, 400 tons to Ontonagon, 100 tons to Alpena, 300 tons to Manistique, 500 tons to Huron, O.; 670 tons to Portage, 450 tons to Sheboygan, 300 tons to Bay Mills, 1,150 tons to Port Huron, 2,150 tons to Michigan City, 370 tons to Sand Beach, and about 33,000 tons to miscellaneous ports by vessels from Tonawanda, not reported at the Custom House.

Chicago. Sept. 9.

(From Our Special Correspondent.)

Anthracite.—The trade of this center remains in a stage bordering on stagnation. The out-of-town trade shows up but slightly in comparison with that usual at this time of year, and only cold weather can do anything to improve trade from that direction. The increased price of hard coal, 25c. added September 1st, has been the means of cutting down business, but it is understood that the latest circular rates are not being exactly held to. Circular quotations on anthracite coal are now for broken and grate \$5.60, and egg, stove and chestnut, \$5.85 f.o.b. cars Chicago.

Bituminous.—Trade has picked up a little this week, though the prices obtained are lowest known. It is an unproductive business so far as profits are concerned. Out-of-town trade has increased somewhat from the West and Northwest. There is a great deal of soft coal coming in, and in consequence competition makes its sale necessary.

The Illinois & Wisconsin Retail Coal Dealers' Association has been organized as the successors of the old Northwestern Retail Coal Dealers' Association. The following officers were elected: President, C. L. Deering, Chicago; vice-president, Frank Harral, Aurora; secretary, Thomas Bedwell, Rockford; executive committee, T. C. Keeler, Beloit; D. B. Buckner, Naperville; John W. Lowe, Chicago.

Coke.—Business is limited to a few small sales, the iron trade having lately cut down their orders for this material through dull business in their line.

Pittsburg. Sept. 10.

(From Our Special Correspondent.)

Coal.—We have to report a dull and unsatisfactory market. The wage fight is still on; while some miners are willing to accept a reduction others insist on the 70c. rate. About 200 miners at Finleyville returned to work at the 60c. rate. The situation of the river trade has not materially changed since our last, though it is expected that with the approaching cooler weather the demand will soon pick up, and cause increased activity in the pools where there is very little doing at present. As regards the railroad coal trade lake shipments have been rather light during the week, owing to the glutted condition of the lake ports, which made it difficult to handle the increasing coal; otherwise no changes have occurred in the situation.

A big sale of coal lands is reported from Springfield Township; there is about 3,000 acres under option until December 1st. W. I. Lynn has an option on 1,000 acres and I. B. Drumm on 2,000 acres, all on the Baltimore & Ohio Railroad. A syndicate of 10 manufacturers is said to be in the deal with a probable new railroad back of the project. Engineers have already been on the ground and located a site for a coke plant. The option price was \$200 per acre and upward.

Connellsville Coke.—Trade last week showed an increase in demand of 1,000 tons, but a decrease in production of 1,200 tons, with the shutting down of 1,700 ovens. There is scarcely a plant in the entire region that is running in full operation, and it is estimated that the close of the week will see 13,000 men out of employment. The Dunbar furnace closed down and will remain closed until there is an advance in the price of pig iron. Business in the whole Dunbar Valley is at a standstill with poor prospects of a reaction until after the election. Of the 17,947 ovens in the region, 12,307 are out of blast, leaving only 5,640 in operation, and that on an average of five days of the week.

The estimated production was 65,997 tons, as against 74,442 for the week preceding; there was a slight increase in the shipments. In the running order of the ovens in blast, 1,937 ovens made six days, 4,032 ovens five days, and 1,014 ovens four days, an average of 5.33 days. The shipments of coal from the region for the week amounted to 4,000 cars.

The shipments were as follows: To Pittsburg or river points, 1,552 cars; points west of Pittsburg, 1,691 cars; points East, 757 cars. There has been no change in coke prices since the first of the year.

Shanghai, China. July 31.

(Special Report of Wheelock & Co.)

Coal.—There has been a moderate demand for Japan coal and a sale of 3,000 tons Ohnoura took place at \$3.65 f. o. b. Moji; since this we are advised that the market is very much stronger, as apparently the article is scarce. We have heard of a small sale of Cardiff at 12.40 taels per ton, but we be-

lieve this was for immediate consumption. At present there is little inquiry at these prices. Operators have found it necessary to drop prices of Sydney Wallongong to 7.50 taels per ton, being the only way to get rid of some of the very large stock; deliveries have of late been very poor, even the native consumers do not seem anxious to buy at this low price, other coals evidently suiting their purpose.

We quote: Cardiff, 10.75 taels per ton; American anthracite, 9 taels per ton; Sydney Wallongong, 7.50 taels per ton. Japan coal is quoted at 5.75 taels for Takasima lump; 4 taels for Namazuta lump, and 3@3.25 taels per ton for other sorts.

Kerosene Oil.—Business has continued to be confined to Devoes, and all transactions have been among second hands; fairly large quantities have been dealt in at prices ranging from 1.64½@1.67 taels per case. Russian and other brands have had but a small inquiry. The only arrival has been the steamship *Zweena*, on July 17th, with 45,000 cases Langkat. Our stocks, including this arrival, are now 350,000 cases Devoes, 225,000 cases Russian, 23,000 cases Langkat, and 4,000 cases Comet. Quotations are as follows per case: American Devoes, 1.67 taels; Russian Batoum, 1.57½ taels; Russian Batoum, bulk, 1.47½ taels; Langkat, 1.52½ taels; Comet, 1.57½ taels.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 11, 1896.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	Sept. 13, 1895.	Sept. 11, 1896.	Jan., '95.	Jan., '96.	Tons.	Tons.
Anthracite.	49	31,050	31	18,050	751,868	912,610
Coke.	149	167,700	95	108,180	5,147,794	5,594,964
Charcoal.	21	4,650	23	6,420	149,385	205,895
Totals.	219	203,400	149	132,650	6,049,027	6,713,379

So far as the iron market is concerned, history is taking a rest, and there is very little to be recorded this week. Business in raw iron and steel is everywhere dull, and the sales of finished products are light. When concerns like the Bethlehem and the Cambria companies find it expedient to shut down large sections of their works, there is little more to be said.

There is a good deal of talk over the decision of the steel combination at the Cresson meeting to maintain prices of billets. "It is heroic, but it is not business," is the criticism of one large dealer. It is doubtful, however, whether any reduction would stimulate business just now. In November the case may be different.

The persistent adherence of the Lake Superior companies to the prices adopted in the spring is also much criticised. With the present demand and at the prices now offered most of the Pennsylvania and Ohio furnaces have given up trying to make Bessemer pig out of \$4 ore, preferring to go out of blast.

Sellers are urging the point that pig iron production is now down to a level of about 6,500,000 tons a year, or about that of the early part of 1894; but this fact has not induced buyers to raise their offers. There are rumors of more speculative purchases of pig iron, but the only sale of this kind that can be at all definitely located is one of 22,000 tons of Alabama iron. The terms are private, but it is understood that delivery is optional, October to January. This makes a total, so far as ascertained, of about 90,000 tons of iron put away for a rise.

New York. Sept. 11.

The best that can be said of the local market is that there are signs of increasing confidence and more inquiry for material; but the confidence has not yet developed to the point of actual business. In the building trade, upon which so much of the local business depends, there is plenty of talk of new plans, but financial conditions are still in the way, and orders are not being placed. The volume of small transactions continues very light.

Pig Iron.—Aside from speculative buying there is very little to note. Small orders are the rule, and not too many of those. The nominal rates for No. 2 foundry and No. 2 soft Southern have been raised 25c., but no attention has been paid to this in actual sales, and we can report no change in prices. We quote for Northern iron: No. 1 foundry, \$11.75@12.50; No. 2, \$11.25@11.75; gray forge, \$10.50@11. For Southern iron prices are: No. 1 foundry, \$10.75@11.25; No. 2 foundry, \$10@10.75; No. 1 soft, \$10.25@10.75; No. 2 soft, \$9.75@10.25; forge, \$9.25@9.75. Basic pig is offered at \$10.50@11. All prices are for tidewater delivery.

Cast-Iron Pipe.—No new contracts are noted. The talk of a combination has been revived, but with little chance of any result.

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

Steel Billets and Rods.—The pool prices are \$21.75, New York, for Bessemer billets, and \$23.75 New York, for open-hearth billets. No business is noted. Rods are \$23@29, with very small sales.

Merchant Iron and Steel.—Business is still light, but prices are nominally unchanged, though some sales of bars are said to have been made at 1.05c. We quote: For common bars, 1.10@1.15c.; refined bars,

1.20@1.45c.; soft steel bars, 1.20@1.30c. Other quotations are: Steel hoops, 1.50@1.60c.; steel axles, 1.60@1.75c.; links and pins, 1.60@1.70c.; tire steel, 1.80@1.90c.; spring steel, 1.95@2.15c. All prices are for delivery on dock, New York.

Plates.—Only some small sales are noted. We quote for universal mill plates, 1.35@1.50c. For steel plates we quote: Tank, 1.35@1.45c.; boiler shell, 1.45@1.55c.; good flange, 1.60@1.75c.; firebox, 2@2.40c. Charcoal iron plates are quoted 2.25c. for shell, 2.75c. for flange, and 3.25c. for firebox. Rivets are 2.15@2.25c. for steel and 3@3.25c. for iron.

Structural Iron and Steel.—No new contracts are reported this week. A few small lots for builders make up the sales. We quote for angles, 1.35@1.40c.; channels, 1.70@1.75c.; tees, 1.65@1.70c.; beams, 1.70@1.75c. for large orders, and 1.80@1.90c. for small lots.

Wrought-Iron Pipe.—All the business being done is for small lots out of store. Discounts are unchanged, as follows, out of store: For black, large, 67, 10, 10, 10 and 10; 1½ in. and smaller, 57, 10, 10, 10 and 10. For galvanized, large, 55, 10, 10, 10 and 10; for 1½ in. and smaller, 52, 10, 10, 10 and 10.

Nails.—The pool price continues \$2.55 per keg f. o. b. Pittsburg for steel wire nails, and \$2.30 per keg, f. o. b. Pittsburg, for cut nails. Buyers are very much dissatisfied, and practically there is no business.

Steel Rails and Rail Fastenings.—The combination price is still \$28.75 per ton at tide water or \$28 at mill, for heavy sections. Girder rails are \$29@31, tidewater. No business is reported here. Little is doing in rail fastenings. Angle-bars are 1.15@1.25c. and spikes 1.60@1.65c., tidewater delivery. Bolts are 1.85@1.95c. for square nuts, and 1.95@2.05c. for hexagon nuts.

Old Rails.—Two or three lots of old iron rails have been placed at \$12.50@13.50, New York, chiefly for export. Old steel rails are quoted \$10.50@11.50, New York harbor, with few sales. Some old steel rails fit to relay have been sold at \$20@21, New York harbor delivery.

Scrap Iron.—Demand for foundry scrap is variable and prices are hard to find. We continue to quote \$10@11.50 for good machinery; \$8.50@9.50 for ordinary cast scrap; \$6@7.50 for stove-plate and mixed.

Buffalo. Sept. 9.

(Special Report of Rogers, Brown & Co.)

The heavy sales of Southern iron to speculators has caused an advance in some grades of metal from the South. No. 2 soft grade, which is the most popular grade in this territory, was withdrawn entirely, the largest producer in the South refusing to accept more orders at any price. This has caused a much better feeling among melters of foundry iron, as it shows there is a bottom to the iron market, and a point beyond which no furnace will go. Sales have been rather heavy, but not what would have been the result were the consumers more certain of whether they would need more iron this year or next. We quote an advance of 25c. in No. 1 soft. Prices are: No. 1 foundry strong coke iron, Lake Superior ore, \$12.50; No. 2 foundry strong coke iron, Lake Superior ore, \$12; Ohio strong softener No. 1, \$12.50; Ohio strong softener No. 2, \$12; Jackson County silvery No. 1, \$15.25; Southern soft No. 1, \$11.25; Lake Superior charcoal, \$14@14.50.

Chicago. Sept. 9.

(From Our Special Correspondent.)

The market for iron remains unchanged, buying in general being limited to a small aggregate in nearly every line. There does appear a trifle more confidence than heretofore, but this is shown only in inquiries, no heavy buying in any line having been done as yet. Stocks in most lines are at a low ebb, but are plenty for prevailing demand.

Pig Iron.—Carload and 100-ton lots, and not a great many of these, represent the business transacted. The small buying shows the uncertainty prevailing, consumers being unwilling to risk buying heavily even with the very low prices now asked. There is an occasional order given for 1,000 or more tons, and it is as a rule Northern iron. Prices though very low are now strictly held to in Northern iron, but the Southern material fluctuates somewhat. Quotations are as follows: Lake Superior charcoal, \$13.50@14; local coke foundry No. 1, \$11.50@11.75; No. 2, \$11@11.50; No. 3, \$10.50@11; local Scotch foundry No. 1, \$11.50@11.75; No. 2, \$11@11.50; No. 3, \$10.50@11; Southern coke No. 1, \$10.85@11.10; No. 2, \$10.35@10.85; No. 3, \$10.10@10.35; Southern No. 1, soft, \$10.35@10.85; No. 2, soft, \$10.25@10.35; Southern silveries No. 1, \$11.35@11.85; No. 2, \$11.10@11.35; Jackson County silveries, \$14@16; Ohio strong softeners, \$14@14.25; Alabama car-wheel, \$16.25@16.75; coke Bessemer, \$13@13.50.

Billets and Rods.—There have been a few small sales of billets, but none of rods. Billets are now quoted \$21.50, Chicago.

Bar Iron.—Nothing much has been done in this line during the past week, consumers continuing to hold off. Inquiries are not heavy. Bar iron is quoted, for common, 1.30c.; guaranteed, 1.35@1.40c.

Steel Rails.—A limited quantity of business was received during the week, and the outlook has somewhat improved. Inquiries for larger quantities are now coming in. Rails are still quoted \$29, Chicago.

Structural Material.—A small bridge here and

there and a limited quantity for buildings out of the city are all the business. Quotations are as follows: Beams and channels, 1.70@1.75c.; angles, 1.30@1.35c.; plates, 1.35@1.40c.; tees, 1.50@1.55c.

Old Rails and Wheels.—Little business is noticed in these lines, and but little probability of any larger trade. Old iron rails are quoted \$11, and old wheels \$12@12.50.

Cleveland. Sept. 9.

(From Our Special Correspondent.) Iron Ore.—The dealers and shippers report some improvement. Pickands, Mather & Company say that there is some business this week, whereas there was none last week. That business is slowly improving is apparent, as all the dealers report more inquiries. The quotations on iron ore are the same this week as last: Standard Bessemer, \$4; non-Bessemer hematites, \$3@3.25; Mesabi non-Bessemer, \$2.45@2.60. There has been absolutely no change in the lake freight rates. Very little ore is being brought to Cleveland at the present time. The ore docks are filled and many ore carriers are tied up. One charter from Escanaba to Cleveland at 40c. was reported to-day.

Pig Iron.—What is said above of iron ore can also be said of pig iron. There is a little life in the market, and the prospects are better than they were last week. Lake Superior charcoal brings \$13.50@14; bituminous coke, No. 1 foundry, \$12.25; No. 2, \$11.75; Ohio Scotch No. 1, \$12.25; No. 2, \$11.75; Bessemer pig, \$12.25.

Philadelphia. Sept. 1.

(From Our Special Correspondent.) Pig Iron.—The market is about in the same condition as last week. Brokers and furnace agents eagerly scan every bit of news and talk around among each other a good deal. The notion is expressed that we may suddenly stumble into better times and that the decreased production of pig is the preliminary step. Very little iron is selling in a general way, but a few concerns have made arrangements in a quiet way for a good deal of iron. No more specific details can be had just now. Some brokers predict a marked improvement in pig as soon as next week. No. 1 Foundry is selling in a sort of way at \$12.50; No. 2, \$11.25 @ \$12, and forge at \$10.25@11.50 all delivered.

Merchant Bar.—No more encouragement is received this week, although sharp bidding has been done by way of inviting business. Refined, 1.2@1.30. Steel bars, 1.30@1.50. Stores are finding retail sales a little better.

Steel Billets.—Some expected business has dwindled down to trifling orders. The quotation is \$21.50. Agents have been around among the trade this week.

Skelp.—The manufacturers of skelp have been favored with a few small orders served Monday.

Sheet.—The opening of autumn trade and building operations has imparted a little more activity to the market. It is shown in better movement from stores where stocks are rather heavy. The inquiries since Monday for galvanized have raised hopes.

Nails.—Buyers hang to the notion that nails must and will drop in price, but there is no indication yet of a drop or cut.

Pipes and Tubes.—The prices for pipes have been shaded constantly all summer and makers would gladly welcome some steps to make wider margins possible. Business is a little better, particularly in tube work, but it is far from satisfactory.

Plates.—The trade awaits an order or two which it is thought may amount to seven or eight thousand tons of shipyard material. Small orders are showing up. Builders and boiler makers are helping out, but there is nothing to boast of.

Structural Material.—Manufacturers and mill agents are not disposed to be communicative on the subject of business. There is no movement, we are told, but the mills run with a regularity that shows more business is coming in than is reported at offices. There are intimations of a break in prices also, but it appears thus far to be only a street rumor.

Steel Rails.—This department of the steel business is very quiet.

Old Rails.—No sales.

Scrap.—Yardmen have hopes of getting rid of considerable stuff.

Pittsburg. Sept. 10.

(From Our Special Correspondent.) Raw Iron and Steel.—A slight improvement was perceptible in the demand for Bessemer pig; consumers are beginning to realize the fact that prices will go no lower, and that an advance is certainly close at hand. There is one thing to be taken into consideration, stocks in the hands of consumers are down to a low point, and when the advance comes there will be a heavy demand. The beginning of last year few persons thought the summer months, when a lull is usually witnessed, would prove the best of the year: the market falling flat in the summer months this year makes prices much lower than they were then. By comparison we find that Pennsylvania and Ohio iron are from \$1 to \$1.25 per ton lower than they were then, while Southern irons are from \$2 to \$2.25 per ton lower. During the last three months stocks have increased about 60,000 tons; with the furnaces shutting down as they are, the increase will probably in a short time cease. Not, however, until buying starts, will there be any marked improvement in prices.

There is scarcely any demand for steel billets; in fact there seems to be no market at present; small sales are reported at pool prices, and sales also below these figures.

Latest.—The market is firm but not very active; dealers are still waiting. There is no change in prices or demand, but there is no talk of concessions. The bottom has been reached. \$11 spot cash was offered for 1,000 tons Bessemer pig and refused.

Table with columns: COKE, SMELTED, LAKE AND NATIVE ORE. Tons, Cash. Rows include Bessemer, Sept., Oct., and Gray Forge, etc.

METAL MARKET. NEW YORK, Friday Evening, September 11, 1896. Gold and Silver.

Table with columns: September, St. Ex., London Pence, N. Y. Cts., Value of \$1. in \$1. Rows for 7, 8, 9, 10, 11.

After completion of the French tender the silver market has shown decided weakness. Lack of buying orders from Indian banks and higher rates for money in London have been factors in the decline. The market closes weak and nominal at 30% d. in London.

The United States Assay Office in New York reports the total receipts of silver at 74,000 oz. for the week.

Gold and Silver Exports and Imports. At all United States ports, July, 1896, and years from January 1st, 1896 and 1895:

Table with columns: Coin and bullion, Exports, Imports, In ores, Exports, Imports, Total excess, Exp. or Imp.

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

Gold and Silver Exports and Imports, New York. For the week ending September 10th, 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.

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

Average Monthly Prices of Silver

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

Table with columns: Month, 1896, 1895, 1894. Rows for January through August.

FINANCIAL NOTES OF THE WEEK.

The most important matter to be noted is the continuance of gold imports. The total amount reported up to date as taken for import is \$26,120,000, of which a total of \$18,861,000 has actually arrived. From present indications the movement is not yet at an end. The United States Treasury has benefited by the deposit of gold in exchange for legal tenders, and shows this week a gain over last of \$4,000,510 in the gold reserve. To day, Friday, arrivals of gold at New York amounted to \$3,697,800, and about \$3,000,000 was deposited in the Sub-Treasury in exchange for legal tenders.

While these imports have eased matters a little there is still a good deal of reluctance to loan money, especially on time loans, and rates continue too high for commercial comfort. It is evident that confidence has not been restored; though the general feeling has improved, there is not the security which is needed to restore business.

The gold movement has attracted attention in Europe by its continuance and large amount, and with some demand from Russia and Austria has raised the rates for money there. They have been higher both in London and Paris in the general market, and on Thursday, September 10th, the Bank of England raised its discount rate from 2% to 2 1/4%. The rate had stood at 2% since February 22d, 1894, the longest period in the history of the bank of so low a rate without a change.

Shipments of specie from San Francisco by water in August amounted to \$1,158,227. For the eight months ending August 31st they were \$19,722,357, showing an increase over last year of \$6,336,930. The destinations of above shipments were as follows:

Table with columns: Destination, 1895, 1896. Rows for Hongkong, Shanghai, Japan, etc.

Total \$13,385,418 1895, \$19,722,357 1896. The increase this year was chiefly in United States coin shipped to New York.

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: Bank Name, Gold, Silver, Total. Rows for Asso. Banks of New York, Bank of England, etc.

The return for the Associated Banks of New York is of date September 5th; all the others are of September 10th, except the Bank of Italy, July 20th, and the Bank of Russia, August 1st-13th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately, but

their reserves are mainly gold, the silver being chiefly subsidiary coin.

The statement of the United States Treasury on Thursday, September 10th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

Table with 4 columns: Item, Sept. 3, Sept. 10, Changes. Rows include Gold, Silver, Legal tenders, Treasury notes, etc.

Totals. \$238,038,576 Sept. 3, \$238,741,543 Sept. 10, I. \$702,967

Treasury deposits with national banks amounted on September 5th to \$16,635,355, showing an increase of \$475,478 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$126,442,280.

Table with 4 columns: Item, 1894, 1895, 1896. Rows include Loans and discounts, Deposits, Circulation, Reserve, etc.

Changes for the week this year were increases of \$924,000 in circulation and \$1,851,200 in specie; decreases of \$2,720,100 in loans, \$4,863,000 in deposits, \$3,674,600 in legal tender, and \$807,650 in surplus reserve.

Shipments of silver from London to the East for the year up to August 27th are reported by Messrs. Pixley & Abell's circular as below:

Table with 4 columns: Item, 1895, 1896, Changes. Rows include India, China, The Straits, Totals.

Arrivals for the week this year were £230,000 in bar silver from New York, and £40,000 from Chile; a total of £270,000.

Only 40 lakhs of Council bills instead of 45, as for some time past, were offered in London. The bills were all taken, but at a somewhat lower rate, the current price being 14/00d. per rupee.

Domestic and Foreign Coins.

Table with 3 columns: Item, Bid, Asked. Rows include Mexican dollars, Peruvian soles, Victoria sovereigns, etc.

Other Metals.

Copper.—There has been a decidedly better feeling, and after going to press last week, somewhat higher prices were paid, especially for Lake copper, for which a sudden demand sprung up, and some business was done at 10 1/2 up to 10 7/8.

The foreign market has shown a great deal of life and buoyancy. The speculative sorts experienced large fluctuations, which, however, have had little influence on consumers' copper.

Tin.—Our market is in a peculiar position. We have for weeks past pointed out the scarcity of spot tin, which condition was only partly relieved by the recent heavy arrivals.

consumers. Early in the week a large business was done at 13/35, but afterwards prices declined in conjunction with the foreign market to 13 15/16@13 25/16.

The London market was active, but prices have suffered somewhat. The market, which opened at £59 10s., receded from day to day, and this morning touched £58 2s. 6d., but a slight reaction set in, and the close is £58 7s. 6d. @ £58 10s. for spot and 10s. higher for three months prompt.

Messrs. De Monchy & Havelaar's circular gives the supply of tin in Holland for the eight months ending August 31st at 10,546 tons, and deliveries for the same period at 10,347 tons.

Lead.—The market rules very firm; hardly anything is offered, but the demand is also not large. Early in the week a few small transactions took place at 2/70@2/72 1/2.

The foreign market is considerably higher, with small offerings. The price advanced to £11 ls. 3d. @ £11 2s. 6d. for Spanish and 5s. higher for English.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is strong and slowly advancing. Latest sales were on a basis of 2/55 for common and 2/57 1/2 for argentiferous refined.

Spanish Lead Market.—Messrs. Barrington & Holt write from Cartagena under date of August 28th: Local prices of both lead and silver have receded during the past month.

Spelter.—At last the decline has been arrested, and a slightly better demand has sprung up. Heavy shipments for export have been made of late, which have relieved the Western producers, and the stocks which had accumulated have now disappeared.

Antimony remains very dull and is obtainable in small lots. Cookson's is quoted at 7c.; United States Star 6 1/2c., and Hallett's 6 3/4@6 1/2c.

Nickel.—There is nothing new to report, and we continue to quote: 35@36c. per lb. for ton lots and 37@39c. for smaller orders. London prices are 14d.@15d. for large orders and 15d.@16 1/2d. for small lots.

Quicksilver.—The New York quotation has been increased 50c. to \$36 per flask. The London price is £6 10s. per flask, with £6 8s. 9d. quoted from second hands.

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

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

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

Table with 2 columns: Item, Price. Rows include Aluminum, Ferro-silicon, Phosphorus, Platinum, Tungsten, Ferro-tungsten.

Imports and Exports of Metals.

Table with 3 columns: Item, Week, Year. Rows include Philadelphia, Antimony, Copper ore, Ferro-manganese, Bismuth, Iron ore, etc.

New York. Table with 4 columns: Expts., Impts., Expts., Impts. Rows include Aluminum, Antimony ore, Brass, old, Copper, etc.

Metal Exchange Reports. † Week ending Sept. 10.

Baltimore. Table with 4 columns: Exp., Imp., Exp., Imp. Rows include Bismuth metal, Chrome ore, Copper, etc.

Average Monthly Prices of Metals.

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

Table with 6 columns: Month, 1896, 1895, 1894, 1893, 1892. Rows include Copper, Tin, Lead, Spelter.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 11.

Heavy Chemicals.—Conditions remain the same in the heavy chemical market as last reported. Inquiries continue to come in for alkali, which has resulted in a slight stiffening, but as yet the amount of business actually transacted has not increased.

Acids.—The trade in acids has in no way changed during the week. Sulphuric acid remains firm at prices given, which in general are closely adhered to and show no change since our last report. We quote as follows: Acetic acid (in barrels or carboys), \$1.25@1.40; muriatic acid, 18°, 75c.; 20°, 75@85c.; 22°, \$1.10@1.25, according to make and quantity. Nitric acid, 36°, \$3.25 @ \$4.36; 40°, \$4@4.50; 42°, \$4.50 @ \$5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66°, 75@95c., 10@15c. higher for small quantities. Chamber acid, \$6@6.50 per ton at factory. Blue vitriol, \$4@4.25, according to grade and order.

Brimstone.—The upward tendency in the price of brimstone still continues, as shown by the spot quotations for best unmixed seconds, which are \$23@24 per ton. To arrive (nearly due) prices quoted are \$22@23 per ton. For October shipment \$20½ for best unmixed seconds; thirds are \$1 per ton less. The steamer *Pocahontas* is now in port discharging its cargo, but this, as in cases previously reported, was contracted for before the steamer's arrival.

Fertilizing Chemicals.—This market continues dull and heavy. There has been more or less inquiry from the South, and some sales have been effected, but the volume of business is not great. Prices show no change, and we quote: Sulphate of ammonia, gas liquor, \$2.15@2.17½; bone, \$2.05@2.10 per 100 lbs. Dried blood, high grade, \$1.00 per unit, New York; low grade, fine ground, \$1.35 f.o.b. Chicago. Azotone, \$1.60 basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13% @ 15%, av. P₂O₅, 54@65c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P₂O₅, 85c. per unit. Acidulated fish scrap, \$8.50@9.00, and dried scrap \$10.50@11.7 f. o. b. fish factory. Tankage, high grade, \$18@18½; low grade, \$17½@18. Bone tankage, \$21; ground bone, \$22@22.50. Bone meal, \$19.50@23.

Sulphate of Potash: 90-95%, New York and Boston, \$1.96½; Philadelphia, Baltimore and Norfolk, \$1.98; Southern ports, \$2.

Double Manure Salts: 48-53%, New York and Boston, \$1.01; Philadelphia, Baltimore and Norfolk, \$1.02; Southern ports, \$1.03½.

Muriate of potash: The new prices are 1.78c. at New York and Boston; 1.79½c. at Philadelphia, Baltimore and Norfolk, and 1.81½c. at New Orleans for 80@85% (basis of 80%), in lots of 50 tons and upward.

Kainit.—Quotations for 1896 are as follows: New York, Boston, Philadelphia and Baltimore, \$8.80 per ton; Norfolk, \$9.15, and New Orleans, \$9.30 per ton, for 25 tons and upward. Sylvinit at the same ports is quoted at 36½c., 37½c. and 38c., respectively.

Nitrate of Soda.—The prices quoted are 1.77½@1.80c. for spot, according to quantity; 1.80c. to arrive, and 1.82½@1.85c. for futures. The steamer *Wakefield* arrived from Chile on September 9th with a cargo of 25,000 bags of nitrate of soda. Prices are firm at quotations given.

Liverpool. Sept. 1.

(Special Correspondence of Joseph P. Brunner & Co.) Dullness is still the chief characteristic of the chemical market and there is no life in anything.

Soda ash is in ample supply, while little fresh business is reported. We quote nearest spot range for tierces as to market about as follows: Leblanc ash, 48%, \$4@4 5s. per ton; 55%, \$4 5s. @ \$4 10s. per ton net cash; ammonia ash, 48%, £3 5s. @ £3 10s. per ton; 55%, £3 10s. @ £3 15s. per ton, net cash; bags 5s. per ton less.

Soda crystals firm, at £2 7s. 6d per ton, less 5% for barrels, and 7s. less for bags. Caustic soda in limited request, but quotations are nominally unchanged, varying according to export market, as follows: £6 5s. @ £6 7s. 6d. per ton; 70%, £7 5s. @ £7 7s. 6d. per ton, net cash; 74%, £8 5s. @ £8 7s. 6d. per ton; 76%, £9 @ £9 5s. per ton, net cash.

Bleaching powder neglected and hardwood is nominally quoted at £6 12s. 6d. @ £7 per ton, net cash, as to destination.

Chlorate of potash very slow at nominally 4½d. to 4¾d. per lb., but practically nothing doing to test the market.

Bicarb. soda quiet, at £6 15s. per ton, less 2½% for the finest quality in 1-cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia dull and easier, at £7 18s. 9d. @ £8 3s. 9d per ton, less 2½%; for good gray, 24% and 25%, in double bags f. o. b. here, according to quality.

Nitrate of soda quiet, at £8 2s. 6d. @ £8 5s. per ton, less 2½% for double bags f. o. b. here, as to quality. Carb. ammonia, lump, 3d. per lb.; powdered, 3¾d. per lb., net cash.

MINING STOCKS.

Complete quotations will be found on pages 262 and 263 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, Cleveland,	page 260.	

NEW YORK, Friday Evening, Sept. 11.

There has been manifest in the mining stock market a little more interest, but sales at the Consolidated Stock and Petroleum Exchange and the New York Stock Exchange show total transactions of only 8,360 shares.

The Comstocks closed a shade lower this week than they did last week, and in all show sales of 1,760 shares only. The Colorados were very quiet; the larger volume of business was done in the Cripple Creek stocks, which show sales of 1,300. Little Chief was the other Colorado stock, and this recorded transactions of 100 shares at 15c. On Tuesday of this week there was a sale of 100 shares of Victor at \$7, which was not reported to the Consolidated Stock and Petroleum Exchange, although it was made by one of its brokers. The Red Mountain Mining Company, incorporated February 25th, 1881, in the State of New York, is a "prospect" for entry on the lists of the Consolidated Stock and Petroleum Exchange, and a meeting of the mining committee will be held on Monday to take action. The application filed by the company says that it is capitalized at \$200,000, divided into 200,000 shares at a par value of \$1; object, to recover the gold, silver and copper contained in its prospect, which is located in the Red Mountain mining district of Ouray and San Juan counties, Colo. It is stated that the former company carried on development work to the extent of \$2,000.

The only California stock to show any dealings is Brunswick Consolidated, which reached 25c. today; sales were made during the week of 5,200 shares at 21@25c. The following letter, dated September 2d, has been received by Mr. J. J. Halpin, general manager of the company, from the superintendent, Mr. C. H. Morgan: "I inclose you herewith account of sales of 26,347 lbs. of sulphurets sold to the Selby Lead Company last month by this company at \$138.50 per ton; total return, \$1,824. These sulphurets are the result of the June and July ore only. My assay of the sulphurets above was \$161 per ton gold; trace silver. The Puget Sound Reduction Company, of Everett, Wash., bid \$125 per ton; the Pioneer Sulphuret Works, Nevada City \$124.50; Maltman did not bid for himself. On August 25th I shipped run No. 23, 48.40 oz. retorted gold; run from August 24th-28th—four days—for this run Wells Fargo & Co.'s bank credits this company on September 1st, \$795. Run No. 21 netted the company \$795. On September 1st I shipped 37.50 oz. retorted gold, being run No. 23 from August 28th to September 1st, including the battery clean-up. We are working ore now which we find very much mixed with waste and consequently cannot be taken out so clean as before, but must be put through the mill the same as the rest. The stopover the 804 level supplies the mill, and is looking well. The ore is mostly above the header. Work in shaft is progressing. Mill runs steadily."

Boston. Sept. 10.

(From Our Special Correspondent.)

The speculative interest in the market for mining stocks the past week has centered largely as usual in Boston & Montana, which, under the influence of the general market, advanced sharply from \$77 in early dealings to \$81½ yesterday, and considerable stock was marketed at about the highest figure. A reaction to-day followed on attempts to realize, which broke the price down to \$78¾, and this was the closing and lowest price for the day. Sales for the week (five days) aggregate about 12,000 shares. Old Dominion, which is the next in point of activity, shared in the advance and sold up from \$14¼ to \$16¼, losing the fraction only to-day.

The balance of the market, while not active, shows a better tone, and prices have advanced in sympathy with the leading stocks. Calumet & Hecla sold at \$301@305 Quincy advanced \$4 to \$108, and Tamarack from \$70 to \$72, both on small sales. Quincy scrip sold at \$77@78. Kearsarge was in good demand, and sold up to \$11, a gain of ¾. Oceola was strong, and advanced from \$23 to \$25 on sales of about 500 shares. Franklin was firm at \$8¾. Atlantic sold at \$16 for 50 shares, a gain of ½. Wolverine advanced ½, with sales at \$6¾. Butte & Boston sold at \$1½, but declined later to \$1¼.

In gold stocks, Pioneer took the lead, with an advance from \$4 to \$5½, and closed strong. The latest reports from the mine are considered favorable, and there is an active demand for the stock. Merced has been active also at an advance from \$5 to \$7¾, closing at \$7¾ sales. Santa Ysabel advanced from \$9 to \$9½ on small sales. Gold Coin sold in a small way at \$2½, and Boston & Cripple Creek at 20c. Napa Quicksilver sold at \$7 for 100 shares.

Chicago.

The following table gives the highest prices with sales of the stocks recorded on the Chicago Mineral and Mining Board for the week ending September 9th:

Stocks.	Sept. 3	Sept. 4	Sept. 5	Sept. 7	Sept. 8	Sept. 9	Sales.
C. C. & C. C.							
C. C. Golden Group	12½				12¾		3,000
Chl. & Mont.	15¼	15½	15½		15¼	16½	18,500
Chula Vista							
Cosmopolitan					15¼	15	4,000
Delaware Cf.		40%			40%	46%	3,000
Great fissure	12¾	12¾			12%		5,500
Peerless G. M. Co.	15%	15%	15%		15%	15%	
Pharmacit	7%						1,000
San Pedro			10				1,000
Thompson	18%	18%	18%		18%	18%	8,800
Utah Mercur.							

Total shares sold, 44,800.

Cleveland.

Sept. 9.

(From Our Special Correspondent.)

Minnesota stock, which weakened somewhat last week, strengthened yesterday and to-day bids were offered at a considerably higher price. Pittsburg & Lake Angeline weakened this week, and instead of being quoted as \$75 bid was marked \$75 asked. The sales during the past week were few and insignificant, but more inquiries were made of the brokers by prospective purchasers, which indicates a better condition of the market. Following are the quotations:

Name of Company.	Par val.	Sept'mbr 9	
		Bid.	Ask.
Aurora	25	35.00	38.00
Biwabik	100	32.00	34.00
Champion Iron Company	100	10.00	30.00
Chandler	25	34.00	35.00
Cincinnati Iron	25	10.00	13.50
Cleveland-Cliffs Iron Company	100	45.00	.....
Jackson Iron Company	25	70.00	75.00
Lake Superior Iron Company	25	30.00	34.00
Lake Superior Consolidated	100	20.00	21.00
Minnesota Iron	100	43.00	44.00
Pittsburg & Lake Angeline	25		75.00
Republic Iron Company	25	18.00	.....

Salt Lake City.

Sept. 5.

(Special Report of James A. Pollock.)

While the market has been exceedingly dull, the tendency of this week has been toward an advance in strength. Quotations have held their own, with a few rare exceptions, for the first time in many weeks. Notwithstanding shipments of gold ore from the Ajax, the stock failed to reflect merited strength. Alliance was in slight demand at lowering figures. Anchor was neglected. Bogan weakened a trifle on limited sales. Bullion-Beck was in demand and at higher prices. Centennial-Eureka will pay its regular dividend of \$1 per share September 15th. The stock was in demand, but sales limited. Dalton held its own. An assessment of 1c. per share has been levied by the company. Daly was considerably weaker on small offerings, but closed strong under free bidding. Daly West maintained its accustomed strength. Eagle slumped off several points on free offering. East Golden Gate had many would-be sellers. Horn Silver was stronger in the bidding, but recorded no sales. The annual meeting of the company is set for October 6th, in Salt Lake City. Mammoth was very weak and declined heavily immediately after the payment of the dividend. Mercur steadied and indicated a tendency to advance. Offerings were limited. Ontario sold at last week's quotations. The regular monthly dividend has been distributed among stockholders. The announcement of a dividend of 5c. per share on Swansea strengthened the stock for a few days, but it went off a trifle at the close. Silver King was strong in the bidding, but offerings were light. The regular dividend of 25c. per share will be paid on the usual date. Sunshine was strong. There is an unverified report of the sale of a large block of this stock to an Eastern syndicate. Utah continues shipments of high-grade ore. The stock was in demand.

San Francisco.

Sept. 5.

(From Our Special Correspondent.)

There was an improvement shown in the market this week; business was more active and prices generally a little better than last week. At the close to-day matters seemed more promising than for several weeks past.

The closing quotations on Comstock shares are generally little different from those of last week. The Bodies are a little higher.

The Gold Mining Exchange had rather a quiet week and continues to do more and more business in the Comstock shares. Some people think this a mistake.

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

	1895.	1896.
January	254,315	296,415
February	196,700	183,790
March	286,530	246,195
April	262,810	264,735
May	274,030	816,610
June	234,645	479,135
July	185,395	321,380
August	229,850	210,610
Total	1,924,275	2,820,890

Against 2,770,560 shares for the same time in 1894.

A total of \$67,183 was disbursed by mining and other corporations on and around the Comstock for labor during the month of August, 1896. The disbursements were as follows: Hale & Norcross, \$2,873; Andes (estimated), \$1,200; Consolidated California & Virginia, \$11,076; Mexican, \$1,827; Ophir, \$1,921; Best & Belcher, \$1,203; Gould & Curry, \$1,793; Alta, \$1,433; Utah, \$431; Occidental (estimated), \$3,800; Brunswick Exploration Company, \$2,022; Yellow Jacket, \$1,413; Confidence, \$415; Challenge, \$223; Belcher, \$2,583; Segregated Belcher, \$1,198; Imperial, \$381; Bullion, \$1,144; Chollar, \$4,015; Potosi, \$2,278; Union Shaft, \$2,416; Sierra Nevada, \$706; Alpha and Exchequer, \$859; Nevada Mill (estimated), \$2,500; electric light (estimated), \$500; water company (estimated), \$3,000; quartz mills (estimated), \$5,000. The August pay rolls were nearly \$5,000 larger than those of July.

The extraction of low-grade gold ores from the Crown Point mine has been suspended for the pres-

ent, the reason given being that the low stage of water in the Carson River prevents the Mexican mill from running.

Activity in placer mining is shown by the fact that 13 location notices on the Yuba River in Yuba and Nevada counties were filed in the land office at Marysville in one day recently.

The San Francisco Stock and Bond Exchange has elected Mr. Edward Pollitz vice-president in place of the late August Helbing.

The Live Yankee Gravel Mining Company, of Nevada County, Cal., has levied an assessment of 2c per share, delinquent September 18th.

The Union Consolidated Mining Company has levied an assessment of 20c a share, delinquent September 28th.

The Original Empire Mill and Mining Company, of Nevada County, Cal., has levied an assessment of \$1.25 per share, delinquent September 25th. This is the second assessment.

The total amount of assessments delinquent here in September, so far as reported, is \$134,938; of these \$16,000 are of California corporations and \$118,938 of Comstock companies.

The report is that recent assessments are generally being pretty well paid up. This is a better showing than might have been expected.

British Columbia.

(From Our Special Correspondent.)

ROSSLAND, Sept. 3.

The activity in business generally, which began a week or two ago, is constantly increasing. Copious rainfall has effectively extinguished the forest fires. The reported sale of the War Eagle and other properties to an English syndicate for \$1,000,000 is not yet removed from the many street rumors which fertile imaginations find time enough to invent. A number of capitalists from the East as well as from the West are here, and many rumors of sales and deals are current. Development work and the introduction of new machinery are on the increase in the camp.

The sales of stock, aside from the large deals reported, have been considerable, though the tendency to glut the market with stocks of all kinds of propositions is noticeable. The impression has gone abroad that stocks sell better than mines, and there has been a pronounced tendency on the part of some operators to press heavily on the investor. There will be some disappointed investors who have been influenced by that kind of operators, but the great bulk of the transactions so far have been legitimate and unobjectionable.

London. Aug. 29.

(From Our Special Correspondent.)

The London mining stock market has been practically without any animation during the past week. At the earlier part of the week the bears in the South African market considered it prudent to close their accounts, in view of the expected conclusion of the Matabele revolt and the settling down of affairs in the Transvaal, so that there was quite an expensive buying-in. By some people this was mistaken for the commencement of a buying boom on the part of the public, whereas, as a matter of fact, there is very little public buying at present. After the bears' accounts were settled and the usual fortnightly settlement arranged, there was hardly any business done on the stock exchange. Prices in the South African market remained steady. Chartered have kept at a level of £3 10s., while gold and diamond shares have been steady without any particular feature. The announcement that the Mafeking-Bulawayo Railway is to be pushed forward rapidly did not have much effect on the market, though such an event might be supposed to be of immense assistance to all the Rhodesian exploring companies.

The report of the Dolcoath Mine, Limited, in Cornwall, for the first six months of the year shows that the recent reorganization is already bearing fruit. Although the price received for black tin was £2 less than in the previous half-year, the profit available allowed of a dividend of 2½% for the half-year being paid.

The signs of a boom in British Columbians are getting stronger. New companies are being registered every day, and in most cases the cloven hoof is clearly visible to one who knows the promotion system as carried on in London. Here is some advice to the owners of mines and claims in British Columbia: Never sell a mine or a prospect to a London company for anything else but cash, and never deal with a London promoter unless you know his record. By following these rules, probably nine-tenths of the business would be choked off at once, a tantalizing state of affairs for the owner of mine or prospect; but such a course will be best in the end, for he will, at least, still own his property, whereas, if he deals in any other way, he will soon find that he has neither his mine nor his cash.

As I have mentioned before, some attention is being paid by London capitalists to the Mexican gold mines. During the past few weeks the Exploration Company has floated privately the Grand Central Mining Company, Limited, which has been formed to purchase the Prietas properties in the Hermosillo District, in the State of Sonora. Mr. John B. Farish has reported that there are 62,000 tons of ore already in sight, with a total gold content of over \$1,400,000, which can be won at a cost of \$550,000. There are 30 stamps at work, and at present the monthly output is over \$100,000. Since the company took over the property the development work has proved the existence of large bodies

of ore. The capital of the company is £250,000 in £1 shares, and the shares are being placed on the market at about £2 each.

In your issue of June 13th I mentioned the formation of the Gold Basin Mining Company, Limited, to acquire gold quartz properties near Hackberry, Arizona. Sixty thousand preference shares were offered to the public, and the vendors took 90,000 deferred shares, which were not to rank for dividend until 100% had been paid on the preferred shares and £30,000 in cash as purchase price. It appears that directly work was commenced after flotation it was found that the ore body did not exist, and that there was no gold except on the exposed faces. The vendors have considered it best to offer to refund all the money subscribed by English holders of preference shares. There is something behind this collapse which requires inquiry, and any of your readers who can give information will do a service to your English and Scotch readers if they will communicate with you on the subject.

Paris.

Aug. 30.

(From Our Special Correspondent.)

In my last letter I said that one could not tell in what direction the Turk would next make trouble. Before these words were printed the trouble came, and the consequence has been that mining stocks have been very much neglected. The Turkish securities all went up on the settlement of the Cretan trouble, and there was an active speculation for the rise. When the news came of the riots in Constantinople, there was a sharp fall, not only in Turka, but also in Greeks and Italians, and many speculators were badly caught. It has made such an excitement that there was little time to spare for the mining market.

As to the riots, one cannot quite understand. That a handful of Armenians should seize the Ottoman Bank, hold it for hours, carry off nothing, and finally, when they surrendered, should be simply banished from the capital—it is not merely strange, it is inexplicable. The Turk is not given to mercy, especially with an Armenian; but in this case he was more than merciful. What State secret is behind it all? What will come next?

The European powers, however, have only themselves to blame for all these troubles. What will you have? If one maintains a brigand in one's commune, the consequences must be accepted. The Turk is essentially brigand by nature, and he must either be murdered or allowed to murder some one else. There is no choice.

In the little that was done in mining stocks, no change was shown of moment. The copper stocks hold their own and the zinc and lead stocks have not changed. There has been an improvement in the metallurgical shares on a report that orders had been given to several of the railroad companies to make extensive renewals, which have been too long neglected.

There are signs of a rise in South African shares, but I doubt whether there is any real strength in the movement.

Our foreign trade returns continue to be very good, the increasing exports of manufactures being an excellent point in our favor. The total merchandise movement for the seven months ending July 31st is reported by the Ministry of Commerce as follows:

	1895.		1896.	
	Imports.	Francs.	Imports.	Francs.
Food.....	555,982,000	.....	620,780,000
Raw materials.....	1,237,712,000	.....	1,347,676,000
Manufactures.....	324,121,000	.....	364,043,000
Total.....	2,117,815,000	.....	2,332,499,000

	1895.		1896.	
	Exports.	Francs.	Exports.	Francs.
Food.....	317,865,000	.....	354,117,000
Raw materials.....	485,215,000	.....	407,022,000
Manufactures.....	985,382,000	.....	1,049,038,000
Postal parcels.....	67,184,000	.....	87,299,000
Total.....	1,875,646,000	.....	1,948,476,000

The gold and silver movement in France for the half-year ending June 30th is reported by the Ministry of Commerce as follows:

	Gold.		Silver.	
	1895.	1896.	1895.	1896.
Imports.....	206,372,907	173,393,586	64,326,202	94,820,538
Exports.....	92,590,313	76,166,342	27,285,840	48,115,140
Exe's imp.	113,782,594	96,827,244	37,350,362	46,705,698

The statement includes coin and bullion, all coin being given at its face value. There was also imported during the half-year 51,300 fr. in copper and nickel coins, an increase of 18,000 fr. over last year. The exports of these subsidiary coins this year amounted to 216,900 fr., a decrease of 1,322,100 fr. from last year. The net exports of small coins were therefore 165,600 fr. The net imports of gold showed a decrease of 16,955,350 fr. as compared with last year, while those of silver increased 11,355,336 fr. Of the gold imported 17% was from the United States. This, however, does not show the total amount which we drew from your country, since a considerable quantity of American gold came here by way of England, and is therefore credited to that country in the statement. The gold movement, though smaller than in 1895, was larger than that of any previous year for a long period.

The treaty of commerce between France and Chile, which dates from 1846, and which should have expired on July 6th last, notice to terminate it having been given by the Chilean government, has been prolonged by mutual consent to May 31st, 1897.

The movement of gold from here and from London to New York is beginning to attract some attention. At first it was thought to indicate only syndicate purchases, of no great amount; but it has reached too large proportions for such an operation. AZORE.

MEETINGS.

Horn Silver Mining Company, at the office of the company, Salt Lake City, Utah, October 6th, at 12 noon.

Mono Mining Company, at rooms 15 and 16, No. 310 Pine street, San Francisco, Cal., September 17th.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Dinq.	Sale.	Am't.
Alpha Con.....	Nev.....	17	Sept. 7	Sept. 29	.10
Anita Gold.....	Cal.....	10	Aug. 25	" 15	.07
Baltic Gravel.....	"	2	Sept. 2	" 19	.0094
Bay State.....	"	33	" 30	Oct. 20	.08
Belcher Silver.....	Nev.....	53	" 10	Sept. 30	.25
Hullion.....	"	48	" 18	Oct. 8	.10
Bunker Hill.....	S. D.....	8	" 21	" 21	.0024
Confidence Silver	Nev.....	27	" 3	Sept. 24	.30
Con. Imperial.....	"	37	Aug. 27	" 22	.01
Crown Point					
Gold and Silver	Nev.....	68	Sept. 22	Oct. 13	.20
Gibraltar Con.....	Cal.....	10	Aug. 25	Sept. 25	.001
*Gould & Curry.....	Nev.....	70	Oct. 5	Oct. 27	.15
Leo.....	Mont.....	20	Sept. 28	Oct. 19	.0094
Lucky Bill.....	Utah.....	20	Aug. 17	Sept. 15	.02
*Occidental Con.....	Nev.....	24	Oct. 8	Oct. 22	.10
*Original Empire	Cal.....	2	*Sept. 25	Oct. 10	1.25
Orleans.....	Utah.....	24	Aug. 24	Sept. 21	.10
Providence.....	S. D.....	4	Sept. 12	Oct. 12	.002
Rocky Peak					
Gold.....	Cal.....	.....	Aug. 21	Sept. 21	.02
Ruby, G. & S.....	S. D.....	9	Sept. 1	" 19	.01
Sevier.....	Utah.....	.....	" 9	Oct. 9	.06
Sierra Nevada					
Silver.....	Nev.....	111	" 11	" 1	.25
Transit.....	S. D.....	8	" 26	" 17	.001
Union Con. Silv	Nev.....	53	" 28	" 22	.20
West Cable.....	Utah.....	6	Aug. 17	Sept. 17	.01
Ybarra Gold.....	Mex.....	5	" 31	" 15	.1

* New assessment.

DIVIDENDS.

NAME OF COMPANY	Current Divi- dends.		Paid since Jan. 1, 1896.	Total to date.
	Date.	Amount.		
Etna Con.....	Sept. 10	\$10,000	\$30,000	\$70,000
*Alaska-Mexican.....			52,200	155,031
*Alaska Troadwell.....			275,000	2,950,000
Anacoda.....			750,000	750,000
Aurora Iron.....			50,000	700,000
Bangkok-Cora Bell.....			6,000	107,510
Big Six.....			2,500	2,500
*Boston & Mont.....			1,050,000	4,475,000
*Bullion Beck & Ch.....			155,000	2,105,000
Cahoon & Hecla.....	Sept. 25	500,000	2,000,000	46,350,000
Cariboo.....			32,000	95,000
*Centennial-Eureka.....	Sept. 15	30,000	300,000	1,830,000
C. O. D.....			5,000	25,000
*Dalton & Lark.....			87,500	87,500
*Daly.....			37,500	2,887,500
*Deadwood Terra.....			100,000	1,240,000
Dominion Coal.....			600,000	.....
*Elkton Con.....	Sept. -	5,000	35,000	80,000
*Florence.....			54,300	89,348
*Galena.....			26,000	46,000
*Gold Coin.....			65,000	80,000
*Golden Fleece.....			132,000	533,179
Gold & Globe Hill.....			19,500	38 875
Hecla Con.....			30,000	2,130,000
*Helena & Frisco.....			50,000	475,000
Highland.....			25,000	3,159,918
*Homestake.....			10,000	5,962,500
Hope.....			50,000	.....
Horn Silver.....			30,000	5,130,000
*Iowa.....			30,000	40,000
Iron Mountain.....			30,000	440,000
*Isabella.....			157,500	180,000
Jackson.....			7,500	475,000
*Le Roi.....			125,000	200,000
*Mammoth.....			20,000	1,090,000
Mercur.....	Sept. 20	25,000	150,000	500,000
Minnesota Iron.....			495,000	3,240,000
Mont. Ore Pur. Co.....			280,000	440,000
Moon Anchor.....			24,000	24,000
Moose.....			5,000	185,000
Napa Con.....			50,000	790,000
*Ontario.....			135,000	13,310,000
Oscota Con.....			125,000	2,072,500
Ottawaquahy.....			1,000	1,000
*Portland.....			150,000	773,000
*Quincy.....			70,000	8,370,000
*Silver King.....	Sept. 7	37,500	337,500	787,500
*Sacramento.....			2,000	2,000
Slocan Star.....	Sept. 1	100,000	200,000	300,000
Small Hopes.....			25,000	3,275,000
Smuggler-Union.....			100,000	100,000
Swansea.....	Sept. 15	5,000	5,000	6,500
Tamarack.....			150,000	4,320,000
Union.....			23,500	73,500
Utah.....			17,000	149,500
Victor M. & L.....			140,000	605,000
War Eagle.....			12,000	42,000
*Wasp.....			25,000	157,000
			40,000	40,000
Totals.....		\$712,500	\$8,843,500	\$123,483,821

* August dividend paid.

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

STOCK QUOTATIONS.

BOSTON, MASS.*

Table of stock quotations for Boston, Mass. listing companies like Allouez, Arnold, Atlantic, Bost. & C. C., etc., with columns for location, par value, and prices for various dates from Sept. 4 to Sept. 10.

* Official quotations Boston Stock Exchange. Total sales, 22,021.

NEW YORK.*

Table of stock quotations for New York listing companies like Adams, Ajax, Alamo, Alliance, etc., with columns for location, par value, and prices for various dates from Sept. 5 to Sept. 11.

* Official quotations N. Y. Stock and Con. Stock & Petroleum Exchanges. † Holiday. Total shares sold, 8,35.

INDUSTRIAL COAL AND COAL RAILROAD.*

Table of stock quotations for Industrial Coal and Coal Railroad listing companies like Balt. & Ohio, Ches. & Ohio, Col. C. & I. Dev., etc., with columns for par value and prices for various dates from Sept. 5 to Sept. 11.

* Official quotations N. Y. Stock Exchange. † Holiday. Total shares sold, 85,510.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo. listing companies like Ajax, Alamo, Am'ric'n C, etc., with columns for par value and prices for various dates from Aug. 11 to Sept. 5.

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

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

Table of stock quotations for St. Louis, Mo. listing companies like Central Lead, Doe Run Lead, Granite Mtn., etc., with columns for company name, office, par value, bid, asked, and last dividend.

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 prices for various dates from Sept. 5 to Sept. 11.

* Official telegraphic quotations, San Francisco Stock Exchange.

BALTIMORE, MD.* Week ending Sept. 10.

Table of stock quotations for Baltimore, Md. listing companies like Balt. M. & S. N. C., Conrad Hill, etc., with columns for location, par value, bid, asked, and last dividend.

* Official quotations Baltimore Stock Exchange

BRITISH COLUMBIA.* Week ending Aug. 29.

Table of stock quotations for British Columbia listing companies like Moundy Creek, Old Iron Leas, etc., with columns for name, selling price, and other details.

Par val.: Hall Mines Jumbo and Le Roi, \$5; Slocan Star, \$20; other stocks, \$1.

LONDON. Aug. 28

Table with columns: NAME OF COMPANY, Country, Product, Capital stock, Par value, Last dividend, Quotations (Buyers, Sellers), and various company names like 7th Americans, Alaska-Treadwell, etc.

* Ex-dividend.

PARIS. Week ending Aug. 28.

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

MEXICO. Week ending Aug. 27.

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

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

VALPARAISO, CHILE. July 23.

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

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA. July 31.

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

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

DENVER, COLO. Sept. 1-5

Table with columns: NAME OF COMPANY, Par val, Aug 31, Sept. 1, Sept. 2, Sept. 3, Sept. 4, Sept. 5, Sales, and various company names like L'd Mines, Anaconda, etc.

* Official quotations Colo. Mg. St'k Exch. Sales, listed, 2,306,474; unlisted, 240,900; total, 3,147,377.

SALT LAKE CITY, UTAH. Week ending Sept. 5.

Table with columns: STOCKS, Par value, Bid, Asked, Actual selling price, and various company names like Ajax, Alliance, etc.

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

PHILADELPHIA PA. Sept. 3-9

Table with columns: NAME OF COMPANY, Location, Par Val, Bid, Asked, Shares sold, Price, and various company names like Cambria Iron, Choc & Giff, etc.

* Official quotations Philadelphia Stock Exchange. Total sales, 6,617.

HELENA, MONT. Week ending Aug. 27

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

* Special Report of Samuel K. Davis. Total shares sold, 5,500.

PITTSBURG, PA. Week ending Aug. 31.

Table with columns: NAME OF COMPANY, Location, Par val, Bid, Ask, Sell-ing price, and various company names like Nat. Gas, Allegheny, etc.

* Official quotations Pittsburg Stock Exchange.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), Dividends (Total Paid, Date and Amount of Last). Rows list various mining companies like Adams, Alaska, American Belle, etc.

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 \$31,300,000 in dividends and the Cons. Virginia \$42,800,000. 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.

Air Compressors and Rock Drills. American Diamond Rock Drill Co. American Metal Co. ... Air Hoists. Whiting Foundry Equipment Co. Amalgamators. Bucyrus Steam Shovel & Dredge Co. Amalgam Plates. Western Plating and Mfg. Co. Anti-Friction Metals. Besley, Chas. H., & Co. ... Assayers' and Chemists' Supplies. Almond & Wainwright. Baker & Adamson. ... Bankers and Broker. Arkell, E., & Co. ... Belting. Hendrie & Bolthoff Mfg. Co. ... Belt Lacing. Bristol Co. ... Blasting Caps. Metallic Cap Mfg. Co. ... Blasting Batteries, Caps and Fuse. Climax Fuse Co. ... Blowers, Pressure. Connersville Blower Co. ... Boilers. Denver Eng. Wks. Co. ... Brassie Cloth. Besley, Chas. H., & Co. ... Brick Machinery. Freese, E. M., & Co. ... Bridges. Berlin Iron Bridge Co. ... Car Wheels. Whiting Foundry Equipment Co. ... Chains and Link Belting. ... Chemicals. Baker & Adamson. ... Coal Cutters. ... Compressors. Clayton Air Compressor Works. ... Concentrators, Crushers, Pulverizers, Separators, Etc. ...

Conveyers. (See Machinery.) Conveying Belts. Robins Conveying Belt Co. Gas Lift Belts and Producing. American Metal Co. ... Corrugated Iron. Berlin Iron Bridge Co. ... Cranes. Whiting Foundry Equipment Co. ... Cyanide. Rosslor & Hasslach Chemical Co. ... Diamonds. B. Shop, Victor, & Co. ... Draughtsmen. Young, Wm. R. ... Drawing Materials. Heer, Peter. ... Dryers. Brown, Horace F. ... Educational Institutions. Arizona School of Mines. ... Electrical Batteries. Macbeth, James, & Co. ... Electrical Machinery and Supplies. American Engine Co. ... Elevators, Conveyors and Hoisting Machines. Brown, Holst, & Conv. ... Emery Wheels. Besley, Chas. H., & Co. ... Engineers, Chemists, Metallurgists. See Directory Pages 1, 3 and 5. ... Excavators. Bucyrus Steam Shovel & Dredge Co. ... Fire-Brick and Clay. Chur, A. T. ... Fuses. Climax Fuse Co. ... Gas Engines. Norman, J. J., & Co. ... Gas Wires. Pollock, Wm. B., & Co. ... Gearing. Besley, Chas. H., & Co. ... Greenish Graphite, Etc. Besley, Chas. H., & Co. ... Heavy Machinery. Denver Eng. Works Co. ... Hoses, Rubber, Etc. New York Belting & Packing Co. ... Injectors. Jenkins Bros. ... Insulated Wires and Cables. Okonite Co., Ltd. ... Insurance Companies. Hartford Steam Boiler Inspect'n and Ins. Co. ...

Joint Fittings. Tight Joint Co. Lead Linings for Chlorination Tubs. Raymond Lead Co. Locomotives. General Electric Co. ... Lubricators. Asbestos Paraffine Co. ... Machinery. Allis, Edw. P., & Co. ... Metal Dealers. American Dev. & Mg. Co. ... Metallurgical Works and Ore Purchasing Processes. American Dev. & Mg. Co. ... Mine, Mill and Smelters' Supplies. Denver Eng. Wks. Co. ... Ore Cars. Truax Mfg. Co. ... Ore Roasters. Brown, Horace F. ... Ore Testing Works. Hunt, F. F. ... Packing and Pipe Coverings. Asbestos Paraffine Co. ... Perforated Metals. Althoson, R., Perf. Metal Co. ... Peroxide of Sodium. Rosslor & Hasslach Chemical Co. ... Phosphor-Bronze. Phosphor-Bronze Smelting Co. ... Pile Drivers. Bucyrus Steam Shovel and Dredge Co. ... Pipes. Pollock, Wm. B., & Co. ... Powder. Atlantic Dynamite Co. ... Pressure Blowers. Connersville Blower Co. ...

Publications. American Fertilizer. Arms & Explosives. Australian Mg. Stand. Bulletin. Denver Republican. El Minero Mexicano. Electrical Plant & Electrical Industry. Pumps. Blake, Geo. F., Mfg. Co. ... Quarrying Machines. Ingersoll-Sergeant Drill Co. ... Railroads. Atchison, Topeka & Santa Fe Ry. ... Regulators, Dampers, Heat, Etc. Eddy Valve Co. ... Rock Drills. (See Air Compressors.) Roofing. Berlin Iron Bridge Co. ... Rubber Goods. New York Belting & Packing Co., Ltd. ... Screens. Althoson, R., Perf. Metal Co. ... Second Hand Machinery. Hine & Robertson. ... Shoes and Dies. Chester Steel Cast. Co. ... Shovel (Steam). Bucyrus Steam Shovel & Dredge Co. ... Smelting and Refining Works. Balbach S. & Ref. Co. ... Steel Rails, Castings, Rods, Drill Steel. Bethlehem Iron Co. ... Tools. Besley, Chas. H., & Co. ... Tubes. Besley, Chas. H., & Co. ... Turbine Water-Wheels. Leffel, James, & Co. ... Valves. Eddy Valve Co. ... Ventilation. Weston Electrical Instrument Co. ... Water-Wheels. Leffel, James, & Co. ... Well Drilling Machinery. Sullivan Mach'y Co. ... Wharfage. Lambert's Wharfage Co. ... Wire Rope & Wire. Besley, Chas. H., & Co. ...

POSITIONS VACANT.

FREE ADVERTISING

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1487 WANTED—FOR A SOUTH AMERICAN Copper-Silver Smelting Works, a thoroughly competent manager, to erect and superintend the same. While it is proposed to smelt only to a matte at first, the manager should be thoroughly conversant with all the processes used in the treatment of copper and silver ores; conditions—water power, cheap wood, good coke, good climate, altitude 3,000 feet above sea. ARGENTINA, ENGINEERING AND MINING JOURNAL.

1488 WANTED—AN ENGINEER AND Assayer who has had experience in the mines of the Ouro Preto District, Brazil. Address with full particulars, F. F. F., ENGINEERING AND MINING JOURNAL.

1489 WANTED—A MAN ACQUAINTED with lead smelting, sweep smelting, cupellation and refining and desilverizing processes, to run a small blast furnace and refinery in South Africa. A technical graduate preferred, but practical experience absolutely necessary, as well as tact and ability to manage men. A man between 30 and 40 years of age preferred. A good salary will be paid to the right party, who will be expected to return in a responsible position. Address TRANSVAAL, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

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

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

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

MASTER MECHANIC WANTS SITUATION; experience of 10 years in mill work; 29 years of age, and strictly temperate; now employed at large silver reduction works in Mexico; unquestionable references; speaks a little Spanish; has first-class kit of tools and not afraid of hard work; correspondence solicited. Address M. M., ENGINEERING AND MINING JOURNAL, No. 14,901, Oct. 3.

MINING AND MECHANICAL ENGINEER of executive ability and 20 years' experience is open for engagement with first-class company, as superintendent or resident manager; specialty, erection and treatment of low-grade ores; speaks German and Spanish; references the best. Address A. L., ENGINEERING AND MINING JOURNAL, No. 14,899, Nov. 7.

MECHANICAL ENGINEER WITH LONG experience in designing Mining Machinery and complete Mill Plants, is open for engagement; highest references furnished. Address L. W., ENGINEERING AND MINING JOURNAL, No. 14,907, Sept. 26.

WANTED—POSITION AS LOCOMOTIVE or Stationary Engineer; 10 years' experience; first-class references. Address A. H. EMMONS, 565 Main street, Aabury Park, N. J. No. 14,908, Sept. 19.

POSITION WANTED BY A PRACTICAL Metallurgist and Chemist; competent to run a smelter, cyanide or chlorine leaching work; best references. Address H. COLO., ENGINEERING AND MINING JOURNAL, No. 14,910, Oct. 10.

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

Contracts Open.

COAL.—Sealed proposals will be received by the Commissioner of the Department of Parks, at his office, Litchfield Mansion, Prospect Park, Brooklyn, until September 19th, 1896, for two hundred and fifty (250) gross tons of stove coal, weighing 2,240 lbs to the ton, and one hundred (100) gross tons of egg coal, weighing 2,240 lbs. to the ton, all of the best quality, to be delivered at such times and places as the Commissioner of the Department of Parks may direct, during the years 1896 and 1897. A certified check to the amount of ten (10) per cent. of the aggregate bid must accompany each proposal. Proposals to be directed, "To the Commissioner of the Department of Parks," and endorsed "Proposal in relation to Coal." TIMOTHY L. WOODRUFF, Commissioner.

WATER WORKS.—Sealed proposals will be received by the Mayor of the Town of Dows, Iowa, until September 15th, 1896, at which time they will be publicly opened and read, for all materials and labor for construction of a complete system of water works in accord with plans and specifications prepared by Crellin & Lovell, on file at the Mayor's Office in Dows, or at the office of the Engineers at Des Moines. Part 1. Steel tower supporting a wooden tank. Part 2. Pipe line and appurtenances. Part 3. Steel wind-mill and tower. A certified check payable to treasurer of the Town of Dows of \$75 for each part bid upon must accompany each bid. Plans and specifications may be seen at office of City Clerk, or at office of engineers, Des Moines, Iowa, I. C. FENNINGER, City Clerk; Crellin & Lovell, Civil and Consulting Engineers, Des Moines, Iowa.

BRIDGE DEPOT QUARTERMASTER'S OFFICE, Washington, D. C.—Sealed proposals, in triplicate, will be received here until 12 noon, Friday, September 25, 1896, for constructing gravel roadway from Cache River Bridge, near Mound City, Ill., to Mound City National Cemetery; also, for a steel bridge to cross Trinity Slough on line of said road. Information furnished on application. Plans and specifications can be seen here and at the City Engineer's Office, at Cairo, and Mound City, Ill., and the Superintendent's Office at the cemetery. U. S. reserves the right to accept or reject any or all proposals, or any part thereof. Envelopes containing proposals should be marked "Proposals for (as the case may be)," and addressed to Major C. F. HUMPHREY, Depot Q. M.

SEVEN-INCH STEEL MORTAR FORGINGS.—Office of the Chief of Ordnance, U. S. Army, Washington. Sealed proposals in duplicate will be received at this office until October 5th, 1896, for 20 sets of steel mortars of American manufacture, for 7-in. siege steel mortars. Information can be had upon application to Brig.-Gen. D. W. FLAGLER, Chief of Ordnance.

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

DREDGING—U. S. Engineer Office, 106 Granby street, Norfolk, Va.—Sealed proposals for dredging harbor at Norfolk and its approaches, Va., will be received here until September 28th, 1896, and then publicly opened. Information furnished on application. THOS. L. CASEY, Capt. Engineers.

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

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Pursuant to the winding-up orders made in the mat-
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of Neil McLean, Official Referee, by the William
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Street East, in the City of Toronto, on Saturday, the
17th day of October, A. D. 1896, at 12 o'clock noon, the
mining property known as "The Ophir Gold Mine," and
described as the south half of the north half of Lot No.
12 in the Third Concession of the Township of Gal-
braith, in the District of Algoma, being parcel 283 in
register for the District of Algoma, and the north half
of the south half of Lot No. 12 in the Third Concession
of the said Township of Galbraith, being parcel 303 in
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The property will be offered for sale subject to a re-
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man, Freehold Building, corner Victoria and Adelaide
streets, or to Henry W. Barber, Liquidator, Wellin-
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Dated at Toronto, the 10th day of September, 1896.
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DIVIDEND NO. 218.
The regular monthly dividend, TWENTY-FIVE (25)
CENTS PER SHARE, has been declared for August,
payable at the office of the company, San Francisco, or
at the transfer agency in New York, on the 25th inst.
Transfer books close on the 19th inst.
LOUNSBERY & CO., Transfer Agents.

ISABELLA GOLD MINING COMPANY.
COLORADO SPRINGS, Colo., September 10th, 1896.
DIVIDEND NO. 9.
A dividend of ONE CENT PER SHARE (\$22,500) has
been declared, payable September 25th, 1896, to stock
holders of record September 15th, 1896.
The stock transfer books will be closed September
15th, 1896, at 3 o'clock p. m., and will be re-opened on
the morning of September 25th, 1896.
PERCY HAGERMAN,
Vice-President and Treasurer.

ONTARIO SILVER MINING COMPANY,
MILLS BUILDING, 15 Broad St.,
New York, Sept. 18, 1896.
DIVIDEND NO. 266.
A dividend of TEN (10) CENTS PER SHARE has
been declared, payable at the office of the company,
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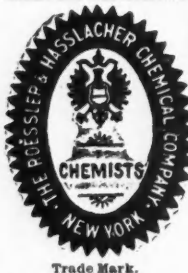
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