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AS we go to press we learn with very sincere sorrow of the death of Mr. ARTHUR F. WENDT, the distinguished American mining engineer. We shall have a fuller notice of Mr. WENDT in our next issue.

OUR reports from the zinc ore market at Joplin, Mo., the center of the great zinc and lead district of southwest Missouri and southeast Kansas show a notable change from the dullness and low prices which have prevailed. Last week the demand suddenly increased and the price of zinc ore went up from the previous week's quotation of \$16.50 per 1,000 lbs. to \$20; with indications of a still further rise. The price of Spelter however is declining.

THE vexatious delays attending the issue of public documents are brought sharply to mind by one before us, which has been received during the current week. It is a report on the Mining and Metallurgical Department of the Paris Exposition of 1889. It may contain much that would have been useful had it appeared three years ago, but the long delay in preparing and issuing it has practically deprived it of all value.

THE fatal accident at the Mansfield mine, in Michigan, where the Michigan River broke through into the workings and drowned 28 men, ought not to be classed among the unavoidable accidents, for, when mining is carried under a body of water, surveys can be made with enough precision to secure a margin of safety. In this case the mine managers ought not to be acquitted without a very thorough investigation.

THE latest association formed in Denver is "The Colorado Association for the Promotion of the Mining, Storage and Use of Silver." It is the result of a meeting held in Denver to favor the plan for warehousing silver and issuing silver certificates, to which we have heretofore referred. The requirements for membership are certainly simple; an applicant need only say that he (or she) favors the objects expressed in the title and "pay to the association one dollar, or 371 1/4 grains of pure silver."

THE Greek Government, which owns the mines of the island of Milo, has asked for bids for the silver ore produced there for a term of years. The ore varies somewhat in value, most of it being low grade, and the government offers to guarantee an annual output of 8,000 (metric) tons, with an average yield of 250 grams of silver to the ton. As this, reducing it to our ordinary standard, is only about seven ounces of silver to the ton of 2,000 lbs., with a value at current rates of about \$5 to the ton, the government is not likely to be overwhelmed with bids, especially as the bidders will be required to put up reduction works at their own expense.

THE so-called "Bi-metallic Convention," which met in St. Louis on Thursday of this week—but which is really a mono-metallic gathering—was a disappointment to its projectors. Instead of the great gathering which they claimed would be present only 172 delegates presented themselves. Of these 25 were from Mexico and South America, but that number did not include any names of prominence. Indeed, such persons seem to have been few in the Convention, as the choice of a man of so little weight as Governor LEWELLING, of Kansas, for chairman shows. The whole affair is rather a pitiful outcome of the great "movement" started a short time ago.

THE Reading company's statement for August shows for the Coal and Iron company the insignificant net earnings of \$88,089, or \$20,089 over the month's proportion of the fixed charges. This is a much worse statement than was made last year, especially when it is considered that August is a month usually of heavy receipts and comparatively light expenses. For the three-quarters of the company's fiscal year, which closed with August, the expenses exceed the gross earnings by only \$128,949; and, if the fixed charges be included, the company ran behind \$740,949 during the nine months. This is a pitiful showing for the largest and most valuable group of coal properties in the country, or we believe in the world.

IF a dispatch from Birmingham is correct, one cause of irritation among the Alabama coal miners will shortly be removed. The dispatch says that the State authorities, who have heretofore kept the convicts employed by leasing them to mine owners, thus bringing them into competition with free labor, have decided on another plan. The State has purchased a tract of 2,500 acres of land on which the convicts will be placed in temporary quarters and where they will be employed for some time in building a permanent penitentiary. When that is completed, and it is expected that the work will occupy several years, they will be used in raising their own food supply and in similar occupations which will not bring them into the general labor market. The lease system, as conducted in some of the States, has been subject to many abuses and is very much behind modern and improved methods of prison management. It is to be hoped that the example thus set by Alabama will be followed in Tennessee where the troubles caused by convict labor must be fresh in our readers' minds.

"AMERICAN matters are not as well as they were three or four weeks ago. Money here is frightened at the delay of the United States Senate in repealing the silver bill. They are beginning to think that it will not be done; here it is given undue importance, they seem to think that the whole salvation of the United States depends upon its unconditional repeal."

This is an extract from a letter written in London, September 23d, by a representative of large capital which desires to make an investment here in a very important enterprise. This investment would bring millions of dollars to a State, one of whose Senators is now strongly opposing the repeal. His obstructive talk frightens capital, and the investment is withheld, with a possibility of its seeking elsewhere a field in which it will consider itself free from the danger of a depreciated currency. Moreover, the delay in complying with the evident wish of the vast majority of our people, and more particularly with the wishes of business men, is intensifying an antagonism to silver that renders more and more difficult the adoption of fair and sensible measures that would secure a stable future value for the metal. No enemy of silver could do as great injury to the cause of practical bi-metallism, which is the sole hope for silver, as is now being done to it by some of its professed friends in the Senate.

A CONGRESS of some importance held in Chicago last month, which attracted but little public attention, was the Statistical Assembly which constituted the fifth biennial meeting of the International Statistical Institute. From the very nature of the papers read and of the discussions, an off-hand report of such a meeting is hardly possible, and its full importance will hardly be known until the minutes are published and can be carefully read. The gathering included some gentlemen of the highest authority in their several departments, including Sr. BODIO, director-general of the Italian Statistical Bureau; Prof. LEVASSEUR, of France; Dr. KLAER, director of the Norwegian Statistical Bureau, and one of the greatest authorities on statistics now living; Mr. BATEMAN, head of the Commercial Department of the English Board of Trade, and others of almost equal authority.

The subjects discussed included commercial, political and economic statistics, and especially the value of those relating to commerce and transportation. The keynote of the whole meeting was perhaps the necessity for uniform standards and uniform methods in gathering and presenting statistics, a point which the international association was organized to secure and upon which it has done already much good work. We need hardly add to our readers that this is a matter in which we are all deeply interested and the importance of which the ENGINEERING AND MINING JOURNAL has urged upon many different occasions in its own columns and also in those of the "Mineral Industry."

THE strike of the coal miners in the district of the Pas-du-Calais, France, follows at a brief interval the great strike of 1891, in which the miners were entirely successful, securing not only an increase of wages, but also forcing the mineowners to concede some other points of considerable importance. If the accounts received are correct, the new strike does not seem to have a very solid basis of grievances to support it. Undoubtedly the French miners, especially those of the Pas-du-Calais and of the Bassin-du-Nord, are better off in many respects than any of their European brethren, having higher wages, shorter hours and more privileges than the miners of Germany, Belgium or any other Continental country. A statement published by the "L'Economiste Francais" gives the average earnings of a miner in those districts employed underground at the present time at \$1.15 per day, the maximum working hours being 9 hours in the mine, or, deducting the time spent in going down and returning to the surface, but 8½ of actual labor. In addition to this, miners receive other advantages, including rent of houses at a reduced price, a free supply of fuel, medical attendance and a system of pensions in case of sickness, accident or disability from old age; the value of these can hardly be exactly calculated, but the same authority thinks they would add from 15 to 20 cents in reality to the daily wages. In some mines where the work is more difficult the wages run higher, and the miner is able to earn from \$1.25 to \$1.40 per day, but by harder work. It must be remembered that these averages are for the year, including all allowances for interruption of work from any ordinary cause. The Belgian miner, on the other hand, averages only from 50 to 65 cents per day for very similar work, and may therefore be considered to have a much better cause for striking. The coal miners of the Pas-du-Calais are thoroughly organized, being represented by a central committee or syndicate, through which all negotiations with the coal operators are conducted. Of the nature of their demands in addition to the increase in wages something may be gathered from the fact that they include requirements that all coal operators shall submit to the miners' central committee copies of pay rolls; that no miner shall be discharged or refused employment on account of conviction for crime unless the offense involved an injury to the property of the mine; and lastly that no miner over 45 years of age shall be liable to be discharged for any cause whatever. The present outlook is for a long and stubborn fight.

THE RAILROAD INTEREST.

Advance sheets of the fifth statistical report of the Interstate Commerce Commission show that for the year ending June 30th, 1892, which is the date of the report, the increase in new mileage was only 3,161 miles, a smaller amount than has been reported for a number of years. The total miles in operation at the close of the year were 171,563. The increase reversed in one respect the condition of previous years, since it was principally in Eastern and Seaboard States. This mileage of road required for its operation 33,136 locomotives and 1,215,092 cars, while the great army of 821,415 employees was engaged in the service. The capitalization of the railroad property amounted to \$10,226,748,134, of which about 46 per cent. was represented by stock, 50 per cent. by funded debt and 4 per cent. by floating debt. The railroads carried during the year 560,958,211 passengers and 706,555,471 tons of freight, the average passenger journey being 24 miles and the average freight hauled 125 miles. The average number of passengers carried per train mile was 42 and the average number of tons per train mile was 182. The earnings from this business amounted to the great sum of \$1,171,407,343; the operating expenses were \$780,997,996, but from the remaining net earnings of \$390,409,347 fixed charges absorbed the greater portion, leaving only the balance of \$115,965,191 available for dividends, being about 2.5 per cent. on the total stock. A considerable part of this was, however, used in making improvements and paying floating debts. The proportions of the earnings furnished by the different classes of business has not changed greatly from previous years, the freight supplying about 70 per cent. of the total and the passenger business 25 per cent., the remaining 5 per cent. coming from mail and miscellaneous matters.

A dark side to the report is the chapter on railroad accidents, which shows that in the operations of the roads 2,554 employees, say 1 in 322, and 376 passengers were killed, while 28,267 employees, or 1 in 28, and 3,227 passengers were injured. Great as this number is, however, it shows a decrease from the previous year which is, perhaps, partly due to the fact, also noted in the report, that there was an increase of 68,537 in the number of cars fitted with automatic brakes and of 75,300 in that provided with safety couplers. As the density of traffic and the consequent danger of operation increases the use of signals and other safety appliances also increases, not quite as fast, unfortunately, as it should, but still in a way which shows a disposition on the part of the roads—or some of them at least—to do better in this respect than they have in the past.

CHEAP WELSH ANTHRACITE IN NEW YORK.

The most important news that the coal trade of the United States has for years heard of is now about to be announced.

When, somewhat more than a year ago, the anthracite coal combination appeared to be firmly established, by the absorption or control by the Reading road of a very large part of the coal output, prices of anthracite were largely advanced, and it was confidently announced that they would be maintained permanently at a high mark. The ENGINEERING AND MINING JOURNAL pointed out at the time the fleeting and uncertain existence of trade combinations in general, and of coal combinations in particular, when they undertake to exact exorbitant prices for necessities, but the memories of the coal barons are proverbially short and our warning was unheeded. The collapse of the Reading has now gone far toward breaking up the control of the coal market and has somewhat reduced the prices of anthracite, though these are still very high. When the combination was at its strongest and prices were highest and the middlemen were being squeezed out of the business, steps were taken looking toward the sale of Welsh anthracite here, at figures so low that they will bring a cold shiver to the coal barons.

These negotiations have been continued during the past year, and are now on the point of consummation, the only question still open being the term of the contract, which the Welsh producers wish to make for six months only and to have it renewable from six months to six months, while the American importers desire it to be binding for ten years.

It will no doubt startle the anthracite trade to learn that the price of the screened Welsh anthracite, free on board at Cardiff or other shipping port, as named in this contract, is 3s. 6d., or say 85 cents, per ton of 2,240 lbs., while it is counted that the cost in New York harbor will not exceed \$2 per ton. There is no import duty on anthracite. The contract calls for deliveries of 500,000 tons a year, and as much more as is wanted is to be supplied, subject to the usual reservations in case of strikes, etc. The Welsh anthracite has, when dry, an average composition of 87 to 92 per cent. fixed carbon, about 5 per cent. of volatile matter, and 3 to 6 per cent. of ash. It is an excellent steam coal, and no doubt would, at the prices mentioned, make serious inroads into the market for anthracite and even bituminous coal used in steam making. It would not, however, become as popular a domestic fuel as our sized and clean anthracite, though a marked difference in price would open many doors to it.

The presence of this fuel in our market will cause the managers of our coal roads to consider more favorably the demands of the anthracite

miners for lower tolls to tidewater, and the low prices at which it can be sold will be of interest to the holders of the coal road stocks.

It is rather curious that while we are arranging for the importation of Welsh anthracite at such extremely low prices as will make it a formidable rival to our own coal, we could ship our Virginia, Maryland and Pennsylvania bituminous coals to London at a large profit, owing to the high price (\$11 to \$12 a gross ton) which coal now commands there on account of the coal miners' strikes in the north of England.

SOUTHERN GOLD MINES.

The general revival of interest in gold mining which has followed the fall in silver has served to give increased force to the tendency which has for some time been apparent toward the Southern gold belt. The gold deposits of North Carolina, Georgia and Alabama are being more carefully examined than ever before; old mines are reopened and new ones sought out. The prospector is abroad in the land, and it is evident that much labor and some capital are to find employment in this field. It is an old field, for though the Southern mines have never been as rich or as prominently before the public, their discovery long antedates that of the gold mines of California and the Rocky Mountain country. The placers about Dahlonega, in Georgia, and the alluvial deposits of western North Carolina were worked 60 years ago, and some of them have been worked with more or less regularity for all the intervening time. The richer Western discoveries and political events diverted attention from them for a time, but they have never been entirely abandoned. In quartz mining, more has been done on the gold belt which extends through north Georgia and the northern section of Alabama than anywhere else, and these regions have been prospected more than any others. Most of the work has been somewhat crudely done with primitive mining and milling appliances. The ores, decomposed near the surface, yielded their free gold by simple stamping and amalgamation, and the mines were abandoned when sulphurets were reached, for with scanty capital and little knowledge of modern improvements in gold metallurgy the Southern miner has not ventured on establishing the large plants required to attain the economy necessary for the successful treatment of his low grade ores. In North Carolina better work has been done than in Georgia, and in a more systematic way, and the Haile mine is treating low grade pyritic ores with satisfactory results.

The boom which followed the close of the war did great injury to the Georgia gold fields. From 1866 to 1871 or 1872 a very considerable amount of money was injudiciously spent there. Properties were bought without proper examination; utterly unsuitable machinery was purchased, and in several cases large sums were paid to charlatans who had "secret" and "infallible" "processes" for working the sulphureted ores. The result was that much of the money put in was pocketed by sharpers; investors were plundered and disgusted, and Southern gold mines got a bad name, which they did not deserve, but which for years retarded their development. It is to be hoped that the present revival will not result in any such boom, but will bring a steady and healthy growth to a promising mining industry. The Southern ores are usually of a very low grade, but are in great abundance; and with the advantages of a climate favorable to operations at all seasons of the year, low priced labor, abundant timber for fuel and mining purposes, and many good water-powers, there are excellent opportunities for cheap working which make the field an attractive one to capital. It must be remembered, however, that there, as everywhere else, investments must be intelligently and judiciously made to bring satisfactory results.

NEW PUBLICATIONS.

POPULAR ASTRONOMY. Vol. I., No. 1. Wm. W. Payne and C. K. Willard, Editors. Northfield, Minn.; Issued from the Goodsell Observatory, Carleton College. Pages 48; illustrated. Subscription, \$2.50 per year.

This new magazine appeals to the part of the public which is, or may be, interested in the study of astronomy, without being able to devote to it that close attention which is needed for a thorough knowledge. The intention is that all important astronomical topics shall be treated in a popular way, in language wholly untechnical, that its illustrations shall be many and excellent in kind, and its writers able and scholarly astronomers, chosen from the best at home and abroad. The first number promises well, having several interesting articles and some good illustrations. The editors evidently mean to deserve success.

GEOLOGICAL SURVEY OF ALABAMA: REPORT ON THE GEOLOGICAL STRUCTURE AND MINERALS OF MURPHREE'S VALLEY. By A. M. Gibson Assistant Geologist, Montgomery, Ala.; State Printer. Pages 132 illustrated.

This is a monograph on an important region, to which we hope to give more space hereafter. It may be said now that Mr. Gibson's report is timely and valuable. He has labored assiduously in the valley for 10 or 12 years, and the results of his observations comprise pretty much all that is available concerning a region rich in mineral wealth, easy of access, and full of the promise and potency of industrial activity. The Alabama Geological Survey, with scanty means, but using them to great advantage, is doing a good work in setting forth, simply and truthfully, the story of what Nature has done for the State.

NINTH ANNUAL REPORT OF THE INSPECTOR OF MINES OF THE STATE OF KENTUCKY. 1892. Charles J. Norwood, Inspector. Frankfort, Ky.; Public Printer. Pages 284; illustrated.

This report shows that there are in operation in Kentucky 122 commercial mines, and eight mines subject to supervision, but worked for local trade only. The inspector reports a marked improvement in the matter of ventilation, but states that there is still much carelessness in prevention of accidents, although the number of persons killed and injured has decreased. The force at command of the inspection bureau is not large enough to permit frequent examinations, and an increase is much needed. In the eastern part of the State especially there is a tendency to cheap mining, and the neglect of precautions against accident, and to prevent this greater care is much needed.

SEVENTH BIENNIAL REPORT OF THE BUREAU OF LABOR STATISTICS OF ILLINOIS. 1892. Springfield, Ill.; State Printer. Pages 632.

This report contains statistics on three general subjects, Part I. giving the results of an inquiry into the condition of working women in Chicago; Part II. a special report on the so-called "sweating system" in the manufacture of clothing, while Part III., which is chiefly of interest to us, is a compilation of the statistics of coal production in Illinois, based on the reports of the State inspectors of coal mines. The extent of the coal interest is shown by the facts that there are 839 openings of all kinds from which coal has been mined; that 33,632 persons were last year employed in and about the mines, and 17,862,276 tons of coal were produced. The openings of course include many small shafts where coal was obtained for local use; but there are also many large mines and the coal output is an important feature in the industrial progress of the State. A considerable part of the report is devoted to mining accidents, of which there were a considerable number, 57 men having been killed and 370 injured. There is in the report some discussion of the causes of accident, but no special recommendations as to preventive measures for the future. It contains much valuable information, which might be somewhat better arranged and presented, but still can readily be found in its pages by a careful reader. The mine inspectors seem generally to have done their work with care.

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 in another page of the Journal.

Paleontology of the Cretaceous Formations of Texas. By Robert T. Hill. Washington; published by the Biological Society. Pages 12; illustrated.

An Introduction to the Study of Chemistry. By Prof. Ira Remsen. Third Edition, Revised and Enlarged. New York; Henry Holt & Co. Pages 436; illustrated.

Victoria: Annual Report of the Secretary of Mines. Hon. A. W. Howitt, Secretary. Melbourne, Victoria; Government Printer. Pages 72; with maps and diagrams.

Notes and Analysis of a Metallic Meteorite from Moonbi, N. S. W. By John C. H. Mingay. Sydney, N. S. W.; published by the Royal Society. Pamphlet, pages 4; with plates.

Inland Waterways: Their Relation to Transportation. By Emory R. Johnson, Ph. D. Philadelphia; the American Academy of Political and Social Science. Pages 164. Price 35 cents.

The Phosphate Industry of the United States: Sixth Special Report of the Commissioner of Labor. Carroll D. Wright, Commissioner. Washington; Government Printing Office. Pages 148; with maps.

Universal Exposition at Paris, 1889. Report on Class 41: Products of Mining and Metallurgy. By William Henry Chandler, Ph. D., F. C. S. Washington; Government Printing Office. Pages 88; illustrated.

Bulletin of the United States National Museum No. 42. Catalogue of the Systematic Collections in Economic Geology and Metallurgy. B. Frederick P. Dewey. Washington; Government Printing Office. Pages 256; illustrated.

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. All letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Methods of Soldering Aluminum.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Will you kindly inform me through your most highly valued and much read columns, a method of soldering aluminum. By so doing you will greatly oblige.

NEW YORK, Sept. 26, 1893.

CHARLES S. HERZIG.

(Several methods for soldering aluminum have been proposed, and quite a number of patents have been taken out for various compositions for the purpose. Methods recommended by those who have tried them were described in the "Engineering and Mining Journal" for December 17th, 1892, page 578, and for April 15th, 1893, page 346. There still seems to be, however, an opening for a better solder.—Ed. "Engineering and Mining Journal.")

"Universal Bimetalism."

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Under the present conditions, as a matter of fact, sales of stocks other than gold are necessarily limited, being made only where the mines are on an established basis of good management and good show-in in ore reserves, or they are in the nature of sacrifices to realize on indebtedness. Could the Senate once comprehend the true situation of affairs and repeal the purchasing clause of the Sherman act, founded as it is in a false theory of finance, and like all other false

theories in legislation bound in the very nature of things to fall, confidence would be restored, and would pave the way for a proper system of bimetalism, which, as a matter of right and equity, the world needs, and must and will have; and which can be formulated on a sound and lasting basis when the would-be solvers and currency tinkers cease trying to make water run up hill, and legislate on the broad ground that what is for the interest of the people, debtor and creditor alike, is equally for the benefit of the whole commercial world.

In this connection I desire to personally express my judgment that the plan proposed by R. P. Rothwell seems to meet the whole question in its entirety, and would be the world's blessing could it be adopted, but nothing can be accomplished until the present obstruction referred to is removed, and a new structure of finance on bimetallic lines, is built on solid foundations and that shall be lasting.

HELENA, MONT.

SAMUEL K. DAVIS.

The Treatment of Zinc Lead Sulphides.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In your "Journal" of the 16th inst., Dr. S. H. Emmens, in a labored article, attempts to defend his remarks made in "The Mineral Industry" concerning "The F. L. Bartlett Zinc Process." In reply, I will say that I do not propose to enter into any controversy, although it is evident to me that Dr. Emmens still completely misunderstands the process as carried out here. What I most object to is the fact that Dr. Emmens, Dr. Schnabel and others take the liberty of writing about my process without consultation or communication with me, or with any one else who has complete knowledge of the process. I should have been pleased to have furnished Dr. Emmens with a complete description of the process for "The Mineral Industry" had he asked it, with all the improvements to date.

It is not wonderful that the "F. L. Bartlett Process" is mixed up with the Lewis & Bartlett process. The Lewis & Bartlett process has been frequently described, while the other has not, and the names are sufficient to cause confusion. Dr. Emmens says "generically the processes are the same," but that can be said of any process which includes smelting.

Specifically, the two processes differ in this way: The Lewis & Bartlett process, as carried out at Joplin, when my patents were taken out, was for the treatment of galena, non-argentiferous, and consisted in converting galena ore direct into pig lead and sublimed lead pigment. It is a beautiful and complete process. My process was designed and is used for the treatment of all kinds of silver, copper and gold ores containing too much zinc for profitable smelting in the usual way. The pigment saved is simply a by-product, and the aim is to extract the silver, gold and copper without loss. The demand for the pigment is good and constant, otherwise the zinc and lead could and would be saved as metals. The average loss of silver in treating 14,000 tons of ore has been under 2 oz. per ton, while there has been a gain in gold and lead over the assays; the copper loss has been under 0.25%, the zinc loss under 7%. The works have run on hundreds of varieties of ore, "tailings" being used only to a limited extent, as higher grade ores are found more profitable. That the process is not known and generally understood, is not singular. It has not been the desire of the private corporation owning the patents to advertise the scheme in any way, as we have nothing to sell but our products. At the same time any professional man of good standing is welcome, and the writer has never yet refused such a man admittance to the works, nor has he failed to answer all letters and questions courteously and fully.

CANON CITY, Colo., September 25, 1893.

F. L. BARTLETT.

The Report on the Bendigo Gold Field¹

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: When I ventured to offer a criticism of Mr. Dunn's monograph on the Bendigo gold field, I did so in no unfriendly spirit, but in reading Mr. Argall's letter, appearing in your issue of September 23d, I am led to wonder whether Mr. Dunn will think of me, as I do of Mr. Argall, that he is unnecessarily severe. When commenting on the report prepared by Mr. Dunn I did not refer to my own study of the same region. It seemed to be unnecessary to do so; nevertheless, I would not at that time have ventured to speak so boldly were it not that I was familiar with the field, and had worked hard to attempt to solve those problems which Mr. Dunn was discussing in his report. I am taken to task for making note of the fact that the author of the report does not offer any explanation of the observation that the lava dykes occur only along the anticlinal axes. My critic says, somewhat brusquely, "no explanation is necessary"; and straightway proceeds to give an explanation, the correct one, himself. It seemed to me that a geological report of this kind intended to be of assistance to those who direct the development of the mines should offer an explanation of a fact which, however evident to Mr. Argall or even to me, is yet certainly misunderstood by the miner.

In speaking of the origin and formation of the dykes, Mr. Dunn repeats the theories which are generally accepted, but, being strongly impressed with the facts observed by me at Bendigo, I felt impelled to object to his explanations and characterized them as more in keeping with the catastrophic theories of the past than in harmony with the evidence obtainable underground in the mines of that particular region. Mr. Argall says that "even a casual examination of the literature of vulcanology will show that the movement of the earth's crust in connection with volcanic action does not conform to any set theory," and forthwith he endeavors to demolish my interpretation of certain new facts by showing that it does not conform to the set theories of the great writers on geology. He refers to Dana, Judd and Le Conte, and follows this up by giving instances of certain of the most violent of recorded volcanic eruptions. The descriptions quoted are doubtless for the most part accurately, but, incidentally, I would state that it is not true that the site of the island of Krakatoa is now covered by

water 1,000 ft. deep. A rocky island, though much diminished in size, still stands above the waves.

I deny that it is a correct method of inquiry to use the phenomena of volcanic eruptions to explain the formation of thin dykes of lava seen several thousand feet underground. So long as there are no opportunities of examining the latter in place it may be interesting to guess at their mode of formation by what one can see around a volcano, but it is illogical and unscientific to attempt to demolish the evidence obtained underground and in place by the deductions made from the occurrences of a volcanic outburst. In the latter instance we have to deal with surface phenomena whose excessive energy is for the most part due to the sudden escape of large volumes of accumulated steam. It is the sudden lightening of pressure at the immediate approach to the earth's surface which is the cause of the violence of volcanic outbursts. Professor Judd, in describing Stromboli, which he takes as a typical volcano, says that "the fluid mass appears to be gradually impelled upward, till it approaches the lips of the aperture, when vast bubbles are formed upon its surface, and to the sudden bursting of these the phenomena of eruption are due." Deep down within the rocky confines of the earth, where pressure is great, the conditions are different from those obtaining at a volcanic vent, and the behavior of the rock-forming materials is, I think, of a more orderly and less violent character. I believe this because of observations made underground in mining regions far apart, but more especially because of facts gathered and evidence seen in the 27 mines that I examined at Bendigo, where lava dykes can be inspected in workings extending from surface to over a half mile deep.

Therefore, though Mr. Argall pile Pelion upon Ossa, quote Judd after Le Conte, yet not all the clever observations of the authorities will awe me so much as one solitary opposing fact accurately determined. The cause of scientific progress, particularly as regards mining geology, has suffered too much already by these attempts to guard the sacredness that is supposed to hedge the theory of an acknowledged authority. I speak advisedly when I say that more than once new facts have been pointed out by an observer only to be pooh-poohed because they were in contradiction to a current explanation, and many years after when the theory has slowly wilted away some one has again brought up the evidence noted in the time gone by, and being now in accord with theory, it has been received as a new revelation. Surely we have gotten over the time when it was considered wrong in science to question any theory, not flippantly or impertinently, but thoughtfully and after careful investigation. If a theory be good let it stand, if bad let it go. The resifting of evidence can do naught but good. If there be any discord between a fact and the theory, don't endeavor to harmonize the former with the latter, but "leave your theory, as Joseph his coat in the hands of the harlot, and flee."

T. A. RICKARD.

DENVER, Colo., Sept. 30, 1893.

Transport by Wire Tramways.—This forms the subject of a study and investigation with which the Societe Industrielle de l'Est, in France, has charged two of its members, one of whom, Professor Thiery, lately forestalled the definite report by a lecture delivered at Nancy. He concluded by giving the cost of transport on eight wire lines, the mean of which, 57 centimes per ton per kilometer, or 17 cts., per ton per mile, happens to be exactly that of the wire tramway lately erected between Custines and Marbache for carrying ore to the Pont-a-Mousson blast furnaces. In addition to the low cost of transport, Professor Thiery enumerated the following economical advantages of wire tramways: They are independent of the land on which they are erected, and which may be hired instead of bought, and cultivated like adjoining portions; there is sufficient height for tipping to dump; they may be established on any land where roads or railways would be impossible, notwithstanding natural obstacles; they will work in any weather, not being interrupted by snowstorms, or floods; the loading and unloading is effected in a very simple and practical manner; they may be worked by untrained laborers; and, lastly, the energy stored up in descending may be utilized for ascending, which is not the case with other means of communication.

Copper Among the Indians.—An article by R. L. Packard in the "American Antiquarian" says that careful investigation seem to show that at the time of the discovery of America copper was used by the North American Indians only as a precious metal and for ornamental purposes, and had not reached the stage of industrial use, as it had among the Aztecs in Mexico. There is, moreover, no evidence to show that the northern Indians had any knowledge of ore working or smelting, and it is almost certain that all the copper they possessed was found in the metallic or native state. There is nothing to show that they were aware of the existence of copper ore as a source of metal. No remains of smelting places, or slag, or other indications of metallurgical operations have yet been found. The quantity of copper which the Indians possessed at the time of the discovery, although the metal was diffused over a very wide territory, was very small as compared with stone. This is shown by the relatively small proportion of copper implements in the principal collections, as at the Smithsonian Institution and others. The larger numbers are found in Wisconsin, and this is accounted for by the fact that Wisconsin is directly south of the Keweenaw district in Michigan, where the largest beds of native copper occur. In these beds the copper shows as such in the rock, and the ancient miners had only to follow down a promising outcrop showing metal for a few feet, and hammer away the rock from the copper to secure the latter. When they came upon a large mass they were compelled to abandon it after hammering off projecting pieces, because they had no tools for cutting it up and removing it. Several instances of this sort have been found. The ancient mines were not real mines, not being underground workings, but merely shallow pits or trenches, and sometimes excavations in the face of a cliff. At the time modern mining began they had become mere depressions in the ground. All these workings when examined contained stone hammers or mauls, a few wooden shovels, remains of wooden bowls for baking, birch-bark baskets, and some spear or lance-heads, and other articles of copper.

MINERALS IN THE CYOLADES ISLANDS, GREECE.

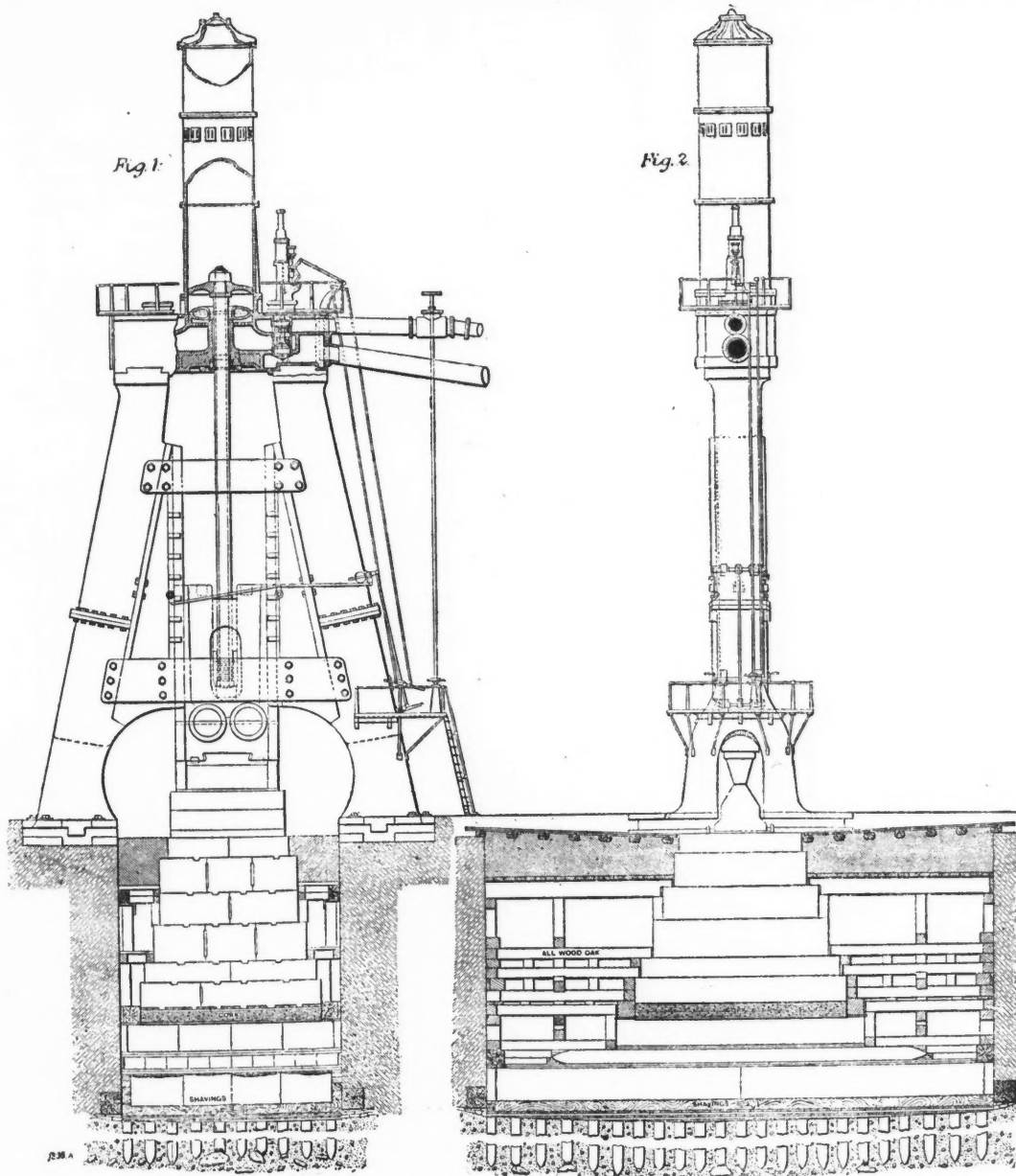
The Greek government has made extensive explorations on the island of Milo, in the course of which deposits of argentiferous barytes were found near Triades, Mirobilla, Pelonisi, Pikodrun, Kastanas, Bani and Klima, though not all of these are of the same importance. The mineral is said to contain in different localities a proportion of silver varying from 10 oz. to 350 oz. per ton. Milo produces also sulphur said to be superior to the Sicilian mineral, which is now largely imported into Greece. The annual output in 1892 amounted to over 2,000 tons, which was all sent to the Peloponnesus, where it is chiefly used in the treatment of vines against oidium. Manganese ores amounting to about 12,000 tons annually are exported to the United States and England, and from 3,000 to 4,000 tons go to the smelting works of Laurium.

The most important mineral produced in Naxos is emery stone, of

from 250 to 330 grams; and the third, over 330 grams to the ton. A yearly delivery of 8,000 tons of ore, with an average of 250 grams silver per ton, will be guaranteed, and the purchaser will be required to work the ores at his own cost.

THE 125-TON HAMMER OF THE BETHLEHEM IRON COMPANY, PENNSYLVANIA.*

The engravings which we publish show the 125-ton steam hammer of the Bethlehem Iron Company. The tool was designed by Mr. John Fritz, one of the most noted of American metallurgical engineers, and has now been at work some time, during which forgings of the heaviest class have been turned out by its aid. For a tool of this kind a reliable foundation is essential, and a reference to Figs. 1 and 2 will make clear the precautions adopted in this case. Primarily the foundation is supported by piles, driven at 2 ft. 6 in.



THE 125-TON STEAM HAMMER AT THE BETHLEHEM IRON COMPANY'S WORKS.

which 1,562 tons, valued at \$40 per ton, were shipped during November and December, 1892. Usually vessels only call at Naxos during the winter months, when the Black Sea is closed for navigation, as in the open season they are employed in that trade.

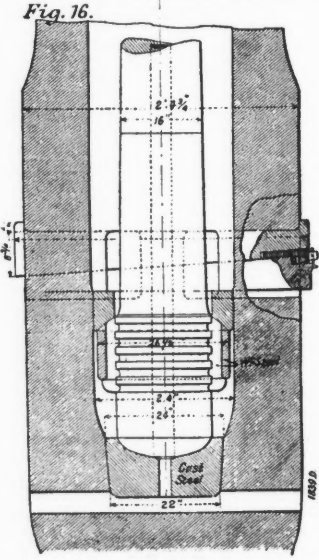
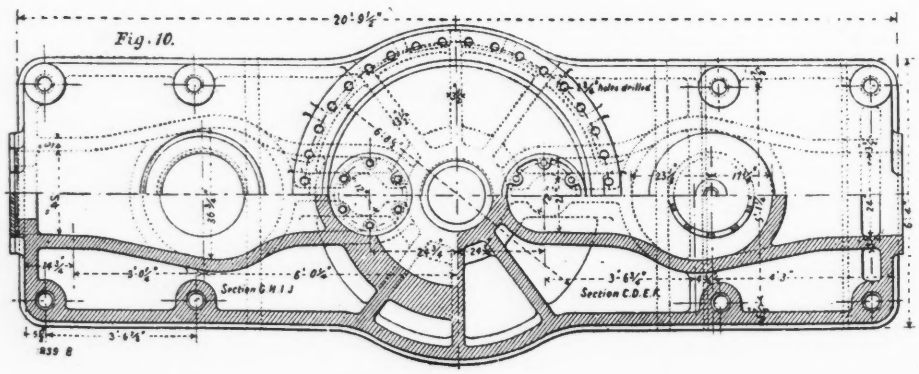
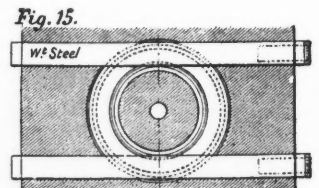
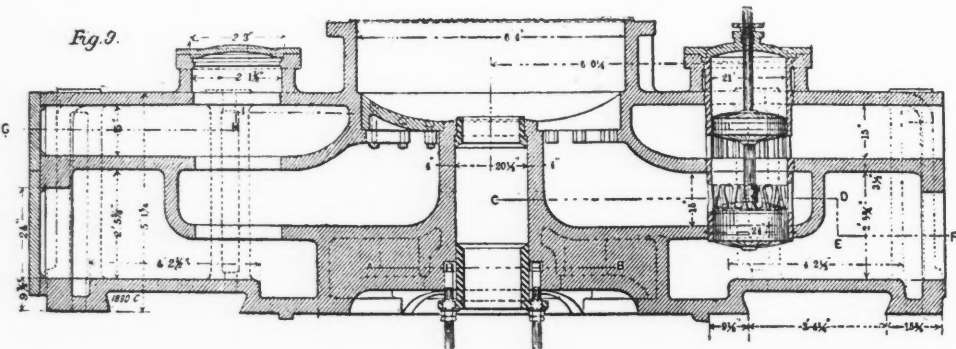
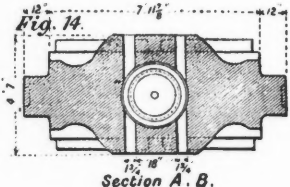
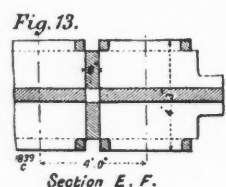
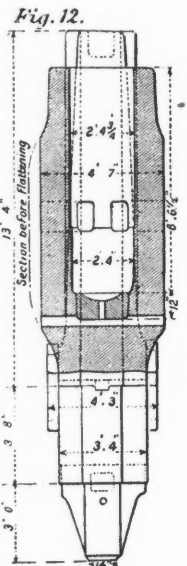
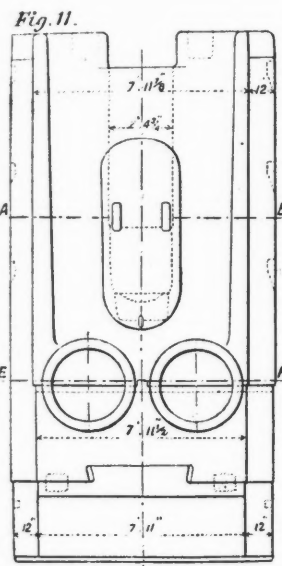
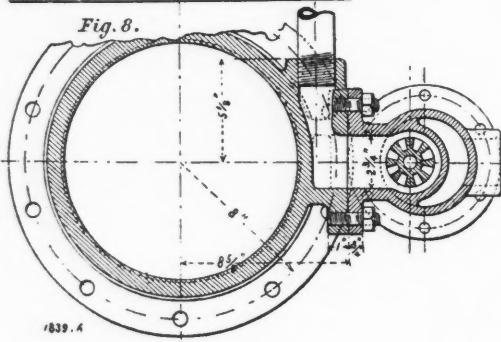
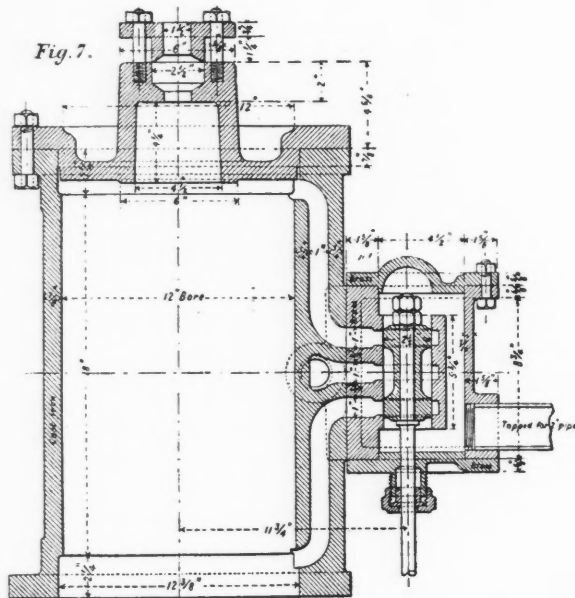
In Seriphos the large deposits of iron ore (hematite and magnetic oxide) have been worked in open quarries, and during 1892 a total of 134,500 tons, valued at \$1,167,500, was exported, of which amount nearly 40,000 tons went to Philadelphia. The hematite has from 47% to 55% of iron, the magnetic ore about 65%; there is also some pyrites. The ores carry from 2% to 2.5% manganese.

The only coal mines in Greece are at Kymi, in Euboea, and at Oropos, in Attika. At Kymi there is a brown coal, or lignite, which occurs in a vein from 1 to 3 meters thick. About 6,000 tons were mined in 1892 and used locally. At Oropos there is a similar deposit of lignite, from which 2,500 tons were mined in 1892 and used at the Laurium works.

The Greek Ministry of Finance has lately asked for bids for the argentiferous ores of the island of Milo. The ore will be graded in three classes, the first carrying 170 to 250 grams per metric ton; the second,

to 3 ft. centers, some 35 ft. to 40 ft. into the ground below the bottom of the foundation pit. On the top of these piles a timber flooring is laid, which is covered over with a cushion of wood shavings. On this cushion rests the first of several courses of cast iron blocks, which give to the foundation the weight and inertia which are so essential. This first course consists of eight blocks, and above it is placed an elastic layer 18 in. thick, built up out of 2-in. planking faced with cork. On top of this elastic layer ten heavy steel bars are laid, which stretch right across the foundation, and insure a fair distribution of the superincumbent load. Above these bars is a second layer of planking, but this time without the cork. On this are laid four massive cast iron blocks, then a second elastic layer of plank and cork, and from this point the foundation is completed by six courses consisting of six cast iron blocks each. In the four lower courses these blocks weigh 70 tons each, and in the two upper ones 54 tons each. The shoes weigh 60 tons each, and the anvil die 30 tons. The total weight of metal in the anvil blocks is thus 2,150

*Abstract of article in London "Engineering."



DETAILS OF THE 125-TON BETHLEHEM HAMMER.

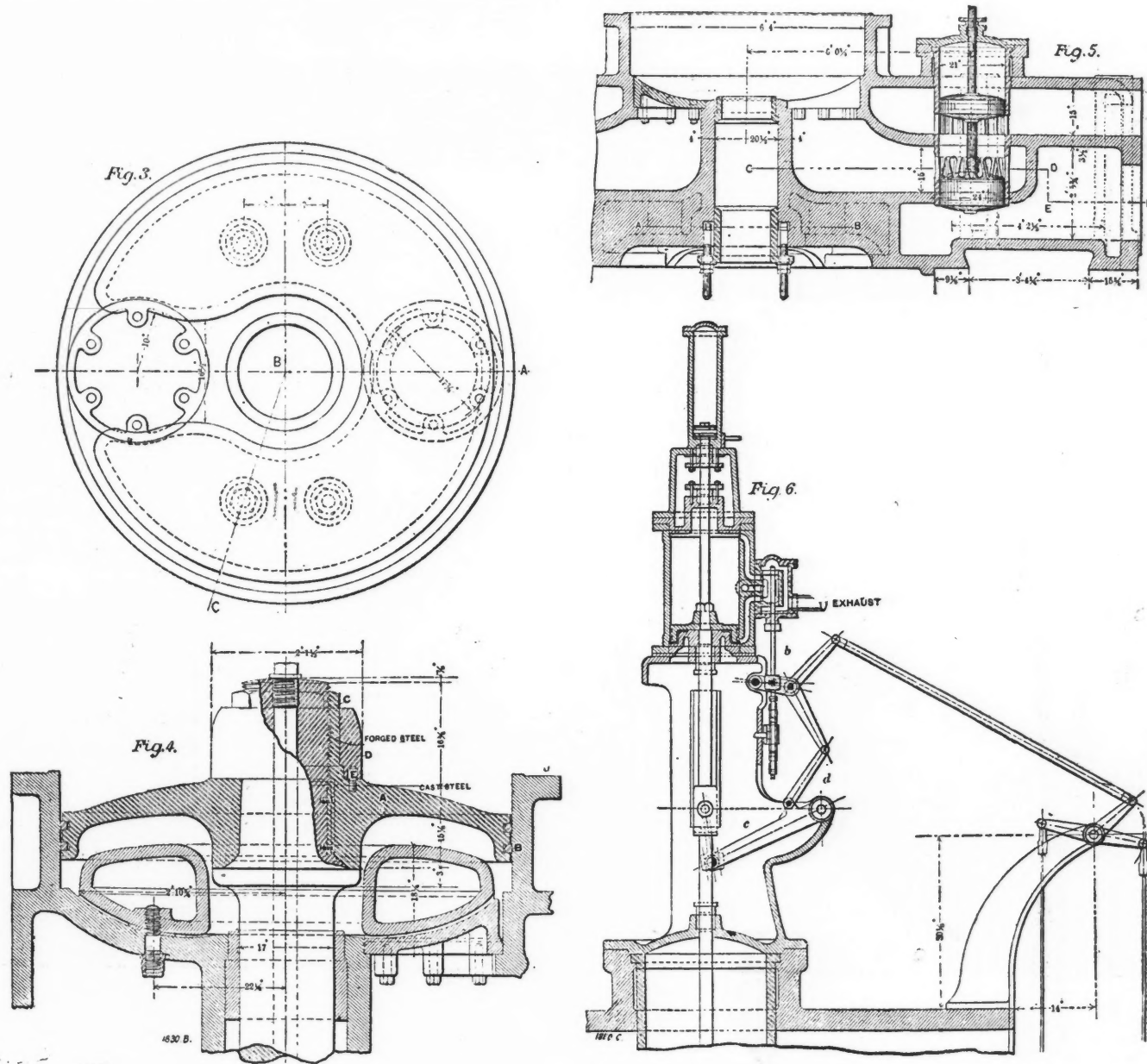
tons. The hammer stands on the banks of the Lehigh River, on made ground, and piles extending down to bedrock were necessary.

The hammer is single-acting, and the combined weight of piston, piston-rod and trip is 125 tons. The cylinder is built up in three parts, of which the lower weighs nearly 10 tons, the middle rather less and the upper section 7 tons. The diameter is 76 in., and the inside length nearly 20 ft.; the actual stroke of the hammer is, however, only 16 ft. 4 in., as exhaust ports are cast in the upper ring of the cylinder, about 4 ft. from its top, so that when the piston passes there the pressure of the steam below it is relieved. At the same time the remaining portion of the cylinder above the piston acts as an air cushion, which quickly brings the flying mass to rest, in spite of its ponderous weight. The entablature supporting the cylinder weighs 60½ tons, and has the steam ports cast in it. It rests on a pair of legs, each built up of an upper and a lower section, the former weighing 48½ tons each, and the latter 107 tons each. To these legs are bolted the guides, which weigh 75½ tons. The baseplates support-

proved very satisfactory, the hammer being under full control at all times

Details of the piston are shown in Fig. 4, and, as will be seen from that engraving, the clearance at the bottom of the cylinder is reduced by packing pieces, which are shaped as shown in Fig. 3, leaving a clear port opening. The piston A is fastened to its rod by a split nut C, over which is shrunk a steel ring D, which is prevented from turning by the peg E. The packing rings B are of steel. In Figs. 11 to 16 are shown details of the hammer-head and of the means adopted for securely attaching it to its rod. The upper cast iron portion of the trip is secured to the lower steel part by shrinking rings round semicircular lugs cast on each, as indicated in Fig. 11. The hammer is secured at any desired height by means of a series of notches in the guides, and in the trip head locking-pieces worked by a lever from the attendant's platform engage with these notches and support the hammer.

On one leg of the hammer the hydraulic ram, which works the knife-



DETAILS OF THE 125-TON BETHLEHEM HAMMER.

ing the whole structure measure 10 ft. by 8 ft., and weigh 56 tons each. The steam distribution, as already explained, is effected through ports cast in the entablature (see Fig. 10), and details of the main valve are shown in Fig. 5. As will be seen, this is of the balanced piston type, and being 21 in. in diameter, gives a large passage-way for the steam. An auxiliary cylinder is used to work the main valve, which is far too ponderous to be operated directly by hand. This auxiliary cylinder and its valve gear are shown in Fig. 6, and in further detail in Figs. 7 and 8. The valve for this cylinder is also of the piston type, and is worked from the platform shown at the side of the tool, Fig. 1, through the levers shown in Fig. 6. As will be seen, the link marked c is coupled to the piston-rod of the auxiliary cylinder, and by a link d to b, which operates the valve. This arrangement is to prevent too great a motion of the main valve, for as the piston descends it carries with it the lever c, and thus closes its own slide valve, shutting off steam. Springs are fitted to the valve rod as shown to prevent shocks. This valve gear has

used for trimming armor plates, is mounted. The total height of the tool from ground level is 90 ft., and its extreme width is 38 ft. The accessories to the hammer include two large heating furnaces and two 150-ton overhead traveling cranes.

Steel Ties on Mexican Railroads.—The Mexican Railroad Company has now some 150 miles of track, including the Pachuca branch, laid with steel ties, which weigh 124 lbs. each, or 126 lbs. with the two keybolts. These sleepers are 8 ft. 3 in. long, rolled so as to have a longitudinal web, and have clips for holding the rails formed by cutting slots out near either end of the sleeper and bending up the steel. The first metal ties of crude design were placed on this road 14 years ago. On the Inter-Oceanic Railroad some 50 miles had been laid with "pot" sleepers. About one-fourth of these have been replaced by steel sleepers, and further replacement is made as rapidly as finances permit

THE MERCUR MINING COMPANY'S CYANIDE MILL.

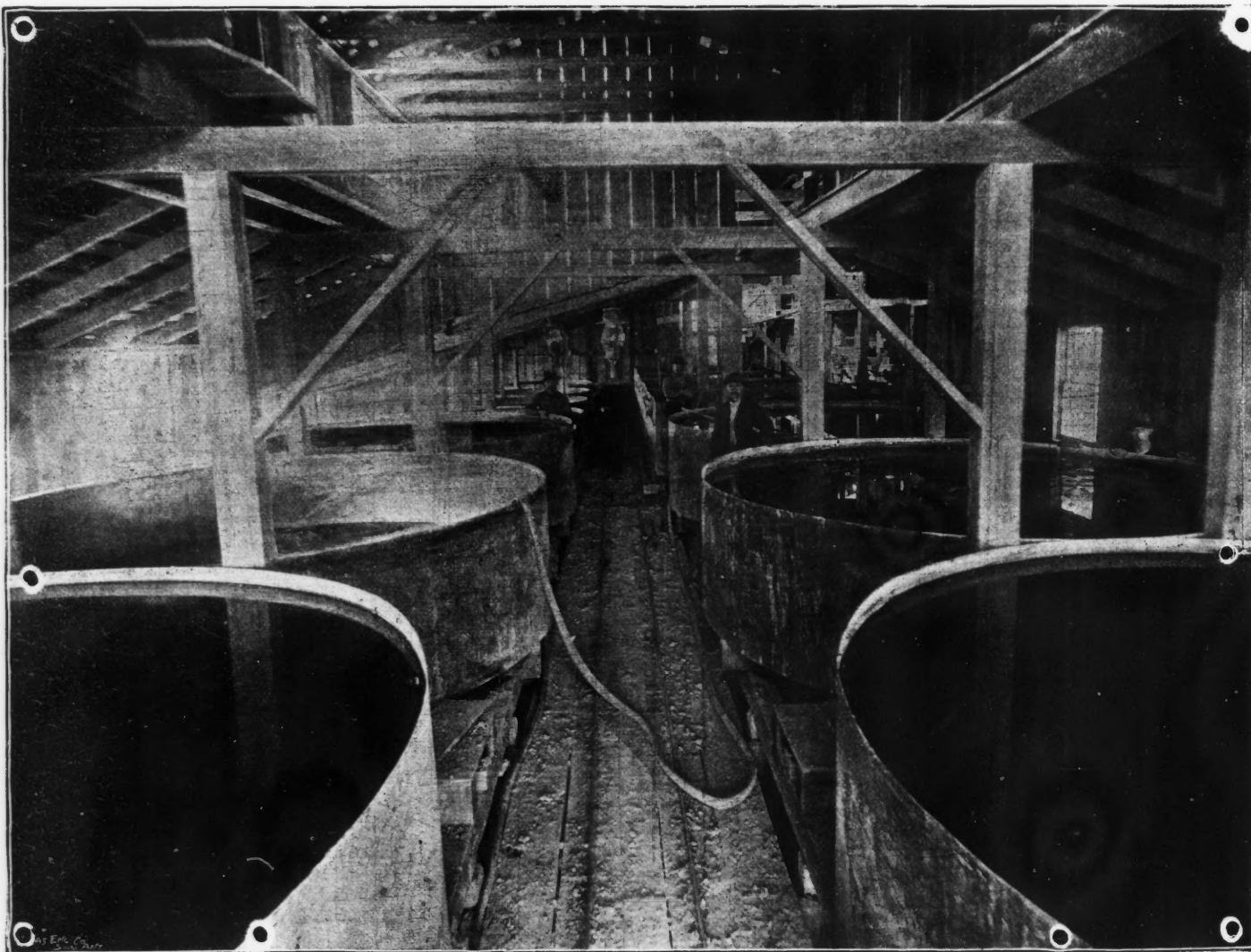
Written for the Engineering and Mining Journal by Louis Janin, Jr.

The Mercur Mining Company's cyanide mill, some details of which are shown in the accompanying illustrations, is not a model plant, but the interest excited by the successful operation of the cyanide process there makes reference to it of more than passing value. The mill was not built for a cyanide plant, nor was the mine originally thought to be gold bearing. When the Mercur vein was discovered it was believed, as its name would imply, to be a deposit carrying quicksilver. Indeed it does; but not in sufficient quantity to make the extraction of that metal profitable. Finally the ore was found to contain gold in paying quantities, although finely disseminated in the gangue. Then a pan amalgamation mill was built, as the ore could not be worked by the ordinary process of plate amalgamation. It turned out later that the pan mill could do very little better, saving not over 40%, it is said, the gold being very fine, while some of it existed as a mere coating on magnetic oxide of iron. Then, too, the nature of the gangue, which contained considerable silt, placed difficulties in the way of successful work. After this failure the plant was closed,

necessary for the cyanide process; that the solution had the happy faculty of penetrating the gangue and carrying off the gold in its outward passage. Several mills were built under this mistaken idea, which have not been so successful as they otherwise might. It is hoped that millmen are now thoroughly disabused of this opinion.

After the ore has passed the rolls it is carried over the vats in cars and is then discharged. In a properly constructed mill—one built to be worked with the utmost economy—this delivery to the vats would be automatic. Conveyors would take the ore after passing the screens and discharge it into hoppers over the tubs. The tubs themselves are too small. Their dimensions are: Diameter 12 ft. 8 in. and depth to false bottom 35 in. This gives a capacity of about 14 tons when the vat is filled to within 6 in. of the top. The diameter of the vats should be increased, but not necessarily the depth, since the capacity for leaching in a given time increases in the direct ratio of the surface areas, while increasing the depth increases the length of time necessary to leach a charge in direct ratio to the increase. Beyond certain limits increase in either diameter or depth is not practicable, but tanks holding 25 to 50 tons are within the limits of economical and convenient work.

As would be expected from the crudity of the crushing at the Mer-



THE CYANIDE PROCESS AT THE MERCUR MILL—ORE TANKS.

and the owners began to look around for another process. After listening to the claims of various inventors a quantity of ore was sent to Denver for experiments with the cyanide process. Here the results were so good that the Mercur people were encouraged to alter their plant to a cyanide mill. That the mill as it stood at the time the photographs were taken was not so convenient in arrangement as it might have been was due to its construction for another process, and really the work that has been done there is highly creditable from a metallurgical and from an economical standpoint when the numerous disadvantages are considered.

In the first place, the crushing is coarser than it should be. The rolls are not adapted for evenness of product, being the variety known as "Wall's corrugated." There are two sets of these to treat the ore which has passed a Dodge breaker, the primary ones being set to $\frac{1}{2}$ in. and the final to $\frac{1}{4}$ in. Over 20% of the final product which is sent to the leaching tanks refuses to pass a $\frac{1}{4}$ -in. mesh, while the nature of the ore prohibited fine crushing; such a coarse reduction was not advisable. Sizing trommels would have prevented the formation of an excessive quantity of slimes and would have furnished an even product which would have been leached to a much higher percentage than was then possible. The really unprecedented results which were obtained at the Mercur mill from this coarse ore gave rise to an opinion—erroneous, it is needless to say—that fine crushing was not

cur mill, the time of leaching necessary to extract all of the gold that is possible varies greatly. It ranges between 10 and 240 hours. Such wide extremes cannot be due to the nature of the ore alone, but to the differences in mechanical condition. It is claimed, moreover, that the ore is singularly constant in quality and value. The precipitating boxes, which are shown in the illustration, are 40 ft. long—one of wood and the other, slightly larger, of iron. Through these boxes the solution from the tanks passes constantly, and is returned to the solution stock tanks, where additions of cyanide are made to bring it up to the proper strength. After the ore in the tanks has been leached sufficiently, the tank is allowed to drain. However, a considerable quantity of solution (about 400 lbs. to the ton, or with the 0.25% solution used at the Mercur about 1 lb. of c. p. potassium cyanide to the ton of ore) remains in the tank. Of course it is imperative that as much of this as possible should be saved. To dislodge this, wash water is used, either plain water or by a system employed at times weak solution resultant from washing. In the latter case the weak solution is stored in separate tanks, and this arrangement allows washing with a minimum increase or wastage of solution.

The auriferous precipitate at the Mercur is remarkable for its high contents in lime, as it carries 36.7% CaCO_3 . The ore is highly calcareous, but so great a solubility of limestone in cyanide as this

would imply is to be doubted; it is probably due to mechanical causes, finely divided ore being carried in suspension into the precipitating boxes, where it settles. This, of course, would make the precipitate difficult to handle did the company attempt to refine it on the spot, but as it is shipped to smelting works the latter have to contend with this difficulty.

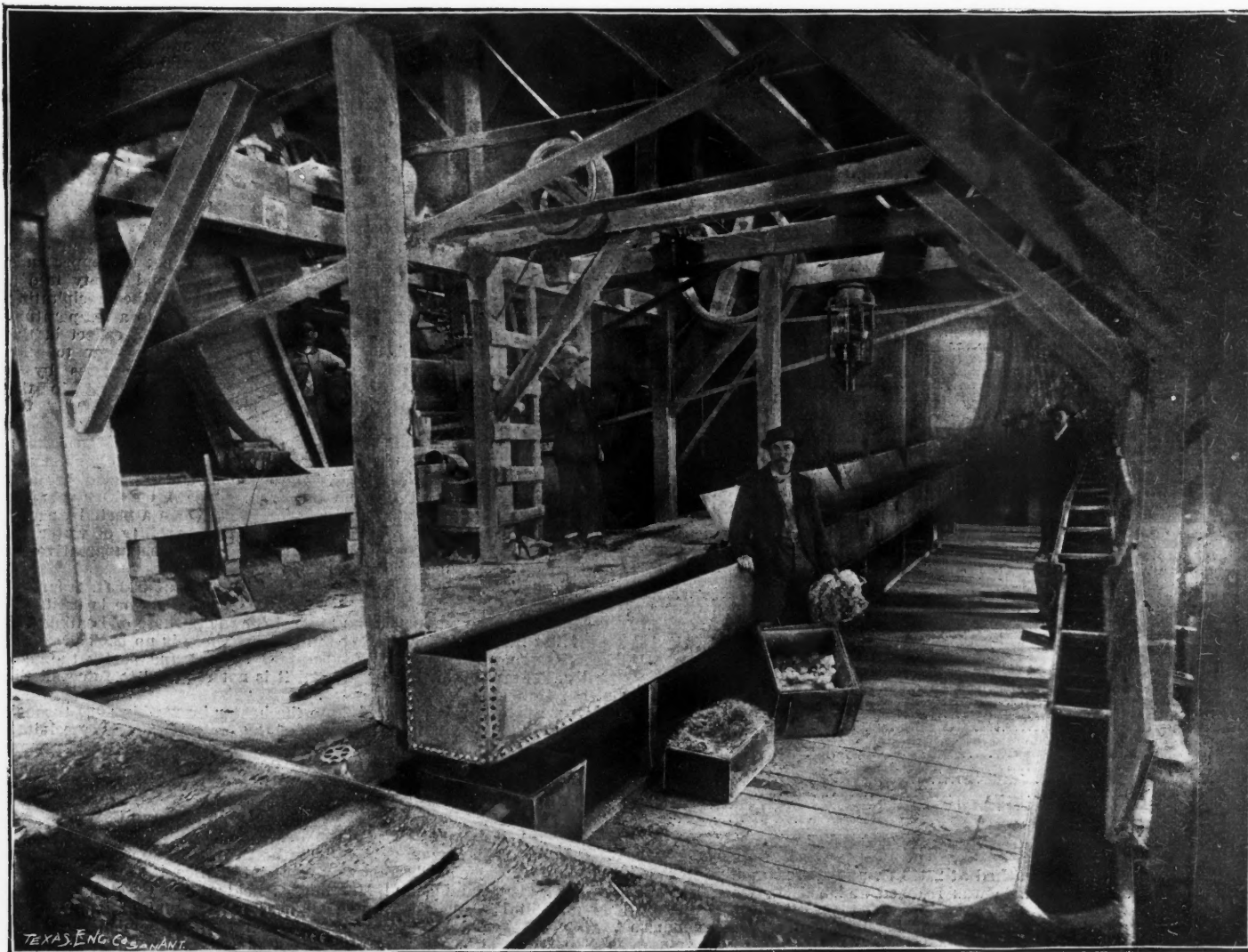
The smelting works pay a very fair price for the gold. They allow \$20 an oz., less express charges of 12 cents, the gold in the precipitate thus netting \$19.88 per oz. Troy.

The extraction at the Mercur has varied. When the mill was first put in operation it was considerably below 70%, but as experience with the process increased the results became more encouraging, until now, I am informed, the average return is between 85 and 90%. The mill has been enlarged recently, and better results are anticipated both as to extraction and cost. The cost during an early period of work is given at \$2.40 per ton, divided as follows: Potassium cyanide (1.27 lbs. per ton), 66 cents; zinc (0.55 lb. per ton), 5 cents; labor (7 shifts per 24 hours, six day and one night), \$1.12; supplies, repairs, fuel, freight, 57 cents; total (not inclusive of office expenses, royalty and superintendence), \$2.40.

THE DEEP BORINGS ON THE WITWATERSRAND.

The result of the deep borings on the Rand-Victoria mines in the Witwatersrand districts, Transvaal, are full of interest of an uncommon kind. It proves the permanency of the banked beds, predicted by Hamilton Smith, Jr., and other engineers, and throws light on the geological construction of the bankets; it has an important bearing upon the politico-economic question as to the future supply of gold, and, finally, it does high credit to an American diamond drill. In our issue of August 25th we chronicled the fact that the deep borings on Tracey & Beatty's claim, 4,000 ft. distant from the outcrop of the main reef, had passed through the south beds of the main reef series at a depth of over 2,300 ft. The claim mentioned has now been united with that formerly known as the Salmon, and has been renamed the Rand-Victoria Mine, Limited.

The boring began on October 25th, 1892, a "Dauntless" diamond drill 1 7-16 in., made by the M. C. Bullock Company, and guaranteed to drill to a depth of only 1,600 ft., being used. It was hoped that the Main Reef would be cut within the above distance, but the calculations made showed a far greater depth. Owing to the shallow depth



THE CYANIDE PROCESS AT THE MERCUR MILL--PRECIPITATING TROUGHS.

Since this period the expenses have been reduced as the amount of cyanide lost per ton has been diminished, and a larger quantity of ore is reduced with the same amount of labor.

The Mercur mill was the first one in the world to treat ores (as distinct from tailings) with commercial success. It has been a pioneer, and the efforts of its owners and managers should be appreciated. The figures of costs and results undoubtedly could be improved upon on a new plant, but, all things considered, they are highly creditable as they stand. For further information concerning this mill and the process it would be well to consult the article by C. W. Merrill in "The Engineering and Mining Journal" for November 5th, 1892, and the article by the present writer in the "Mineral Industry" for 1892, which is published by the Scientific Publishing Company.

Belgian Blast Furnaces.—The number of blast furnaces at work in Belgium Aug. 1st, 1893, was 24, while there were 18 furnaces out of blast at the same date. The total of 24 furnaces in blast was made up as follows: Charleroi district, 8; Liege district, 12; Luxembourg, 4; total, 24. The production of pig in Belgium in July was 60,751 tons, as compared with 54,945 tons in July, 1892. The aggregate output in the first seven months of this year was 439,866 tons, as compared with 429,975 tons in the corresponding period of 1892.

of the outcrop it is certain there has been a local vertical tilt of the strata on that section of the Main Reef which has flattened the surface outcrop, without disturbing the ground to the south. Consequently the Main Reef series had to be sought for in a position agreeing with the general dip of the strata. Generally speaking, the inclination of the strata on the Witwatersrand Range gradually decreases from the Main Reef, proceeding southward, or, to put it approximately in figures, the outcrop of the Main Reef series is 45° to 85°, the outcrop of the Bird Reef series 40° to 45°, the outcrop of the Kimberley series 30° to 35°, and the outcrop of the Ras series 20° to 25°. Taking a section of the strata, south from the Simmer & Jack mine through the bore, the outcrop dips are: Main Reef series 26°, Bird Reef series 40°, Kimberley Reef series 32°, Ras Reef series 30°. The dip of the Main Reef series at general rule, and it may be fairly attributed to a local flattening of the outcrop which extends but a short distance south. According to calculations based on the surface distances between the outcrops on neighboring ground east and west of the local disturbance referred to, and commencing from the line of the bore, the Bird Reef should have been struck at a vertical depth of 280 ft.; the Livingston Reef at 1,580 ft., and the Main Reef series at 2,300 ft. These distances agree very well with those actually ascertained. The journal of the bore shows the Bird Reef at 300 ft., the Livingston beds at 1,585 ft.,

and the south leader of the Main Reef series at 2,343 ft., the present depth of the hole.

The following table gives the formations cut through, the figures giving the depth in feet from the surface, the whole making an interesting geological record:

DETAILS OF THE CORE:		Fl.
Surface soil and sandy blue clay		10
Small boulders in same		18
Friable shale changing to yellow clay, which hardened to rock at		98
A gradually hardening shale, blue in color, and with undecided stratification		126
A three-inch quartz seam		138
Flagstone (?) of a greenish blue color with a little lime		153
Blue shale, occasional layers of metamorphosed sandstone; dip of strata 60°		167
A stratum of quartzite 1 ft. wide		193
Blue slate with quartz pebbles		197
Three-inch layer quartz		229
Quartzite with few small pebbles, intermixed with sandstone layers		252
Sandstone layers		288
" with some pyrites and hydromicaceous seams		286
Pebble seam, 3 in., in a series of vitreous sandstones and grits, all much metamorphosed		303
Beds of banket matter (?), probably coarse grits		333
Vitreous sandstones and quartzites and commencement of Bird Reef series		357
The Bird Reef series of banket beds, barren, dip 50°		366
Sandstones		367
Pyritic banket reef		368
Average dip of footwall here 50°. A further series of sandstones and seams of banket, with hydromicaceous partings, until two reefs each 6 in. thick are encountered at 384 and		385
4-ft. banket bed		389
An 18-in. banket bed		391
A 3-ft. banket bed		405
A series of quartzites with grits terminating in a pyritic quartzite, dip 50°		426
Highly vitrified sandstones and quartzite		427
A series of hard blue quartzites, dip 47°		440
Reef matter, giving blank pannings		479
Fine grained sandstones, with few small pebbles, some small grit seams, and having a dip varying between 30° and 40°		508
A fairly well defined reef, but barren		518.7 in.
A series of hard blue quartzites, with some sandstones, frequent seams of grit, or reef matter, a few layers of white quartz and occasional stray pebbles, terminating in 24-in. barren reef at		915
Another series of a similar nature to the last, but with the dip increasing up to 45° again, and terminating in a reef, barren, but one foot wide at		1,127
A similar reef at		1,152
Another similar series of quartzites, vitreous sandstones and grits		1,154
Intensely hard gray shale dipping at 45°		1,529
Medium dark gray quartzite		1,580
Very pebbly strata		1,582
Green pyritic shale in seams of quartzite		1,580
A few inches of barren banket in a coarsely pebbled quartzite		1,591
Coarse quartzite		1,598
A 1-in. seam of solid pyrites in quartzite, the dip being 41°		1,605
A 1½-in. of a dark micaceous shale		1,607
A series of quartzites, some coarse and gritty, some schistose		1,614
A pyritic banket bed		1,635
One foot of banket, contains gold, and is said to belong to the Livingstone series		1,637
Dip 27°		1,638
A series of 6 banket seams, nearly all blank		1,642
And terminating in a quartzite at		1,657
Coarse and fine quartzites, with pale-colored bands, dipping 23°		1,668
Another series of quartzites of all degrees of fineness, average dip about 22°, terminating at		1,860
3 ft. of an undefined rock, which crumbled away, the core being thus lost, probably a hydromicaceous schist		1,869
A series of fine schists with some small seams of very small pebbles		1,878
A continued series of the same, with more frequent thin bands of conglomerate, the dip of the strata being as low as 13°		1,913
Distinct bands of pyrites and pyritic partings		1,973
Pyritic partings		1,977
A further series of schists and quartzites, with some white quartz veins and frequent stringers of conglomerate		1,978
Dark gray shale, with white quartz and pyrites streaks		2,027
Quartzites, and more frequent thin seams of conglomerate (banket)		2,028
Scattered pebbles		2,040
5-in. white quartz vein		2,047
A further series of quartzites, less schistose, but containing frequent beds of conglomerate		2,048
Mottled quartzites		2,092
Distinct pyrites bands		2,095
A series of pyritic conglomerate seams, with frequent seams of pyrites, and very pebbly strata throughout		2,096
Joints of pyrites		2,163
White quartz 4 in		2,167
1-in. of solid pyrites		2,173
Pyrite crystals scattered throughout the strata		2,204
Dip of strata average 15°		2,205
A series of very pebbly strata of quartzites		2,206
8-in. of banket, with ¼-in. pebbles; the outside fringe of the Main Reef series		2,277

The South Reef was reached at 2,343 ft. and the Main Reef at 2,397 ft. The bottom of the hole was reached at 2,500 ft., when the drill stopped.

As this bore-hole is situated about 1,800 ft. south of the northern boundary of the claim, it is calculated, allowing a 10% margin of error, that a main shaft sunk at the boundary to work the bed discovered will not be over 1,200 ft. deep before striking the lode at that point. Assays of the Main Reef at 2,400 ft. are not yet obtainable, but those made of the South Reef show as follows: Top, 3 oz. 8 dwts.; center, traces; bottom, 3 dwts. 12 grs. per ton. The calculated average is 23 dwts. 12 grs. per ton, which is for the most part free milling.

Phosphorescent Sulphurets.—Mr. Jacksh, of Trieste, Moravia, as quoted by the "Popular Science Monthly," names four sulphurets which become phosphorescent after a brief exposure to daylight—the sulphurets of calcium, strontium, barium and zinc. The last compound has been obtained in a luminous condition only recently by distillation in a vacuum. Prepared in the usual way, by precipitating soluble salts of zinc with sulphurets, it shows no signs of phosphorescence. Sulphuret of barium gives a yellowish-orange glow, but only for a few minutes after each exposure to the light, and is of as little use as the sulphurets of strontium and of zinc, the greenish glow of which disappears after about two hours. For practical uses the sulphuret of calcium of commerce is the only phosphorescent of value. Pure, it gives a faint yellowish light; but treated at a red heat, with the addition of a small quantity of a salt of bismuth, it is transformed into a substance giving a violet light and retaining its luminous quality for nearly 40 hours after an exposure of only a few seconds.

MINING AT THE COLUMBIAN EXPOSITION.

Specially Reported for the Engineering and Mining Journal.

THE WARREN WEBSTER FEED WATER HEATER.

Warren Webster and Company, of Camden, N. J., exhibit in operation, in the boiler room of Machinery Hall, what they claim is the largest feed-water heater ever constructed. The guaranteed capacity is 4,000 H. P., but the tests recently made showed that the capacity of the heater is in excess of that claimed by the manufacturers. During a test of one hour 130,000 lbs. of water, at a mean temperature of 210° F., passed through the heater. Indicator cards, taken from several engines during the test, showed an absence of back pressure. The heater is connected with an exhaust line, into which a number of engines deliver steam. Some of these are of the compound type, non-condensing; yet the heater absorbs sufficient steam to secure the efficiency of the compound cylinder without lowering the temperature of the feed water. Tests for the pressure of oil and scale in the boilers prove the heater effective in this direction also. The conditions within the heater are such that the displacement caused by the rapid condensation hastens the influx of steam from the source of supply, and reduces the pressure in the exhaust pipe.

The Webster vacuum heater and purifier consists of a closed rectangular iron shell with a doubly inclined bottom, and is provided with an inlet pipe for the exhaust steam and one for cold water. The supply of the latter is automatically controlled by a gravity regulator operating the valve by means of a connecting lever. There is an outlet pipe which leads to the feed pump, and delivering the purified water to a tank or to the boilers direct. The casing contains a series of oppositely inclined perforated copper trays, which spread the water over an extended area of surface, and bring it into contact with the exhaust steam in a finely atomized form. The heat units of the vapor given off by the heated water are absorbed by the cold water coil, which consists of a number of parallel pipes, open at one end and connected with the water inlet by the center group. The opposite ends of the entire set terminate in a horizontal pipe; the upper ends of the discharge pipes are bent at a right angle and empty into a trough, from which the water flows over the tops of the precipitating trays. The feed water and the condensation, heated to a temperature claimed to be within 2° of that of the exhaust steam, collect in the bottom of the chamber without agitation and flow to the pump. Scum and grease are excluded from the pumps by a partition which extends completely across the chamber. In the main chamber, the light impurities float upon the surface of the water and can be drawn off from time to time by means of a scum pipe connecting with the drain. By freeing the gases, that retain the impurities in solution, the heavy mechanical solids and chemical salts are precipitated upon the bottom of the chamber and may be easily removed through the drain pipe. A check-valve upon the overflow pipe prevents the admission of air when a partial vacuum occurs, and is an outlet provided to avoid any possibility of water entering the exhaust pipe should the regulator become inoperative on account of foreign matter lodging in the valve.

It is possible to locate the heater at a distance of 500 ft. from the source of the steam supply, if desired. Where no engine is used, the exhaust from the pumps can be utilized for the purpose of heating and purifying the water for feeding the boiler. There is no back pressure, because the volume of steam necessary to heat and purify the feed water, is drawn into the heater, and it is not required to force all the steam through it.

All precipitation is removed from the heater by washing out through the doubly inclined bottom by means of the drain pipe. The precipitating plates can be taken out without stopping the engines by removing the cover. More than 300,000 H. P. of these heaters and purifiers are in daily use in blast furnaces and steam plants in different parts of the world.

THE RIO TINTO ROCK DRILL.

This rock drill, now on exhibition in the British Section of the Machinery Hall, at the World's Fair, first came into notice at the International Exposition of Mining and Metallurgy, held at the Crystal Palace in London in 1890, where it gave an excellent account of itself at the drill contest held in connection with that exposition mentioned. Mr. James McCulloch, the inventor and patentee, is a practical mechanical and mining engineer, and 22 years ago was engineer to the Burleigh Rock Boring Company, afterward carrying out on his own account many rock drill contracts in mines throughout Europe; he has now been for 10 years with the Rio Tinto Copper Mining Company in Spain, carrying out contracts for the development of their mines.

The advantages claimed for the Rio Tinto Rock drill are speed and economy in tunneling, driving headings, benching, shaft-sinking, rising, stopping and quarrying; and when two or more of these drills are mounted on the tunnel car, headings can be quickly driven. Its great efficiency is the result of the construction of its working parts which include an absolute, positive valve motion; reliable twist gear; a cradle quickly and easily adjustable; durability and boring power, and a total absence of springs. The positive valve motion is obtained by the combined action of the air or steam pressure and a tappet actuated by the piston rod, which imparts at each stroke a definite movement to the valve; but this tappet has a very small amount of work to do, because, as soon as the valve is started from its end position, steam or air is admitted into the valve chest and helps to push the valve over; once over, the top and bottom parts of one end of the valve chest are open, and shut at the other end, thereby keeping the valve in its position until the tappet again starts the valve. This overcomes the risk of operating the valve by air pressure alone, and of its stoppages by grit or rust. No springs are required at the back of the valve to keep it in position, as the pressure does this, being equally distributed over the whole of the valve.

The second and most important advantage claimed is the twist gear device used, which dispenses altogether with ratchet wheels, pawls and springs and is claimed to be simple, durable and certain in action, no matter what class of work it may be doing, or at what rate of speed the drill is running, or how long or short the stroke may be; the twist is as perfect with a 2½-in. as with a 5½-in. stroke, and is most effective when starting upon uneven rock, a circular hole can be formed with the short stroke at a speed of 600 per minute. To do this, Mr. McCulloch has provided for the automatic movement of a non-rotating toothed disc relatively with a tooth disc fixed on the

cise and accurate, no injury can be done to either gear or twister, both being relieved of concussion and friction.

The last advantage claimed for the Rio Tinto drill is the special provision made for taking up the wear in the cradle and keeping the machine steady when at work, dispensing with the necessity of removing the cylinder and the employment of skilled labor to adjust the cradle. This is done by making the cradle in two longitudinal parts, held together by studs or bolts; numerous thin strips of steel are inserted between them, which can be taken out as the cylinder wears, and close together the two halves of the cylinder by screwing up the bolts. Any

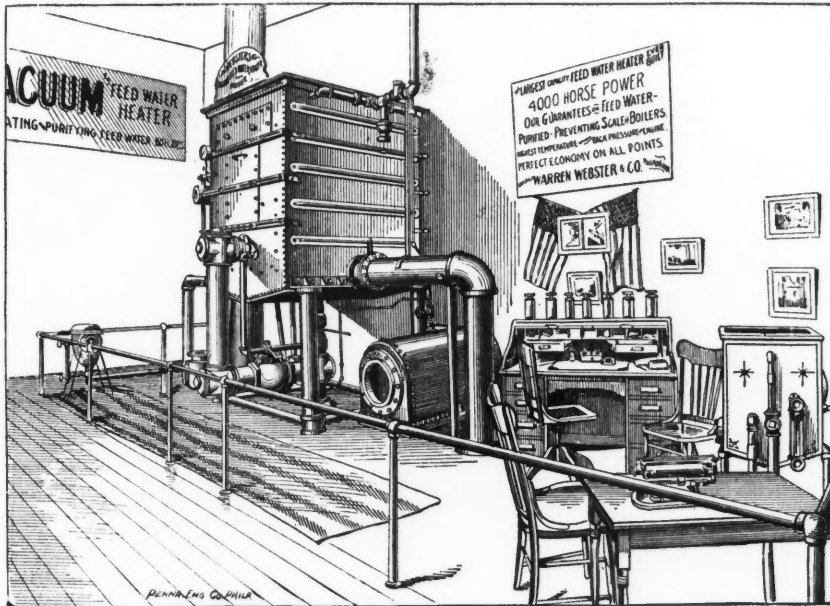


FIG. 1.—RESERVOIR.

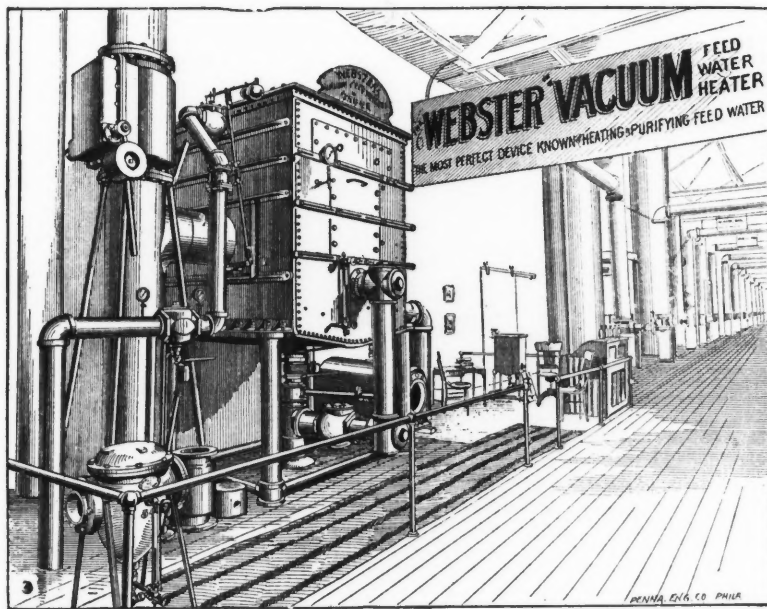
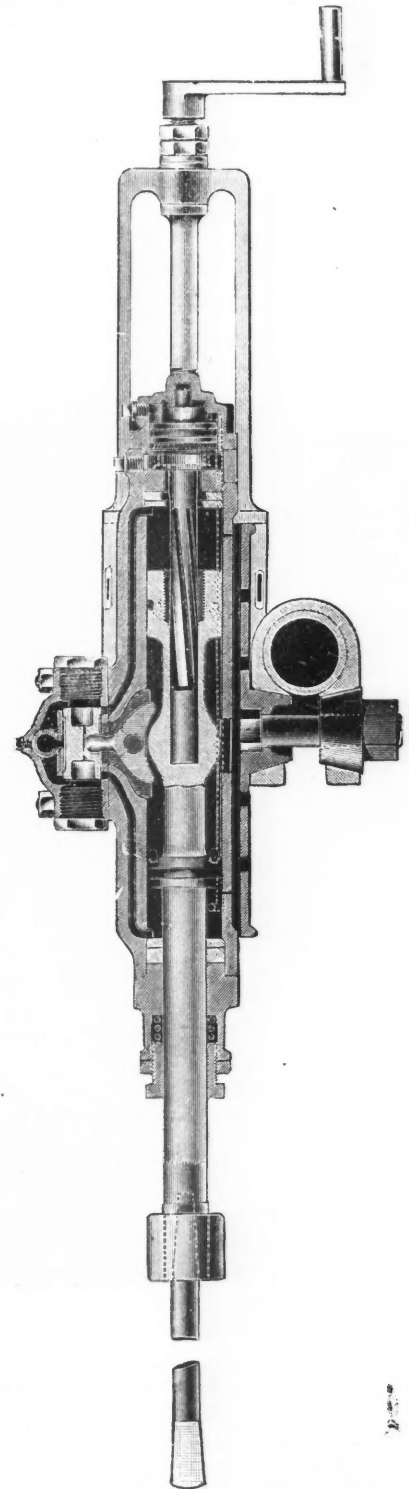


FIG. 2.—FRONT VIEW.
THE WEBSTER FEED WATER HEATER.



THE RIO TINTO ROCK DRILL.

twist bar, for the purpose of pulling it into and out of gear. This is actuated by the pressure of air or steam diverted through a passage made for it, running longitudinally with the cylinder; when the air or steam enters the lower or outer end of this passage at bottom of cylinder to cause the piston to make its return or rotating action stroke upward, it moves the non-rotating toothed disc forward about 5-16 in., becoming thereby geared with the rotating disc on the twist bar and holding it firmly while the piston rod rides or twists upon the bar. During the forward stroke of the piston, when the piston rod is striking its blow, the two discs are out of gear, avoiding unnecessary stress on the discs and friction upon the twist bar. The rotation being pre-

unskilled workman can readily adjust the cylinder in the cradle, so as to keep it steady and rigid while the drill is in operation. The best class of design, workmanship and materials is employed in the construction of this tool.

Australite.—Some tests of a new explosive to which this name has been given were recently made at Broken Hill, in New South Wales. The explosive was considered equal in power to twice its weight in ordinary blasting powder. At present its bulkiness is considered objectionable, but the makers propose to compress and granulate it to about one-third of its present bulk.

A PORTABLE ELEVATOR, SCREEN AND CONVEYOR.

The illustration given represents a practical and efficient machine for the handling of sand and gravel, made by the Jeffrey Manufacturing Company, at Columbus, O. The machine is intended to dig sand and gravel from the bank, and then separate and deposit the same in different cars. The capacity of this machine is about 40 cars per day of 10 hours, making it possible to load 30 cars of sand to 10 cars of gravel, this depending largely upon the proportion of sand in the bank. This machine is very substantially constructed, and can be built for larger or smaller capacities. The lower timberwork is mounted on truck wheels to suit the standard railroad gauge. On this truck is placed a circular gear-rack engaging with a geared pinion which is fastened to an upright shaft on the upper framework. Castor wheels and a center-plate are placed between the upper and lower framework for the purpose of revolving the entire upper part of the machine on the lower framework in a complete circular movement, thus enabling the operator to reach the bank from either side of the track. The elevator is constructed of the Jeffrey special steel chain, double strand, to which suitable buckets are attached. The buckets are

ABSTRACTS OF OFFICIAL REPORTS.

RICHMOND CONSOLIDATED MINING COMPANY, NEVADA.

The report of this company, as presented at the annual meeting in London, September 29th, covers its operations for the year ending February 28th, 1893. There were during the year 1,124 tons of ore and concentrates sold, containing 813 oz. gold, 34,683 oz. silver and 299 tons of lead. The results of the working were: Proceeds of ore and concentrates sold (\$44.80 per ton), £10,485; sundry receipts, £38; total, £10,573. The total cost of mining, hauling and concentrating was £6,635; general expenses at Eureka, £792; a total of £7,427 (\$29.60 per ton), leaving a mining profit of £3,146. To this is added interest and transfer fees, £1,035; balance from previous year, £2,746; a total of £6,927. The London office and other expenses amounted to £1,356, leaving a net balance of £5,571, from which was paid a dividend of 1s. per share, amounting to \$2,700, leaving £2,821 carried forward to the current year's account. In addition to the working expenses, however, there was expended and charged to capital account £980 for maintenance and insurance of buildings and machinery; £1,466 for prospecting and exploration work, and £1,500 for expert services in



THE JEFFREY PORTABLE ELEVATOR, SCREEN AND CONVEYOR.

made of heavy sheet steel banded on the top edge, with teeth riveted to the front lip for the purpose of digging the material from the bank. This elevator is mounted on a wrought iron angle ladder frame which is allowed to swing from the upper or delivery end of the elevator by means of two wire cables fastened to the lower end of the ladder and passing over sheave wheels at the end of the jib timbers and down on two spools on the framework. By means of crank and gearing the elevator is raised up on the bank and is then allowed to work its way down to a line even with the track. The sand and gravel are elevated and discharged on a shaking screen, the mesh of which can be made to suit the grade of sand desired, the gravel passing off over the screen upon a rubber belt conveyor into the car, the sand passing through the screen into a chute below and thence into another car. If it is desired at any time to work the elevator at an angle with the tracks the shaking screen, chute and conveyor are arranged to swing at an angle, in order to keep them about square with the cars. Further particulars can be obtained from the makers.

Firing with Coal Dust.—The new Kudlicz method of burning fine coal dust with forced draught has been applied already to 70 boilers at several iron works in Germany with satisfactory results.

finding new mines; a total of £3,946, of which it would seem that at least £2,446 belonged properly to the revenue account. A further dividend of 1s. per share from revenue balance was ordered after the close of the year, making 2s. for the year.

The directors' report says: "The furnaces and refining works have been shut down throughout the year. Prospecting was carried on both in the Richmond and Williamsburg during a part of the year, but as nothing of importance was found, it was discontinued. Work in the mines is at present confined to what is being done by tributaries who are taking out ore from various parts. On the surface the old slag dumps are being worked over by concentrating machines, with satisfactory results. The shareholders are aware that for years past Mr. Probert had been endeavoring to secure for the company a suitable new mine, and with this object in view has traveled many hundreds of miles and carefully examined a great many properties, with none of which he was satisfied. The directors, however, have great pleasure in informing the shareholders that he has at last succeeded in securing a mining property which he hopes will be a success. He has taken a working bond—that is, an option for purchase—for one year, for \$15,000, and another bond for three years on about 1,100 acres of surface land, for \$10,000, with the privilege of using all the timber

wanted for mining purposes and for fuel. There is a 10-stamp mill on the property, and he expects that the mine can be opened up and proved at a small cost."

AFRICAN GOLD RECOVERY COMPANY, LIMITED.

This company owns and operates the MacArthur-Forrest cyanide process in South Africa. The report presented at the annual meeting in London covers the year ending June 30th, 1893. The revenue account shows receipts of £210,052 royalties on gold recovered; £381 miscellaneous; a total of £210,433. Payments were for working expenses £119,179; office and general expenses, repairs, etc., £9,432; depreciation of plant and property, £15,183; London office and general expenses, £6,362; a total of £150,156, leaving net earnings of £60,277. To this must be added a balance from the previous year of £14,386, making a total of £74,663. The sum of £30,000 was carried to reserve fund, and three dividends of 5% each were paid, amounting to £26,250 in all; the balance of £18,413 was carried forward to the current year. Since the close of the year another dividend of 5% has been paid, taking £8,250, and reducing the balance to £10,163. The total return on the stock for the year was thus 20%, besides the £30,000 laid aside as a reserve for future contingencies. The capital stock issued is £175,000; the sum of £150,000 was paid for patents, and £33,000 have been expended for plant and working materials.

The directors' report says: "The total Witwatersrand output for the year ending June 30th, 1893, apart from the process, was 1,087,058 oz. gold. By the process this was increased by 226,078 oz., making a total of 1,313,136 oz. From other districts a further recovery of 2,395 oz. was returned, making in all 228,473 oz. due to the working of the process. It will thus be seen that, by the use of the process, the Rand gold production was increased by 21%. Individual returns show that at several of the leading and most prosperous mines 35% to 50% of their gold output is due to using the MacArthur-Forrest process. June 30th, last, the process was in operation at 31 mines, and since that date others have arranged to adopt it, mostly on a large scale. The board deem it advisable, in the interests of the company, to create a fund to meet possible contingencies, and towards the redemption of the company's patents, and with that in view place £30,000 to a reserve fund. The business of the company necessarily entails the use of extensive funds, in addition to which your directors are employing a portion of revenue to secure interests calculated to promote the permanent prosperity of the company."

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Supreme Court of Nevada.

Notice of Location of Mines.

The mining law does not require that a notice of location of a mine shall contain a reference to a natural object or permanent monument. It is the record of the location that must contain such reference, and only then when the district laws require the record to be made.—*Poujade vs. Ryan*. 33 Pac. Rep. 659.

United States Circuit Court of Appeals, Eighth Circuit.

Mine Foremen and Laborer Are Fellow-Servants.

A foreman in a coal mine, whose duty it is to direct 10 or 12 men what work to do, and to prop the roofs of rooms with timber; to inspect them and see if they are safe; to drill holes in the face of the rooms, charge them with powder and fire them, but who is subject to the orders of the pit boss and the superintendent, is the fellow servant of a laborer, under his direction, who is injured in performance of his duty, in shoveling and removing coal and dirt, and assisting the foreman in his work. *What Cheer Coal Company vs. Johnson*. 56 Fed. Rep., 810.

Supreme Court of Utah.

Action Against Mine Owner for Injury to Employee.

In an action against a mining company for personal injuries received by an employee, by rock falling down a manway in which he was working, where he claimed that the fall of rock was caused by blasting in a tunnel which was being extended toward the manway, evidence as to the length of time which was required to complete the tunnel, after the accident, was admissible as bearing on the proximity of the blasting to where the injured person was at work. It appeared that the fall of rock could have been prevented by proper precautions on the part of the company; that he was ordered to work in this manway, though it was not a part of his duty to do so; and that the foreman knew the place was unsafe for one unaccustomed to work there. This was evidence that the fall of rock was caused by the blasting in a neighboring tunnel, of which no warning was given, and the employee was unaware of the proximity of this tunnel. A verdict for the employee was justified.—*Länderberg vs. Crescent Mining Company*. 33 Pac. Rep. 692.

Supreme Court of Pennsylvania.

Revocation of Authority for Brokerage.

Where one employed to sell mining land, he to receive all over a certain amount, devotes a large amount of time thereto, and performs labor, and incurs large expenses to effect it, and is permitted to do so for a period of years, he is entitled to recover on a "quantum meruit" for his time, labor and expenses, his authority is revoked.—*Jaekel vs. Caldwell*. 26 At. Rep. 1063.

Taxation of Corporate Stock Held by Another Corporation.

Where a domestic coal mining company owns all the stock of a railroad company, built to convey products of the mines to the market, and the railway company has been taxed, on the appraised value of its capital stock, the mining company cannot, as the holder of the stock of the railway company, be assessed with the sum already paid by that company; since corporate stock is taxable in the hands of the holders thereof only when the corporation does not fall within the provisions of the Act of June 1, 1889. An intent on the part of the Legislature to impose double taxation will not be presumed, but the intent must clearly appear from express words.—*Commonwealth vs. Fall Brook Coal Company*. 26 At. Rep. 1071.

PATENTS PUBLISHED IN GREAT BRITAIN.

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

WEEK ENDING SEPTEMBER 23D, 1893.

- 5,725 of 1893. Rock Drill Carriages. M. H. Larmuth and R. B. Howarth, Manchester.
- 12,074 of 1893. Obtaining Chlorine from Hydrochloric Acid. A. Vogt and A. R. Scott, Glasgow.
- 13,911 of 1893. Electric Forging and Welding. W. P. Thompson, Liverpool (C. L. Coffin, Detroit).
- 13,912 of 1893. Diamond Drills. A. H. Dittmer, Berlin.
- 14,732 of 1893. Ore Roasting Furnaces. O. W. Davis, Middlesbrough, Ky.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office:

TUESDAY, SEPTEMBER 19TH, 1893.

- 505,094. Steam Boiler Furnace. James Cleghorn, Port Chalmers, New Zealand.
- 505,112. Smelting Furnace. Oscar Ludwig, Chicago, Ill. Assignor of three-fourths to James L. Board, Robert D. Wardell and Ellsworth M. Board, trustees, same place.
- 505,125. Process of Manufacturing Electrodes. Carl Pollak, Frankfurt-on-the-Main, Germany.
- 505,131. Process of Galvanizing Sheet Metal. Samuel A. Sague, Cleveland, O.
- 505,132. Apparatus for the Manufacture of Sheet Iron or Steel. Samuel A. Sague, Cleveland, O.
- 505,143, 505,144. Boiler Furnace. James K. Thompson, Leeds, England, Assignor of two-thirds to Charles F. Jahn, Pittsburg, Pa.
- 505,169. Ore Concentrator. Thomas McGlew, San Francisco, Cal., Assignor to the McGlew Ore Concentrator Company, of California.
- 505,171. Apparatus for the Manufacture of Tin Plate and Coating Sheet Metal. William F. Niedringhaus, St. Louis, Mo.
- 505,220. Steam Hydraulic Crane. William S. Halsey, Allentown, Pa.
- 505,221. Machine for Buffing Metal Tubes. Thomas Harper, Brooklyn, N. Y., Assignor to William S. Hurley and David Alexander, same place, and Asa P. Meyler, New York, N. Y.
- 505,263. Electrical Metal Working. George D. Burton, Boston, and Edwin E. Angell, Somerville, Mass., Assignors to the Electrical Forging Company, of Maine.
- 505,348. Apparatus for Charging Furnaces with Metal. James Buchanan, Jr., Liverpool, England.
- 505,356. Mechanical Retort. Robert Haig, Paisley, Scotland.
- 505,377. Tool for Oil Wells. George Woodard, Bradford, Pa.
- 505,400. Stamp Stem Guide. Hugh F. Grubin, Helena, Mont.
- 505,408. Process of Treating Ores of Zinc, Manganese, or Iron. Gideon E. Moore, New York, N. Y.
- 505,412. Ore Concentrator. Thomas McGlew, San Francisco, Cal.
- 505,427. Process of Purifying Ammonia Gas. George L. Vail and Thomas Charlton, Denver, Colo.

TUESDAY, SEPTEMBER 26TH, 1893.

- 505,443. Well Drilling Machinery. Albert C. Darragh, Allegheny, Pa.
 - 505,460. Excavating Machine. William M. Gross, Spokane, Wash., Assignor of one-half to George L. Walker, same place.
 - 505,512. Shears for Cutting Rods while in Motion. Victor E. Edwards, Worcester, Mass., Assignor to the Morgan Construction Company, same place.
 - 505,526. Apparatus for Concentrating Liquids. Oscar Gutmann, London, England.
 - 505,524, 505,525. Manufacture of Gas. James L. Hastings, Philadelphia, Pa., Assignor to the National Heat and Power Company, same place.
 - 505,537. Apparatus for the Manufacture of Gas. Jas. M. Rose, Allegheny, Pa.
 - 505,538. Blast Furnace. Dennis Sheedy and Malvern W. Iles, Denver, Colo.
 - 505,542, 505,543. Boiler. George S. Strong, New York, N. Y., Assignor to James N. Gamble, Daytona, Fla.
 - 505,549, 505,550. Tuyere. Malvern W. Iles, Denver, Colo.
 - 505,551, 505,552. Method of Treating Slag. Malvern W. Iles, Denver, Colo.
 - 505,576. Method of Depositing Layers of Metal on Glass. John H. Scharling, Newark, N. J.
 - 505,624. Automatic Stone-Cutting and Stone-Dressing Machinery. William Errington, Melbourne, Victoria.
 - 505,637, 505,638, 505,639. Hoisting and Conveying Apparatus. Peter Rasch, Cleveland, O., Assignor to the King Bridge Company, same place.
 - 505,660. Apparatus for Coating Metal Sheets. Daniel Jenkins, Morriston, England.
 - 505,611. Furnace. William Kneen, London, England.
 - 505,684. Placer-Mining Machine. Charles O. Sumner, Fair Play, Colo.
 - 505,700. Carburetor. Harry B. Cornish, Hampton, Ia.
 - 505,714. Apparatus for Manufacturing Gas. Leonard L. Merrifield, Franklin, Mass.; John T. Westcott, Cramer's Hill, N. J., and William H. Pearson, Jr., Toronto, Canada.
 - 505,723. Separator and Screen. James Pollock, Wilkes-Barre, Pa.
 - 505,728. Soaking Pit for Steel Ingots. Alton J. Shaw, Muskegon, Mich., Assignor to the Shaw Electric Crane Company, same place.
 - 505,755. Process for Recovering Organic Substances from Sulphite Liquor. Viggo B. Drewsen, Eidsvold, Norway.
 - 505,759. Furnace for Making Gas. John Fehrenhatch, Cincinnati, O. Assignor of two-thirds to Frederick C. Veir, same place.
- Reissue No. 11,367. Centrifugal Ore Separator. Orrin B. Peck, Chicago, Ill., Assignor, by mesne assignments, to the Patent Title Company, same place.

DIVIDENDS PAID BY MINING COMPANIES DURING SEPTEMBER, 1893.

NAME OF COMPANY.	Paid in Sept.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in Sept.	Paid since Jan. 1st.
Alaska Tr'd'w'll, Alaska	.....	\$275,000	Kennedy, Cal.....	.....	50,000
American Turquoise.....	.....	60,000	Maid of Erin, Colo.....	.....	150,000
Aspen, Col.....	.....	20,000	Mayflower Gravel, Cal.	10,000	90,000
Bald Butte.....	.....	37,500	Minnesota Iron, Minn.	.....	420,000
Belden Mica, N. H.....	5,000	45,000	Mollie Gibson, Colo.....	50,000	1,080,000
Bimetallic, Mont.....	.....	200,000	Morning Star D., Cal.	4,500	57,000
Calumet & Hecla, Mich.	500,000	1,000,000	Napa Cons., Cal.....	.....	60,000
Centennial - E u r e k a ,	.....	.....	North Star, Cal.....	.....	100,000
Utah.....	15,000	142,500	Omaha, Cal.....	3,600	32,400
Champion, Cal.....	3,400	30,600	Osceola, Mich.....	.....	50,000
Cleopatra.....	37,500	537,500	Pacific Coast Borax...	.....	15,000
Colorado Central, Colo.	.....	27,500	Parrott, Mont.....	18,000	162,000
Colorado Fuel Co., Colo.	.....	67,120	Pharmacist, Colo.....	12,000	84,000
Cons. New York, Nev..	.....	10,000	Plumas, Eureka, Cal.	.....	26,367
Copper Queen, Ariz.....	.....	200,000	Quincy, Mich.....	.....	300,000
Daly, Utah.....	.....	187,500	Red Cloud, Idaho.....	.....	10,000
De Lamar, Idaho.....	.....	350,000	Rico-Aspen, Colo.....	.....	25,000
Dexter, Nev.....	.....	115,000	Sierra Butte, Cal.....	.....	15,313
Elkhorn, Mont.....	21,875	175,000	Standard, Cal.....	.....	20,000
Enterprise, Colo.....	.....	175,000	Tamarack, Mich.....	.....	200,000
Golden Reward, S. Dak.	5,000	45,000	Trinity River Hydraul-	.....	.....
Great Western Quick-	.....	.....	ic, Colo.....	2,500	20,000
silver, Cal.....	12,500	112,500	Utah, Utah.....	.....	5,000
Hecla Con., Mont.....	15,000	145,000	Victor.....	15,000	75,000
Homestake, S. Dak.....	12,500	112,500	W. Y. O. D., Cal.....	3,000	27,000
Hope, Mont.....	.....	150,000	Total.....	819,175	7,419,900
Horn Silver, Utah.....	50,000	187,500			
Idaho, Cal.....	7,750	77,500			
Iron Mountain, Mont..	15,000	60,000			

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.

PERSONALS.

Mr. John S. Kennedy, of Chambersburg, Pa., is spending a few weeks in Chicago, at the Fair.

Mr. Perry Bickford, of Wyoming, has been appointed surveyor-general of Wyoming, by the President.

Mr. G. A. Kirchmaier, State Chemist at Toledo, O., is in Chicago, where the Fair will hold his attention for a few weeks.

Mr. W. H. Case, recently manager of the Bertha zinc mines in Virginia, is inspecting some mining properties in western North Carolina.

Mr. Thos. E. H. Curtis, of Plainfield, N. J., is visiting the Fair, at Chicago. He is connected with the Colorado Fuel and Iron Company.

Mr. Frank Nicholson has severed his connection with the Little Fannie mine, in New Mexico. His address will be Phoenix, Ariz., hereafter.

Mr. W. B. Middleton, a mining engineer of Colorado, is now in charge of the MacArthur Forest cyanide process exhibit in the Mines Building.

Mr. Louis Janin, mining engineer, of San Francisco, Cal., is making an examination of the Providence and Champion mines, in Nevada County, Cal.

Mr. W. G. Kidd, public school inspector, of Kingston, Ont., is in Chicago. Mr. Kidd has loaned part of his fine mineralogical collection to the Ontario authorities.

Mr. John Griswold Hall, chemist of the metallurgical department of the Pennsylvania Salt Manufacturing Company, of Natrona, Pa., is in Chicago, viewing the Fair.

Mr. Chas. Kaufman, mining engineer, of 68 Broad street, New York, has gone West on a professional trip. His address will be Palace Hotel, San Francisco, for the present.

Dr. Charles J. Fauvel, mining engineer of South Africa, has recently been in Leadville, Colo. He has visited this country to inspect the mines, and also to introduce a method patented by himself for working refractory ores.

A handsome testimonial will be presented to Mr. F. J. V. Skiff, chief of the department of mines and mining, on his birthday, October 5th. It will be from the exhibitors in the Mines Building, given to show their regard for his services.

The New York Clearing House Association has elected George G. Williams as president, Alexander Gilbert as secretary, and William Sherer as manager. The new Clearing House Committee (the governing body) is composed of F. D. Tappan, William A. Nash, George F. Baker, W. W. Sherman and Richard Hamilton.

Mr. W. F. Mattes, for some time past general manager of the West Superior Iron and Steel Company, at West Superior, Wis., is about to remove to Pueblo, Colo., in the hope of benefiting his health. Mr. Mattes is well known as one of the most expert iron and steel makers in the country, and we hope that the change may have the desired effect.

Mr. R. C. Troeger, general manager of the Good Hope Bouanza Mining Company, of Hillsboro, N. Mex., has just returned home after a pleasant visit to the Fair, at Chicago. Mr. Troeger has in the New Mexico exhibit, in the Mines Building, 50 free gold specimens taken from his mine, which are the source of constant admiration.

Mr. Edmund William Janson, member of the firm of Riley & Co., mining engineers, of Finsbury Square, London, England, is at present in Chicago, where he is looking over the exhibits at the Fair. For three months past he has been examining mineral properties in Newfoundland, particularly that of the Pilley's Island Pyrites Company.

Dr. F. W. Traphagen, as a recent notice should have read, has returned to his professorship in the Montana Agricultural College, at Bozeman, and not to the Montana School of Mines, at Deer Lodge, where Prof. W. G. King, of the Case School of Applied Science, and a post graduate of the Columbia School of Mines, takes the chair of chemistry.

A special meeting of the New York Mathematical Society was held in Hamilton Hall, Columbia College, this city, on the 30th ult., in honor of Prof. Felix Klein, of Göttingen University, who was commissioned by the German Government to attend the Mathematical Congress, held in August, at the World's Fair, and to present there, on behalf of the mathematicians of Germany, some 20 papers on various subjects in that science.

Mr. E. H. Beckler, late chief engineer of the Pacific extension of the Great Northern Railway, was unanimously elected an honorary member of the Montana Society of Civil Engineers, at the last meeting. Mr. Beckler is the first member of this society elected to honorary membership, and in conferring this honor the Society did so in recognition of Mr. Beckler's high attainments as engineer, and especially in view of the professional ability he displayed in the location and construction of the Pacific extension of the Great Northern Railway.

OBITUARY.

Gordon McDowell, late president of the South Chicago Foundry Company, died at South Evanston, Ill., September 26th. He was but 30 years of age and was born in Cincinnati. He had retired from business on account of his health, but had partially regained it and was arranging to resume when he was seized with fatal illness.

SOCIETIES AND TECHNICAL SCHOOLS.

Western Railway Club.—At the meeting in Chicago, September 19th, the result of the election of officers for the ensuing year was: President, Wm. Forsyth; first vice-president, Geo. Gibbs; second vice-president, G. L. Potter; secretary and treasurer, Clement F. Street; member of executive committee, P. H. Peck.

Colorado Association for the Promotion of the Mining, Storage and Use of Silver.—At a meeting held in Denver, Colo., September 20th, at which about 25 persons were present, it was resolved to form a permanent organization for the purpose of advancing the mining industry and promoting the storage of and dealing in silver bullion, and to the increased use of the same. The name given above was adopted. The conditions of membership are that any one deeming himself or herself interested in the objects of the association may become a member on payment of \$1, or 371/4 grains of pure silver. The officers elected are: President, George Merriek; vice-president, S. R. Pratt; secretary, Orlando Kling; treasurer, W. F. Kendrick; executive committee, Porter Plumb, R. A. Southworth, J. D. Hooper.

Patent and Trade-Mark Congress.—This body met in Chicago, October 2d, its purpose being to discuss matters relating to patents, trade-marks and copyrights, and delegates from England, Germany, Belgium, France, Sweden, Austria-Hungary, Holland, Switzerland, Canada, Japan and Mexico, in addition to over 100 from this country, responded to their names. After the gathering had been welcomed by C. C. Bonney, Hon. Henry W. Blodgett was selected as permanent president of the congress and addresses at length on the influences that encourage and discourage progress were made. Brief remarks were made by several of the delegates, and ex-Secretary of the Interior John W. Noble read a paper on the inter-dependence of inventions and of the effect of one upon the other. During the week Richard Pope, Canadian commissioner of patents; John S. Seymour, United States commissioner of patents; Congressman Wm. F. Drooper and Elijah J. Morse, of Massachusetts; ex-Congressman Buchanan, of New Jersey; Carroll D. Wright, United States commissioner of labor, and many foreign delegates made addresses or presented papers.

Bi-Metallic Convention.—This body assembled at St. Louis, Mo., October 3d, and was called to order by President A. C. Fiske, of Denver, Colo. A careful count showed there were but 172 delegates in the hall. Of these about 25 are from Mexico, Central and South America. Secretary Newell then read the call for the convention, setting forth its aims and ratio of representation. Governor Tillman, of South Carolina, was chosen temporary chairman by acclamation. Olney Newell, of Denver, was elected temporary secretary in the same manner. Governor Tillman, in accepting the position of temporary chairman, made a short speech, which set the delegates cheering. The usual committees on credentials, permanent organization, et al., were appointed. The Committee on Credentials and Permanent Organization, reported Governor Lewelling, of Kansas, for permanent chairman. President Fiske, of the Bi-Metallic League, was then introduced, and made an exhaustive argument in favor of the unification of Western interests.

The second day was devoted to reading of letters and speech-making, the only business done consisting in the appointment of the following committee on resolutions: Mexico, H. M. Taylor; Colorado, Gov. S. S. Waite; Iowa, Gen. J. B. Weaver; Kansas, John W. Breidenthal; Missouri, Dr. King; Montana, J. W. Powers; Oregon, J. K. Weatherlee; South Carolina, Governor Tillman; Texas, O. L. Kiekelman; Washington, H. C. Walters.

INDUSTRIAL NOTES.

The North mill of the Lackawanna Iron and Steel Company resumed work October 2d.

The Trenton Iron Company has reduced the wages of its employees 10%, beginning on October 2d.

The Morewood Tin Plate Works, in Elizabeth, N. J., have closed down, and it is said that they will not be reopened.

The Susquehanna Rolling Mill, of Columbia, Pa., resumed work October 3d, after a stoppage of some weeks.

The works of the Columbian Pump and Machine Works, Columbiana, O., have resumed operations, after a shutdown of about four weeks. Forty-five men are at present employed.

The New Jersey Art Metal Company has been incorporated in New Jersey, with a capital stock of \$20,000, for the purpose of manufacturing fancy metal articles of every description at Passaic.

The Columbia Iron and Steel Company, of Pittsburgh, has given judgments for \$110,000 for money loaned to the company. The lack of working capital was the cause of the trouble. Liabilities are between \$600,000 and \$700,000, including the bonded indebtedness. The company has capital stock of \$400,000.

The Joliet, Ill., branch of the Illinois Steel Company has given its ultimatum to the men to go to work on a 33% reduction, or the mills will start up with non-union men. Superintendent Pettigrew told them he could get all the men he wanted at \$1 per day. The mills will be in readiness to start October 15th.

Judge Balfington made an order at Pittsburgh, Pa., September 29th, allowing H. W. Oliver, receiver of the Linden Steel Company, to make an arrangement with the creditors of the concern to pay 20% of its indebtedness within a year, and 10% of the remainder every six months until the whole amount is paid.

At the coal mines of the H. C. Frick Coke Company, in the Connellsville, Pa., region there are now in use 20 of the Bristol recording gauges, which were described in the "Journal" of January 7th last. These gauges are used in connection with the ventilation of the mines for recording air pressures, and have been very serviceable.

The Atlantic Iron and Steel Company, of New Castle, Pa., has been granted a charter, with a capital stock of \$350,000, the incorporators being Edward N. Ohl, A. W. Thompson, P. L. Kimberly and others. It is stated that this is the first step in the direction of consolidating the interests of P. L. Kimberly and others, located in Sharon, New Castle and Greenville.

The American Road Machine Company, of Kinnett Square, Pa., issues an illustrated pamphlet on "Good Roads, and How to Make Them," which contains some excellent suggestions on the making and repairing of roads, concluding with an illustrated description of its own machines. The pamphlet is well worth having and reading by any one interested in the road question.

The annual meeting of the stockholders of the American Tin Plate Company was held September 27th at the office of the company, Elwood, Ind. A dividend of \$2 per share was declared, and it was decided not to extend the size of the plant at present. Following is a list of officers elected: President, Col. A. L. Conger; vice-president, John F. Hazen; treasurer, W. B. Leeds; secretary, D. G. Reid.

On the new tunnel under the Palisades, opposite New York, the heading was holed between east end and shaft No. 1, September 28th. The distance from East Portal to where the heading was holed is 973 ft.; it was driven in 5 1/2 months with Ingersoll drills, four machines in the heading. It was started eight months previous to September 28th, but work was stopped 2 1/2 months out of that time.

The Mason Regulator Company, Boston, has brought out a new device in the shape of the Mason vacuum valve, which is to the regulation of a vacuum what the reducing valve is to steam pressure, for placing one of these valves in the exhaust pipe leading to the vacuum pump, any desired amount of vacuum may be kept in the chamber, by simply adjusting the valve. It is especially desirable where different degrees of vacuum are desired, in each one of a series of chambers, as in the triple effect process of sugar refining, and other processes where a certain vacuum is desirable.

The Wenstrom Electric Company has been organized in Baltimore, with Joseph P. Smith, Enoch Pratt, Jacob Tome, Robert Rennert, John M. Denton, Elihu E. Jackson and Gann M. Hutton, as directors. The new company will succeed the Wenstrom Consolidated Dynamo and Motor Company. The land and factory at Calverton, with all the franchises, patents, machinery and water rights, formerly belonging to the old company, and which were recently purchased at public auction by its bondholders, will be now transferred to the new corporation, which will own them free from all debts or liens.

The Link-Belt Machinery Company, Chicago, report business as rapidly picking up. They have just designed and erected for the J. T. Staff Packing Company's new canning factory, at Cayuga, Ind., a box conveyor, 150 ft. and 11 ft. wide, and two conveyors for other purposes, the whole being driven by a manilla rope power transmission. A system of coal and ash-handling machinery has been furnished the Illinois Steel Company for its rail mill boiler-room, at South Chicago, while a similar outfit has been furnished the steel mill boiler-room, at Joliet. An inclined conveyor, 52 ft. long, driven by a manilla rope power transmission, has been also furnished to Armour & Co., Union Stockyards, Chicago.

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.

Tennessee Coal, Iron and Railroad Company.—The monthly financial statement of this company for August shows that the estimated net earnings for the month were \$55,600; the fixed charges were \$60,300. These fixed charges include a sinking fund of \$11,100 monthly, although the company has bonds on hand sufficient to pay the sinking fund for several years.

ALABAMA.

Cleburne County.

(From our Traveling Correspondent.)

Benfield.—This property, about a mile to the northeast of the Sutherland, has been prospected at several points, and the openings although shallow are sufficiently extensive to determine that this ore body at least is a deposit, covering an area of several acres in extent, of undetermined depth. The character of the ore is the same as on the Sutherland; the same mineralized sandrock carrying about the same percentage of garnets, and the seams of decomposed quartz and oxidized iron occur. The ore would be classed as low grade judging from the panning, but much of its value probably is held in combination with the unoxidized garnets and iron. The ore could be mined by an open cut to a depth of nearly 100 ft. and trammed directly into works which could be located on a creek furnishing an ample supply of water for milling purposes, which runs at the base of the hill in which the ore body occurs.

Denson.—Two ledges of gold-bearing quartz were pointed out to me on this property, which have been partially prospected by shallow workings. Samples from either pan well, and specimens carrying free gold easily detected with the naked eye are not infrequently found. Aside from the quartz ledges this property of 640 acres is valuable because of the richness of the hill and bar diggings in placer gold, which offer advantages to the hydraulic miner, if sufficient water can be obtained. There are two sources which would supply the requisite amount; the first and nearest is a creek which crosses a portion of the section; but to make this available pumping machinery is requisite. The other source of supply is from a creek about two miles distant; from this the water could be brought by flumes and ditches, but whether the pressure would be of the required power without pumps remains to be proved.

Eckles Mine.—Here the owners are preparing to sluice and work the tailings in an arastra. The character of the ore for about 40 ft. below the surface will permit of this, because it is for that depth nearly all placer material, but below harder but decomposed quartz sets in. This property has been prospected to a depth of 60 ft., and at the surface pans for a width of about 50 ft., but at the bottom of the shaft a cross-cut shows the thickness of the ore body to be 18 ft.

Lucky Joe.—This mine, with its new 10-stamp mill, has been idle for a while because of disappointment at the results of the first clean-up. Work was started up again October 1st, and a series of tests for treatment of the ore will be made. This is found to be necessary because of the presence of unoxidized garnets and magnetic iron in the ore as depth is attained which interferes with amalgamation, and while no loss can be detected in the tailings by panning, yet a fire assay proved that \$2.50 per ton was lost. The ore body will be also developed by sinking, cross-cutting and drifting at depth, and before the mill is again started up sufficient ore will be mined and stopes opened on a lower level to insure a continuous run. It is probable that either Frue vanners will be added to the machinery or some other process than amalgamation adopted for treating this ore.

Middlebrook.—This property is located on this same lead, only to the southwest of the Sutherland about 1½ miles distant. An incline shaft about 20 ft. deep shows the ore body to be nearly 5 ft. in thickness and going down dipping toward the east at an angle of about 30°, with its strike about 20° east of north and west of south; the ore pans the entire thickness of the body averaging about \$5 a ton. It has the same characteristics as the other properties I have mentioned in this district and will apparently develop into a permanent body of medium grade ore, which can be mined at very low cost.

ARIZONA.

Cochise County.

Copper Queen Mining Company.—This company has reduced wages in its mines, at Bisbee. Men

receiving \$3.50 per day or over will be cut down 50 cents, and those under \$3 will be reduced 25 cents.

Old Dominion Copper Company.—This company has resumed work with full shifts, both at the mine and smelter.

COLORADO.

Dolores County.

Enterprise Mining Company.—According to the Rico "News," this company is working over 100 men on ore and is making regular shipments.

Rico-Aspen Consolidated Mining Company.—This company is now working a force of 75 men and is running the Stephauite, Syndicate and Vestal mines. About one car of ore per day is being shipped to the Omaha Grant smelter, at Denver, says the Rico "News." The management is also running a diamond drill hole from the breast of the Syndicate tunnel to the Silver Glance shaft, a distance of about 300 ft., for the double purpose of prospecting the ground and ventilating the mine.

The Rico "News" publishes the following items of mining news from that camp:

A. B. C.—J. W. Burns is working a small force on the properties, taking out a good grade of lead ore from development work.

Black Hawk.—It is reported that parties are negotiating for a lease on this mine. It is to be hoped they will succeed, for it is too good a property to lie idle.

Forest.—This mine is working a force of 10 men, four of which are on ore. They are shipping three cars per week to Durango.

Little Emma.—George Parshall is working a small force on development work on the Little Emma lease, on the West Dolores, and taking-out considerable good ore which is being stored for future shipments.

Pay Roll.—This mine is still producing a fair quality of good grade ore which runs well in both silver and lead, and which is being shipped to Durango.

Rebecca.—Herbert H. L. Way is driving a long tunnel from the Rebecca mine to cut the ore chute on the Johnny Bull at a greater depth than has yet been reached on that property.

Union-Carbonate.—This mine is shipping two cars per week of lead silver ore to the San Juan Smelter, Durango.

W. L. Stevens.—Lee Wood and Major Litchfield have taken a lease for one year on the W. L. Stevens mine, which lies between the Newman group and the Rico-Aspen properties. They began work last week.

El Paso County.

Isabella Mining Company.—The Cactus and Cleona claims, situated between the Victor and Buena Vista, at Cripple Creek, were sold September 27th to this company for \$75,000, and the first payment made. These claims cover valuable ground, through which the Victor and Buena Vista veins are said to run.

Mollie Kathleen.—A strike has been made by H. C. Gortner on this property on the south slope of Tenderfoot Hill, Cripple Creek. At 15 ft. he has a pay streak of 14 in., which pans well and is said to assay over \$200 per ton. A small shipment just made assayed by grab samples \$200 per ton. This property lies northeast of the Gold King, and the strike of the vein is northwest and southeast.

Victor Gold Mining Company.—The Victor shaft is down 270 ft., from which point drifts are being started, says the Cripple Creek "Crusher." The vein shows 2 ft. of good ore in the bottom of the shaft. Sinking will be resumed as soon as the drifts are far enough in to be out of the way. The lower levels are showing even better ore than heretofore. Two carloads were shipped last week.

The following items of Cripple Creek news are from the "Crusher":

Anaconda Mining Company.—At a special meeting of the stockholders of this company, held in Denver, on September 29th, Messrs. B. F. Crowell, of Colorado Springs, and David Rubidge, of Denver, were unanimously elected directors to fill the newly created positions on the directorate. There were 711,000 out of 1,000,000 shares represented. The report of the examination committee stated that during the last 6½ months work had been prosecuted at the mines with a force of 15 men, and from such operations \$12,000 net had been earned.

Cyanide Mill.—This mill is full to overflowing with concentrates and is running steadily.

Mattie D.—The management is drifting northeast on the vein and taking out good ore.

Plymouth Rock.—The owners have been timbering their shaft and doing dead work. The ore taken out in sinking the shaft has paid for all improvements therefor.

Rhinoceros.—The shaft is down 55 ft. and drifts have been started. A good grade of ore is found in the bottom.

Something Good.—The shaft being sunk near the south side line of the Something Good shows the cross vein to be fully 4 ft. wide with several rich streaks which pan handsomely.

Sylvanite Mill.—This mill has been leased by Samuel Boylan and will continue to run full time. It is now doing excellent work.

Gunnison County.

Colorado Fuel and Iron Company.—The first shipment of anthracite coal from Ruby-Anthracite, the new coal mine of this company, took place last week, when 12 cars were shipped to Denver. This is said to be the second anthracite coal mine ever opened in Colorado. It is being operated on a large scale. At present there are about 180 men employed, including carpenters, machinists and all other mechanics, working in building the breaker. Men are also engaged in making coal entries. The Denver & Rio Grande Railroad has made extensive yard room to handle long strings of cars and otherwise facilitate the work.

Lake County.

Harrison.—Basl McKee, of Lake County, has sold to Thomas Officer, of Pottawattomie County, Ia., the Harrison lode, in the Alicante mining district. Consideration not stated.

Picton.—W. H. and K. H. Chisolm have sold to E. Thomas, D. H. Harle, B. F. Ramping and W. A. Chisolm, the Picton and St. Mary's lodes, in the Twin Lakes district.

(From our Special Correspondent.)

Griffin.—This mine, in the St. Kevin district, is now being worked by lessees. They have an ore body from 40 to 50 ft. wide and so developed that shipments can be commenced at once. The mine is one of the best in that section and is equipped with a first-class plant of machinery.

St. Kevin.—This property is being developed by lessees, who have just begun a new shaft on the Carson vein of that property.

Walcott.—The new shaft on this mine was progressing well until September 29th at a depth of 100 ft., a large body of surface water was encountered. This will necessitate putting in a pumping plant.

Pitkin County.

Aspen District.—The mine managers of Aspen, who have been working on a scale of wages to be submitted to the men, concluded their conference September 29th. There were represented in the meeting the properties of Jerome B. Wheeler, J. J. Hagerman, David R. C. Brown, H. P. Cowenhoven, and all the larger interests, with the exception of B. Clark Wheeler and E. Dunbar Wright.

Following is the scale of wages to go into effect October 1st, 1893: For an average price of silver of less than 80 cents for the month: Miners, trammers, ore sorters, machine drill helpers, timber helpers, cagemen, top carmen and all unskilled labor, \$2.50 per shift of 10 hours, one-half hour of the company's time for lunch; in wet ground requiring rubber clothing and in shaft work, either \$2.50 for 8 hours, or \$3 for 10 hours, with clothing furnished by the company; machine drill runners, \$3 per 10-hour shift, dry; machine drill runners, wet or shaft work, \$3.50 per 10-hour shift, with rubber clothing furnished; top carpenters, timbermen and trackmen, wet or dry, \$3 per 10-hour shift. Firemen, \$2.50 for 8 hours, \$3 for 10 and \$3.50 for 12 hours. Blacksmiths, \$4 for 10 hours and tool-sharpeners, \$3.50 for 10 hours. Engineers, \$3.50 for 8 hours, \$3.75 for 10 and \$4 for 12 hours. Pumpmen, \$3.50 for 8 hours and \$4 for 12 hours and rubber clothing furnished. Shift bosses, \$3.50 for 8 hours, \$4 for 10 and \$4.50 for 12 hours. Diamond drill men, wet or dry, \$3.50 for 10 hours.

When silver is 80 cents and over, but less than 82½ cents, then 25 cents is to be added to the above figures. When silver is 83½ cents, then 50 cents is to be added. The above additions are based on the average price of silver for any one month.

Several managers of other properties were not asked to participate in the meeting, so that what view they may take of the proposed scale cannot now be had. Among those who did participate there is said to be an ironclad agreement on the scale, so that in the event the miners do not accept their terms the properties will be closed down. This would force into idleness no less than 200 men. These have been drawing \$3 per day for a shift of 8 hours. The working properties not asked to go into the compact would not and could not employ over 100 men under present conditions. On most of the properties, like the Mollie Gibson, for instance, the pumps will have to be kept going. The Miners' Union has as yet taken no action upon the scale, but will do so at once.

Mollie Gibson Consolidated Mining and Milling Company.—This company's concentrator, located 1½ miles west of Aspen, on the line of the Rio Grande Railroad, and used for the treatment of low-grade ore was burned on September 20th. The mill was a 20-stamp, and was valued at \$10,000. There was no insurance.

FLORIDA.

Polk County.

Clear Spring Phosphate Company.—This company has been organized to work phosphate deposits at Clear Spring. The capital stock is \$150,000, and the office is in Bartow.

GEORGIA.

Cherokee County.

Orange.—The mine opened by J. S. Thrasher at this place is showing up well.

Roberts.—The mineral interest in this property, which adjoins the Creighton mine, near Ball

Ground, has been sold by Mr. A. W. Roberts for \$5,000.

Fannin County.

Lovinggood.—At lot No. 8, on this property, recently, says the Dahlonega "Signal," prospectors struck a vein which promises well. The vein is from 1 in. to 2 ft. wide, increasing in width with the depth, and shows free gold.

Lumpkin County.

Newtown.—On the Grindle property, at this place, a vein carrying free gold has been discovered, and exploring work is in progress.

White County.

Sutton.—On this property, near Cleveland, a new vein was recently found, which is paying well.

IDAHO.

Alturas County.

War Dance Group.—This and the Emery group, on Deer Creek, have been bonded to J. O. Swift for \$30,000.

Boise County.

Boise Basin District.—The Elmira Mining Company has decided to close down its mine, at Baumer, and the pumps are now being removed. The long tunnel to develop the Baner mine will, however, be continued. The mill and Gold Hill mine, at Quartzburg, have not been run for over a month owing to changes in the management. The Mountain Queen mine, at Pioneer, is still working. At the Boulder mine the tunnel is in 200 ft., but it will be run 100 ft. farther. Work on the various placers of the district have been suspended for the season.

Buffalo.—This mine, which is owned and worked by Charles Cooper and Frank Cooper, Jr., has two shafts down on the vein, one about 1½ ft. and the other 32. They are 100 ft. apart, and from both rich gold ore is taken out. Teams are now hauling ore to the Blaine mill for reduction that will yield about \$100 per ton. The ledge is from 2 to 3 ft. wide and the richest seam from 4 to 8 in. After the present run is made a tunnel to tap the mine at greater depth will be driven.

Chickahominy.—William Libby and Ed. Beck are extracting ore from this mine and a claim farther east on the same vein, which they will soon commence milling. The ore is very high grade. They have discovered and located some rich placer ground at the mouth of Chickahominy Gulch. They are now digging a ditch to convey water onto it. Mr. Solomo has also found the east extension of the vein east of the claim recently located by Beck & Libby. The ledge is large, well defined and shows well in free gold.

Coeur d'Alenes.

A new agreement has been signed by the mine-owners and the representatives of the Miners' Union. Both sides have made concessions. The men agree to accept \$3 per day for carmen and shovelers. The mineowners agree to stand by the union and make no discrimination against the old men.

Bunker Hill & Sullivan Mining Company.—Some of the men who were at work at this mine have quit work, notwithstanding the fact that \$3 per day was paid for underground work. The cause of this action is not definitely known, but it is thought that the men have been persuaded to hold out for higher wages. The company has shown a willingness to meet its men and treat them fairly, the latest move in this direction being a reduction of board and rent at the company's house to \$6 per week board and \$1 per month rent for a bunk, the bunks on the third floor being free. The notice issued further adds that when for any month 100 lbs. of lead and 2½ oz. of silver sell for \$6 or over, miners' wages will be advanced to \$3.50 per day and the charge for boarding and room rent will be advanced to the old rate.

Bunker Hill & Sullivan.—This mine is now working under the new scale. More men will be added and by the middle of October 250 to 350 men will be employed in the mine and mill. The Gem and Frisco will resume in a few days. The general belief is that all the leading mines will be reopened under the new scale within three weeks. All danger of future conflict between the laboring men and the mineowners is believed to be ended, and if the present price of lead is maintained it is believed the mines can continue work all through the winter.

Stemwinder Mine.—About 20 men are working on contract. The mill runs part of the time only.

Idaho County.

Red River Mining Company.—This company is said to be shipping large quantities of gold dust from its placer, on the Red River. A dredge is employed. The company also has a considerable force on the Crooked River.

Lemhi County.

American Developing and Mining Company.—This company is working a number of quartz and placer claims near Gibbonsville, among which are the Barclay group and the Bull & Woods group. The first group has turned out about \$500,000 since its discovery in 1877. The No. 3 tunnel is 1,560 ft. in and cross-cuts all the veins. It is now proposed to erect a mill on Dahlonega Creek, which will furnish 40 H. P. At present there is only a five-stamp mill on the property.

ILLINOIS.

Sangamon County.

Coal Miners' Strike.—In the neighborhood of Springfield 1,300 coal miners struck on October 2d. They demand 45 cents a ton and the operators offer but 40 cents.

IOWA.

Scott County.

Pleasant Valley Coal Company.—This company has filed articles of incorporation to work coal mines at Pleasant Valley. The capital stock is \$25,000. The incorporators are A. F. Gunther, J. Dawson, Geo. Smith and Thomas Collins.

Webster County.

McGovern Coal Mine.—A fall of slate in this shaft, near Coalville, recently killed Frank McGovern, owner of the mine, who was just preparing to step into the hoisting cage.

KENTUCKY.

Howesville Coal Company.—Work is in progress on a half-mile spur to connect this company's mines with the Louisville, St. Louis & Texas road. When this is done the output will be largely increased.

MICHIGAN.

Copper.

Atlantic Mining Company.—The September output of copper was 235½ tons, against 252½ tons in August.

Calumet & Hecla Mining Company.—A late dispatch says that this company has discharged about 300 men, including 80 from the mill at Lake Linden.

Quincy Mining Company.—The September report of this company's mine was 750¼ tons, against 724 tons in August and 501 tons in September, 1892.

Tamarack Mining Company.—The framework of Shaft No. 3 is being raised. About 1,500 tons of rock are sent to the mill per day.

Tamarack, Jr., Mining Company.—This mine now sends about 150 tons of rock to the mill per day.

Wolverine Mining Company.—Superintendent Stanton declares that the mine will work throughout the winter.

Iron—Marquette Range.

Cleveland-Cliffs Iron Company.—The recent cave at this company's Salisbury mine took in the surface for about 2,000 ft. south of the stockpile, the ground sinking about 30 ft. All the mining force, says "Iron Ore," and a large number of teams are employed hauling dirt to the mouth of the pit, which no time will be lost in filling, when an effort will be made to set in motion the pump now idle, also the hoisting plant under roof of the same structure whose foundation has been undermined by the fall of ground. It is doubtful if satisfactory results be again obtained until the engine-house and plant have been removed to a more substantial foundation. The management has already taken steps looking to that end. Sundry cracks on top speak of the weight of ground and its inclination to the east. No. 1 shaft is no longer available for hoisting purposes on account of contraction, but enough of space may yet be saved for a ladder road. The old trestlework and adjoining pockets have been removed and the timbers pressed into service as blocking in the cave. Little or no trouble is expected on account of the accumulation of water, as the inflow is at no time great. At the Cliffs shaft the pumps have been withdrawn. It is the opinion of the company that the mine will not be operated within a year at shortest, and they concluded it would be a saving to stop pumping. The mine is one that will stand filling with water, as the ground is firm, and no timbering has been required to support the walls.

Iron—Menominee Range.

Mansfield Iron Mine.—On the night of September 28th the Michigan River broke through into the workings of this mine, which extended under the river bed, and the whole volume of water flowed into the mine until it was filled. The opening in the river bottom was not less than 50 ft. in diameter and the ground around it was undermined and shaken so that two buildings were carried down and others are imperiled. The mine is ruined, as there is no way of freeing it of water except by changing the course of the river, a work involving a cost too great to be undertaken. But the great loss by the cave-in is that of the lives of the men of the night shift, who were at work when the cave-in occurred at the mine. A few, who were at a distance from where the water came in, kept ahead of it and came out safely, the rest are buried where it overtook them. The number of the lost was given, just after the occurrence, at 35, but later advices place it at 28. The men were heads of families and largely Cornishmen, and the conditions are such that it is impracticable to attempt the recovery of their bodies. No disaster of equal magnitude, says the "Iron Ore," ever occurred in the Menominee region, the cave-in of the Keel Ridge mine, some years since, costing fewer lives by half and lacking the horror of the rush of water, and the flooding of the Hamilton and Ludington properties being unaccompanied by any loss of life. There is now no active mine in the Crystal Falls field.

MINNESOTA.

Duluth County.

(From our Special Correspondent.)

Iron ore shipments for the past week from the head of the lake were 21,892 tons from the Vermilion range, and 32,000 from the Mesaba. Of Vermilion mines the Minnesota has sent in all 307,942 tons in the season, the Chandler 360,151 and the Zenith 10,973. The latter will suspend shipments in a day or two. Messrs. Carnegie, Phipps and Fricke returned Saturday night from a trip over the Vermilion and Mesaba ranges. Chairman Porter, of the Minnesota Iron Company, who was with them, states there will be no resumption of mining for some time to come. Vessel rates to Lake Erie are now firm at \$1 a ton, double the price of 30 days ago.

Iron—Mesaba Range.

(From our Special Correspondent.)

Chicago & Minnesota Ore Company.—The operations of this company in 20-50-18 have been suspended and the lease abandoned. While a great deal of ore was exposed, it was not high grade, and the property is 15 miles from the nearest track of the Duluth & Iron Range road.

Duluth Ore Company.—This mine has closed after shipping 38,000 tons for the season.

Franklin.—This property has resumed after a month's shutdown, and expects to make up a total of 24,000 tons for the season, before closing.

Mountain Jim.—This mine has added a steam shovel to its mining equipment, giving a very large possible output.

MISSOURI.

Jasper County.

(From our Special Correspondent.)

Joplin, Oct. 2.

The mining operations and the sales of ore from this lead and zinc district for the past week prove that the slump in the zinc ore market has been broken. The price of zinc ore has advanced in the past two weeks from \$16.50 to \$20 per ton, and a further advance is looked for this week. There is but little change in the lead ore market, the price ruling at \$20.50 per thousand. The majority of the mines at Joplin, Webb City and Cartersville commenced preparations the latter part of the week for opening up this morning with a full working force. Following are the sales of ore from the different camps for the past week: Joplin mines, 1,437,890 lbs. zinc ore and 324,590 lead, value \$19,854; Webb City mines, 743,000 lbs. zinc ore and 71,200 lead, value \$8,314; Cartersville mines, 734,160 lbs. zinc ore and 227,360 lead, value \$11,401; Zincite mines, 34,640 lbs. zinc ore and 38 lead, value \$380; Oronogo mines, 36,930 lbs. lead ore, value \$669; Galena, Kan., mines, 800,000 lbs. zinc ore and 425,000 lead, value \$14,990; district's total value, \$55,608; Granby mines, 242,160 lbs. zinc ore and 73,610 lead, value \$3,141; Aurora mines, 701,010 lbs. zinc ore and 175,050 lead, value \$8,194; lead and zinc belt's total value, \$66,953. It will require active operations and a large production of ore from now up to the end of the year to have the total value of the output reach \$3,500,000.

MONTANA.

Granite County.

Bi-Metallic Mining Company.—This mine was closed down on September 25th and the 100-stamp mill is now idle, according to the Phillipsburg "Mail." A few men are still employed in "cleaning up," but that will soon be accomplished, and then the shutdown will be complete. The cross-cut from one of the lower levels in the Bi-Metallic to the Butte tunnel was completed recently, and as the Granite mine is connected with the Bi-Metallic by a cross-cut from the 14th level, both mines are drained into the Butte tunnel, thus avoiding the expense of keeping the pumps in operation while the mines are shut down.

Jefferson County.

Homestake District.—In this district the Vendetta, owned by La Chappelle, Mueller & Vullmer, is developed by a 45-ft. shaft and 164 ft. of tunnels. The ore is high-grade, averaging about 150 oz. in silver. The ore now being extracted is sacked at the mine and will be held until the market justifies shipment. Dingle & Co., of Butte, are operating on the Silver Bar, an adjoining claim to the Vendetta.

Lewis & Clarke County.

Piegan Mining and Milling Company.—At its annual meeting this company elected the following officers: President, J. A. Stemple; vice-president, Wm. Brown; secretary, Chas. Watson; treasurer, H. H. Potting.

St. Louis Mining Company.—The St. Louis Mining Company has brought another suit against the Drummond, in the United States court, to recover \$200,000, the value of the ore claimed to have been taken from the ground of the former company. Judge Knowles has also issued an injunction restraining the Drummond from taking any more ore from the ground in dispute. This action has resulted in the laying off of about 30 miners employed in the Nine Hour.

White Horse District.—A new mining district, at the head of White Horse Gulch, which lies between Beaver and Indian creeks, about 30 miles

from Helena, is being developed. A lead owned and worked by Dr. Perrin and Geo. L. Tracey, of Helena, shows up well, running \$10 in free gold.

Missoula County.

Curlaw Mine.—This mine, near Victor, in the Bitter Root Valley, is shipping considerable high-grade ore extracted from the recent discovery on the 500-ft. level. It is stated that by the first of the year if present production continues, the mine will yield a profit sufficient to liquidate the indebtedness of the company and place it again on a dividend-paying basis.

Keystone.—It is probable that work on this mine, in Spring Gulch, will in a short time be resumed under lease. This mine has been the largest producer in that camp.

Park County.

Independence Mining Company.—It is reported that this company will soon start its mill.

Silver Bow County.

Blue Jay.—This mine, which was worked for some months by the Butte & Boston company, has been closed down. The Blue Wing mine has also been closed down.

Boston & Montana Mining Company.—At this company's mines, says the "Daily Inter-Mountain," more men are now employed than ever before. Some 800 tons of ore per day are being shipped to Great Falls, the Leonard producing about 300 tons alone. At the smelter the production last month reached the high-water mark, and during the month of September it is estimated that the output will reach 3,500,000 lbs. The new converters for the treatment of Butte & Boston ore are completed and will be started up within 30 days, when the force of men will be increased. Sinking is still in progress at the Mountain View, the shaft having now attained the depth of 1,100 ft. There will be no cessation of work until the 1,200-ft. mark is reached. At the West Colusa, operations are being conducted as usual, a force of men being engaged in cutting the station at the 600-ft. level.

Butte & Boston Mining Company.—According to the Boston "Herald," this company is earning rather more than its charges, and its balance sheet will show a debt somewhat less than a year ago. The total debt September 1st was \$2,212,000, the \$212,000 being notes payable, offset by copper on hand and in process, and bills receivable somewhat larger than that sum. The Bessemer works, at Great Falls are to be finished about November 1st, and are expected to save \$18,000 per month on freight and bags, \$10,000 in the cost of treatment and something on silver, in all rising \$30,000 per month. The company has lately sold a round amount of matte for export, it is said, at 9 cents for copper in the matte.

Eveline Mine.—William P. Forbis has resumed active work on this mine. He has 11 men working at the mine now on two shifts. Ore is being shipped to the Moulton mill. The shaft, which is now 250 ft. deep, will be sunk to the 300-ft. level.

Heinze Smelter.—The converters of this smelter, at Butte, were started October 2d. At the Gaynon mine the force has been largely increased.

Southern Cross Mining Company.—This company has elected the following officers: President, O. P. Blain; vice-president, John Noyes; secretary, Guy X. Piatt; treasurer, J. W. Fairfield; board of directors, J. H. Monteath, H. L. Frank, B. E. Harris and J. W. Fairfield. The stockholders are considering two propositions; one is to sell the property for a good price offered, and the other to reorganize the company on an assessable basis.

Sundorg Mine.—F. A. Heinze has abandoned this mine, as it did not justify further outlay. A small pocket of rich ore was uncovered in prospecting, but that was all. The Sundorg is situated north of Walkerville. Twelve years ago William McDermott paid \$12,000 for it. He worked the mine for several years and finally abandoned it. All he got out of it after paying current expenses was \$1,500. Since then at divers times the mine has been worked under lease and bond. The mine has cost over \$50,000 to date.

NEVADA.

Elko County.

Belle Isle Mining Company.—At the annual meeting of this company, held in San Francisco, Cal., last week, the following directors and officers were elected: E. Scott, president; F. A. Berlin, vice-president; Aug. T. J. Shackelford, M. A. Jackson and J. W. Pew, directors. J. W. Pew was re-elected secretary, and his report showed a credit of \$270.43. An assessment of 10 cents per share was levied.

Storey County—Comstock Lode.

The Virginia City correspondent of the New York "Sun" writes as follows: The efforts of the Comstock mine directors to wheedle the miners into submitting to a reduction of wages upon the plea that times are hard and the poor stockholders ought to be relieved of the heavy burden of expenses, have stirred up the men to make a few inquiries concerning expenses. The facts and figures do not make a pretty showing. During the month of June the total expenses of the Comstock mines were \$194,571, and of this amount the miners received only \$43,960. Presidents, secretaries, superintend-

ents and other gilt-edged miners, most of whom live in San Francisco, and do no work, absorbed \$16,680 in salaries. The rest of the money was paid out for water, office rent, supplies, etc.; and "supplies, etc.," are often furnished by dummy contractors really representing directors of the mine, at about double their value. Sierra Nevada employed four miners during June, paying them \$480, and it cost \$675 to boss those four men. In the Alpha one man was employed half the month at a cost of \$60. This half of a miner required \$375 worth of bossing. Confidence paid \$300 in office salaries to keep one miner at work and wants to economize by reducing the miner's wages. Overman paid a superintendent \$300, president \$150, secretary \$200 and assistant secretary \$50, and employed eight miners. The Adelphi's half miner drew \$60, but the total expenses of the mine were \$2,046. The mine could save \$15 for the poor stockholders if that half miner would consent to a 25% reduction of his wages, and visions of dividends would loom up at once. Silver Hill, Imperial and Lady Washington managed to spend \$3,368.61 without employing a miner. Not a lick of work was done in the Alta, but the salary list was \$725, and the total expense \$3,475. Some of the officials hold places in four or five mines, and get from \$650 to \$950 a month. A. C. Hamilton gets the latter amount for superintending seven mines. This looting of the Comstock has developed in San Francisco the two professions of mining president and mining secretary, both of which are lucrative and neither of which is laborious. The shareholders of Best & Belcher, Gould & Curry and Kentuck declined to be cinched for any more assessments, and 18 miners have been dropped from the payrolls of those mines by the economical managers. Salaries have not been reduced.

Consolidated California & Virginia Mining Company.—The latest weekly official letter says: The shipments of ore to the Morgan mill amounted to 513 tons and were the largest in many weeks. The average car sample assay of this ore was \$32.90 per ton. The amount of ore milled was 429 tons, and the average battery sample assay was \$28.66 per ton. During the week bullion valued at \$13,354.41 was shipped to the Carson Mint. Of the ore yield of the past week 44 tons was extracted from the openings, 75 ft. above the sill floor of the 1,500-ft. level, and the average of the same was \$30 per ton—the highest yet. Good ore continues to be found in the various openings, 52 ft. below the 1,650 level.

Hale & Norcross Mining Company.—The latest weekly official letter says: On the 1,300 level we have finished putting the square sets of timbers in the new winze and drifted east from bottom of winze 7 ft. The bottom of winze shows a width of about 11 ft. of ore, and the face of the east drift shows a mixture of ore and porphyry. We have extracted from the winze the past week 17 cars of ore, average assay value per car samples, \$30.50 per ton.

Potosi Mining Company.—The latest official weekly letter says: We have started an upraise from the south drift on the 16th floor above the 930 level, and advanced 16 ft.; top in porphyry and bunches of quartz that give fair assays. The north drift, 28 ft. below the 1,000 level, is out 33 ft.; face in porphyry and low-grade quartz. We extracted and sent to the mill the past week 206 tons and 1,000 lbs. of ore from the 1,000 and 1,100 levels. Milled during the week 151 tons. On hand at mill 147 tons and 1,200 lbs. Average battery assays, \$20.73; average car sample assays, \$25.32.

Consolidated California & Virginia Mining Company.—This company has granted the West Consolidated California & Virginia Mining Company permission to use the old Consolidated Virginia shaft and the west drifts on the 1,100-ft. level to prospect the west country. No expense is to attach to the first-named company except repairing the gallowes frame at the shaft, which will cost about \$1,000.

NEW MEXICO.

Grant County.

It is expected that a large number of miners will be at work in the mines at Cook's Peak in a few days, says the Silver City "Sentinel." As yet there is but little doing in the mines there, but arrangements are nearly completed for resuming work on a large scale.

Mimbres Consolidated Mining Company.—There is but little doing at Georgetown and the prospect for an improvement in the situation there is not very good, says the Silver City "Sentinel." The Mimbres Consolidated company had been operating its mines there at a loss before the drop in the price of silver last June, and there was little profit being made in any of the mines there.

NORTH CAROLINA.

Cabarrus County.

(From our Special Correspondent.)

Montgomery.—A Mr. Church is about to open the Montgomery mine, one mile from Concord. This property is owned by Senator Jones, of Nevada. The vein is of quartz with sulphurets, and has a width of 6 ft. The ore assays over \$10 per ton on an average and will make a concentrate that will pay for shipment to some smelter.

Chatham County.

Egypt Coal Mines.—A new hoisting engine is being put in with a capacity of 1,000 tons in 10 hours. The main shaft is now down 800 ft.

Mitchell County.

Cranberry Iron Mines.—It is reported that the control of this property has been secured by parties who are also interested in the new Mesaba iron ore syndicate. The Cranberry iron ores are Bessemer ores.

Montgomery County.

(From our Special Correspondent.)

Bunnell Mine.—Dr. R. M. Eames has on exhibit in Salisbury a beautiful gold nugget found last week at this mine.

Ophir Mine.—This is a new discovery and shows up a deposit over 30 ft. in width of soft decomposed ore that, it is reported, will mill \$2 per ton, and can be mined and milled for less than \$1 per ton. Mr. Taylor, the owner, is erecting a mill to work 20 tons per day.

Stanly County.

(From our Special Correspondent.)

Ingram.—On this property, five miles from Albemarle, about September 1st, prospectors while engaged in panning found good prospects and set to work with hand rocker. Since that time four or five men have washed out over 300 dwt. in nugget and fine gold. This, no doubt, is a continuation of the Sam Christian mine.

OHIO.

Jackson County.

The mines of this county, says the Jackson "Standard," have been idle since September 12th, and no one knows when the mines will start up. The shutting down of the mines followed the rejection by the miners of a proposition made by the operators, asking for longer time in paying for work. The first proposition was voted down by a vote of 2,326 to 12. It was resubmitted on September 11th and rejected by a vote of 2,009 to 174. On Saturday, September 23d, the third proposition was submitted by the operators. It is as follows: That we pay on September 25th for the first half of September, October 10th, second half of September; November 10th, all of October; December 10th, all of November, resuming regular, semi-monthly pay on December 25th. The executive board of the United Mine Workers, of District 7, decided not to refer the proposition to the men. Thus, the matter rests where it has rested for two weeks, and the end is not in sight.

OREGON.

Baker County.

Collateral.—The owners of this mine have leased it to H. Holcomb and S. Lewis, of Baker City, who have put a considerable force at work.

Durham.—This is a new mine adjoining the Mabel, recently discovered by James Baisley. Sufficient exploring has been done to warrant the erection of a mill, which is to be put up shortly.

PENNSYLVANIA.

Anthracite Coal.

The committee of the Schuylkill Coal Exchange, after drawing five collieries to return prices of coal sold in September to determine the rate of wages to be paid miners and mine laborers in the Schuylkill region, find the average price of coal to have been \$2.643. They have, therefore, fixed the rate of wages for the last half of September and the first half of October at 5% above the \$2.50 basis of 6% increase over wages paid last month. The reason of this large increase is due to the fact that coal from the collieries drawn was marketed almost entirely along the line, and but little sent to tidewater, and is not due to any such increase in average price received for coal in the general market.

Lehigh & Wilkes-Barre Coal Company.—During the week ended September 30th the 10 active collieries of this company, in the Luzerne field, produced and shipped a total of 46,248 tons of anthracite, while during the same period the 10 active independent collieries in this same district mined and shipped a total of 18,396 tons, making a total output of 64,645 tons. Six individual collieries were idle. The total shipments for the year in this field amount to 2,090,796 tons.

Philadelphia & Reading Coal and Iron Company.—Orders have been given to put all this company's collieries about Shenandoah on full time.

A dispatch from Shenandoah says that the officials of this company have made an important discovery at its Boston Run colliery. Extending a distance of about a mile west from an old slope of the mine is a row of old breaches caused by the caving-in of the surface. A few days ago, sparks from a mountain fire ignited a pillar in one of the breaches and a force of miners were put at work to extinguish the burning section. It was necessary to strip the surface from the pillar and this laid bare some of the finest anthracite ever mined in that section. The officials say the bed is very large.

Philadelphia & Reading Coal and Iron Company.—All the collieries of this company, at Shenandoah, resumed operations on the 2d inst., under orders to work six days each week for two months, and

the miners to be paid at the rate of 5% above the \$2.50 basis.

Bituminous Coal.

Eureka Coal Company.—This company has bought 140 acres adjoining its present property, near West Newton, and is making preparations to develop the coal by sinking shafts.

Forest Hill Mine.—At this mine, near West Newton, there are now five coal mining machines at work by compressed air.

Youghiogheey Coal Mining Company.—The new shaft at Bauving is now nearly completed, and work has been begun drifting on the coal vein.

Iron—Berks County.

Rittenhouse Gap.—The iron ore mines at this place, Berks County, resumed work October 4th in part, and are expected to be in full operation in a week.

SOUTH DAKOTA.

Custer County.

Mayflower.—A group of seven claims with this name, located near Custer City, has been bonded to Ohio parties for \$15,000.

Lawrence County.

Black Hills Gold Recovery Company.—The new cyanide works are about completed, and the company hopes to start up by October 15th.

Deadwood & Delaware Smelter.—This company still announces that it will buy all gold and silver ores offered.

Fauvel Gold Recovery Company.—This company has been incorporated at Deadwood, to operate the patent owned by Charles J. Fauvel. The company is capitalized at \$100,000. The directors are C. J. Fauvel, E. J. Hart and J. H. Kemp.

Whitewood Creek Placers.—Some 25 or 30 miners are now at work on the old placer grounds and are reported as making very good wages. The number is increasing.

Pennington County.

J. R. Mine.—The main shaft is now about 150 ft. deep and the ore taken from that level shows well. The company is now adding 10 more stamps to the mill.

Lady Gay.—The owners of this mine have agreed, with W. A. Logan and others, to put up a 10-stamp mill in return for an interest in the mine. The mill will be erected on the creek near the Lady Gay. A tunnel will be run from the top of the mill, which will tap the vein at a depth of nearly 400 ft.

Sheridan.—The new tunnel is now 22 ft. in ore, which is said to average about \$9 per ton.

TENNESSEE.

Bledsoe County.

Sequachee Valley Coal and Iron Company.—This company has about completed the work of opening up the new mines near P. Keyville, says the Chattanooga "Tradesman." The Nashville, Chattanooga & St. Louis Railway has extended its line up the side of the mountain to the mines, at a cost of not less than \$40,000. The vein which is being operated is 3½ ft., and is of excellent quality, being especially free from slate partings. The company has contracted with the railroad people to mine not less than 500 tons per day, but it has made arrangements to mine 1,500 to 2,000 tons. It has already placed a number of large orders and thinks it will have no trouble in placing all of its output.

Blount County.

Chilhowee Mining and Railroad Company.—This company has been organized by W. K. Spadden and others to operate coal mines.

Slate Quarries.

The slate district, which is most promising, says a correspondent of the Chattanooga "Tradesman," lies between the Hiwassee River on the southwest and parallels the Smoky Mountains, through Monroe, Blount, Sevier and terminating at English Mountain, back of Newport, in Cocke County, being a distance of about 100 miles in length by 6 to 8 miles wide. The principal development has been made by Mr. Warner, of Chattanooga, and by Hamilton & Walsh, the former having opened a quarry on Abraham's Creek, two miles up the creek from the Little Tennessee River and about 14 miles from Alleghany Station, on the Marietta & North Georgia Railroad. A pole tramway was built from the quarries to the river, over which considerable slate was hauled, a part of which was loaded into barges and floated out, but owing to the fact that the stream is navigable only during high tides, and then very rapid and dangerous, while the towing back of the barges must be done by hand, renders the transportation of the slates both expensive and unsatisfactory. This quarry has suspended operations for the present.

On Shop Creek, two miles from the mouth and about the same distance up the river, from the mouth of Abraham's Creek, Hamilton & Walsh are operating a quarry, and although their methods are of the crudest character, some shipments of the product had been made and the operations were paying, even without proper equipments and machinery, which would soon be added and the work pushed. An effort is being made to get a railroad from the quarries to a connection with the Marietta & North Georgia, at Alleghany, and in that event large shipments would be made, as many other quarries could be opened on the lands controlled by Hamilton & Walsh.

The Marietta & North Georgia Railroad cuts through bodies of slate for several miles, and, although not so regular as on the Little Tennessee, good bodies can be found close to the road. Coming back and following up Little River, in Blount County, good slate is found, but is too far from transportation. From there on up the belt to the Pigeon River, through Sevier County, at a point about seven miles south of Sevierville, slate of excellent quality is found cropping out.

UTAH.

Salt Lake County.

Anderson Sampler.—Judge T. J. Anderson has leased the old Scott & Anderson sampler, at Sandy, and formed a company to do a general sampling business at that place.

Ben Butler.—The tunnel on this property, in Markham Gulch, is now in about 150 ft., and streaks of galeua ore are exposed in the face, indicating the near approach to ore.

Caledonia.—C. F. Johnson has secured a lease on this lode and is now engaged in working the same. This claim is one of the Tiewaukee group.

Camp Floyd District.—Robert L. Scannell has filed five suits against Matt T. Gisborn, contesting the latter's right to a like number of mining claims in the Camp Floyd mining district. Gisborn recently applied for patents in the Land Office for the properties in question and the plaintiff immediately filed his protest and began suit. The claims are known as the Maid Marian, Fraction, Jim Blaine and Coleman.

Markham.—Bourgard & McBurney have commenced to send down ore from the Markham Gulch properties, in the Bingham district. Regular shipments of slag from the old Winnemuck slag dump are still being made.

Moutezuma.—The lessees have sent in a carload of carbonate ore.

Nast Mine.—One hundred tons of first-class ore from this mine has been shipped to Salt Lake.

North Lost Chance.—This mine is now working a force of 30 men, and is making regular weekly shipments.

Sweden Lode.—The operators of this lode, at the head of Markham Gulch, are still engaged in driving the tunnel ahead on that property for the vein, which they are expecting to encounter any day. They are now in 225 ft.

York.—There was a 100-ton shipment of second-class ore from this mine. The ore bodies of this property are improving.

Summit County.

Anchor Mining Company.—Arrangements are being made to start up this mine, the concentrator being repaired and placed in order. Just what number of men the management will commence with is unknown, but it will probably run full-handed—at least well-grounded rumors are being circulated to that effect, according to the Park "Record."

Crescent Mining Company.—The future of the Crescent is still in doubt, and while the concentrator is being placed in order for a full run, there is much uncertainty as to whether it will start or not. It all depends on what terms Manager McGregor makes in reference to the sale of ores. The tramway will be started up and supplies for the winter, such as fuel, timbers, provisions, etc., taken to the mine. A force of men will be put to work in the Alliance tunnel about October 1st, and the driving into the Crescent commenced in earnest.

Silver King Mining Company.—This mine is again in operation, work being resumed September 22d with a force of about 75 men. The run, while practically an experiment, will last at least three months, as contracts have been made for ore that will require fully that length of time to fill, reports the "Record." Underground wages will be the old scale, but top men have been cut down a few cents per diem. Whether the mine will run or not after present contract has been filled is uncertain. When the mine shut down the ore bins were full of rock and hauling to the sampling mill has already commenced.

WISCONSIN.

In our mining news column for September 16th a brief article was published stating that the Zinc Carbonate Company, of Lafayette County, Wis., had received at the Columbian Exposition the medal for the concentration of lead and zinc ores. The announcement was made on the authority of a letter from the vice-president and general manager of this company. The official statement of the awards at the Exposition states that the award for "a collective exhibit of carbonate zinc ores" was made to W. P. Blake, of Shullsburg, Wis., and no mention is made of the medal claimed by the Zinc Carbonate Company.

FOREIGN MINING NEWS.

BELGIUM.

Coal Miners' Strike.—Cable dispatches say that the strike among the coal miners in the Charleroi district is extending, and 10,000 men are now out. Later dispatches report that the strike is extending from Charleroi to the Borinage district.

BORNEO.

Captain Beeston's explorations in Darvel Bay, in British North Borneo, have resulted in the discovery of coarse gold in the Subahon River, and fine gold in the Pallas and Zuncu rivers. Near Selam, the capital of the Residency, some very promising reefs were found.

BRAZIL.

Ouro Preto Mining Company.—During August 3,147 tons were milled, producing 1,031 oz. gold.

BURMA.

The concession to work the tin-bearing area of Tenasserim has recently been granted to Captain Menzell, who has formed a company. During the past two years the field has been thoroughly explored by the Geological Survey and the reports were very favorable.

CHILE.

(From an Occasional Correspondent.)

The reports of most of the mining companies in the districts of Huantajaya and Santa Rosa (Tarapacá) are now at hand, and the half year's results of those in actual production is regarded as satisfactory, while there is fair news from most of the others which are still in the exploration stage of their existence.

San Augustin de Huantajaya.—Capital \$1,500,000. In the six months ending June 30th 627 running meters were opened at a total cost of \$56,216. The output of ore was 9,339 metrical quintals, which produced \$189,075. The balance carried forward from December 3d had been \$357,307. Dividends to the amount of \$267,837 have been distributed, and \$263,436 carried on to the new account. This latter sum is invested in gas and other securities, and deposits in the banks of Chile and Valparaiso, and includes the legal reserve of 5% on all dividends up to a certain amount (in proportion to capital) exacted by the Chilean law. The directors of this and of all the other mines complain of the scarcity of labor, which impedes progress. A powerful set of drilling machinery is on the way from New York, and when once in operation important results may be anticipated. Since the issue of the report a large pocket of native silver has been struck. Dividends continue at the rate of 2½% per month. The principal shareholder and manager of this mine is Mr. Maximilian Rosenstock, an old Californian for over 25 years a resident of the South Pacific Coast, who also controls the Alianza mine in the same vicinity. This latter property has only recently been formed into a public company and no report is yet forthcoming.

Compania Minera la Descubridora de Huantajaya.—Capital \$1,000,000. The statement for the half year shows a total gain of \$165,107, from which amount \$8,500 have been passed to the legal reserve (now amounting to \$95,000) and \$10,000 to special reserve (\$70,000), leaving a net profit of \$146,607, which added to \$56,379, carried forward from December 31st, leaves \$202,987. Of this \$170,000 has been distributed in dividends, and \$32,987 carried forward to the new account. The work in the mine has been carried on without interruption, and 483 meters run in spite of the scarcity of workmen. Working expenses, \$76,960. Ores sold to the mills, 7,024 quintals, averaging 334 oz. per ton. The directors show that the cost of silver per ounce during the term included has been 10½d. Dividends have continued since the issue of the report at the rate of two per cent. per month.

Compania Minera la Cantora de Huantajaya.—This is a small company, with a capital of \$100,000, recently formed to develop a property situated in the immediate vicinity of the three last mentioned concerns. There remains still to be called up \$32,500, as required, for working expenses. Some progress has already been made in development, and a shaft has been sunk which has passed through the porphyry zone, from which cross-cuts are being run off to test the veins which were rich above it. Some work has been also done in the upper part of the mine, and some small pockets have been found giving about 150 oz. per ton.

ECUADOR.

Zaruma Mines, Limited.—During August the mill worked 20 days with 15 stamps, and crushed 410 tons ore from surface workings, producing £370 in gold.

FRANCE.

Coal Miners' Strike.—Late advices say of the miners' strike in Pas de Calais and the neighboring departments: The tension in the mining district in the north of France is becoming very dangerous. Baudin, Basly and Lamendin, the Socialist agitators, are energetic in urging that the strike be continued to the bitter end.

GREAT BRITAIN.

Coal Miners' Strike.—The Coal Mine Owners' Association, at a meeting held October 3d, reiterated its decision that there could be no settlement of the miners' strike, unless the men agreed to accept a reduction in their wages. An invitation was received from the mayors of Sheffield, Leeds, Bradford, Nottingham and Derby asking the masters to send delegates to a conference with the mayors and representatives of the miners, with the object of endeavoring to effect some settlement of the dispute. The Association appointed three delegates to attend the conference.

INDIA.

Mysore Gold Mining Company, Limited.—During August 3,959 tons of ore produced 3,724 oz. gold, in addition to which 787 oz. were recovered from tailings.

Nundydrooz Gold Mining Company, Limited.—During August 2,200 tons of ore were crushed, producing 2,206 oz. gold; 161 oz. were recovered from tailings.

Oregum Gold Mining Company, Limited.—During August 3,353 tons of quartz produced 5,591 oz. of gold, and 3,310 tons of tailings produced 921 oz. of gold; total production for the month, 6,512 oz. of gold.

MEXICO.

Coahuila.

Piedras Negras Coal Mines.—The explorations being made at present by the company headed by Mr. C. P. Huntington in these coal fields appear to be giving good results. According to data received, says the "Two Republics," a stratum of coal 13 5 ft. thick has been discovered at less than 100 ft. in depth.

NEW SOUTH WALES.

South Mine. Broken Hill.—On the 725 ft. level a large body of water has been tapped, which is coming in at the rate of 90,000 gals. per day. The sinking of the main shaft has been stopped temporarily in consequence of the main sources of smelting ore having given out. The details of the plant for treating sulphides are not yet to hand, but portions of the machinery are on the road up. At the Central mine the sulphide stopes south of the 400-ft. level in the first and second floors are returning their usual quantity of sulphides, and the faces look well. The southern drive from the 430-ft. level has been discontinued for the present. Preparations are now being made to open up an extensive body of carbonate ore lately developed. A general reduction of wages, amounting to about 10%, took place on August 12th.

PERU.

London Pacific Petroleum Company.—This company's wells are situated at Talara, about 40 miles north of Paita, and are under the active management of Mr. Herbert Tweddle, Jr., who was formerly connected with the (American) Standard Oil Company. The company's lands comprise an area of about 1,000 sq. miles, the oil region extending for 200 miles north of Talara, and inland for a distance of 16 miles. The first well bored by Mr. Tweddle yielded at the depth of 300 ft. a flow of 180 barrels of petroleum daily. Up to the present time the company has drilled 26 wells, finding oil in every instance. The company is now handling about 100 tons of crude oil per day, the possible output being about 100 barrels per day per well. The depth at which the oil is found is not over 500 ft. The distilled product is sold along the coast, while the crude oil has a large sale at Callao for use by the gas companies, for stationary engines and for the railway locomotives, as a substitute for coal, than which it is 40 to 50% cheaper. Last year the company sold at Callao 20,000 cases of 10 gallons each for illuminating purposes, but there seems to be evidence that the oil is lacking in paraffine, and is better adapted, therefore, to lubricating than to illuminating uses. Its flashing-point is said to be low, and in lamps it gives off a smoke and a very offensive smell. It is possible, of course, that these faults can be remedied. Even if they are not, however, the cheapness of the Peruvian oil, as compared with American, recommends it very strongly to the average consumer in Peru. It is being sold at rather less than half the price of American, and is put up in cases in exactly the same style as the American article. The duty paid by imported oil is substantially the same as the selling-price of Talara oil—namely, about 2-73 soles per case.

SOUTH AFRICA.

Orange Free State.

The Johannesburg syndicate, formed to prospect for gold on the south side of the Vaal River, is meeting with great success. The properties secured by the syndicate consist in all about 21 miles in length along the reef, with an average width of two to three miles. The reefs do not generally outcrop, but there are indications on the surface in the form of decomposed quartzite, showing the probable position of the reef. Three reefs outcrop, and considerable work has been done. The hanging walls are of slate and the float wall of sandstone. These reefs have a great similarity to the south reef of the Main Reef series of the Witwatersrand. The facilities for mining are exceptionally good, there being quantities of wood and coal mines in the vicinity. Native labor and food is also cheap and plentiful, and as regards water rights and battery sites everything is as could be desired. The average fire assays give about 1 oz. to the ton, and the size of the reefs from 2 to 8 ft. wide, dipping at an angle of 15 to 40°.

TASMANIA.

Nickeliferous pyrrhotite has been discovered near Zeehan, Tasmania. The assays of the mineral vary from 6 to 14% nickel; it also carries about 5% copper. The mineral in appearance is somewhat like the Mount Lyell massive pyrite, has about the same density and weight, but is not so hard, and is much duller in color on a fresh fracture. The reward claims in the center are situated four miles from Zeehan, on the survey line of the Waratah-Zeehan railway line, which runs through the sections.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 6.

Statement of shipments of anthracite coal (approximate) for week ending September 30th, 1893, compared with the corresponding period last year:

	1893.	1892.	Difference.
	Tons.	Tons.	Dec.
Wyoming region.....	543,195	552,174	Dec. 8,979
Lehigh region.....	160,573	148,281	Inc. 12,292
Schuylkill region.....	293,311	308,186	Dec. 12,875
Totals.....	997,079	1,008,641	Dec. 9,565
Total for year to date..	31,280,099	30,568,787	Inc. 711,312

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending September 30th and year from January 1st:

Shipped East and North:	1893.		1892.
	Week.	Year.	Year.
Phila. & Erie R. R.....	1,002	63,165	65,232
Cumberland, Md.....	95,753	3,081,752	2,819,414
Barelay, Pa.....	453	38,560	54,539
Broad Top, Pa.....	7,374	453,229	452,823
Clearfield, Pa.....	62,061	2,910,136	2,951,774
Allegheny, Pa.....	28,734	937,725	931,765
Beach Creek, Pa.....	50,784	2,155,192	1,784,004
Pocahontas flat Top.....	32,430	2,125,169	1,942,877
Kanawha, W. Va.....	58,785	2,419,293	1,818,691
Totals.....	357,376	11,190,631	12,849,459

Shipped West:	1893.		1892.
	Week.	Year.	Year.
Pittsburg, Pa.....	23,339	901,712	949,463
Westmoreland, Pa.....	30,648	1,434,231	1,274,593
Monongahela, Pa.....	13,762	518,463	486,063
Totals.....	67,719	2,854,406	2,710,069
Grand totals.....	384,400	17,001,312	15,559,528

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending September 30th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 35,805 tons; year 3,272,460 tons; to corresponding date in 1892, 4,027,603 tons.

Anthracite.

No new feature has developed in the anthracite coal market since our last report. The improvement then noted has continued, and October finds the trade in a better condition than for some time past. During the past week the demand has continued very fair, and coal has moved freely. It was not to be expected that the late financial stringency would fail to affect the coal trade, and it is, therefore, only natural that buyers are still pursuing a conservative policy in the matter of laying in stocks. Altogether, there is a greater confidence in the stability of the market than many would have us believe.

The uncertainty which still prevails, concerning the final outcome of the negotiations now pending between the independent operators and the Lehigh Valley Coal Company, has not prevented retailers from buying as much coal as they will require for some time and although there are many persons who believe that considerable "cutting" will be indulged in later on, we think that the reasons for the comparative smallness of the orders which have been placed during the past few days are rather of a financial nature than because of a belief that much lower prices will prevail later on this year.

A meeting of the individual operators along the lines of the Lehigh Valley was held at the office of George B. Newton & Co., Philadelphia, on the 4th inst., at which the situation was thoroughly discussed. At the close of the meeting a committee, including Messrs. William Connell, E. B. Leisenring and Charles Parrish was sent to Mr. John B. Garrett, second vice-president of the Lehigh Valley Railroad. These gentlemen, on behalf of the operators, requested that the matter stand as it does at present for another week, and also that the present arrangements continue until that time. Mr. Garrett acceded to their request, and, pending further consideration and decision, the Lehigh Valley will carry operators' coal under the September agreement.

The Reading official circular rates, subject to the usual commissions, are as follows, f. o. b. at its New York harbor shipping ports:

	Broken.	Egg.	Stove.	Chestnut.
Hard white ash.....	\$4.00	\$4.25	\$4.60	\$4.60
Free white ash.....	3.90	4.15	4.60	4.60
Shamokin.....	...	4.50	4.80	4.60
Schuylkill R. A.....	...	4.50	4.95	4.75
Iykens Valley.....	5.15	5.80	6.25	5.50

Pea, \$2.50@2.75; No. 1 buckwheat, \$1.80@2.00; No. 2 buckwheat, \$1.50@1.80.

The Reading Railroad system reports that its coal shipment (estimated) for last week, ending September 30th, was 290,000 tons, of which 45,000 tons were sent to Port Richmond and 30,000 tons were sent to New York waters.

NOTES OF THE WEEK.

The committee of the Schuylkill Coal Exchange, after drawing five collieries to return prices of coal sold in September in order to determine the rate of wages to be paid miners and mine laborers in the Schuylkill region, find the average price of coal sold by these collieries to have been \$2.6403. They have, therefore, fixed the rate of wages for the last half of September and first half of October at 5% above the \$2.50 basis, or 6% increase over wages paid last month.

Bituminous.

The Atlantic seaboard trade is still in a good condition and business is generally brisk. However, the effect of the general depression in trade all over can be seen coming. It is anticipated, as a result of the

mills and factories shutting down during the last few weeks, that the soft coal trade will be affected in consumption to the extent of 15% or 20%. Consumers generally are taking the minimum amount of coal called for in their contracts instead of the maximum quantity, as they have done in previous years. The entire trade will feel the depression a little later, and the probabilities are that the poorer coals will be affected to a greater extent than the better grades. The all-rail trade is not as good as it has been during the month just passed. There are a few transient orders being taken, and the last orders from the ice ports are being given now to fill up for the winter season. Shoal water port orders are about in the same condition. A fleet of vessels has been detained this side of the Cape by the late prevailing north winds. These vessels will probably arrive at the unloading ports in a bunch, and on account of the first vessels using up all the empty cars there probably will be considerable money paid out for demurrage to the vessels arriving last. This accumulation of vessels at the Cape in addition to the demand which has existed of late has necessarily produced a scarcity of ships at the loading ports. This scarcity is not so very great, however, and we anticipate that arrivals from the detained fleet shortly will again make the supply as large as it usually is.

We quote this week ocean freight rates from Philadelphia: To Boston, Salem and Portland, 75c.; Sound ports, 65c.; Newburyport, 85c@90c.; Portsmouth, 80c.; Bath and Bangor, 80c. alongside; Gardiner, 80c. alongside and towage; Wareham, 85c@90c.; Dover and Saco, 90c.; and towages; Baltimore, Newport News and Norfolk, 10c. above these rates. We hear of some large vessels making charters for two or three trips at the above rates.

There has been very little shipping done during the week at Baltimore. This port seems to have fallen into disuse. The reason for it is that the Baltimore & Ohio Railroad, as was stated in this column recently, has reduced rebates on reshipments, making it unprofitable to send coal there for shipment to other places.

Cars are in fair supply, and transportation from the mines to destination is fairly good, with exception of the Pennsylvania Railroad. In the line of this road the blockade still exists, notwithstanding the promised endeavors on the part of the railroad company to relieve this condition.

The London correspondent of the United Press wrote as follows on the 1st inst. regarding the coal famine in England: "The commercial effects are already very severe. Many trains have stopped running, and railroad receipts in the past two months have declined \$5,000,000. The retail price of coal is now about \$10 a ton; yet the Miners' Federation have again voted not to yield. The decision of the operators to allow the men to return to work at the old rate of wages, wherever possible, will open some mines, but will also contribute to the ultimate defeat of the strikers. It is high time America took advantage of the situation. No coal comes to England from the continent on account of the strikes there. Every car of bituminous coal sent here from America within the next month, even if the strike immediately collapses, will pay a big profit." To our knowledge, negotiations for vessels to take coal to England are making by some well-known bituminous coal firms of this city. There is no reason why the venture should not be profitable if prompt measures are taken to take advantage of the situation.

Boston.

Oct. 5.

(From our Special Correspondent.)

The week has been a disappointment to the trade. The yards have been quite busy now for several weeks, and it was anticipated that the yard people would have purchased quite freely ere this. The money situation is not very favorable as yet, and the dilatory action of the Senate seems to have given business a set back. It is said the companies are holding their prices quite well, while on the other hand individual operators are offering their coal at concessions, so restless are they becoming with the slowness with which trade is improving. The companies' prices here are net: Stove, \$4.45; egg, \$4; free broken, \$3.75; chestnut, \$4.45.

Individuals' white ash coals can be had at the following prices: Stove, \$4.15@4.25; egg, \$3.75@3.85; free broken, \$3.65@3.75; chestnut \$4.15@4.25. Lykens Valley coals are quoted here at the basis of the net price at Philadelphia: Broken, \$4.90; egg, \$2.55; stove, \$6.00, and chestnut, \$5.25.

October could hardly be other than a better month for bituminous coal than September. The mills are now starting up in various sections, slowly, to be sure, yet it helps trade. More coal is also being moved on contract. Prices as a result are firmer. Cumberland coal on cars here is worth \$3.60@3.65, New River and Pocahontas, \$3.50@3.55, and Clearfield \$3.30.

Freight rates are very steady. They are: From New York, 60c@65c.; from Philadelphia, 75c.; from Baltimore, 80c.; from Newport News and Norfolk, 75c@8c.; to Sound points, 65c.

The yards being very busy with the house trade that comes at this time of the year they naturally get full prices for their stocks. Prices quoted here are: Stove, \$6.25; nut, \$6.25; egg, \$6; furnace, \$5.75; Franklin, \$7.75; Lehigh egg, \$6.25; Lehigh furnace, \$6, and bituminous coal, \$4.25.

The receipts of coal at the port of Boston for the week ending September 30th were 23,894 tons of anthracite and 4,500 tons of bituminous, against 53,155 tons of anthracite and 31,904 tons of bituminous for

the corresponding week last year. Since January 1st the receipts have been 1,519,500 tons of anthracite and 818,728 tons of bituminous, against 1,608,610 tons of anthracite and 597,475 tons bituminous for the corresponding time last year.

Buffalo. Oct. 5
(From our Special Correspondent.)

There is a slight improvement in the anthracite coal trade as family orders are now beginning to be filled. Prices are without change. Money is not so easy as was the case after the action of the House of Representatives on the Sherman bill. Dealers, however, do not worry knowing that fuel must be had.

Bituminous coal is less active as manufacturers are again cautious under the unsatisfactory condition of affairs at Washington, and are working their establishments in a limited way only. Prices are nominally unchanged, but quotations are shaded to save demurrage railroad charges.

Connellsville coke is quoted in car lots at Buffalo at \$3.65 for foundry and \$3.75 for crushed per 2,000 lbs. on track.

Several loads of coal were shipped by canal during the month of September from this port to Syracuse, N. Y., at 45¢ per net ton, free on and off. The movement of coal eastward by canal this year has been very light thus far.

The contract for the construction of the powerhouse for the electric plant of the Cataract Construction Company at Niagara Falls has been let. It will contain 10 turbine wheels and will furnish 50,000 H.P.

Oswego expects an increased business in shipping coal from that port as the rock in the harbor has been excavated, giving a channel 200 ft. wide and 17 ft. deep.

There was a good demand for vessels for coal the beginning of last week, but the inquiry fell off toward the end. There were more vessels than coal, many leaving light in consequence. The shipments of coal westward by lake from Buffalo from September 24th to 30th, both days inclusive, were again quite large, aggregating 117,534 net tons, distributed as follows: 52,060 net tons to Chicago, 30,875 to Milwaukee, 20 to Port Dover, 12,980 to Duluth, 100 to Saginaw, 10,800 to Superior, 600 to Gladstone, 740 to Sault Ste. Marie, 600 to Bay City, 1,513 to Port Arthur, 3,825 to Toledo, 300 to Tawas, 600 to Green Bay, 650 to Detroit, 700 to Portage, 50 to Serpent River, 51 to Parry Sound, 650 to Sarnia and 500 to Washburn. The rates of freight were 30c. to Chicago, Green Bay, Marquette and Milwaukee; 20c. to Duluth, Superior, Gladstone, Washburn, Toledo and Detroit; 25c. to Port Arthur and Sarnia; 35c. to Sault Ste. Marie, Tawas and Bay City, and 40c. to Portage and Saginaw—closing Monday last week, and 5c. lower to Chicago, Milwaukee and Duluth.

The following statistics were prepared by Mr. William Thurstone, the secretary of the Buffalo Merchants' Exchange, showing the coal trade of the port thus far this year, as compared with preceding years. Railroad receipts and shipments at Buffalo of coal are not reported by request. Receipts of coal by lake thus far for this season, none; shipments of coal by lake westward for month of September, 394,168 net tons, as compared with 387,362 net tons in 1892 and 553,670 net tons in 1891; for the season to October 1st, 1,334,242 net tons, as compared with 1,797,950 net tons in 1892 and 1,687,850 net tons in 1891.

The receipts of coal by canal for the month of September were 15,953 net tons as compared with 14,777 net tons in 1892, and none in 1891; the total receipts by canal for the season to October 1st, 55,382 net tons as compared with 26,123 net tons in 1892, and 625 net tons in 1891. The shipments by canal for the month of September, 1,800 net tons, as compared with 3,243 net tons in 1892, and 4,406 net tons in 1891; for the season to October 1st, 13,884 net tons, as compared with 22,007 net tons in 1892 and 24,227 net tons in 1891. The aggregate shipments by lake this year to October 1st, as compared with 1892, show an increase of 36,292 net tons, and an increase of 148,392 net tons as compared with 1891. The rates of freight on coal hence to points named during September, 1893, were 30c. to Chicago, Milwaukee and Green Bay; 20c. to Duluth, Washburn, Gladstone, Toledo and Detroit; 40c. to Saginaw, and 35c. to Bay City. A year since the rates were: 55c. to Chicago, Milwaukee and Green Bay; 40c., 25c. to Duluth and Superior; 65c., 60c. to Racine; 25c. to Toledo and Detroit; 40c. to Saginaw, and 35c. to Bay City and Washburn.

Chicago. Oct. 4.
(From our Special Correspondent.)

The cold wave of last week, coupled with cloudy weather accompanied with rain, which was predominant over the West, stimulated demand for anthracite coal. While there are no large orders being received small lots of 5 to 10 or 12 cars are more active and the whole of the territory tributary to this distributing point has added its quota. Apparently July circular is well maintained; and though there is some shading, it is seemingly restricted to one or two shippers. A notable feature is that shippers and large jobbers are selecting their customers; a good deal of weeding out is being done, and any orders in the least doubtful are unceremoniously turned down.

The market as a whole is now assuming a more healthy phase and the cold weather we are now experiencing was the very tonic required to brace up the trade. Conditions have materially improved in

the Northwest, as we are credibly informed by those in a position to know, that the coal war in St. Paul which has been a disturbing element in the trade here for so long a time, has been settled and the operators there brought to time. The effect on the market here was such that some of the larger shippers had determined to refuse further shipments of coal to the head of the lakes for distribution through the territory usually supplied from thence. The fact that the sales agents East had wisely decided that there should be no advance has afforded a full meed of satisfaction to shippers and dealers here; it has borne fruit in the already increased business coming forward from all quarters, and, while it is true that orders are not large, they are sufficiently numerous to give at least an appearance of activity to the market.

Circular prices are at the following rates: Lehigh lump, \$6.25; large egg, \$5.85; small egg, range and chestnut, \$6.10. Retail prices per ton are: Large egg, \$6.75@7; small egg, range and chestnut, \$7@ \$7.25.

Bituminous coal continues in fair demand from all classes of consumers. Demand for all varieties of steam coal has improved within the week, and, though by no means active, it gives operators a forecast of what is in the future for them. We are assured by largest shippers that with the exception of the lake coal going to the docks on Lake Superior, there is very little, if any, stocking. This is especially noticeable in regard to railroad supplies, orders for which are almost entirely restricted to requirements of current consumption. Country trade is steadily increasing and promises to be very steady, as dealers so far are ordering very largely from hand to mouth.

The number of small manufacturing industries which have already resumed and which will resume during October is large. The demand from this source of consumption is rapidly augmenting. As to prices, Hocking Valley advanced from \$1.10 to \$1.20, at mine, for all points except Chicago, which for the present remains at the former figures. Indiana block and Illinois lump are steady as quoted. Central Illinois coal is in fair demand and most of the mines are running to full capacity. Prices of bituminous per ton of 2,000 lbs. f. o. b. Chicago are: Pittsburg, \$3.35; Hocking Valley, \$3.25; Youngblood, \$2.25; Illinois lump, \$2.70; Brazil block, \$2.75.

Coke continues to show increased shipments west, receipts are larger, and the outlook more promising. The tonnage of crushed coke going into consumption is steadily increasing, and shippers are encouraged at the prospect ahead. The rumored cancellation of the contract for Pocahontas coal by the Illinois Steel Company is denied by an official. Quotations are: \$4.10 furnace; \$4.35@ \$4.40 foundry, crushed; \$4.40 Connellsville. West Virginia: \$3.90 furnace; \$4.10 foundry. New River: Foundry, \$4.40; Walston, \$4.10 furnace, \$4.35 foundry.

Pittsburg. Oct. 5.
(From our Special Correspondent.)

Coal.—The river coal trade since our last report has shown no improvement. During a period of over six months there was only one small shipment by river, less than 50,000 bushels. At this writing there is no prospect of water. The amount loaded ready for departure will reach 24 to 25,000,000 bushels; a large amount has been loaded for months. At West Elizabeth on Wednesday the dockmen of the Joseph Walton company struck against a reduction of 25 cents per day. An effort is being made all along the river to reduce the wages of caulkers. The Walton company's men went to work a few days ago at the old wages, but to-day were asked to accept a reduction, which they declined and immediately quit. The question will probably remain in the same status until there is a general resumption at the mines.

Connellsville Coke.—There is a continued improvement in trade throughout the region; fresh ovens have been fired at many points. The indications are that the total estimated production will show a further increase. Among those that fired up idle ovens were the H. C. Frick Coke Company, the McClure Coke Company, the Rainey plant, the Whitney plant, the Oliver plant. The Frick company's idle ovens fired were 325; all these plants ran five to six days.

The shipments for the week aggregated 48,600 tons, distributed as follows: To Pittsburg, 1,300 cars; to points east, 650 cars; to points west, 750 cars; total, 2,700 cars. Western shipments increased 150 cars; Eastern shipments increased 50 cars, and Pittsburg shipments increased 400 cars, a net increase of 600 cars. Present rates for the various kinds are: Furnace coke, f. o. b. cars at ovens, \$1.35 per ton; foundry coke, f. o. b. cars at ovens, \$1.65 per ton; crushed coke, f. o. b. cars at ovens, \$1.75 per ton. Add 70c. per ton, and you have the price of coke delivered at Pittsburg.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Oct. 6, 1893.

Pig Iron Production.

Fuel used.	Week ending		From Jan., '92.	From Jan., '93.
	Oct. 6, 1892.	Oct. 6, 1893.		
Anthracite.	67	27,750	44	24,387
Coke.	128	116,605	56	58,126
Charcoal.	43	9,733	28	5,570
Totals.	238	154,088	128	84,283

Pig Iron.—The condition, which prevailed in the pig iron market at the time of our last report have undergone no change worthy of mention, and certainly no improvement has taken place since then. Statistically, perhaps, the situation is not worse; the production shows a decrease which, sooner or later, will probably react favorably on the market, so far as prices are concerned, but there has been no increase in the consumption, and a feeling of discouragement has come over sellers. Rumors of low prices are still numerous, which is very fair evidence that consumers have not regained full confidence in the stability of the market. The future is not very bright. The tidewater prices of the Thomas Iron Company on the new basis are as follows: No. 1, \$14.50 per ton; No. 2, \$13.50; No. 3 or No. 2 plain, \$12.75. For regular brands we quote as follows: Northern brands: No. 1, \$14@ \$14.50; No. 2, \$12.50; gray forge, \$12. For Southern iron we quote: No. 1, \$13.25@ \$14; No. 2 F., \$12@ \$13; No. 1 soft F., \$12@ \$13; gray forge, \$11.75@ \$12—all at tidewater. Scotch irons are quoted: Coltness, \$21.50@ \$22; Eglinton, \$19.50@ \$20; Summerlee, \$20.

Billets and Rods.—We do not hear of much business in this market. Sellers continue to offer billets at low prices. We quote: Steel billets, tidewater, \$21.50@ \$23; foreign, \$27.75@ \$28.50; wire rods, domestic, \$30@ \$31; foreign, \$39@ \$40.

Manufactured Iron and Steel.—We do not hear of any business of consequence doing in this market. It continues quiet and prices rule as low as ever, if, indeed, not lower than last reported. We quote: Angles, 1.75@ 1.9c.; axles, scrap, 1.80@ 2.10c., delivered; steel, 1.75@ 2c.; bars, common, 1.45@ 1.60c.; refined, 1.60@ 1.85c. on dock; beams, up to 15 in., 1.70@ 2c.; 20 in., 2.10@ 2.30c.; car truck channels, 2@ 2.10c.; channels, 1.85@ 2c. on dock; steel hoops, 1.8@ 1.9c., delivered; links and pins, 1.70@ 1.80c.; plates, flange, 2@ 2.10c.; firebox, 2.5@ 2.8c.; flange, 2.10@ 2.25c.; marine, 2.50@ 2.75c.; sheared, 1.85@ 2.10c.; shell, 1.95@ 2.10c.; tank, 1.70@ 1.9c.; universal mill, 1.70@ 1.90c., tees, 2@ 2.10c., all on dock.

Merchant Steel.—We do not hear of any business of consequence in this market, which continues very quiet. Quotations are: Tool steel, \$6.50@ \$6.75 and upward; tire steel, \$2@ \$2.10; toe calk, \$2.30@ \$2.40; Bessemer machinery, \$2.10@ \$2.20. Bessemer bars, \$1.60@ \$1.70; open hearth machinery, \$2.25@ \$2.30; open hearth carriage spring, \$2.10@ \$2.20; crucible spring, \$3.75@ \$4.

Old Material.—The market for old material continues quiet. Some sales are reported at low prices. We quote nominal y old iron rails, \$13@ \$14; wrought scrap, \$9.50@ \$10.50.

Rail Fastenings.—The market for rail fastenings is dead. Quotations remain: Fish and angle plates, \$15@ \$15.80 at mill; spikes, 1.80@ 1.90c.; bolts and square nuts, 2.45@ 2.50c.; hexagonal nuts, 2.55@ 2.60c., delivered.

Spiegeleisen and Ferromanganese.—There is nothing doing in either ferro or spiegel. Quotations are nominally as follows: 10 to 12% Spiegel, \$22@ \$22.50; 20% \$25@ \$25.50. Ferro, \$56@ \$57.

Steel Rails.—There is absolutely nothing doing in this market. We do not hear of any sales and the mills are inactive. Quotations are \$29 mill or tidewater. Girder rails, \$31@ \$33.

Tubes and Pipe.—Business in tubes and pipes is very dull. Ruling discounts on carload lots are as follows: Butt, black, 5%, 10 and 5%; butt, galvanized, 50, 10 and 5%; lap, black, 6%, 10 and 5%; lap, galvanized, 5%, 10 and 5%.

Buffalo. Oct. 5.
(Special Report of Rogers, Brown & Co.)

We are unable to report any improvement in the pig iron market and on the other hand cannot observe any retrograde movement. The volume of business continues light. Here and there consumers are found who are covering future requirements by contracts, but the demand is principally for present wants and bought in small quantities. As the close of navigation approaches the business in charcoal iron becomes more active, but still below the usual average and at prices which seem ruinous to the makers. So many of the Southern furnaces are going out of blast that it has become difficult to place orders for Southern coke iron for delivery running beyond January 1st.

We quote below on the cash basis f. o. b. cars Buffalo: No. 1 X, foundry strong coke iron, Lake Superior ore, \$13.75; No. 2 X foundry strong coke iron, Lake Superior ore, \$13.25; Ohio strong softener No. 1, \$14; Ohio strong softener, No. 2, \$13.25; Jackson County silvery No. 1, \$16.50@ \$17.30; Jackson County silvery No. 2, \$16@ \$16.80; Lake Superior charcoal, \$16; Tennessee charcoal, \$16; Southern soft No. 1, \$13.15; Alabama car wheel, \$18; Hanging Rock charcoal, \$20.50.

Chicago. Oct. 5.
(From our Special Correspondent.)

The Chicago Terminal Railroad Company will, in the course of a very short time, be in a position to let some large contracts for structural material. There is a quiet but steady revival in all manufacturing industries catering more particularly to the agricultural interests, and while the general process of recuperation must be necessarily slow, it shows some gain each week. Hence the demand for miscellaneous steels and special shapes of steel is well maintained. Crude iron is also in better request, the carload orders of a month ago are being replaced by larger contracts, and as stocks are de-

creasing there is a perceptible firmer feeling in regard to prices of Northern as well as Southern coke iron. In other material there is little worthy of special notice.

Pig Iron.—Sales of local coke iron are on the increase and the tonnage is enlarging. A number of orders are reported for several hundred tons up to 500 and one of 1,000 tons, the two latter for scattered delivery extending into next year. The outlook for a steady inflow of business is promising for this and next month. Southern coke iron shows some improvement, inquiries more numerous for small quantities and some demand for round lots. The inquiry noted last week for 1,500 tons has been closed and the agents state that as it was for delivery this year a low price was named. For delivery extending into 1894 they are asking 25c.@50c. per ton more. Lake Superior charcoal iron does not move as fast as was expected. Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, \$16.00@18.50; Lake Superior coke, No. 1, \$13.50@13.75; No. 2, \$12.75@13.25; No. 3, \$12.25@12.50; Lake Superior Bessemer, \$14.00; Lake Superior Scotch, \$14@14.50; American Scotch, \$15.50@16.00; Southern coke, foundry, No. 1, \$13.50; No. 2, \$12.00; No. 3, \$11.50; Southern coke soft, No. 1, \$12.00; No. 2, \$11.50; Ohio silverites, No. 1, \$16.50; No. 2, \$16.00; Ohio strong softeners, No. 1, \$16.25; No. 2, \$15.75; Tennessee charcoal, No. 1, \$16.50; No. 2, \$16.00; Southern standard car wheel, \$18.25@18.75.

Structural Iron and Steel.—Quite a good deal of the specification work now coming up and being figured on will be laid over until spring. The costly ornamental and bronze work for the New York Life Building, now in process of construction and nearly inclosed, will be let this week. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, \$1.70@1.80; tees, \$1.95@2.05; universal plates, \$1.70@1.80; sheared plates, 75c.@1.85; beams and channels, \$1.75@1.85.

Plates.—Mill and warehouse business has improved during the week. Small orders are more frequent, but prices are no stronger. Steel sheets, 10 to 14, \$2.25@2.35; iron sheets, 10 to 14, \$2.20@2.30; tank steel, \$1.90@2; shell iron or steel, \$2.50@2.75; firebox steel, \$4.25@5.25; flange steel, \$2.74@3; boiler rivets, \$4@4.15; boiler tubes, all sizes 65%.

Merchant Steel.—Many smaller implement concerns have closed contracts for supplies, and there is still quite a good tonnage yet to place. Quick shipment has been ordered on many specifications now being received, indicating increasing manufacturing facilities. Quotations are: Tool steel, 6.50@6.75c. and upward; tire steel, 1.85@1.90c.; toe calks, 2.20@2.30c.; Bessemer machinery, 2.05@2.15c.; Bessemer bars, 1.70@1.80c.; open hearth machinery, 2.10c.; open hearth carriage spring, 2.10@2.20c.; crucible spring, 3.50@3.75c.

Galvanized Sheet Iron.—Short stocks at mills have greatly improved warehouse business. Some agents are refusing mill orders. Discounts are unchanged at 70, 10 and 5% off on Juniata and 70, 10 and 10% off on charcoal and jobbing quantities at 70 and 7 1/2% off on the former and 70 and 10% off on the latter.

Black Sheet Iron.—Large dealers and jobbers report difficulty in getting material from mills, some being two to four weeks behind with delivery. New business is light. No. 27 common is quoted at 2.75c. Chicago; jobbing price is 2.95@3c. for iron, and steel sheets are about 10c. higher per 100 lbs.

Bar Iron.—The business in sight—there is plenty of it—does not materialize into orders as fast as mills would like. There is also a good inquiry, and mill price here is easy at 1.45c. Eastern mill agents refuse to meet some figures made by mills in this vicinity. Jobbing demand is fair at 1.65@1.75 for iron and steel bars.

Nails.—Wire nails are in good inquiry and some fair-sized contracts are reported at \$1.45 here. Jobbing trade only moderate at \$1.55 in less than carloads. Steel cut nails are in fair demand in small lots at \$1.20. Jobbers report a light trade at \$1.35 from stock.

Billets and Rods.—Rods are in better demand, as barb wire factories are resuming operations, and sales of 400 to 500 tons are noted at \$27.50. Billets lower, but stagnant at about \$21.50.

Steel Rails.—There is practically nothing doing in standard sections at \$30@31, though business is fair in light weights.

Scrap.—There is a little better demand in car lots, but prices are badly demoralized. Railroad, \$11.00; No. 1 forge, \$11; No. 1 mill, \$7.50; fish plates, \$12.00; cast borings, \$4.50; wrought turnings, \$7.50; axle turnings, \$7.25; machinery castings, \$9; stove plates, \$6.50; mixed steel, \$8; coil steel, \$14; leaf steel, \$14; tires, \$13.50.

Old Material.—Nothing doing in iron rails, which are nominally \$14. A sale of 3-ft. lengths and over of steel rails is noted at \$10; short pieces, frogs, etc., are worth about \$8. Car wheels are nominal at \$13.

Philadelphia. Oct. 5. (From our Special Correspondent.)

Pig Iron.—The market is very weak, and a rumor is circulated to-day that there is to be a reduction to \$14.25 for standard No. 1. This is based upon the fact that sales of standard No. 1 have been made at that price. For gray forge \$12.50 is the average price for standard, although very good iron bas

has been sold at less. These rumors of declining prices prevent even the full amount of business being done that might be done. The situation is worse than last week.

Steel Billets.—The fact that a good many users of billets are nearly out, has not stimulated demand. Rumors are rife in this branch of trade also, that another drop is likely to be made, and until this uncertainty is removed there will be very few large orders placed. Average prices to-day are \$21@21.50, but outside price will probably be \$21 before long.

Merchant Iron.—Merchant iron is very weak; mills have booked very few orders. Buyers who were inclined to make provision for the early winter last week have suddenly withdrawn. Quotations will not decline. Mill owners here and from the interior say there is nothing more to be done but shut down. Concessions have no effect upon the market. While all this is true, the possibility must be kept in mind of a sudden movement on the part of buyers to replenish stocks.

Nails.—The nail trade has dropped to small proportions, on a basis of \$1.25.

Skep Iron.—Negotiations were started to-day for a large lot of skep.

Sheet Iron.—One sheet mill shut down this week, and one and possibly two others may close on Saturday. The stocks are sufficiently large so long as demand is of present proportions.

Plate and Tank.—Several inquiries for large lots of plate have been made in this market since Monday, and by concerns which are in need of material. Western competition is interfering with Eastern prospects, but the manufacturers expect to get a share—enough to keep mills half employed.

Structural Material.—A few more small orders for beams and channels have been secured. There is absolutely nothing of interest going on in this branch of the iron trade.

Steel Rails.—Steel rails are quoted at \$29. Only a few small orders are coming in, mostly for repairing. A canvass of some of the large corporations has recently been made for business; but the returns have been disappointing.

Old Rails.—Old rails are offered at \$15; there would be no difficulty about having this figure shaded. Railroad companies are quite willing to sell and have made offers to yardmen of a very favorable nature.

Scrap.—No. 1 wrought scrap has dropped to \$13 for best; machinery, to \$10.50. Best heavy steel scrap has sold at \$13.50.

Pittsburg. Oct. 5. (From our Special Correspondent.)

Raw Iron and Steel.—The condition of the iron and steel trade has not improved during the past week, but on the contrary prices continue weak and unsatisfactory. It is difficult to accurately report the situation owing to the great irregularity in prices depending on the character of the material offered and the size of the order and the terms of payment. Most of the business transacted during the week has been limited to sufficient amounts for material required to keep the mills employed to complete orders on hand.

A few months ago a party of Chicagoans rented a furnace that was idle, and made considerable iron; as prices continued to decline they failed to find purchasers; the venture was not a success; the sheriff was called in to adjust matters, which he did by closing out the entire stock of pig metal at pretty low prices—thus repeating the story of the Marshall iron of a few years ago. This metal is now being sold at pretty low figures, and until the lot is disposed of low prices will be the rule, not the exception. City furnaces refuse to sell iron below current rates.

Table listing prices for various iron and steel products including Coke Smelted Lake and Native Ore, Billets, Rods, Sheet Bars, and Scrap.

METAL MARKET.

NEW YORK, Friday Evening, Oct. 6, 1893

Prices of Silver per Ounce Troy.

Table showing silver prices for Sept., Oct., and N.Y. Cts. with columns for St. Ex., London, and N.Y. Cts. and values in \$.

There was no allotment of India Council Bills this week. The London market has been very dull, but steady at lower quotations.

Buyers for Eastern markets are deterred by the uncertainty of the situation in the Senate.

The Treasury Department purchased 280,000 oz. of silver at 74.25c. on October 1st.

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

Gold and Silver Exports and Imports at New York, Week Ending September 30th, 1893, and for Years from January 1st, 1893, 1892.

Table showing Gold and Silver Exports and Imports for Week, 1893, and 1892.

During the five days ending October 6th, the exports and imports so far as ascertained have been as follows: Exports, gold, \$273,198; silver, \$147,576. Imports, gold, \$36,201; silver, \$844. The silver exported consisted of \$29,554 in Mexican coin, rated at its bullion value, and \$118,022 in American bullion.

NOTES OF THE WEEK.

The New York Chamber of Commerce passed at its regular monthly meeting, held October 5th, a strong resolution condemning the delay of the Senate to repeal the Sherman act.

The debt statement issued October 2d shows a net increase in the public debt, less cash in the Treasury, during September of \$834,793. The interest-bearing debt increased \$150, the non-interest-bearing debt increased \$187,136, and the cash in the Treasury decreased \$108,277.

The balance of the several classes of debt at the close of business on September 30th were: Interest-bearing debt, \$585,037,740; debt on which interest has ceased since maturity, \$1,984,770; debt bearing no interest, \$374,364,264.87. Total, \$961,386,775.

The certificates and Treasury notes offset by an equal amount of cash in the Treasury outstanding at end of month were \$570,225,363, an increase of \$4,610,482.

The total cash in the Treasury was \$719,548,155. The gold reserve was \$93,582,172, and cash balance \$13,293,461. In the month there was a decrease in gold coin and bars of \$3,213,401, the total at the close being \$173,209,751. Of silver there was an increase of \$5,659,676.

Of the surplus there was in national bank deposits \$17,213,278, against \$17,685,476 at the end of the previous month.

During the month the percentage of each kind of money received for customs at New York was as follows: Gold coin, 58.1; silver coin, 0.2; gold certificates, 1.7; silver certificates, 17.5; United States notes, 16.3; United States Treasury notes, 6.2.

The Clearing House Association had its annual meeting October 3d, and elected the ticket already announced.

The managers' report shows that the Clearing House transactions for the year were as follows: Exchanges, \$34,421,380,869; balances, \$1,696,207,175; total transactions, \$36,117,588,045. The debit balances were paid in as follows: United States gold coin, \$71,212,000; United States bearer gold certificates, \$65,061,000; United States order gold certificates, \$32,355,000; United States Treasury notes, \$584,013,000; United States legal tender certificates, \$188,120,000; United States legal tenders and change, \$525,063,175; Clearing House loan certificates, \$23,783,000; total, \$1,696,207,175. Transactions of the United States Assistant Treasurer at New York: Debit exchanges, \$311,667,362; credit exchanges, \$114,840,233; debit balances, \$199,488,783; credit balances, \$2,659,655; excess of debit balances, \$190,827,128.

During the month of September, the United States mints coined 714,874 pieces of gold of the value of \$5,932,270; 2,382,400 pieces of silver of the value of \$905,185 and 4,360,600 pieces of minor coinage of the value of \$76,818.

The present circulation of money in the United States is the largest ever recorded, according to the statement issued by the Treasury Department on October 1st. The aggregate circulation is given at \$1,701,939,918, which amounts to \$25.29 per capita for an estimated population of 67,306,000. This is an increase of \$21,377,247 during the month of September, and of \$105,889,935 since October 1st, 1892. The chief items of increase are \$14,829,741 gold, and \$5,062,317 National Bank notes. The issue of standard silver dollars in actual circulation is \$58,832,668,

the silver certificates in circulation are \$324,955,134, and the Treasury notes \$148,824,199, making the silver money of the country in actual circulation about \$533,000,000, in addition to \$64,100,205 in subsidiary silver.

Domestic and Foreign Coins.

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

Table with columns: Bid, Asked, Mexican dollars, Peruvian soles and Chilean pesos, Victoria sovereigns, Twenty francs, Twenty marks, Spanish 25 pesetas.

Other Metals.

Copper.—The market has not as yet recovered from the dullness which we had to report last week, business being still very unsettled on account of the uncertainty as to what may or may not be done regarding the silver question, and the never-ending debate at Washington affects not only this commodity, but also all others.

Arizona pig copper, which continues to be rather scarce, cannot as yet be bought at prices which would seem to be in proportion to those for other grades. The market for G. M. B.'s moved within very narrow fluctuations, but showed a somewhat better tendency at the close, when the prices were £42 for spot, and £42 7s. 6d. for three months.

The exports of copper from the port of New York during the past week were as follows:

Table listing copper exports from various ports including Liverpool, London, Swansea, Havre, Hamburg, Rotterdam, Antwerp, St. Petersburg, and others, with columns for quantity and value.

The exports of copper from Baltimore for the week ending September 30th were as follows:

Table listing copper exports from Baltimore for various ports including Havre, Liverpool, Rotterdam, and others, with columns for quantity and value.

Tin is somewhat easier, several more lots having been put on the market by speculative holders, which, however, have now passed into stronger hands.

bring us closer to the time when imports will have to be made at prices as may be ruling abroad and the duty paid thereon. To-day such importations would cost about 2 1/2%.

Lead has been very weak, the pressure to sell on the part of several refiners having forced prices down to 3 65, at which we close. The statistical condition continues as favorable as for some time past, but the resumption of operations in the Cœur d'Alene district appears to be the present cause for the decline in values.

The foreign market is also low, Spanish lead in London being quoted £9 10s. @ £9 12s. 6d.; English 2s. 6d. higher.

Spelter.—The better demand which we signaled last week has again disappeared, while on the other hand offerings on the part of smelters have become far more plentiful. The result has been the lowering of prices, which must now be called \$3.65 New York.

Quicksilver.—There is nothing new to report of this market. It continues quiet. Quotations remain unchanged at \$38 for New York and £6 9s. @ £6 10s. for London.

Antimony is unchanged at 10 1/2% for Cookson's, 10c. for L. X. and 9 1/2% for Hallett's.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Oct. 6.

Heavy Chemicals.—There has been no noteworthy change in this market since our last report. While the prospects for the future are somewhat brighter owing to the resumption of work by many consumers, and to the gradual disappearance of the dark clouds which during the past few months have obscured the financial sky, yet there is not much activity in the heavy chemical market just at present.

Quotations are nominally as follows: Caustic soda, 60%, 3'05@3'20c.; 70%, 2'80@3c.; 74%, 2'82 1/2@3'05c.; 76%, 3c@3'10c. Carbonated soda ash, 48%, 1'15@1'25c.; 58%, 1'10@1'20c. Alkali, 48%, \$1.10@1'20; 58%, \$1.05 @ \$1.15, according to package. Sal soda, English, 1'10c.; American, 1@1'10c. Bleaching powder, 2'25@2'50c.

Acids.—In this market acids have undergone no change, either in prices or in general trade conditions, since our last report. There has been no increased demand for any of the acids which we quote below, and the usual jobbing trade is doing. Prices are without marked change and we quote as follows: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, \$1.87 1/2; in carboys, \$2.25; muriatic, 18', 90c. @ \$1.10; 20', \$1 @ \$1.25; 22', \$1.10 @ \$1.35; nitric, 40', \$4; 42', \$4.50 @ \$4.75; sulphuric, 75c. @ \$1. Mixed acids, according to mixture, oxalic, \$6.30 @ \$6.50. Blue vitriol is quoted all the way from \$3.50 to \$3.75; glycerine for nitroglycerine, 1 1/2 @ 1 1/2 c., according to quality and quantity.

Brimstone.—The market for Sicilian brimstone continues very quiet. Prices have advanced slightly, and we now quote October-November steamer as follows: Best unmixed seconds, 18 1/2%; best thirds, 17 1/2%. Spot is nominally 25c. higher than the above figures.

Fertilizing Chemicals.—October opens with an improved demand and a higher range of values in the fertilizer market. Sales are reported every day, and although the buying is not so free as it doubtless would be if financial conditions were better, yet the light stocks of ammoniates have caused an advance in prices which consumers are obliged to pay. Our quotations this week are as follows: Sulphate of ammonia, on the spot, gas liquor, \$3.65 @ \$3.70; bone, \$3.30 @ \$3.35. Dried blood, \$2.70 @ \$2.80 per unit for high grade, and \$2.40 @ \$2.50 for low grade; azotine, \$2.70 @ \$2.75. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P2O5 60c. per unit at seller's works in bulk. Dissolved hone-black, 17% to 18%, P2O5 92@95c. per unit. Acidulated fish scrap, \$15 @ \$16, and dried scrap, \$25 @ \$25.50 l. o. b. fish factory; wet scrap, \$15 f. o. b. fish factory. Tankage, high grade, \$26 @ \$27; low grade, \$22 @ \$23. Blue tankage, \$23 @ \$24; bone meal, \$24 @ \$25.50.

The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, \$1.12; Philadelphia, \$1.14 1/2; Charleston and Savannah, \$1.17 cwt., basis 48@50%, in 50-ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis 90%; New York and Boston, \$2.07; Philadelphia, \$2.09 1/2; Charleston and Savannah, \$2.12 1/2, sulphate of potash, 96-99%, basis 90%, is 4% higher. Phosphates.—Owing to the curtailment in the output, to which we alluded in our last issue, prices of high grade phosphate rock are higher. Quotations f. o. b. Charleston are \$5 @ \$5.50. Freight are \$2.25.

Muriate of Potash.—No new business is reported in this market. The prices fixed by the syndicate for 1893 are as follows: New York or Boston, \$1.78; Philadelphia, \$1.80 1/2; Southern ports, \$1.83. During the past week there were no arrivals.

Kainit.—Practically nothing is doing in kainit. Quotations for shipments are as follows: New York, Philadelphia and Boston, \$9 for foreign invoice weight and test, and \$9.25 for actual weight; Charleston, Savannah and Wilmington, \$9.75 for invoice weight and test, and \$10 for actual weight.

Nitrate of Soda.—There is no change to report of the nitrate market. It continues quiet. Prices for spot are \$1.80 @ \$1.85.

Messrs. Mortimer & Wisner, the well-known brokers of this city, send us their interesting monthly statement of nitrate issued under date of October 1st. We have on previous occasions expressed our gratification at the regular issue of these reliable statistics. It is an example which should be followed by firms importing other chemicals.

Table showing nitrate statistics for 1893, 1892, and 1891, including bags imported into Atlantic ports, stock in store, and visible supply.

Included in the deliveries of 1893 are 9,500 bags shipped to European ports.

Liverpool.

Sept. 27.

(Special Correspondence of Joseph P. Brunner & Co.) There have been some signs of late that the coal strike is nearing an end, but no actual settlement has been arrived at yet, and in any case it looks as if work would not be resumed for at least a couple of weeks yet, and possibly it may drag on for even longer.

The scarcity of fuel is naturally a very serious matter, and the Alkali Company has most of their plant shut down on this account.

Soda ash keeps very dull and orders are scarce. For Leblanc makes quotations are unreliable, varying according to quantity, make, market, etc. The quotations are quite nominal and may be quoted as follows: Caustic ash, 48%, \$4 10s. @ \$5 per ton; 57%, 58%, \$5 10s. @ \$5 15s. per ton. Carbonate ash, 48%, \$4 15s. @ \$5 per ton; 58%, \$5 5s. @ \$5 15s. per ton, net cash.

Ammonia ash, 58%, is flat at about \$4 @ \$4 5s. per ton, less 2 1/2%, for prompt delivery.

Soda crystals are in small compass and firm at \$3 5s. @ \$3 7s. 6d. per ton, less 5%.

Caustic Soda.—For prompt delivery nominal quotations are \$10 5s. for 60% and \$11 5s. for 70%, net cash. These of course are fancy figures, as the article is almost unobtainable at present, the plant being stopped and stocks are practically exhausted.

Bleaching Powder.—In very limited request at nominally \$9 to \$9 5s. per ton, net cash for hard-wood packages. There are second hand parcels, however, offering at considerably less money, but the difficulty is to find buyers.

Chlorate of Potash is dull and there is very little business moving; prices are easier. We quote to-day: Prompt delivery @ 8 1/2 d.; September, 8 1/2 d., and October-December, 8 d. @ 8 1/2 d. per lb. less 5%.

Bicarb. Soda is in good demand and firm at \$7 per ton less 2 1/2% for 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is flat, and prices show a considerable decline, but it is difficult to give any reliable quotation, for prompt delivery \$14 5s. @ \$14 10s. per ton, less 2 1/2% for good gray, 24 @ 25% in double bags f. o. b. here, may be taken as about the nominal figures.

Nitrate of soda is receiving little attention from buyers and is unchanged at \$9 10s. per ton for double bags less 2 1/2%.

Carb. Ammonia.—Lump 3 1/4 d. per lb.; powdered 3 1/4 d. per lb. less 2 1/2%.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 386, 387 and 388.]

NEW YORK, Friday Evening, Oct. 6.

Only by a great stretch of good nature can a person speak of such a thing as a "mining stock market" in these days, when the chief operation in it seems to be confined to the making of nominal quotations. Actual sales are infrequent and insignificant in size. Practically, we may say that no business is doing. The aggregate commissions on the total weekly transactions would barely support a mining broker's office boy. Thus, during the past week the total sales amounted to 4,550 shares, on which the broker's commission, according to the regular rate

of the Consolidated Stock and Petroleum Exchange would be but \$24.50.

The only feature about what is euphemistically called "the mining market" is the excessive dullness, a positive and absolute inactivity which grows greater as the weeks pass by.

The most active stock during the week was Lacrosse, of which 3,400 shares changed hands at 3 3/4c.

The Comstocks were absolutely neglected. There was a sale of 100 shares of Ophir at 85c.

There was a solitary transaction of 50 shares of Bodie Consolidated at 20c.

Phoenix of Arizona (reorganization certificates) advanced from 40c. to 49c.

Boston, Oct. 5.

The market has ruled extremely dull and narrow for the past week, with but slight change in prices.

Calumet & Hecla has held steady at about \$280, a few shares selling at \$280 1/2 @ \$281.

Tamarack was inclined to lower prices on a report that the next dividend might be reduced.

Quincy sold in a small way at \$105; no change. The output for September exceeded that of last year about 25 tons.

Osceola sold at \$25 1/2, which is a decline of 1/4 from last week, with very little doing in it.

3:00 P. M.—After the noon hour Boston & Montana sold at \$20 1/2; Butte, 7 1/2 @ \$7 1/4.

San Francisco.

SAN FRANCISCO, Oct. 6 (By Telegraph).—The opening quotations to-day are as follows: Best & Belcher, 40c.

London, Sept 21.

(From our Special Correspondent.)

A few days ago there were signs of a general revival in mining speculation, and for two whole days there was a belief in financial circles here that we were on the threshold of better times.

Among American shares rather more has been done during the week than for several weeks past. The stock that has shown the greatest improvement is New Guston, which has with perfect regularity advanced 6d. every day for four days.

return published a week ago. Montana have also slightly improved. Elknoors rise 6d. one day and fall 6d. the next and do not exhibit much vitality.

DIVIDENDS.

Mollie Gibson Consolidated Mining and Milling Company, dividend No. 39 of five cents per share, \$50,000, payable October 15th.

MEETINGS.

Argonaut Consolidated Mining and Milling Company, at the office of the company, room 521, Mining Exchange Building, Denver, Colo., October 11th, at 4 P. M.

Breece Mining Company, at the office of the company in New York City, October 11th, at 2 P. M.

Comstock Tunnel Company, at the office of the company in New York City, October 9th, at 1 P. M.

Consolidated California & Virginia Mining Company, at the office of the company, No. 309 Montgomery street, San Francisco, Cal., October 16th, at 1 P. M.

Elkhorn-Valley Coal Land Company, at the office of the company in New York City, October 12th, at 12 o'clock noon.

Eureka Consolidated Mining Company, at the office of the company, 134 Market street, San Francisco, Cal., October 16th, at 11 A. M.

Idlewild Gold Mining Company, at the office of the company, No. 309 Montgomery street, San Francisco, Cal., October 11th, at 3 P. M.

Pleasant Valley Coal Company, at the office of the company, in the Board of Trade Building, in Salt Lake City, Utah, October 16th, at 12 o'clock noon.

CURRENT PRICES.

Table listing various commodities and their prices, including Acid, Alcohol, Alum, Ammonia, Antimony, Arsenic, Asbestos, Ashes, Asphaltum, Barium, Bismuth, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Gluconum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Osmium, Palladium, Potassium, Rhodium, Ruthenium, Rubidium, Selenium, Sodium, Strontium, Tantalum, Tellurium, Thallium, Titanium, Tungsten, Uranium, Vanadium.

Table listing various commodities and their prices, including Cadmium Iodide, Chalk, China Clay, Chlorine Water, Chrome Yellow, Chromite, Cobalt, Copper, Cryolite, Epsom Salt, Feldspar, Fluorspar, French Chalk, Fuller's Earth, Glauber's Salt, Glass, Gold, Kaolin, Kieserite, Lead, Litharge, Magnesia, Manganese, Mercuric Chloride, Marble Dust, Metallic Paint, Mica, Mineral Wool, Naphtha, Nitre Cake, Ochre, Oil, Phosphorus, Plumbago, Potassium, Pyrites, Quartz, Rotten Stone, Sal Ammoniac, Salt, Soapstone, Sodium, Stannate, Sulphur, Sylvite, Talc, Terra Alba, Yellow Jacket.

Table listing various commodities and their prices, including Tin-Crystals, Muriate, Oxymur, Vermilion, Am. quicksilver, Trieste, Zinc White, Antwerp, Paris, Red Seal, Muriate solution, Sulphate crystals, THE RARER METALS, Arsenic, Barium, Bismuth, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Gluconum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Osmium, Palladium, Potassium, Rhodium, Ruthenium, Rubidium, Selenium, Sodium, Strontium, Tantalum, Tellurium, Thallium, Titanium, Tungsten, Uranium, Vanadium.

Table listing various commodities and their prices, including Tin-Crystals, Muriate, Oxymur, Vermilion, Am. quicksilver, Trieste, Zinc White, Antwerp, Paris, Red Seal, Muriate solution, Sulphate crystals, THE RARER METALS, Arsenic, Barium, Bismuth, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Gluconum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Osmium, Palladium, Potassium, Rhodium, Ruthenium, Rubidium, Selenium, Sodium, Strontium, Tantalum, Tellurium, Thallium, Titanium, Tungsten, Uranium, Vanadium.

NEW YORK MINING STOCK QUOTATIONS.

Table with columns: NAME AND LOCATION OF COMPANY, Sept. 30, Oct. 2, Oct. 3, Oct. 4, Oct. 5, Oct. 6, SALES. Lists various mining companies like Adams, Alice, Amador, etc.

Table with columns: NAME AND LOCATION OF COMPANY, Sept. 30, Oct. 2, Oct. 3, Oct. 4, Oct. 5, Oct. 6, SALES. Lists various mining companies like Alpha, Alta, American Flag, etc.

*Ex-dividend. †Dealt in at New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 150. Non-dividend shares sold, 4,400. Total shares sold, 4,550.

BOSTON MINING STOCK QUOTATIONS.

Table with columns: NAME OF COMPANY, Sept. 29, Sept. 30, Oct. 2, Oct. 3, Oct. 4, Oct. 5, SALES. Lists various mining companies like Atlantic, B die, Bonanza Development, etc.

Table with columns: NAME OF COMPANY, Sept. 29, Sept. 30, Oct. 2, Oct. 3, Oct. 4, Oct. 5, SALES. Lists various mining companies like Allouez, Arnold, Astec, etc.

Dividend shares sold, 1,134. Non-dividend shares sold, 525. Total shares sold, 1,659.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Table with columns: Name and Location of Company, Capital Stock, Shares, Par, Assessments, Dividends. Lists various mining companies with financial details.

Table with columns: Name and Location of Company, Capital Stock, Shares, Par, Assessments, Dividends. Lists various mining companies with financial details.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns: Name and Location of Company, Capital Stock, Shares, Par, Assessments (Total Levied, Date and amount of last), Dividends (Total paid, Date & amount of last), Name and Location of Company, Capital Stock, Shares, Par, Assessments (Total levied, Date and am't of last).

G., Gold, S., Silver, L., Lead, C., Copper, B., Borax. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid \$1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid \$775,000 in eleven dividends and the Terra \$75,000. ¶ Previous to the consolidation in August, 1884, the California has paid \$31,320,000 in dividends, and the Cons. Virginia \$42,500,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. †† This company paid \$180,000 before the reorganization in 1880. ††† This company acquired the property of the Raymond & Ely Company which had paid \$3,075,000 in dividends. †††† Previous to this company's acquiring Northern Belle, that mine paid \$2,400,000 in dividends against \$425,000 in assessments.

COAL AND COAL RAILROAD STOCKS.

Table with columns for Stock Names, Sept. 30, Oct. 2, Oct. 3, Oct. 4, Oct. 5, Oct. 6, and Sales. Lists various coal and railroad stocks with their respective prices and sales figures.

Total shares sold, 137,265.

INDUSTRIAL AND TRUST STOCKS.

Table with columns for Stock Names, Sept. 30, Oct. 2, Oct. 3, Oct. 4, Oct. 5, Oct. 6, and Sales. Lists industrial and trust stocks with their respective prices and sales figures.

Total sales, 304,318.

CALIFORNIA.

Table for California stocks, San Francisco, with columns for Stock Names, Sept. 30, Sept. 31, Oct. 1, Oct. 2, Oct. 3, Oct. 4, Oct. 5. Lists various stocks with their prices.

Colorado Springs, Oct. 2.

Table for Colorado Springs stocks, with columns for Stock Names, Bid, and Asked. Lists various stocks with their bid and asked prices.

MARYLAND.

Table for Maryland stocks, Baltimore, with columns for Stock Names, Bid, and Asked. Lists various stocks with their bid and asked prices.

MONTANA.

Table for Montana stocks, Helena, with columns for Stock Names, Bid, and Asked. Lists various stocks with their bid and asked prices.

MINNESOTA.

Table for Minnesota stocks, Duluth, with columns for Stock Names, Par, Bid, and Asked. Lists various stocks with their par, bid, and asked prices.

UNLISTED STOCKS.

Table for unlisted Minnesota stocks, with columns for Stock Names, Bid, and Asked. Lists various unlisted stocks with their bid and asked prices.

MISSOURI.

Table for Missouri stocks, St. Louis, with columns for Stock Names, Bid, and Asked. Lists various stocks with their bid and asked prices.

PENNSYLVANIA.

Table for Pennsylvania stocks, with columns for Stock Names, Bid, and Asked. Lists various stocks with their bid and asked prices.

London Quotations.

Table for London Quotations, with columns for Stock Names, Buyer, and Seller. Lists various international stocks with their buyer and seller prices.

New York Mining Stocks.

Table for New York Mining Stocks, with columns for Stock Names, Bid, and Asked. Lists various mining stocks with their bid and asked prices.

ASSESSMENTS.

Table for Assessments, with columns for Company, No., Divt. in office, Day of sale, and Am. per share. Lists various companies and their assessment details.

CLASSIFIED LIST OF ADVERTISERS.

Adders and Calculators
Smith, B. C.

Air Compressors and Rock Drills
American Diamond Rock Boring Co.
Bullock, W. C., Mfg. Co.
Rutledge Rock Drill Co.
Clayton Air Compressor Works.
Hassensahl, W.
Ingersoll-Sergeant Rock Drill Co.
Morris County Machine & Iron Co.
Norwalk Iron Works Co.
Penn Diamond Drill & Mfg. Co.
Rand Drill Co. (See Diamond Drills.)

Aluminum
Cowles Electric, S. & A., Co.

Amalgamators
Bucyrus Steam Shovel & Dredge Co.
Denver Separator & Amalgamator.
Gates Iron Works.

Architects and Builders
Berlin Iron Bridge Co.
Feneoy Bridge & Const. Co.
Pennsylvania Steel Co.
Pollock, Wm. B. & Co.
Scaife, Wm. B. & Sons.

Arms and Ammunition
Hardley & Graham.

Assayers and Chemists' Supplies
Almsworth, Wm.
Baker & Adamson.
Baker & Co.
Berge, J. & H.
Bullock & Crenshaw.
Denver Fire Clay Co.
Henry Hill Chem. Co.
Hoskins, Wm.
Overbrook Chem. Co.
Penn Sm. & Ref. Wks.
Penna. Salt Mfg. Co.

Bankers and Brokers
Bandell, E. H.
Bieber & Sohne.
Billings, Robt. & Co.
Chisom, A. R., & Co.
Cochran, A. M.
Gelder, Bailey & Co.
Grant, E. R.
Handy & Harman.
Hyde, Geo. A.
Mattes, E. C. & Co.

Belting
Hendrie & Bolthoff Mfg. Co.
Jeffrey Mfg. Co.
Link Belt Machinery Co.
New York Belting & Packing Co., Ltd.

Blasting Caps and Fuse
Lau, J. H., & Co.
Macbeth, James, & Co.
Metallic Cap Mfg. Co.

Blowers
Foss Mfg. Co.
Sturtevant, B. F. Co.

Boiler Compound
American Fluoride Co.

Biers
Babcock & Wilcox Co.
Star Boiler & Sheet
Lidgerwood Mfg. Co.
Orr & Sembover, Inc.
Pollock, Wm. B. & Co.
(See Machinery.)

Brake Shoes
Sargent Co.

Brick Machinery
Freese, E. M., & Co.

Bridges
Berlin Bridge Co.
Pancoyd Br. Con. Co.

Buckets
Scaife, Wm. B. & Sons.
(See Machinery.)

Calculators
Smith, B. C.

Carbons
Bishop, Victor, & Co.

Car Wheels
Whitner, A. & Co.

Chain and Link Belting (See Belting.)

Chemicals
Baker & Adamson.
Bullock & Crenshaw.
Henry Hill Chem. Co.
Overbrook Chem. Co.

Coal
Bryndon-Whitton Coal
Mg. Co.
Castner & Curran
Consolidation Coal Co.
Coxe Bros. & Co.
Haddock, Shonk & Co.
Coal Cutters
Ingersoll-Sergeant Drill Co.
Jeffrey Mfg. Co. (See Machinery.)

Coke
Rainey, W. J.

Concentrators, Crushers, Pulverizers, Separators, Etc.
Allis, Edw. P. & Co.
American Mining & Milling Machinery Co.
American Ore Machinery Co.
Beckets Foundry & Machine Co.
Blake, Theo. A.
Bradley Fertilizer Co.
Colorado Iron Works.
Copeland & Bacon.
Denver Separator & Amalgamator.)
Dimon & Adams.
Fraser & Chalmers.
Frisbee-Lacop Mill Co.
Frue Vanner Concentrator.
Gates Iron Works.
Hendrie & Bolthoff Mfg. Co.
Krom, S. R.
Mechanical Gold Extractor Co.
Pierce & Miller Engineering Co.
Sturtevant Mill Co.
Totten & Hogg Foundry Co.
Walburn-Swenson Mfg. Co.
(See Machinery.)

Copper Dealers and Producers
Abbott, Wheelock & Co.
American Metal Co.
Atlantic Mining Co.
Bilbach S. & Ref. Co.
Baltimore Cop'r Wks.
Boston & Col. S. Co.
Boston & Mont. M. Co.
Canadian Copper Co.
Central Mining Co.
Copper Queen Mfg. Co.

Contractors and Miners' Supplies
Bucyrus Steam Shovel and Dredge Co.
Carpenter, Geo. B., & Co.
Lidgerwood Mfg. Co.
Pollock, Wm. B., & Co.
Pratt & Whitney Co. (See Machinery.)
Corrugated Iron
Berlin Iron Bridge Co. | Scaife, W. B. & Sons.
Deaks, Chairs, Etc.
Andrews, A. H. & Co.

Diamonds
Bishop, Victor, & Co.

Diamond Drills
American Diamond Rock Boring Co.
Bishop, Victor, & Co.
Bullock Mfg. Co., M. C.
Hassensahl, W.
Penn. Diamond Drill & Mfg. Co.
Sullivan Machinery Co.
(See Air Compressors and Rock Drills.)

Drawing Materials
Kunzel & Esser Co.
Queen & Co.
Schwenke, Kirk & Co.

Dredges
Bucyrus Steam Shovel & Dredge Co.
Southern & Co.

Dump Cars
Hunt Co. C. W.
Thacher Car & Con. Co.

Educational Institutions
California Scientific School
Correspondence School of Mines.
Harvard Univ. (Lawrence Scientific School)
Michigan Mining School.
Pennsylvania Military College.
Woodside Seminary.

Electrical Machinery and Supplies
General Electric Co.
Jeffrey Mfg. Co.
Okonite Co., Limited.
Thomson-Houston International Co.

Elevators, Conveyors and Hoisting Machines
Brown Hoisting and Convey. Mach. Co.
California Wire Works.
Cooner, Hewitt & Co.
Davis, F. M., Iron Works.
Hunt, C. W., Co.
Jeffrey Manufacturing Co.
Lidgerwood Mfg. Co.
Link-Belt Machinery Co.
Orr & Sembover, Inc.
Scaife, Wm. B. & Sons.
Union Wire Rope Tramway Co.
Vulcan Iron Works.
(See Wire Rope Tramway and Machinery.)

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

Emery Mill Stones
Sturtevant Mill Co.

Employment Bureaus
Engineering Employment Bureau.

Engineers, Chemists, Metallurgists
Adams, J. N.
Adams, W. H.
Argall, Philip.
Askew & Russell.
Baker & Co.
Blandy, John F.
Blauvelt, Harrington.
Boggs, W. R., Jr.
Boss, Clarence M.
Bryndon, M. P.
Brodie, Walter M.
Burlingame, E. E.
Butters, Charles.
Campbell-Paton R. C.
Carpenter, Franklin R.
Cary, J. Stockly.
Cazin, Franz.
Chandler, W. H.
Channing, J. Parke.
Chanute, D.
Chatard, Thomas M.
Clark, C. H.
Clark, Ellis.
Clement, Victor M.
Collins, J. H. & Sons.
Cramer, Stuart W.
Darling, L. B.
De la Bouglise, Geo.
Dewey, Frederic P.
Dickerman, Alton L.
Dickinson, H. P.
Donald, J. T.
Emmens, Stephen H.
Everette, Dr. W. E.
Farish, John B.
Farish, Wm. A.
Fearn, Percy L.
Flak, W. W.
Freeland, Francis T.
Froehling, Dr. Henry.
Fulton, Henry.
Furlong, W. H.
Gentry, F. A., Jr.
Godfrey, W. S.
Gouldie, James H.
Hall Bros.
Hammond, John Hays
Hampton, W. Huntley
Hardman, John E.
Hastings, John B.
Hedburg E.
Herradon, J. H.
Hofman, Ottokar.
Hollbaugh, J. R.
Hollis, H. L. & Co.
Hooker & Lawrence.
Hunt & Robertson.
Ince, F. W.
Jennings, E. P.

Engineers' Instruments
Altmeyer, T. & Son.
Brandis' Sons.
Bullock & Crenshaw.
Everhardt, J. M.
Gurley, W. & L. E.
Heller, Chas. S.
Kunzel & Esser Co.
Queen & Co.

Engines
Buckeye Engine Co.
Bullock, M. C., Mfg. Co.
Lidgerwood Mfg. Co.

Excavators
Bucyrus Steam Shovel & Dredge Co.
Southern & Co.

Fire-Brick and Clay
Chur, A. T.
Denver Fire-Clay Co.

Forges
Foss Mfg. Co.

Furnaces
Hoskins, Wm.
Moore, S. L., & Son Co.
Pollock, W. B. & Co.
(See Machinery.)

Furniture Oils, Etc.
Andrews, A. H. & Co.

Gas Works
Pollock, Wm., B. & Co. | Wood, R. D. & Co.

Gauges, Recording, Etc.
Bristol Mfg. Co. | Everhardt, J. M.

Grease, Graphite, Etc.
Dixon, Jos., Crucible Co.

Hose, Rubber
New York Belting & Packing Co., Ltd.

Hotels
The Cochran.
Owen House.

Inspection and Tests
Hunt, The Robert W. Co.

Insulated Wires and Cables
Crescent Insulated Wire & Cable Co.
Okonite Co., Ltd.

Insurance Companies
Hartford Steam Boiler Inspect'n and Ins. Co.
Mutual Life Insurance Co.
Lynn Diamond Drill & Mfg. Co.
Everhardt, J. M.

Locomotives
Hunt, C. W. Co. | Porter, H. K., & Co.
Thomson-Houston International Co.

Lathes
Dixon, Jos., Crucible Co.

Manganese Steel
Taylor Iron & Steel Co.

Mats, Rubber
New York Belting and Packing Co., Ltd.

Machinery
Ing and Other Machinery
Allis, Edw. P. & Co.
American Mining & Milling Machinery Co.
American Ore Machinery Co.
Beckets Foundry & Machine Co.
Buckeye Engine Co.
Bullock, M. C., Mfg. Co.
Carbon Steel Co.
Colorado Iron Works.
Copeland & Bacon.
Davis, F. M., Iron Works Co.
Dimon & Adams.
Fraser & Chalmers.
Fulton Iron Works.
Griffith & Wedge Co.
Hendrie & Bolthoff Mfg. Co.
Lidgerwood Mfg. Co.
Mechanical Gold Extractor Co.
Mecklenburg Iron Works.
Moore, Samuel L., & Son.
Morris County Mach. & I. Co.
Oil Well Supply Co.
Orr & Sembover, Incorn.
Penn Diamond Drill & Mfg. Co.
Pierce & Miller Engineering Co.
Pollock, Wm. B., & Co.
Poole, Robt., Son & Co.
Scaife, W. B., & Sons.
Sullivan Machinery Co.
Thomson-Houston International Co.
Totten & Hogg Foundry Co.
Trenton Iron Co.
Union Iron Works.
Vulcan Iron Works.
Walburn-Swenson Mfg. Co.
Webster, Camp & Lane Machine Co.

Metal Dealers
Abbott, Wheelock & Co.
American Metal Co.
Am. Zinc-Lead Co.
Canadian Copper Co.
Cowles Elec. S. & A.
Aluminum Co.
Eureka Co.

Metallurgical Works and Ore Purifiers
American Zinc Lead Co.
Baker & Co.
Balbach Smelting & Refining Co.
Baltimore Copper Works.
Boston & Colorado Smelting Co.
Canadian Copper Co.
Cowles Elect. Smelt. & Aluminum Co.
Kansas City S. & Ref. Co.
Ledoux & Co.
Mechanical Gold Extractor Co.
Orford Copper Co.
Pennsylvania Salt Mfg. Co.
Russell Process Co.
St. Louis Sampling & Testing Works
Walburn-Swenson Mfg. Co.

Mining and Land Companies
Atlantic Mfg. Co.
Boston & Mont. Mfg. Co.
Central Mfg. Co.
Copper Queen Mfg. Co.
Detroit Copper Mfg. Co.
Eureka Co.
Nickel
Canadian Copper Co.

Nuts, Lock
Young Lock Nut Co.

Ore Cars
Star Boiler & Sheet Iron Works.

Ore Testing Works
Hunt & Robertson.
Ledoux & Co.
Snelson, W. H., Assaying & Engineering Co.

Packing and Pipe Coverings
Brandt, Randolph.
Jenkins Bros.
Keashy, Robt.

Patents
Atkins, Benj. R.
Atkins, J. L.

Perforated Metals
Clinton Wire Cloth Co.
Harrington & King Perforating Co.
Mundt & Sons.

Periodicals
Arms and Explosives.
El Minerio Mexicano.
Electrical Plant & Electrical Industry.

Phosphates
Trenholm, Paul C.

Phosphor-Bronze
Phosphor-Bronze Smelting Co.

Picks, Miners'
Collins & Co.

Pile Drivers
Lidgerwood Mfg. Co.
Bucyrus Steam Shovel and Dredge Co.

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

Platinum
Baker & Co.

Powder
Etna Powder Co. | Lafin & Band P. Co.
Atlantic Dynamite Co. | Macbeth, J., & Co.

Pumps
Blake, Geo. F., Mfg. Co.
Cameron, A. S., Steam
Pump Works.
Jennessville Iron Wks.
Knowles Steam Pump
Works.
Maslin & Son, John.

Publicationes
Allison Coupon Co.
Arms & Explosives.
Colliery Engineer Co.
Electrical Plant & Electrical Industry
Pulley
Lake, J. H. & D. Co.

Pyrites
Adams W. H.

Quarrying Machines
American Diamond Rock Boring Co.
Ingersoll-Sergeant Rock Drill Co.
Rand Drill Co.
Steam Stone Cutter Co.
Sullivan Machinery Co.
Union Wire Rope Tramway Co.

Quicksilver
Eureka Co.

Railroad Supplies and Equipment
Carpenter, Geo. B., & Co.
Robinson & Orr.
Hunt, C. W., Co.
Porter, H. K., & Co.
(See Machinery.)

Refrigerating Machines
De la Vergne Ref. Machine Co.

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

Rock Drills. (See Air Compressor.)

Roofing
Berlin Iron Bridge Co. | Phelps, Dodge & Co.
Lee Composite Co. | Scaife, Wm B., & Sons
Pancoyd Bridge and
Const. Co.

Rubber Goods
New York Belting & Packing Co., Ltd.

Screens
Clinton Wire Cloth Co.
Harrington & King Perforating Co.
Mundt & Sons.
Tyler W. S., Wire Works Co.
(See Machinery.)

Screen Plates
Harrington & King Perforating Co.
Harrison Safety Boiler Works.

Shaft Sinking
Postech-Scoy Smith Freezing Co.

Shoes and Dies
Chrome Steel Works. | Reliance Steel Co.
Crescent Steel Co. | Sargent Co.
Pratt & Letchworth.

Shovels (Steam)
Bucyrus Steam Shovel & Dredge Co.
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