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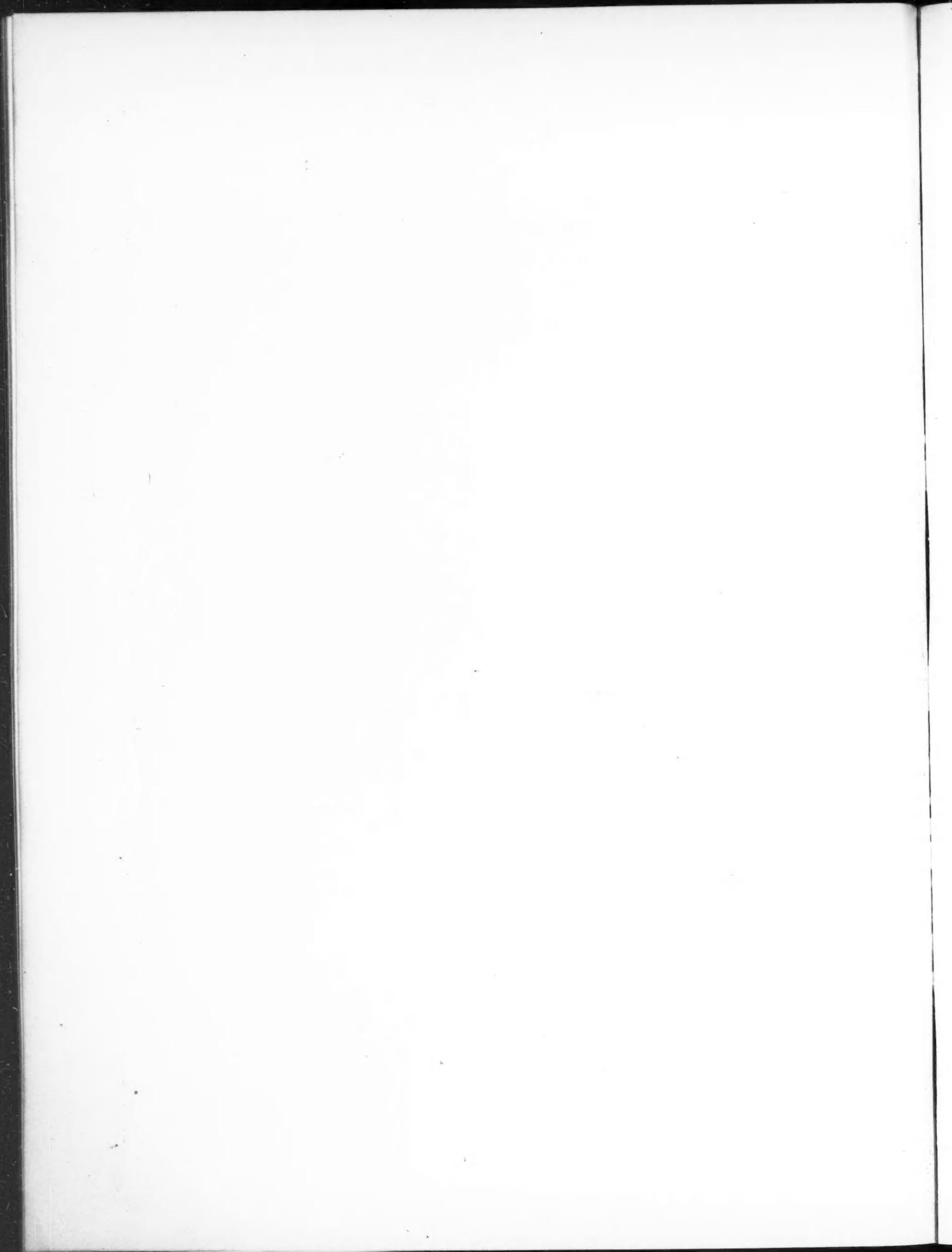
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ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with columns for advertiser names and page numbers, organized alphabetically from A to Z. Includes sub-sections for A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

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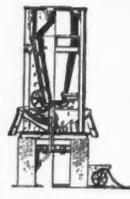
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The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the exclusive benefit of subscribers to the ENGINEERING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

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

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1534 WANTED—AN EXPERIENCED Placer Mining Foreman; one who is capable of taking full charge of a placer mine and is able to put in such improvements as will be required; building dams for holding water in reservoir, digging ditches, and putting in pipe and giant. Must also be familiar with under-currents. Must come with best recommendations as to ability and honesty. State experience and salary expected. Mines are located in Oregon. Address PLACER FOREMAN, ENGINEERING AND MINING JOURNAL.

1535 WANTED—MILL SUPERINTEND- ent for Peru; must fully understand the amalgamation of silver ores by the latest processes. House rent and table board furnished free. State experience, salary desired and references. Address PERU, ENGINEERING AND MINING JOURNAL.

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A PRACTICAL MINING MAN DESIRES engagement as manager; 20 years' experience in Central and South America. Able to open out and develop new properties, design, construct and run mills, etc., and manage any class of labor; speaks Spanish; city references. Address O. Y., ENGINEERING AND MINING JOURNAL. No. 18,039, July 3.

A MINING ENGINEER 26 YEARS OF AGE, now under engagement with well-known mining company, desires change; has been continuously employed for past five years in every capacity; thorough assayer and chemist. Address MINING, ENGINEERING AND MINING JOURNAL. No. 18,030, Aug. 14.

CHEMIST AND ASSAYER, GRADUATE OF a leading technical college, and having two years' practical experience, desires a position as chemist and assayer, preferably in the West; good references. Address CHEMIST, ENGINEERING AND MINING JOURNAL. No. 18,031, July 3.

POSITION AS MINE MANAGER WANTED by an experienced man; satisfactory references. Address EXPERIENCED, care Mariner & Hoskins, 81 S. Clark St., Chicago, or ENGINEERING AND MINING JOURNAL. No. 18,033, July 10.

MINING ENGINEER, GRADUATE OF Massachusetts Institute Technology, experienced mine manager, wishes permanent position; will go anywhere; ten years' experience United States and Mexico; nominal salary to begin. Address MEXICO, ENGINEERING AND MINING JOURNAL. No. 18,023, July 3.

POSITION WITH SMELTING COMPANY as Assayer and Chemist or Assistant Superintend- ent wanted by experienced and technically educated mining engineer; salary at first no object; long engage- ment wanted; Spanish spoken. Address COPPER, EN- GINEERING AND MINING JOURNAL. No. 18,024, July 3.

A. C. MORRISON, THE EX-DEPUTY STATE Mine Inspector for Colorado, will be open for an engagement on July 1st. Address MORRISON, EN- GINEERING AND MINING JOURNAL. No. 18,038, July 3.

A MINING ENGINEER OF EXPERIENCE is open to an engagement as superintendent and general manager; in the prime of life. Full references given as to former record; also refers to present em- ployers. Can organize and manage men, and is thor- oughly posted in designing and operating machinery and in all construction. Address Box 862, ENGINEERING AND MINING JOURNAL. No. 18,044, July 24.

A MERICAN (30), TECHNICAL GRADUATE, experienced as superintendent, manager and organizer in manufacturing, mechanical and chemical work, with record as a result-getter; salary \$2,500. Ad- dress REFERENCES, ENGINEERING AND MINING JOURNAL. No. 18,045, July 3.

WANTED—POSITION BY A COMPETENT and thoroughly experienced metallurgist in copper or lead smelting, who is just now free to make a new engagement. Address C. S., ENGINEERING AND MINING JOURNAL. No. 18,054, July 10.

A MINING ENGINEER OF NINE YEARS' experience will be open for engagement after August 1st as Manager, Assistant Manager, Superin- tendent or any responsible position; 30 years of age; a thorough assayer, surveyor and bookkeeper; best of references from former and present employers. Address WESTERN, ENGINEERING AND MINING JOURNAL. No. 18,043, July 24.

SUPERINTENDENT.—POSITION AS MINE Superintendent wanted by an experienced man now under engagement with well-known mining com- pany; first-class mechanic; understands all details of mining from the sinking of shafts to the development of same. Specialties: reduction of costs and increase in production of output. Address PRACTICAL, EN- GINEERING AND MINING JOURNAL. No. 18,042, Aug. 7.

POSITION WANTED BY AMERICAN MIN- ing Engineer, age 27, one year's practical experi- ence mining in Mexico. Certificate from Freiberg Mining Academy and from the Royal Saxon Works. Is familiar with copper smelting, lead smelting and de- silverizing, and is well posted in metallurgical chemis- try. Speaks English, German and Spanish; has high references. Address D. A., ENGINEERING AND MINING JOURNAL. No. 18,047, July 24.

CONTRACTS OPEN.

U. S. ENGINEER OFFICE, Burke Building, Seattle, Wash., May 10th, 1897.—Sealed proposals for fur- nishing 500,000 tons of stone and other materials for construction of jetty at Gray's Harbor, Washington, will be received here until July 9th, 1897, and then pub- licly opened. Information furnished on application. HARRY TAYLOR, Capt. Engrs.

IRON BRIDGES.—Morristown, N. J.—Sealed proposals will be received until 11 a. m., July 8th, by a committee of the Board of Freeholders of Morris County, N. J., for the building of two iron bridges in the Township of Rockaway. Plans, etc., can be seen at the office of County Engineer at Morristown, N. J., or at the office of THOS. H. HOAGLAND, Rockaway, N. J.

TUNNEL.—Riverside, Ill.—Sealed proposals per- taining to the improvement of the water supply will be received at the office of the Village Clerk of Riverside, Cook County, Ill., until noon, Standard time, July 5th, 1897, for the excavation of a shaft 73 ft. deep and 200 ft. of small tunnel, together with lining for the same and collateral work. The excavation is entirely in rock. Plans and specifications and other information are avail- able at the office of Thos. T. Johnston, C. E., Room 1009 Security Building, Madison Street and Fifth Avenue, Chicago, Ill. The right to reject any and all proposals is reserved. Proposals must be accompanied with a certified check for the sum of \$300, payable to the order of the Treasurer of the Village of Riverside, and drawn on some responsible bank doing business in the city of Chicago.

CEMENT, BROKEN STONE, ETC.—United States Engineer Office, 166 Granby Street, Norfolk, Va. Sealed proposals for furnishing and delivering cement, broken stone and yellow pine lumber at Fort Monroe, Va., will be received here until 12 o'clock July 30, 1897, and then publicly opened. Information furnished on application.

IRON LIFT BRIDGE, Brooklyn, N. Y.—Bids will be received until July 12th for preparing and build- ing an iron lift bridge over Coney Island Creek, in- cluding 300 ft. of pile trestle. Plans, etc., may be seen at office of Engineer of Construction and Repairs, Room 33, Municipal Building; deposit, \$1,500; surety, \$20,000.

WATER - WORKS.—Wauseon, Ohio.—Sealed proposals will be received by the Water Works Trus- tees of Wauseon, Ohio, until 12 o'clock noon of the 14th day of July, 1897, for furnishing machinery, materials and labor for constructing the following: one pump- ing plant, 750,000 gallons capacity; building for same; service reservoir, 102,000 gallons capacity; stand-pipe, 13x120 ft.; distribution system comprising about 5 miles of 10, 8, 6, and 4-in. pipe; 35 hydrants, with valves, etc., etc., as per plans and specifications.

Each proposal must be accompanied by a certified check of \$1,000 on a Wauseon, O. bank in the sum of \$1,000, made payable to C. E. Guilford, Secretary. In case bid is only for part of work, then said check shall be in an amount equivalent to 10% of bid. All bids must be made out upon the proposal blanks attached to the specifications. Plans and specifications are on file at the office of the Water-Works Board, and at the office of the Engineer at Chicago.

STONE ARCH BRIDGE, Evansville, Ind.— Sealed proposals will be received at the office of City Water-Works until 5 o'clock p. m., July 10th, 1897, for furnishing material and doing the work of construct- ing a stone arch bridge across Bee Slough, upon the site of the present stone and wood bridge, at the meet- ing of the River Road and Bayless Street.

For particulars apply to trustees, who will furnish plans and specifications for examination and making estimates of cost. Each proposal must be accompanied by a cash deposit of \$1,000, or a certified check to that amount, as a guarantee that the bidder, if awarded the work, will execute a contract therefor, with approved security, within five days from notification that he has been awarded the work. Failing to do so, said deposit or check for \$1,000 will belong to the City of Evansville, as liquidated damages.

Approved security in the sum of \$6,000 will be re- quired from the successful bidder as a guarantee for the completion of the contract. The bids will be opened in the presence of the bidders at the above office, by the trustees and their counsel at 7 o'clock, p. m., July 10th, 1897. The trustees reserve the right to reject any and all bids.

TUNNEL.—Riverside, Ill.—Sealed proposals per- taining to the improvement of the water supply will be received at the office of the Village Clerk until July 5th, 1897, for the excavation of a shaft 73 ft. deep and 200 ft. of small tunnel, together with lining for the same and collateral work. The excavation is entirely in rock. Plans and specifications and other information are available at the office of Thos. T. Johnston, C. E., Room 1009 Security Building, Madison Street and Fifth Avenue, Chicago, Ill. The right to reject any and all propo- sals is reserved. Proposals must be accompanied with a certified check for the sum of \$300, payable to the order of the Treasurer of the Village of Riverside, and drawn on some responsible bank doing business in City of Chicago.

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EIGHTH day of September next (1897),

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situate upon the parcel of land known and distinguished as the southerly ends or halves of lots number twenty-seven and twenty-eight in range B of the township of Coleraine, in the County of Megantic, containing about one hundred and four acres of land.

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Tenders for the property will be received up to the date of sale, the Joint-Liquidator reserving the right to accept any such tender and withdraw the property from sale, and further reserving the right to place an upset price upon the property at such sale, and make such other conditions as they may see fit. The property is open to inspection at any time. Inventory can be seen, and any further information will be furnished on application to the undersigned.

JOHN J. PENHALE,
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Joint-Liquidator.

Sherbrooke, Que., May 31st, 1897.

DIVIDENDS,

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COLORADO SPRINGS, COLO., June 10, 1897.

DIVIDEND NO. 11.

A dividend of **ONE-HALF CENT PER SHARE** (\$11.250) has been declared, payable June 25th, 1897, to stockholders of record June 15th, 1897.

The stock transfer books will be closed June 15th, 1897, at 3 o'clock p. m., and will be reopened on the morning of June 26th, 1897.

PERCY HAGERMAN,
Vice-President and Treasurer.

CONTRACTS OPEN.

Continued from Page 18.

STONE.—U. S. Engineer Office, Burke Building, Seattle, Wash.—Sealed proposals for furnishing 500,000 tons of stone and other materials for construction of Jetty at Gray's Harbor, Washington, will be received here until July 9th 1897. Information furnished on application. **HARRY TAYLOR,** Capt. Engrs.

DREDGING.—U. S. Engineer Office, Boston, Mass.—Sealed proposals for dredging in Essex River, Mass., will be received here until June 28th, 1897, and then publicly opened. Information furnished on application. **S. M. MANSFIELD,** Lt.-Col. Engrs.

REMOVAL OF LEDGES.—U. S. Engineer Office, Boston, Mass.—Sealed proposals for removal of ledges in Gloucester Harbor, Mass., will be received here until June 28th, 1897, and then publicly opened. Information furnished on application. **S. M. MANSFIELD,** Lt. Col. Engrs.

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The iron trade, as well as the coal trade, is disturbed by the prospect of labor troubles. There have been, as our readers know, a great many reductions of wages, most of which have been submitted to as unavoidable in the present condition of trade. There are now many signs of restiveness, however, and it will not take very much to precipitate a series of strikes which may have disastrous consequences. The uneasy feeling which prevails as to the future has had a notable effect and has helped to produce some hesitation in accepting contracts for export and other future deliveries.

The constitutionality and effective operation of the Caminetti law, as it is usually called, have been fully sustained by a recent decision of the United States Circuit Court in San Francisco, enjoining the North Bloomfield Mining Company from discharging tailings or debris into the Sacramento River. The injunction was asked for on the ground that the company had not erected sufficient works to impound its tailings, and that it had obtained no permit from the Debris Commission established by the law. The company claimed, on the question of fact, that it had established retaining dams which complied with the law, but admitted that it had received no permit from the Commission. The Court held entirely with the Commission, and enjoined the company from working until it should have complied fully with the law.

The amendment to the Tariff bill proposed in the Senate this week to make the duty on manganese ores \$1 per ton, apparently including therein manganiferous iron ores, will hardly be acceptable to the steel makers, or to the makers of spiegeleisen and ferro-manganese who have relied chiefly on foreign ores for their supply. They have done this in large part, because our own mines have not furnished sufficient quantities. One of our producers, at least, has exported a considerable quantity of ferro manganese during the last two years, and has presumably found the business profitable. The manganese ore used in the manufacture came chiefly from Russia. Whether the manufacture and export will continue to be profitable with a duty of \$1 on the ore is doubtful; but the Senate does not consider that when there is a chance to impose a useless duty.

The change in the conditions of the iron trade during the past few years is again shown by the fact, to which brief reference was made last week in our market report, that negotiations have been entered into with the object of securing here the steel water pipes to be used by the West Australian government to convey water to the Coolgardie gold-fields from the River. The contract has not yet been let, in spite of rumors which have been current to that effect, but the fact that the Australians have sent here for bids is a very significant one. Such a thing would not have been suggested a few years ago, nor would our makers have had any expectation of obtaining the order. The contract is an important one and we hope it will come to our makers, as we believe it is very likely to do. The latest report in this connection is given in a London despatch, which notes the placing of large orders for steel rails in the United States by two important railroad companies in India, the prices here being \$5 per ton lower than the English mills offered.

At present there is a prospect of considerable difficulty before the Western bituminous coal trade. The dissatisfaction over the low mining rates, which has existed for some time, is finding emphatic expression. In the Pittsburg district matters have been in a confused condition, and the Ohio miners have been hesitating for some time over proposals for a general strike. The point has been reached in Illinois, and it is probable that another week will see a general stoppage of work at the mines in that State and in Indiana. Unless the matter is quickly settled, there is no doubt that the strike will extend eastward; and it is quite within the possibilities that it may cover all the territory west of the anthracite regions and north of the Ohio. The time is not at all a propitious one for a general strike, and the results can scarcely be anything but injurious to the miners, and to the operators also.

The only people who are likely to benefit by a general strike, such as the agitators are planning for, are the West Virginia operators, who will very probably do as they did at the time of the great strike three years ago, when they secured a great extension of their trade, a fair proportion of which they were able to hold afterward. A general strike cannot fail to do much damage and to add to the already heavy burdens of the trade. Until the industrial condition of the country has improved, so that the present unprofitable prices of coal can be advanced, it is vain to strike for higher wages and costs in mining.

In our issue of June 13th, 1896, we described the Burnham Syndicate's zinc-lead sulphide process, and made mention of a dispute between Captain Angel and Messrs. Fry, David and Ledoux as to the ownership of the patent for treating silver-bearing zinc-lead sulphides, which had been taken out by the last named gentlemen and transferred by them to the Burnham Syndicate, of London. This dispute has been ended by a

satisfactory compromise arrangement, Captain Angel withdrawing all claims against the patentees, and in return the patentees purchasing the patents of Captain Angel. This amicable settlement of the dispute was much to the interest of both parties concerned, as it prevented their secrets being divulged to the world; though, on the other hand, metallurgists were deprived of the pleasure of studying the details of an interesting problem. The dispute, it appears, was not a personal one, but one which arose out of different views of a chemical process. Experts who have recently examined the working of this process where it is smelting 40 tons a day and getting 25 per cent. zinc in the slag, state that the tests have been quite successful, and that the process is probably economically applicable under conditions which exist in Utah, Wyoming and other places where natural sulphate of soda is abundant and very cheap, as well as where it is made in the Leblanc process in the alkali industry. We trust these favorable reports will be fully justified in extended practice, and that this process will afford one greatly needed solution of the vexed zinc-lead sulphide reduction problem.

The Metric System in English Machine Shops.

Some opposition to the introduction of the metric system in the United States has come from the proprietors of large machine works, whose opinions have been voiced by the American Society of Mechanical Engineers. These gentlemen have argued that the substitution of the metric system for the present system of weights and measures in the United States would lead to endless complications and inconveniences in machine shops, where existing gauges and patterns would have to be altered. Bearing upon this point the experience in the works of Messrs. Willans & Robinson, England, which is described by Capt. H. R. Sankey, R. E., in a paper read at the recent engineering conference of the Institution of Civil Engineers, is instructive and important. This firm manufactures the Willans central-valve engine and the Nielauss water-tube boiler. It was decided to adopt the metric system in the works, but for reasons which are not explained it has so far been applied only to the boiler manufacture and certain sizes of the engine. The two systems, English and metric, have, therefore, been in use concurrently. The old gauges and templates were marked with millimeters, and the men were supplied with rules graduated into inches on one side and millimeters on the other. After four years of work in this manner the result, according to Capt. Sankey, is as follows:

"No difficulty has been experienced in getting draftsmen to use the new measures. No serious mistakes have been traceable to the change and very few minor ones. The draftsmen are practically unanimous in favor of metric measures, finding it easier to design, to check and to read millimeter drawings. Taking all fractions into account, little more than half the number of figures formerly used are now required to express a dimension. The proportions between dimensions are more readily appreciated when expressed in millimeters. A point of some importance is that the ordinary foot and inch ticks or marks are not required, and with them disappears the possibility of having 2 in. added to each 10 in. or deducted from each foot in a dimension. A case of this kind occurred in which two 13-in. flanges intended to come together were shown on different drawings; in one of them a tick was introduced after the one, and that flange was made 1 ft. 3 in. With millimeters a cypher might possibly be put in or omitted; but a dimension ten times too big or too small would at once be noticed as absurd. No mistakes have been made in marking off work to millimeters. The men preferred the old system at first, the new figures conveying little idea of size; but they are now much in favor of the millimeter, and find drawings so figured easier to read. The shop where the difficulties of the change would be most felt is that in which the tools and gauges are made; the foreman says that it was a little awkward at the outset—for about two days. In the manager's opinion, the metric system would prove even more advantageous in shops where measurements are taken from the rule than where gauges are used. He considers it easier to teach men the use of the rule with the metric than with English measures.

As Captain Sankey appropriately remarks, an experience in such a matter has more value than mere theory, and we are convinced that the hypothetical objections of certain American manufacturers would prove insignificant upon the actual introduction of the metric system in their works. In connection with the Willans & Robinson experiment it is interesting to note the difficulty with respect to screw-threads that was encountered. For a time the ordinary Whitworth thread was retained, but for reasons connected with the manufacture of the engines on the Continent the body of the bolt is now turned larger than usual, the excess being 0.3 millimeter for 1/4-inch Whitworth, and 2 millimeters for 1 1/4-inch Whitworth, intermediate sizes in proportion. The bored holes are then able to take the corresponding screw cut to the standard of the French makers of the engine. This is the one recommended by the Société d'Encouragement pour l'Industrie Nationale, which has been adopted by the French Navy and railways and promises to become universal in France.

The variation in systems of screw and pipe threads under which the industrial world now labors is an absurdity on a par with our wire-gauge system (though the latter, we are glad to say, is at last fairly on a way to be remedied). As an instance of the barbarity of having different pipe-thread systems, a case which came under our notice recently in Mexico is apposite. An English company, which was constructing large works, sent the pipe and necessary fittings, a large stock, from England, but

purchased the fitting tools in the United States. When the various consignments reached their destination, a remote *mineral* in the Sierra Madre, it proved, of course, that the pipe cut with the American tools would not fit the English tees, elbows, etc., and the feelings of the engineer constructing the works may be easily imagined. It is to be hoped that when the world has finally adopted the metric system it will unite on a standard screw and pipe thread.

Gas Engines in Mining Plants.

We have at different times taken occasion to show the advantages to be gained by the application of the gas engine in mining work, and we have also illustrated and described plants in which such engines were used for hoisting, pumping and other purposes. The demand for these engines is growing steadily, and we hear frequently of their introduction in mines and mills; in almost every such case we hear later of their success.

Apart from the theoretical questions which affect the value and efficiency of the gas or impulse-engine as compared with the steam engine, there are certain special advantages which the former presents in a great many mining plants, which are quite sufficient to bring about a decision in its favor. No objection can be interposed on the ground of efficiency or economy. Donkin, Otto and other engineers have shown that theoretically the impulse engine can produce an indicated horse-power with a consumption of 0.8 pounds of coal, which is about one-third the fuel consumption of the best designed and most carefully constructed steam engine. Practically also this has been proved by actual and continued service with engines of various sizes and designs. They have been used in mill work and for driving machinery of all kinds to an extent which has put their demonstrated usefulness far beyond the experimental stage in which many still seem to consider them. There are other considerations than economy in fuel which should also decide in favor of their use in many cases.

One of these is the compactness of a gas engine plant and its greater portability. The location of a plant is usually determined by that of the mine; and our readers know in how many cases that is such that the transportation of heavy machinery is difficult and costly. Every pound of increased weight adds to the expense; and its extension beyond certain limits may sometimes actually prohibit the use of a plant at all. Now the gas engine itself is compact and its weight can be brought down to a very moderate limit. It does not require a battery of heavy boilers, and where a producer is used it will weigh much less and can be put in better shape for transportation than any form of steam generator.

Another advantage is that a required amount of power can be furnished by a number of small engines to very much better advantage with gas engines. All engineers know the greater economy of a large steam engine, and understand that the splitting up of the power into a number of small motor-units is a wasteful process. It is impossible to produce 300 or 500 horse-power in 10 or 20 steam engines with the same consumption of steam and fuel that will be sufficient for a single engine. This is the case where the motors are near together, and where it is advisable to place them at different points we have the added losses in condensation and other forms which cannot be avoided in transmission of steam to any considerable distance from the generator. Now gas engines can be divided into small units and placed where most convenient; and the comparative loss in efficiency will be very small.

Another point which is of importance is the water supply. In very many cases the quantity of water which can be obtained at a mine is limited; in others it is charged with impurities, which render its use in a boiler a source of constant trouble and often of danger. But the gas engine requires only sufficient water to cool the cylinder. If the supply is small it can be used over and over again, and the quality has very little effect; the only precautions needed are to see that the water contains no acid or other active ingredient which will corrode and eat away the iron of the cylinders, and the determination of this is readily made.

Economy of fuel is an important point almost anywhere, and it is especially so at many mines where a supply is difficult to obtain, and its transportation from a distance is expensive. Here the advantages of a gas engine are marked. Producer gas can be supplied from almost any kind of fuel, even the most inferior. Wood, sage brush, lignite and other material which could not well be used under a boiler will serve in a gas producer. In many cases also it is possible to use gasoline or naphtha without the intervention of a producer, the volatile oil being vaporized in the engine itself. The light hydrocarbons, as waste or by-products from the distillation of oil, are usually cheap and can be easily transported. Their successful use has been proved in small plants, where the moderate quantities needed have been carried over bad mountain roads which would prohibit the transportation of coal.

Another consideration which might be urged is that less skilled labor is needed to run a gas engine. The operation of such motors is easily taught to an unskilled man, and they need usually less attention while running than does the steam engine. This point is especially

valuable where only a small plant is required, as is the case at many mines.

So far, especial reference has been had to the gold and silver mines of the mountain regions of the West, and the mines similarly situated elsewhere. There are other places, however, where the gas engine can be most advantageously used. In coal mines where coke plants are attached to or located near the mines the waste gases from the coke ovens can be used to run the engines required for haulage, ventilation, pumping, etc., while at present the coke oven gases are usually wasted in this country.

Many other applications of the same kind can be suggested. We recently referred to experiments conducted at the Seraing Works in Belgium, where large engines have been successfully run with the waste gases from the blast furnaces; and there is no reason why many such appliances should not be adopted at our iron furnaces and other metallurgical works.

The gas engine merits the careful attention of our mine engineers and managers, and we hope to see its use, in which a beginning has already been made, extend more and more rapidly as its advantages are proved and realized.

NEW PUBLICATIONS.

THE MANUAL OF AMERICAN WATER-WORKS. Fourth issue, 1897. Edited by M. N. Baker. New York; *Engineering News Publishing Company*. Pages, 632. Price, \$6.

This useful directory for engineers and investors becomes better with each yearly issue, as experience enables the compiler to understand the nature of the information required and the best and most convenient form of summary. The statements have necessarily been condensed as much as possible to keep the volume within bounds, as the number of new water-works is large, and reports are now secured from many in the smaller towns and villages, which formerly withheld their statements. The water-works of the United States now represent a very large amount of invested capital, and are of the greatest importance to a large part of our people. The main object of the present volume is to describe briefly the condition and liabilities of the company or municipality which owns or operates the work. This is, of course, the matter of chief interest to bankers and investors; but there is also much information valuable to engineers.

THE BUILDING MATERIALS OF PENNSYLVANIA—I. BROWNSTONES. By T. C. Hopkins. Appendix to the Annual Report of the Pennsylvania State College, 1896. State College, Pa.; published by the College. Pages, 125; 2 maps and 26 full-page plates.

This report is written from an economic standpoint and will no doubt be valuable to the stone dealers, contractors and architects, and lead to a more intelligent use of the stone in the State. The College is to be commended for its enterprise in publishing such timely information on the resources of the State. The geological reports of Pennsylvania are more voluminous than those of any other State, yet with the exception of coal and oil there is but little on economic subjects of value to the trade-man, and this move on the part of the College will no doubt be appreciated. The author is an expert on the subject and has published several monographs on building stones, besides numerous shorter articles in the trade and scientific journals, and has contributed to several volumes of *The Mineral Industry*.

The report is divided into three parts; the first, treating of the general features of brownstones, discusses the chemical composition, the structural, textural and mineralogical features, the durability, methods of quarrying, etc. Tables of analyses and crushing tests are given.

The second part describes in detail the different quarries and quarry regions of the State, and the third part describes briefly the competitive quarries of other States. It is an excellent monograph on a subject which needs treatment.

A TREATISE ON ROCKS, ROCK WEATHERING AND SOILS. By George P. Merrill. New York; The Macmillan Company, and London; Macmillan & Company, Limited. Pages, 412; illustrated. Price, \$4.

In this work Mr. Merrill has presented the results of a long study of the phenomena attendant upon the degeneration of rocks and the formation of what we know as soils; in other words, of the outer coating or surface which the earth presents to us. As the author says in his preface: "Although beginning with a discussion of rocks and rock-forming minerals, the work must be considered in no sense a petrology as this word is commonly used. What is here given relative to the origin, structure and composition of rock masses is regarded as an essential introduction to the chapters on rock weathering. The portion dealing with the structure and composition of the resultant materials is an essential corollary to these same chapters."

The book is an interesting one, for it takes up a subject on which, perhaps, less special work has been done than on almost any other essential branch of geology. We have on the one hand abundance of literature on petrology, on the rocks and their composition; and on the other many studies of the soils and their composition, but comparatively little on the processes by which the one class passes into the other. The study of these processes and the forces concerned in them is the special object of the present work. In it Mr. Merrill has collected the observations and discussions of earlier writers and has added much drawn from his own experience, making a symmetrical study of the subject, which is an acceptable addition to the library of the student and the geologist. It will repay reading, for it is not one of those books which are written simply for the purpose of making a book on a given subject—as too many are written now, in these days of continual and often superfluous publication.

Parts I. and II. of the book, both of an introductory nature, as ex-

plained, occupy 172 pages. Part I., 52 pages, treats of the constituents, physical and chemical properties of rocks and the mode of their occurrence; while Part II., 120 pages, gives the general classification of the rocks. The main part of the book begins with Part III., on the weathering of the rocks, which covers 113 pages. A large portion of this is devoted to a consideration of the general principles, and to the agencies most active in the process of weathering. These are the atmosphere; the chemical action of water; the mechanical action of water, including ice; and finally by the action of plants and animals. This is followed by a number of illustrations taken from special cases. The other chapters are on the physical manifestations of weathering, and on time considerations. The last treats mainly on the rate of weathering and the various circumstances which affect it.

Part IV., comparatively brief, as it occupies only 15 pages, relates to the transportation and redistribution of rock debris, the agencies being gravity, water, and ice and wind. These are considered briefly, but in a very interesting way.

Part V., the last, occupies the remainder of the book, and treats of the "Regolith," which Mr. Merrill defines as the outer crust or deposit forming the surface of the earth as presented to us, and including generally the secondary rocks and the still unconsolidated sands, gravels and like products. This rock blanket is the most important part of the earth so far as man is concerned, for on it he lives, and from it he derives his subsistence, since it includes what we know as the soil.

The text throughout is accompanied by copious citations of authorities quoted or referred to. It is a practical study of actual conditions and of soil history so far as it can be traced by the aid of our actual knowledge of existing forces of chemistry and geology. There is little theorizing in it, the object being rather to give the facts as they are known to us than to formulate any special theories or systems.

The book is very well illustrated, and in this direction the author has had the advantage of being able to use many of the specimens from the collections in the National Museum. The engravings are good, and the mechanical work on the book is generally very satisfactory. A copious and carefully prepared index adds to the value of the volume.

BOOKS RECEIVED.

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

Mining in the Victorian Era. By C. M. Percy. Wigan, England; Thomas Wall & Sons, 1897. Pages, 93; with portraits. Price, in New York, 35c.

Eighteenth Annual Report of the Ohio Society of Surveyors and Civil Engineers. C. N. Brown, Secretary-Treasurer. Columbus, Ohio; published for the Society, 1897. Pages, 286; illustrated. Price, 50c.

Report of the Mines Department of the South African Republic; with the Report of the State Mining Engineer for the year 1896. Pretoria, S. A. R.; State Printing Office. Pages, 60; with maps and tables.

Twenty-first Annual Report, 1896, of the Department of Geology and Natural Resources of Indiana. W. S. Blatchley, State Geologist. Indianapolis, Ind.; State Printers. Pages, 719; with maps and illustrations.

Geological and Topographical Map of the Northern Part of the Lake of the Woods and Adjacent Country. Ottawa, Canada; Published by the Geological Survey of Canada. In colors. Scale, two miles to an inch. 1897.

Observations on Popocatepetl and Ictacchhuatl; with a Review of the Geographic and Geologic Features of the Mountains. By Oliver C. Farrington. Chicago, Ill.; Published by the Field Columbian Museum. April, 1897. Pamphlet. Pages, 120; with maps and illustrations.

CORRESPONDENCE.

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

Nitrosylized Blast-Furnace Slag as an Addition to Hydraulic Cement.

Sir: I beg to correct a typographical error in the above article, which appeared in your last week's issue. It occurs in the sentence: "A much fairer test would be to slurry the mixtures just as is done in working cement for the 'second set' and to fill the slurry into the molds without heating it," which should read "without beating it."

As it may interest some of your readers, where I got the slag that I used for my experiments, I may as well state that it came from the Isabella Furnaces, at Etna, Pa., and that it had been vitrified by casting it from a "jumbo-car," down an inclined plane, in cumulative layers.
NEW YORK, June 29, 1897. ALEX. D. ELBERS.

The Tenacity of Steel Wire.—A Correction.

Sir: On page 111 of the *Engineering and Mining Journal* for January 29th, 1897, I gave the tenacity of hardened steel wire, containing only 0.022% of carbon, as 114,000 lbs. per square inch. I gave this on the strength of the report of a trustworthy public testing company on the tensile test of a wire which I hardened and sent it. On repeating the experiment, the highest tenacity which I find is 66,154 lbs. in a very short fragment of number 13 specimen; 63,476 lbs. in a longer piece, and 91,800 lbs. in a fragment of a quenched wire which had already been tested. On investigating the matter I find that the tenacity of 114,000 lbs. originally given to me was wrong, and was due to an error in calculation made by that testing company.
HENRY M. HOWE,
BOSTON, June 29, 1897.

Hydraulic Work Under Water.

Sir: Some of your many competent contributors would bring out certain points of interest if they would state from their own or others' experience in the actual working of hydraulic nozzles and elevators in placer mines whether it would be feasible to use them in dumping grounds under water to level off the material deposited by scows, consisting of sand, gravel, clay and cobbles. Some plan of this kind, if it could be used, would certainly be cheaper than dredging. Where there is a sufficient depth of water the capacity of a dumping ground would be very largely increased if the heaps could be scattered and leveled under water as fast as the scows dropped their burden.

Is it not possible also that the hydraulic method could be used to scour or cut out a channel in water of moderate depth? There seems to be very little written on this subject and the books are no guide in these cases, but it is possible that trials have been made, and it is certain that the results of such trials, whether successful or otherwise, are unknown. If they have failed others may be prevented from going over the ground again with certain failure ahead. The problem seems a simple one, but there are certain data lacking as to the effect of the hydraulic nozzle under water, and any of your readers would do a service to engineers if they could supply them.

H.
NEW YORK, June 26, 1897.

The Colombian Gold Mining Company.

Sir: In the issue of the *Engineering and Mining Journal* for June 26th there is an article on the Colombian Gold Mining Company, signed "Don Enrique." The gentleman evidently wrote from hearsay and is misleading. The gentleman who was last in charge of La Guaca was Mr. Louis Kline and not Mayer, as stated; he ran the mill and mine just six weeks, when he started for New York to procure the necessary equipment and men to conduct the work, as the men then there were leaving. He died unfortunately on the steamer *Newport* north of Hatteras of heart failure, caused by a congestive chill. Mr. Kline's opinion, expressed to several persons of the La Guaca, was a very high one. Mr. John Grodhaus had charge of the mine for about a year and a half previous to Mr. Kline and sent the company \$38 a ton for every ton of ore milled.

The last time Colonel Farrand was at the mine was in 1892 or 1893, and not in 1895; he told Dr. Fabrego, of Agua Dulce, that out of 100 tons of ore he put through the mill he cleared \$30,000, Colombian money; he also showed a gold brick to a very prominent gentleman of Newburg, N. Y., where his home was, and whose name I can give you, so that you may verify it from himself, that the gold brick he was then exhibiting "he took from the La Guaca the last time he was there."

Your correspondent further says that "there are no large bodies of ore in the vicinity of Santiago"; on the contrary there are enormous bodies of low-grade ore. Mr. Johnston, assistant superintendent of the Gran Remance, told Mr. Alexander Campbell, "that he had traced the outcroppings of veins for miles and that their property is over eight miles long." They are now putting up a mill of 40 stamps.

As I said before "Don Enrique" speaks from hearsay, but the opinion of John M. Harper, John Grodhaus, Louis Kline, Alexander Campbell and others who were on the ground is entirely different from his; in fact that the whole country in the vicinity of the La Guaca mine is gold-bearing and almost virgin. In justice I ask that you will give this a place in your very valuable paper. I have been on the ground and I know the facts.

BROOKLYN, N. Y., June 26, 1897.

M. E. R.

BARNEY BARNATO.

London papers received by mail are naturally full of Barney Barnato's death, and incidents of his life almost without number are told. Many of these are trivial, of course, but some add a little to our knowledge of the man. No new facts are brought out as to his early history, concerning which he was always reticent, while his relatives seem to have followed his example.

As Barnato's first large operation was the consolidation of the Kimberley diamond mines, his name first became prominent in the struggle between the Kimberley and the De Beers companies for the control of the diamond mines. De Beers won, but was obliged to recognize the opposition and Barnato was made a life governor of the consolidated company. Concerning the negotiations which ended the fight, we find the following story, which is probably not strictly true, but at least has the air of truth about it:

"It was the evening of a day nearly 10 years ago when three men who held the chief interest in the diamond mines at Kimberley sat down together to arrange the terms of the projected amalgamation. The three were Mr. Cecil Rhodes, Mr. Alfred Beit and Mr. B. I. Barnato, of the Kimberley mine. Each one had a concession he required from the others, but the requirements of the last two are of no public interest. The concession Mr. Rhodes required was entirely different. It was this: 'I want the power to go to the north to carry out the expansion there, and I think the company might assist me in the work. I believe everything they give will be returned; but even if it were lost, it is a very fair case for the doctrine of ransom.' In other words, Mr. Rhodes insisted on getting the power to use the profits of the De Beers mine for the acquisition of the unoccupied regions of the north. Mr. Beit said little, but supported Mr. Rhodes; but the notion of using the diamond mines to create an empire did not recommend itself as good business to Mr. Barnato, even when it was backed by Mr. Rhodes. Mr. Barnato was amused at this proposal, and argued against it for a long time. But Mr. Rhodes was determined to have his way, and insisted on their agreeing to his conditions, as he had agreed to theirs. He sat there with them all night, and till four o'clock in the morning. At last the other two gave way, Mr. Barnato observing, 'Some people have a fancy for this thing, some for that thing, but you have a fancy for making an empire. Well, I suppose we must give it you.'

Another story, not altogether probable perhaps, which is current in London is that some years ago, when the company had 220,000 carats of diamonds to sell, Mr. Barnato made Mr. Rhodes an offer for the lot in one parcel. Mr. Rhodes, having considered the offer, replied, "Yes, you shall have them for that on one condition." "And what's the condition?"

"That you let me see a sight no human eye ever saw yet." "What's that?" inquired the puzzled dealer. "Why," said Mr. Rhodes, "a bucketful of diamonds in a heap." "Done," exclaimed the buyer, delighted to have the diamonds on his own terms. So they poured the stones all together into a bucket, and emptied the bucket in a heap and gloated over the sight, and had it photographed. Mr. Rhodes' laugh came when he had the diamond market to himself for six weeks, during the time required for resorting the diamonds into their 160 classifications.

An estimate of his character given by a financial paper speaks of his quickness in seeing an opportunity and his promptness in taking advantage of it; forming his judgment not after a logical consideration of cause and effect, but arriving at a conclusion with a leap. His mastery of figures was unique; and here, again, the mental operation was quite original, and perhaps it is not too much to say that estimates thrown out after a moment's thought—estimates that, as a rule, were justified by time—were arrived at by a process that the author of them could not have explained. For matters of routine he had no taste whatever, but nothing ever escaped his notice. Whatever he took in hand, he always displayed the same earnestness, and he always played to win. He would throw himself heart and soul into a game of cards, in which perhaps a sixpence was involved, to the same extent as he would if a deal in which millions were at stake were being discussed.

It may be added that his memory was extraordinary, and that he seemed never to forget the most trifling incidents. He had his good side too, and was generous in an impulsive and careless fashion. Notwithstanding the great wealth that he secured, appeals from old friends whose lot had been less fortunate were never made in vain. Intimate associates know that he gave away large sums of money in cases that, after investigation, he found to be deserving, but two stipulations were invariably insisted upon—"Don't tell anyone about it" and "Don't burden me with your gratitude."

The enormous wealth with which Mr. Barnato was credited at the height of his prosperity shrunk rapidly after the collapse of the boom. How much of it he kept in South African enterprises is not definitely known. It must have been a large proportion, although he is believed to have invested a sufficient sum in real estate and solid securities to make him still quite a wealthy man, though nothing like he would have been could he have sold out at top prices. This, of course, he could never have done, since any attempt to realize on a large scale would have broken the market at once. When the boom began to collapse, he is credited with spending a very large amount of money to support the market. He must have foreseen the break; but, shrewd as he was, he seems never to have looked or planned very far ahead. He was of the present, living in and acting for the present only, with very little regard for the future.

The extent of the shrinkage in his nominal fortune, so far as it was invested in his own securities, is shown by a table prepared by the *London Economist*, which includes 18 of the stocks of what are known as the Barnato companies. The par or face value of their stocks is \$39,018,440. At the height of the boom the nominal or selling price of the stocks was \$171,685,000. At the quotations of the week ending June 19th the selling value had fallen to \$58,215,000, showing a loss of \$113,470,000, or 66%. How large a proportion of these stocks was held by the public and how much by Barnato Brothers is uncertain; but a loss of two-thirds is a serious matter to the largest fortune. Mr. Barnato was known to be a large owner of De Beers Consolidated shares, which he held as an investment, quite apart from his Witwatersrand stock.

Undoubtedly this shrinkage of his fortune was very much felt by him. He thoroughly enjoyed the reputation of being the richest man in London, with the consequence and social recognition which it brought him; and the loss of a large part of his wealth and the consciousness that his importance was passing away must have had a great effect on him. Indeed, the change might have disturbed a much better balanced mind than Barnato's.

THE GOLD MINING CONVENTION AT DENVER.

The attendance at this convention promises to be large, as delegates have been appointed by many States, cities and associations, and concessions have been secured from the railroads in all directions. As previously noted in our columns, the committee in charge of the arrangements has decided to lay down no very definite programme, believing that the convention should be left free to take its own course.

Under the call the temporary organization is provided for by the Executive Committee, with Governor Adams in the chair, but beyond this the committee will not go, except, perhaps, to suggest a programme for the three days, which the convention may or may not adopt. This suggestion will be the merest outline, keeping in view the main purposes for which the convention was called. The opening day, Wednesday, July 7th, is reserved for organization and the debate of one topic, "The Relation of the Federal Government to Mining"; the California delegation will doubtless be accorded the honor of opening the debate. The second day, Thursday, July 8th, must be largely devoted to sight-seeing in Denver, taking in the smelters, mine, machine manufactories and warehouses and the exhibits of mineral. The topic for the second day will probably be "The Treatment of Low-Grade Gold Ores." Prof. E. B. Kirby has been requested to prepare a paper on this subject, and it will probably suggest the scope of the discussion. The third day, Friday, July 9th, should provide for a wholesale visit to Gilpin and Clear Creek counties, in order that the delegates and visitors may see for themselves how the low-grade gold ores and the medium grade gold-silver ores are mined, concentrated and milled in Colorado. The closing session will be held Thursday evening in Denver, and at this session a call of the States will be in order for resolutions, etc.

Beginning with Saturday morning, July 10th, excursions to the several mining camps will be in order. The delegates from the respective camps will of course take charge of this part of the programme, which need not interfere with the proceedings of the convention proper.

A large number of papers has been offered to the committee, but time will probably permit the reading of a few only at the meeting.

THOMAS EGLESTON.

The course of events in the School of Mines, Columbia University, the past year, and the assumption of the emeritus grade by its senior professor, the subject of this sketch, have brought prominently forward his long series of distinguished services to technical science in general and to the institution with which he has for so many years been connected.

Professor Egleston was born in New York City December 9th, 1832, of an old New York family, whose members had served with distinction in the Revolution. He entered Yale College in 1850, graduated in 1854 and shortly after began his studies in metallurgy and mining in the *École des Mines*, at Paris, France, where he graduated in 1860. During these years abroad Professor Egleston became imbued with a love for the study of mineralogy and geology; the former has been his delight and recreation all his life, and the latter secured for him an appointment for some time in one of the museums of Paris, where he busied himself arranging the collections of fossils. The young student and engineer made many friends during his life in Paris, a number of whom are now leaders in mineralogy and metallurgy in France. On returning to America he was for a time in charge of the collection of mineralogical and metallurgical products at the Smithsonian Institution and also engaged in the practice of mining engineering, with headquarters in New York. The subject of a school of mines in New York had been vaguely and unsuccessfully agitated for some time before this, but in March, 1863, Professor Egleston drew up a plan and submitted it to the trustees of Columbia College. It met at the start with no great sympathy from some members of the board, but was finally adopted, and in the following December the appointment of a professor without salary was authorized, and the sum of \$500 for equipment was appropriated. February 1st, 1864, Mr. Thomas Egleston was appointed professor of mineralogy and metallurgy, which chair he has held up to the present, as he becomes emeritus July 1st, 1897. Dr. F. A. P. Barnard was elected president of Columbia in June, 1864, and took a great interest in the development of the School of Mines; the quickly succeeding appointments of Professors Vinton, Chandler, Van Amringe, Newberry and Rood firmly established it. Professor Egleston busily devoted himself to building up the work in mineralogy and metallurgy, and year by year has seen the collections expand and the work become more and more systematized. He has often been called upon for service outside of his professorship. In 1866 he examined and reported upon the geology and resources of a portion of Nebraska for the Union Pacific Railway surveys, and took with him a squad of his students. In 1868 he was a member of a commission to examine the fortifications of the country, and on three occasions, in 1870, in 1878 and in 1885, he was a member of the commission that annually verifies the assays and coinage of the mints. In 1861 Professor Egleston became a member of the Lyceum of Natural History, now the New York Academy of Sciences, and has been one of its supporters for over 35 years. He was a prime mover in this connection in the erection of the beautiful monument to Audubon, placed by the Academy in Trinity Cemetery in 1893. Professor Egleston was one of the founders of the American Metallurgical Society, and year in and year out has stoutly advocated the introduction of the metric system. At the inception of the American Institute of Mining Engineers in 1871, Professor Egleston became an earnest worker in it, and was chosen one of its first board of managers. In 1872, 1873, 1874, 1877, 1878, 1884 and 1885 he was a vice-president, and in 1887 he was elected president. Many papers scattered through its *Transactions* attest the deep interest felt by him in its success. Professor Egleston has issued, in addition to these and numerous other papers in technical journals, several general works in mineralogy and metallurgy, and has been a prolific writer, especially in the latter field. His papers are marked by close and minute observation, and by the careful record of details. While the reader is at times impressed with the somewhat excessive amount of the latter, and by the fact that greater discrimination might have been exercised between essential and non-essential matter, yet it is fair to say that success or failure in metallurgical processes may depend upon apparent trifles, and that a record may perhaps best err on the side of fullness.

Professor Egleston has always been a faithful and devoted instructor, and has won the respect of his students in all his years of work by his sincerity. His French training in a measure led him to establish a somewhat greater official barrier between himself and his students than is often the case in American schools, but few, if any, failed to appreciate that a singularly kind disposition was behind his rather severe manner, or that he always endeavored to be strictly just. In the lecture-room he has been a rapid speaker, whose thoughts seemed to crowd for utterance. He sometimes outran his speech and led to irrelevant statements, of which the professor himself was entirely unaware. He has, however, often developed a pithy conciseness of speech, and not a few of his sayings, current among his old students, have the wit and force of proverbs.

In addition to his strictly professional work Dr. Egleston has interested himself in not a few philanthropic enterprises, giving them much time and attention, and showing here again his kindly disposition and the energy which he displayed in every field which he entered.

The failure of Professor Egleston's health three years ago led to the partial suspension of his activities, but after a brave struggle to perform his duties with insufficient strength, he was forced in December, 1896, to ask the trustees to retire him to emeritus grade, and this was authorized and, as earlier stated, took effect July 1st, 1897. All of Professor Egleston's old students and friends will wish him many years of work still, in which with restored health and free from the routine of the classroom, he may devote himself to the pursuit of his favorite lines of work.

THE LAKE OF THE WOODS GOLD-FIELD.

Written for the Engineering and Mining Journal by T. A. Rickard.

The discovery by Marcus Powell of the Richardson mine in Hastings County, Ontario, on August 15th, 1866, may be considered the birthday of the gold-mining industry of Ontario. For the quarter of a century succeeding that event development has been feeble and sporadic, but to-day a renewal of vigorous growth gives promise of a more substantial fruition. A glance at the map shows the widely scattered distribution of existing centers of activity and ill-defined boundaries of possible future development. No small part of the Dominion is covered by the exposures of that Huronian formation in which the gold of Ontario has been found. The same gold-bearing country extends beyond the international boundary southward into Minnesota. From Lake Temiscamingue, on the 80th meridian as far as the Manitoba boundary, on the 96° line, gold has been discovered in pre-Cambrian rocks, and from Itasca County, Minnesota, to Lakes Miminiska and Winnipeg, north of the Canadian Pacific Railway, gold mining is now being prosecuted. These limits are 900 miles apart one way and 300 the other, enclosing, therefore, an area of no less than 270,000 sq. m. The Lake of the Woods District lies in the western part of this territory. The attention which it has recently received springs from the success of the Sultana and Mikado mines, in the vicinity of Rat Portage. Fig. 1 is a sketch map of this district.

Prospecting on the Sultana location was begun by John F. Caldwell in 1890, but real mining did not commence until March, 1892. The early history of this mine was checkered with failures and disappointments, and it was only during the past year that a dividend-paying stage was attained. The mine is said to be producing now about \$7,500 per month from the crushing of 520 tons of ore. The Mikado, at Shoal Lake, was discovered by an Indian named George Green in March, 1896, and work was commenced on August 20th, 1896. In September and October two trial lots of ore, amounting to 297 tons, were treated at the Rat Portage Reduction Works for a yield of \$8,886 in gold. The mine is being actively developed and a 20-stamp mill is in course of erection. A number of other mines, such as the Regina, Yum Yum, Cornucopia, Mascotte, etc., are worthy of serious mention, and behind them come a number, daily increasing, of prospects whose value is as yet quite undetermined.

Behind recent successes there is a background of unhappy enterprises, whose ruined shaft-houses and deserted mills should serve as a warning to those who rush in. From Rat Portage to Hay Island there extends

a series of scattered mines, whose operations about 15 years ago disturbed the quiet life of a fishing and lumber community. The Winnipeg Consolidated, Pine Portage, Heenan, Keewatin and Gold Hill properties, now idle, but in all likelihood soon to be revived, need not lead to the inference that the district has once been tried and found wanting; but they should at least suggest that success in newer ventures must be sought by avoiding the blunders there made.

The geology of this region, like that of the most of the Ontario gold-fields, is identified with the relation between the Huronian and the underlying Archæan. What the Wanaka schists of Otago are to the gold-fields of the South Island of New Zealand; what the black slates of the hills flanking the Sierra Nevada are to California, the Keewatin* schists are to the mines of Algoma.† Just as the andesite breccia characterises our newer gold-producing areas in Colorado, and slates and sandstones enclose the wealth of the older provinces of Australia, so also in Western Ontario the occurrence of gold has already become associated with a particular prevailing geological environment. This suggests the fact, so obviously disregarded a generation ago, that the existence of gold-bearing ores is confined to no one formation and identified with no single rock encasement; for the Wanaka schists are Archæan, the black slates of California are Jurassic, the Cripple Creek breccias are Eocene, and the slates and sandstones of Ballarat and Bendigo are Silurian; the record shows that gold lies within rocks whose age reaches from a geological yesterday to the very dawn of time.

* Keewatin is a town three miles west of Rat Portage, which has given its name to this part of the Huronian formation. The latter, of course, owes its name to Lake Huron, along whose shores it has a notable development.
† Algoma is often used to describe the western part of the province of Ontario. The gold region is variously named the Rainy River country, the Lake of the Woods and the Algoma goldfield.



THOMAS EGLESTON.

The Keewatin schists represent that formation to which Sir William Logan gave the name of Huronian when he discovered an unconformity between it and the underlying Laurentian. The Huronian of Canada is therefore the equivalent of the Algonkian of the United States Geological Survey. It is a formation already identified with some of the largest

ing place to gneiss and protogene in the Rainy River District, along the International boundary.

Before proceeding with the predominant geological features it will be necessary to glance at the physiography of the region. The country occupied by the Lake of the Woods, with its 14,000 islands, is beautiful and offers marked facilities to the miner. The Lake, with its tributary network of turbulent rivers and placid reaches of quiet water, occupies a table-land a little more than 1,000 ft. above sea level. It receives the drainage of 36,000 sq. m., equally divided by the British-American boundary. At its southern end it is fed by the Rainy River and its tributaries; at its northern extremity, near Rat Portage, it pours its overflow into the Winnipeg River, which in turn empties into the lake of the same name and so onward into Hudson Bay. The uniform appearance of the country, the endless repetition of shallow lake and gentle hill-slope, suggest the handiwork of a far-reaching agency. It is, as Dr. Lawson has happily phrased it, a partially flooded area of *roches moutonnées*. The traces of glacial action are everywhere apparent. Glacial striae, pointing south 40° west, are readily observable on the surface of the Laurentian granite. Some are splendidly preserved. These grooves are as frequent on the granite as polished faces are common on the finer-grained hornblende traps and schists of the Huronian. There is abundant evidence to support the idea that during the long succession of geological epochs succeeding the Huronian this area was above sea level and undergoing erosion. What material may have been deposited during periods of temporary subsidence was subsequently removed by the glacier and since the retirement of the ice sheet the surface has undergone practically no degradation.

The intimate relation between geological structure and the physiography of a country, observable in all mountain regions, is abundantly manifest here. The identity of shore line with the strike of the rocks is readily noticed, but there is also the much wider observation, due to Dr. Lawson, that the outlines of the Lake itself are "evidently determined by the locus of the contact of the Laurentian gneiss and Keewatin schists." Similarly, many islands have a core of granite and an encircling shore of schist. This is traceable to the hardening due to the contact of a metamorphic with an intrusive rock. But I would also suggest that the later agency of mineral solutions, finding a passage along the shattered country near the contact and depositing quartz to heal the rents, has repaired the rocks with a material harder than either the granite or the schist, and thereby has established lines of maximum resistance to weathering and erosion. This is confirmed by the observation that quartz veins occur for the most part along the rolling ridges whose axes approximately follow the lines of contact. The immediate result of these facts is seen in the discovery of many mines by prospectors who did not have to go ashore to find them.

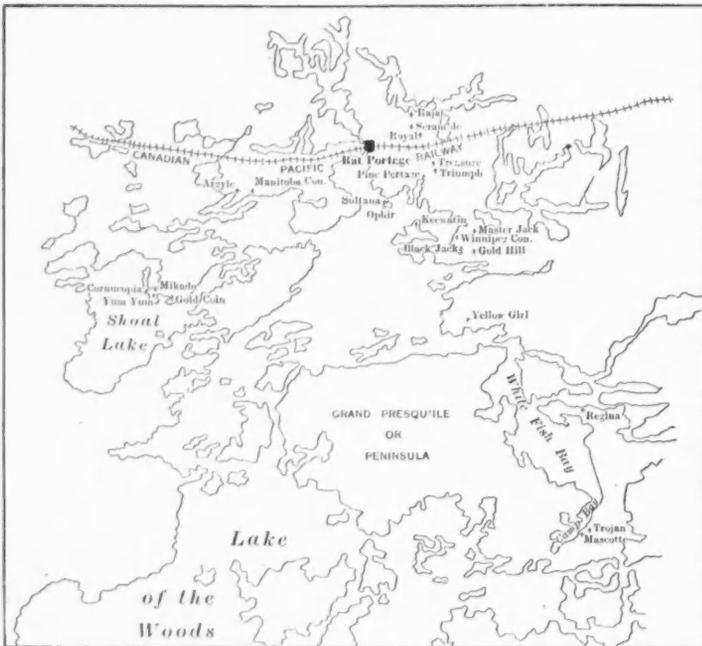


FIG. 1.—MAP OF LAKE OF THE WOODS DISTRICT.

ore deposits known, for in it are enclosed the iron measures of the Vermilion, Mesabi, Gogebic, Marquette and Menominee ranges in Minnesota, Michigan and Wisconsin. Within it also are found the massive deposits of nickeliferous pyrrhotite at Sudbury, and the silver mines of the Lake

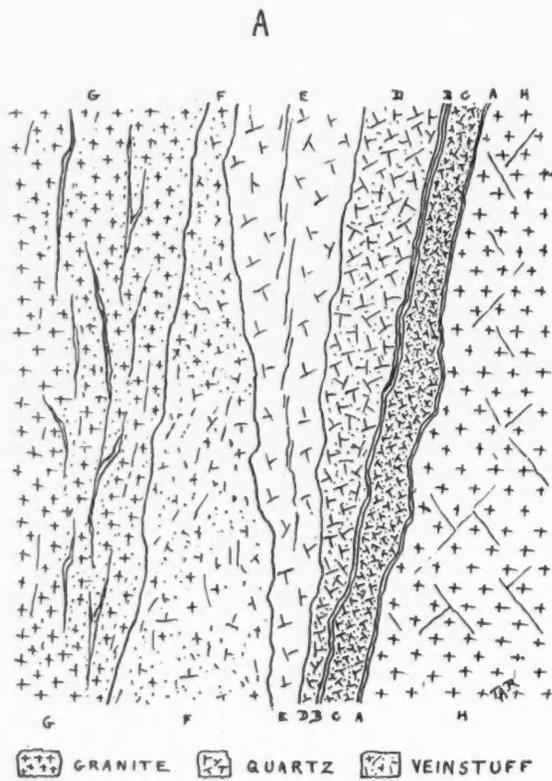


FIG. 3.

SECTIONS OF REGINA LODGE, LAKE OF THE WOODS DISTRICT.

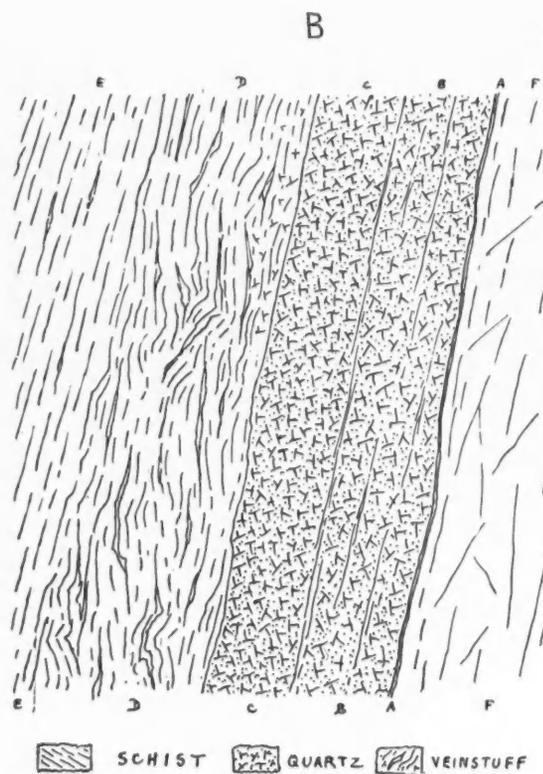


FIG. 4.

Superior shore. In the Lake of the Woods District, the Huronian has varied development and exhibits a differentiation which makes it difficult to describe the formation by any broad generalization. It receives its local name, Keewatin, from a notable series of hornblende rocks, which form the basal member of the formation and lie in contact with the granitoid gneiss of the Laurentian, the Archaem of Canada. These schists are associated with intrusive diabase from which it is often impossible to separate them. Overlying these are agglomerates and hydromica-schists. Southward these rocks are less notably prevalent, giv-

By paddling around in a birch-bark canoe the gold seeker detects the white quartz veins as they appear at the water's edge and subsequently traces them inland. For this reason the best prospected territory is also the most insular. Larger masses of land, such as the Grand Presqu'île, are yet practically unexplored.

The gold-bearing veins so far uncovered in the Lake District have a great variety of rock encasement, but it may be said generally that the formation prevailing at most of the mines is schist near granite; that is, the Keewatin schists in their approach to contact with the granitoid gneiss of the Laurentian or the much younger irruptive granite which penetrates both. On the Minnesota side the Caouchiching mica-schists lack gold discoveries as yet, the gold-bearing territory being entirely in

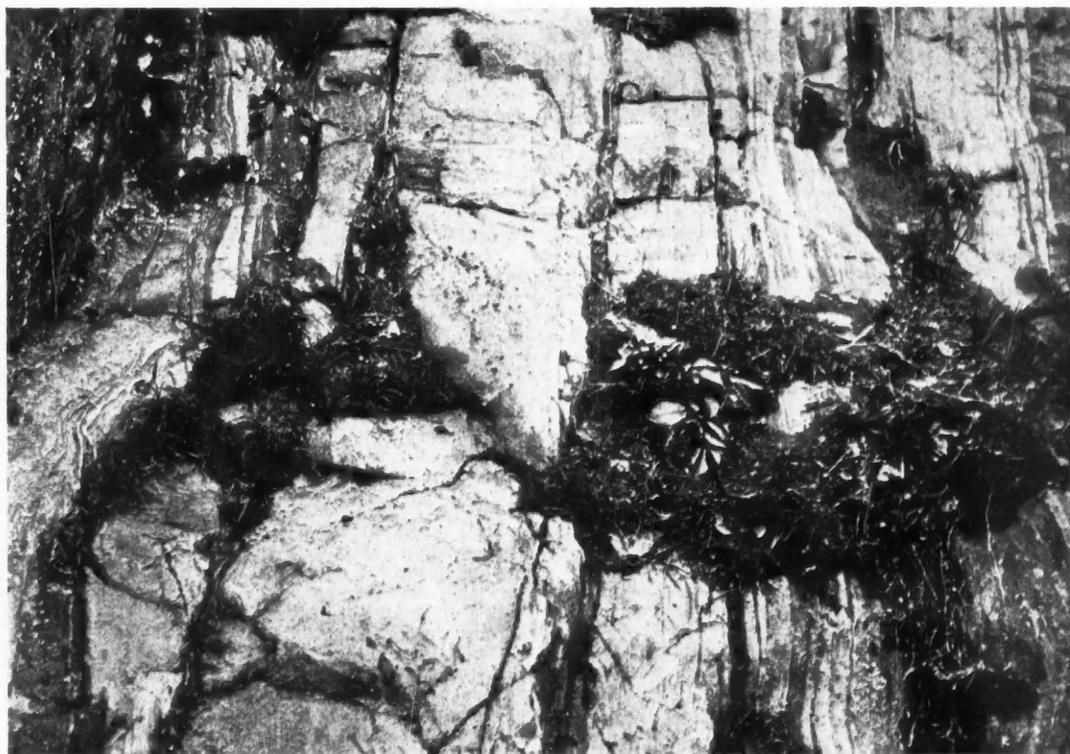
* This word is the Indian name of the Northwest wind—according to Dr. Andrew C. Lawson, *Annual Report*, 1885, Geological Survey of Canada.

Keewatin hornblende rocks.* These schists are of great variety, and for this reason have already undergone a most heterogeneous nomenclature. They have been interpenetrated by eruptives which follow their lamination and have become merged with them. Metamorphism has consolidated the schists into massive rocks, while pressure has developed cleavage in the intruding traps, so that there is a gradation from a massive to a schistose structure. It is particularly noticeable that the casing of the veins is highly schistose, even where the outer country has a blocky fracture. At the Triumph mine, for instance, I noticed a rock, in which fluidal structure certified to an igneous origin, but which was so fissile near the vein as to be properly regarded as a schist. A great deal of the schist and trap is so quartzose as to resemble the quartzites of other regions such as the DeKaap and Lydenburg in South Africa. By decomposition of their pyroxene and amphibole there have also been formed the chloritic schists which inclose some of the most typical veins. In these ways a great variety of rocks has already received recognition at the hands of the miner.

The granitoid gneiss surrounding and underlying the schists of this district is of coarse texture, and, near its contact with the Keewatin series, it is characterized by a marked foliation which dies out into rock quite devoid of such structure. At the Treasure mine, near Pine Portage Bay, a true granite passes into a foliated rock as it approaches a contact along which several veins occur. At a point close to the electric lighting plant of Rat Portage, where the lake empties into the Winnipeg River, there is an exposure of the contact between the two formations, the Keewatin and Laurentian, which has been the basis of discussions by Doctors Bell, Lawson, Dawson, Selwyn and other geologists. The accompanying photograph illustrates this interesting geological section. It is readily seen how the granite has intruded between the laminae of the

enormous extent. However in the course of professional work among half a dozen mines and twice as many prospect holes the writer has been able to gather scattered evidence whose interweaving leads to certain conclusions. Owing to the variety of rock enclosing the veins and the fact that many of them penetrate from one formation into another, there is ample opportunity to study the effects of a change of country upon the ore occurrence. The testimony thus obtained strongly emphasizes the experience of other regions as described elsewhere by the writer,* that the ore of veins is very frequently nothing more than altered rock in place.

The veins observed in the Lake of the Woods take the habit of the rock encasing them, this also meaning most frequently the rock by whose alteration they were formed. Therefore the structure of the ore in veins traversing granite presents distinct variations from that of veins enclosed within schist. The Regina lode illustrates this statement with particular force because it crosses from one formation into the other. It so happens that the shaft is sunk in the vicinity of the contact which, as seen in the longitudinal section of the mine workings, pitches north at a high angle. The levels north of the shaft are in granite, those south of it are in hornblende schist. The granite is granular and has a blocky fracture due to well-developed jointing. The schists are distinctly fissile where they encase the lode channel. The ore partakes of these characteristics in its course through first one and then the other of these rocks. Two drawings made by me on the spot will serve to illustrate these facts, and are given in Figs. 3 and 4. The former represents the breast, 5x6½ ft., of No. 3 level north. *H* is clean granite exhibiting joints. The lode includes divisions *A, B, C, D, E, F*, a width of 3½ ft. On the hanging wall the granite is more decomposed than on the foot side and is traversed by numerous irregular stringers of quartz which become less frequent with distance from the



Granite. Schist. Granite. Schist. Granite. Schist.

FIG. 2.—CONTACT BETWEEN KEEWATIN SCHISTS AND LAURENTIAN GRANITE, RAT PORTAGE, ONTARIO.

schist so that their true relations are obscured; nevertheless the real nature of that relationship is placed beyond doubt by numerous other sections obtainable in the district, exhibiting inliers of schist and the penetration of the Keewatin by cross-veins of granite.

In the above section we have an apparent transition between two conformable formations, but the foliation of the granitoid gneiss is not a remnant of original sedimentation, nor is the parallelism with the lamination of the schist a conformity of bedding planes. The broken and jagged contacts to be seen in many places in other parts of the Lake of the Woods evidence this, so that I agree with Dr. Lawson, who has held that the granite became plastic subsequently to the consolidation of the schists, which, it must be remembered, are the basal member of a series of rocks of great thickness.

The schistose hornblende rocks, lying in contact, as we have seen, with the granitoid gneiss, are succeeded by others in which diorite and diabase occur interbedded, and also in the form of dikes cutting across them. The granitic bosses which break through the Keewatin series are composed as a rule of a red biotite granite of coarse texture, which when it merges into the older Laurentian, as it often does, loses its color and becomes foliated. These masses of irruptive granite are in turn penetrated by dikes of felsitic character, as, for instance, in the Regina mine, on Whitefish Bay. Dr. Lawson† has estimated the average thickness of the entire Keewatin series at about 24,000 ft.

As to the vein structure, it would be unsafe to generalize much regarding the ore occurrences of a district so slightly developed and of such an

vein. In Fig. 3 *AA* is a calcite seam, from ¼ to ½ in. wide. It is peculiarly persistent and reappears again and again in the various mine workings, lining one or the other of the walls of the vein, usually the eastern; *CC* is a width of 4 in. of very dark calcedonic gold-bearing quartz; *BB* is a stringer of barren white quartz, averaging 1 in. in width; *DD* represents 4 to 7 in. of mottled quartz carrying gold; *EE* is an irregular band about 15 in. of massive white quartz poor in gold, while *FF* is granitic vein filling of about the same size. It is evident that this granitic material *FF*, with its irregular veinlets of quartz, is as much a part of the vein as is the barren massive quartz band *EE*. Fig. 4 represents the face of the No. 3 level south. The calcite seam is seen along the *AA*; *BB* and *CC* shows 2 ft. of dark laminated gold-bearing quartz; *DD* is an equal width of included country carrying numerous quartz stringers and also gold-bearing; *EE* and *FF* represent the enclosing schist, that on the hanging being evidently most fissile. By contrasting these two sections, more particularly by candle light underground, it was evident that the structure of the vein was suggestive of the habit and structure of the rock enclosing it, and that within the vein itself there yet remained traces of the rock by whose decomposition and replacement the ore had been formed.

At the Sultana mine, as in less important properties, gold has been found to occur in the encasing schist no less than in the clean quartz and it becomes at once evident that commercial rather than scientific distinctions determine where ore ceases and country begins. Too much stress cannot be laid on this fact in a new district. The association of gold with quartz has by past experience become so firmly imbedded in the miner's consciousness that the presence of the one is held indicative of the other. It is true that the two are so linked together in mining and yet it must be

* H. V. Winchell and U. S. Grant. Preliminary Report on the Rainy River Gold Region, 1895.
† Report C. C., 1885, Page 108.

"Vein Walls," Transactions of the American Institute of Mining Engineers, Vol. XXVI.

remembered that in several modern mining regions gold is found otherwise accompanied. At Cripple Creek, in Colorado, in the Black Hills of South Dakota, and elsewhere, the amount of visible quartz in gold-bearing ores is so small as to have misled early development. In the Lake of the Woods I have found by actual assay of samples that the white clean quartz is often poorer in gold than schist carrying an apparently unimportant proportion of quartz.

In the Lake District the iron and copper pyrites of most gold regions occur, although in a small percentage. I have generally observed that iron pyrite is often plentiful in the poorest ore and the encasing country, so that a notable amount of it is not necessarily a good indication of value. Galena and zinblendende are sparingly distributed. Bismuthinite characterizes the Mikado ore, and molybdenite is frequently seen in that of the Regina. The gold has a bright luster and is crystalline. It has not, therefore, the appearance peculiar to the gold derived from the decomposition of tellurides, nor is there reason to believe that complex mineral combinations will prove an obstacle to cheap ore reduction. Nevertheless the finding of hessite at Pine Portage and nagyagite in the Huronian mine, together with the occurrence of sylvanite in several lodes on the north shore of Lake Superior, should prompt millmen to carefully examine their ore for those compounds of gold and tellurium, the failure to detect the presence of which may lead to lamentable errors, particularly in concentration or in the roasting which usually precedes the leaching of concentrated pyrites.

Reference has already been made to the occurrence of gold-bearing veins in the close neighborhood of the contact between the granite and the schists. This is one of the most apparent features of the region. The geological map, by indicating the places where the Laurentian abuts against the Keewatin formation, and the later granite eruptions break through these same rocks, shows the points where the chief centers of mining activity already exist, and suggests places in which mines may cluster in the future should the development of the region prove successful. The finding of gold under such conditions is in accord with experience elsewhere. The occurrence of gold in veins near the contact of granites and metamorphic rocks, or in a formation such as the Keewatin schists, whether the quartz veins penetrate them in directions across or conformable to their strike, is not at all singular. It may not be out of place to point out that the chloritic schists enclosing enormous masses of low-grade ores in the Black Hills are of an age which, together with their petrographic character, strongly suggests their identity with the Keewatin series. The schists enclosing the Homestake and Deadwood-Terra lodes, of the Black Hills of South Dakota, are unconformably overlain by the Potsdam sandstone, a member of the Cambrian, and thus occupy a similar stratigraphical horizon. Nor, it may be added, is South Dakota so far away from Minnesota, into which the Keewatin series extends almost unbroken from Ontario. The Silurian schists which at Harrietville, in the Australian Alps, enclose quartz veins not unlike some I have seen lately in the vicinity of Rat Portage, bear a strong resemblance to certain portions of the Keewatin. The Wanaka series in Otago in the South Island of New Zealand may also be quoted. Although their character is quite distinct from that of the Keewatin, nevertheless as pre-Cambrian schists enclosing gold their mention is pertinent. Moreover, there are certain narrow bands of rock in the Lake district which remind one of them, for example, in the railroad cuts three miles east of Rat Portage, where a schist marked by much interfoliated quartz recalls sections to be seen on the wagon road between Waipori and Lawrence in the gold-field of Otago. Comparisons such as these should prove suggestive. They indicate, as daily experience in the mine does, that it is the structure of the rocks rather than their composition which determines the place of ore deposition.*

Addition to the Niagara Falls Plant.—The Niagara Falls Power Company has just awarded contracts for important extensions to its powerhouse and wheel pit.

Electric Transmission of Power.—Three interesting papers on transmission of power were recently read before the British Institution of Civil Engineers. Preece states that if coal costs only \$1.25 per ton for transportation 100 miles, this is less than the interest on the capital required for construction of plant to transmit electrically, but other advantages of electric transmission are pointed out. Ellington writes on hydraulic transmission and claims an efficiency of 75% over an area of 4 sq. m. served from one pumping station, admitting, however, that this efficiency may drop to 50%, depending on the application of the power. The third paper, by Hopkinson, refers to five methods of power transmission. He decides on compressed air as best for tunnel work, but recognizes the advantages of electricity in its flexibility. He also gives a prominent place to hydraulic transmission.

The Duty on Mica and the Electricians.—The tariff on mica is engaging the lively attention of those interested, and a vigorous campaign against the proposed increase of duty on this useful mineral is in progress. The present duty on mica is 20% *ad valorem*, and through the representations made by the opponents of what is thought to be an unreasonable duty, the Committee on Finance reported to the Senate an amendment to the new tariff bill providing for 40% *ad valorem*, or double the present duty. Other amendments have been offered, which have for their object considerable increase in the duty. The fact that the soft mica best suited for electrical work is not produced in this country would seem to render any great increase in the duty unwise, as it would entail an unnecessary hardship upon the manufacturers of electrical apparatus, while affording no benefit to the American mica industry. Messrs. Eugene Munsell & Company, New York, in a circular letter urge all interested to write strong letters to their senators in favor of securing a rate nearer the present duty, or to support the amendment of the Finance Committee, which is the least objectionable of the propositions made.

*Among the material available for those interested in the district are the government reports of Dr. Lawson, 1885, the Bureau of Mines, 1895, and Dr. Coleman, 1897. Also a paper by Professor Hamilton Merritt, in the *Transactions of the American Institute of Mining Engineers*, 1895.

MODERN AMERICAN NICKEL REFINING.

American methods of nickel refining differ so essentially from European methods and are so superior to them in several important respects that they deserve detailed consideration. We have accordingly made the following abstract from an excellent article by Titus Ulke published in the *Zeitschrift für Electrochemie*:

The ordinary matte produced by smelting Canadian nickel-copper ores in water jackets and averaging 20 to 25% copper, 18 to 23% nickel, 25 to 35% iron and 20 to 30% sulphur, is treated in one of the two following ways, according as the aim is to secure an alloy of copper and nickel or the pure metals separately:

1. If a nickel-copper alloy is desired, the matte is concentrated by Bessemerizing into high-grade matte, which is roasted and reduced to the copper-nickel alloy. The capacity of the Canadian Copper Company's Bessemer plant, at Sudbury, Ontario, is about 25 tons of cupola matte supplied, or 15 tons Bessemer matte produced in 24 hours. In the converters, of which there are three in the works, iron is almost entirely removed, the sulphur lowered to about 12% to 15%, and the copper and nickel raised to about 43% and 40% respectively. The converter slags, which average 2% copper and 3½% nickel, are returned to cupolas for remelting. Other details of this process are described in *The Mineral Industry*, Vol. III., pp. 459-460. A fair average analysis of Bessemer matte is as follows: Copper, 43.36%; nickel, 39.96%; iron, 0.3%; sulphur, 13.76%; silver, 7 oz. per ton; gold, 0.1 to 0.2 oz. per ton; platinum and palladium, 0.5 oz. per ton. The alloy made therefrom is used in the manufacture of German silver and contains about 51% copper and 48% nickel, with very small amounts of iron, silica, carbon and precious metals. It is only produced in limited quantities, compared with ordinary matte, as the latter is in much greater demand.

The writer, in an article written for the *Engineering and Mining Journal* of January 30th, 1897, proposed to refine Bessemer matte electrolytically, by dissolving it in dilute sulphuric acid and removing the copper by an electric current of low voltage, and then increasing the voltage so as to electro-deposit the nickel free from copper, while all the precious metals are recovered from the slimes. Ordinary matte is now quoted at 8.75c. and 3.40c. per lb. respectively for the nickel and copper in the matte, so that Sudbury matte containing, say, 20% nickel and 20% copper can be laid down at Hamilton, Canada (near Niagara Falls) for about \$53 a ton, including freight. Contracts can be closed at this figure for a monthly supply of at least 400 tons of such matte. In this case nothing is paid for the content of precious metals because their quantity is too small. The cost of Bessemerizing the common matte is said to be only \$12 to \$15 per ton, which seems a low figure.

The cost of Bessemer matte, containing 800 lbs. each of nickel and copper to the ton is \$125 to \$180 per ton at Sudbury, the price largely depending on the quantity purchased and the amount of precious metals (gold, silver, platinum and palladium) in the matte. Taking the present market prices of nickel and copper, there is a difference of \$150 to \$200 a ton between the price of the matte and the refined product, which will amply cover the cost of electrolytic refining and still leave a considerable margin of profit. Moreover, electric current for refining can be furnished by the Cataract Power Company at Hamilton for about \$20 per horse-power year of 24 hours' daily service. Experimental electrolytic works to treat 1,000 lbs. of Bessemer matte daily are now being erected at Cleveland, O., by the Canadian Copper Company.

2. If nickel oxide or metallic nickel is desired, the ordinary matte is smelted in a cupola together with saltcake and coke. The reactions occurring in the furnace during the smelting are as follows: The saltcake is reduced to sodium sulphide, which unites with part of the iron and copper, to form so-called "tops," and is tapped, together with the more nickeliferous "bottoms," into pots and allowed to cool. The tops, consisting of highly cupriferous and ferruginous matte, are then separated by hand from the heavier bottoms.

The weathered tops from the above process are smelted, together with a little matte and sufficient coke, in a second cupola, so as to again produce tops and bottoms. In this furnace the soda in the tops takes up some sulphur from the nickel in the matte and forms a sulphide, which unites with part of the iron and copper. This process is termed top smelting.

In bottom smelting, the bottoms from the first and second cupolas are charged with saltcake and coke into a third cupola, in which tops are produced and final bottoms—composed of a highly nickeliferous sulphide. The latter is roasted with salt in a reverberatory furnace and heated to a temperature which will enable as much nickel oxide as possible to form, together with chloride and sulphate of copper and silver. The roasted mass is then leached to separate the insoluble nickel oxide from the chloride and sulphate solution. The latter contains nearly all of the copper, silver and palladium in the roasted bottom. Formerly iron plates were placed in the solution and a cement-copper was produced, containing 80% of copper with 60 oz. of platinum, and 40 oz. of palladium per ton. Now it is treated by a new method to precipitate out the precious metals, principally platinum and palladium, with some silver and rhodium, and leave the copper in solution. The copper solution is then sprinkled on hot tops or treated with scrap iron to produce cement copper.

The leached nickel oxide is reduced with coke at the Orford Works, near Constables Hook, N. J., to crude nickel, which is cast into anodes of the following composition: 95 to 98% nickel, 0.2 to 0.6% copper, 0.75% iron, 0.25% silicon, 0.45% carbon, 3% sulphur and 0.5 oz. platinum per ton. These anodes are sent to the Balbach Works to be electrolytically refined. There is reason to believe that a cyanide bath is employed in this process. Refined nickel is produced containing 99.5 to 99.7% nickel, 0.1 to 0.2 copper, 0.03% arsenic, 0.02% sulphur, 0.1% iron and traces of platinum. The anode scrap and slime are partly treated to recover platinum, and are partly remelted into nickel anodes.

The final tops, which consist of sub-sulphide of copper and soda, are subjected to a leaching, which leaves copper sulphide as a residue, containing only traces of nickel and platinum, but nearly all of the gold and silver in the original matte. The sulphide solution obtained carries soda sulphide, hyposulphite, carbonate, etc., and is evaporated down into soda salts, which are added to the smelting charge. The copper sulphide is

reduced in reverberatory furnaces to blister copper and cast into anodes. The latter are then refined electrolytically by the ordinary multiple process in a sulphate bath. Electrolytic copper is obtained, and a gold-silver slime, which is added to a lead charge and cupelled down to doré bars. The doré is then parted by sulphuric acid in the ordinary way and cast into bars of fine silver and fine gold. The various stages of the above described process are perhaps shown more clearly in the annexed diagrammatic scheme.

Interesting facts were recently revealed by an examination of the status of the above alkaline sulphide process, also called the Bartlett-Thompson, the Orford, and the "Top and Bottom" smelting process. The method was first suggested by C. Schafhaul in 1839, followed by W. Jeffries in 1840, T. Bell, in 1842 (with a discrimination between tops and bottoms) and W. Gossage in 1845 and 1850. Nevertheless it is stated to have been perfected by R. M. Thompson and C. C. Bartlett, of the Orford Copper Company, while preparing nickel oxide for use by the United States government in armor-plate manufacture, and patents were granted to both of these gentlemen. Thompson's patents of January 10th, 1893, Nos. 489,574, 489,575 and 489,576, cover "the smelting of ores and mattes with alkaline sulphides in excess, whereby nickel sulphide is formed and sinks to the bottom of the crucible. The tops containing alkaline sulphides are used with crude nickel to form the sulphide. The operation is repeated until the separation is satisfactory. The crude nickel is formed by fusing matte with alkaline carbonates."

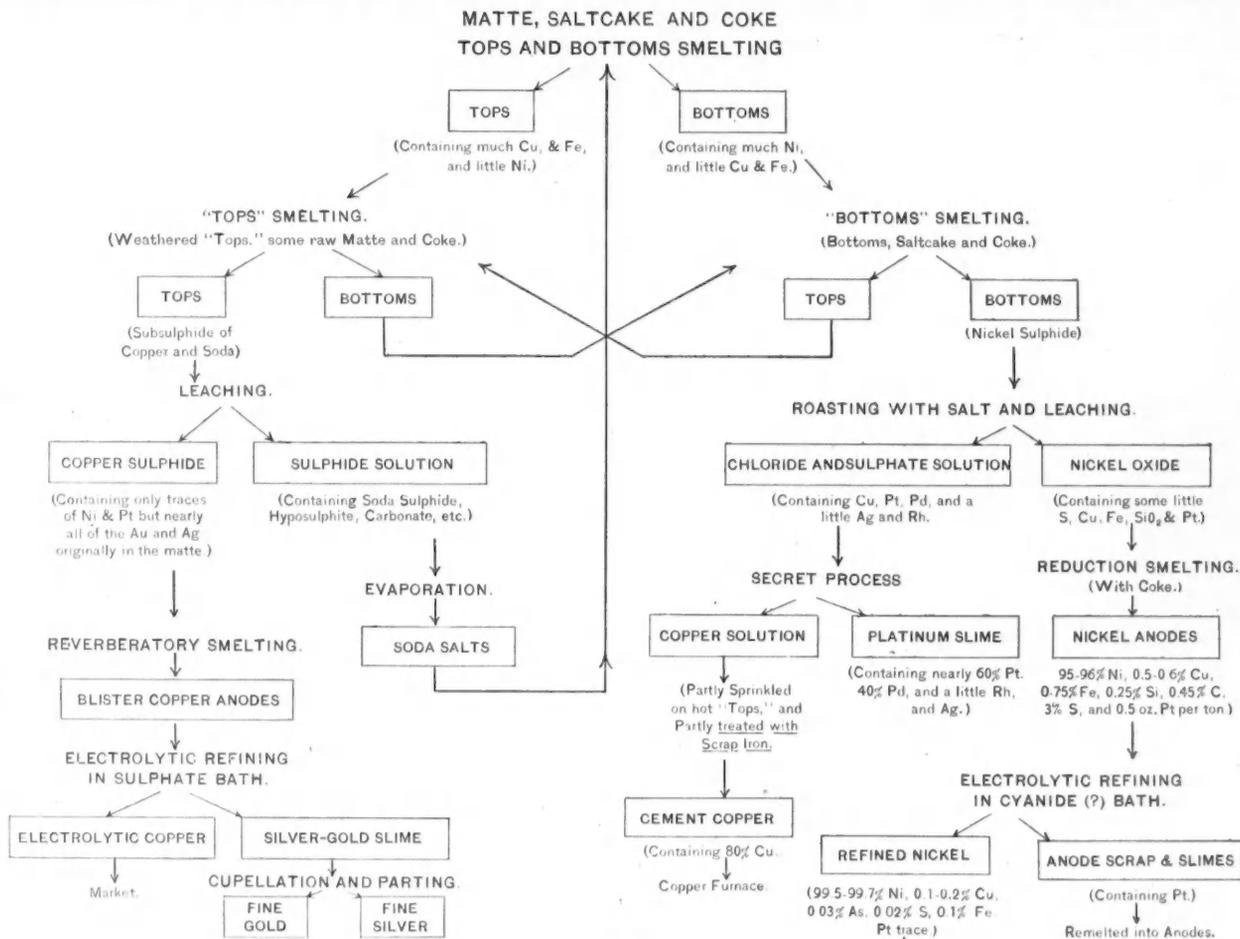
Bartlett's patent of June 13th, 1893, No. 499,314, covers "the smelting

chisel the metal, and the shearing of plates more than 1 mm. in thickness is as troublesome as the manipulation of so much tempered steel. It is an important fact, also, that these plates will neither break nor crack under the hammer nor under the punch. Considerably over 1,000 lbs. of such metallic nickel are now produced daily in Newark.

The usual difficulty of depositing a thick plate of pure nickel is the tendency of the deposit to peel off in parts, but this is overcome, it seems, when a cyanide bath is employed, because the cyanide prevents the formation of the thin film of oxide on the electro-deposited nickel, which is probably the cause of its peeling off. However, in cyanide baths, part of the platinum in the anodes is dissolved and is deposited with the nickel, thus causing a loss of the value of this platinum.

The main drawback of electrolytic nickel refining, however, lies in the large quantity of anode scrap produced, which often amounts to as much as 40% of the charge. This is the case even with anodes averaging as high as 96% of nickel, owing to their uneven solution and consequent disintegration.

A Heavy Bronze Shaft.—The Phosphor-Bronze Company, Limited, of Southwark, London, has recently supplied a tail-shaft forged in Bull's metal for a steam yacht which we believe is the heaviest forged bronze shaft ever fitted, says *London Engineering*. The finished diameter of the shaft is 6½ in., the rough weight 19½ cwt., finished weight 17 cwt. The shaft was forged from a billet 14 in. in diameter, weighing 24 cwt., and



DIAGRAMMATIC SCHEME OF THE ORFORD METHOD OF TREATING NICKEL-COPPER MATTE.

of ore or matte with niter-cake, saltcake, or alkaline nitrates, or carbonates, whereby nickel sulphide is formed and sinks to the bottom, and the repetition of this operation until pure nickel sulphide is obtained." In the British patent, No. 540, of February 10th, 1876, granted to Alexander Parkes, of Birmingham, England, Parkes states on page 3 line 3 *et seq.* of his specification that he smelts nickel ores together with carbon and certain fluxes and produces a sulphide of nickel. As a flux he uses, among other substances, copper pyrites and sulphate of soda.

In passing, it should be mentioned that the process of separating nickel from copper in ore and matte recently invented by N. V. Hybnette, of Brooklyn, United States Patent No. 579,111, consisting in fusing the mixed sulphides, treating the fused mass with sulphide of manganese, and thereby effecting solution of the copper sulphide in the manganese sulphide, allowing the nickel to subside and removing the supernatant sulphide of manganese and copper, was tried at the Orford Works, we are informed, but did not prove a success.

The electrolytic refining of the crude nickel presents but little difficulty if the proper precautions are taken. Both ammoniacal sulphate and cyanide baths may be used. It is, of course necessary to guard against the accumulation of copper, arsenic and iron in the nickel bath, as otherwise serious injury to the deposited nickel may result.

The Balbach Smelting and Refining Company, of Newark, N. J., has succeeded in electro-depositing nickel plates 20 x 30 inches in size and ½ in. thick, which are so tough and elastic that it is very difficult to

had to pass Lloyd's tests. It was therefore forged 10 in. longer than required, and test-pieces were machined from the end; two of these pieces tested by Mr. J. S. White, at Cowes, gave 28½ tons per square inch tensile strength, with 35 and 36% elongation on 6½-in. length. The tested diameter was ½ in. The uniformity of the alloy is shown by the breaking load, which was 19,593 lbs. in the one case and 19,590 lbs. in the other.

Geological Survey of West Virginia.—A bill providing for a geological survey of this State was passed by the Legislature at its last session. It put the survey under a commission made up of the Governor, treasurer, president of the West Virginia University, president of the State Board of Agriculture and the director of the West Virginia Agricultural Experiment Station, who serve without compensation, except actual expenses. They appoint as superintendent of the survey a geologist of reputation, and such assistants as they deem necessary. The objects of the survey are: An examination of the geological formation of the State, with special reference to its economic products; an examination of the soils and the adaptability to particular crops; an examination of forests; a study of the physical features of the State with reference to their practical bearing upon occupations, industrial development and material prosperity of the people; the preparation of special geological and economic maps to illustrate the resources of the State, and the preparation of special reports on geology and State resources.

THE UINTA AND THE UNCOMPAGRE ASPHALTITES OF UTAH.

Written for the Engineering and Mining Journal by Our Special Correspondent.

Recently the Washington news reports have contained frequent mention of the contest over the opening for settlement, first of the Uncompagre, later of both that and the Uinta Reservation, in the northeast corner of Utah, or rather near the corner of the State where Wyoming forms the northern boundary and Colorado the eastern. The keen interest aroused was mainly due to the unique occurrence of asphaltites in nearly vertical fissures, and their economic value, owing to their remarkable purity, there being nothing in nature with which to compare them; in less degree to the wide stretch of choice timber along the northern part of the Uinta Reservation; to the rich farming area, extending up the Duchesne River for 50 miles from its mouth, and to hopeful showings of gold and copper.

While the maneuvers to secure title to these valuable asphaltites are here out of place, it is to be noted that on June 3d, 1897, a measure passed both houses of Congress providing for the allotment of homesteads for the Indians in the Uncompagre, and for the opening of the remainder of the reservation to settlement on April 15th, 1898, excepting, however, land on which are these hydrocarbons. The possession, or location, of these deposits was reserved for future congressional action, so the question whether these tracts are later to be leased by the government, or can be located on as other mineral lands, will be again fought over. No action was taken concerning the Uinta Reservation, and, as the Uncompagre agricultural lands are quite limited, it is probable that after the Indian allotments there will be but little left for settlers.

Parenthetically, the Geological Survey has issued a decree fixing the correct orthography as "Uinta," not "Uintah," and the asphaltite of widest distribution and greatest commercial moment is mineralogically styled uintaite, though gilsonite—from S. H. Gilson, a second or later discoverer—is the common trade term. It is hard for many to part with this final "h," particularly as only the latest government maps adopt this up-to-date orthography. Some assert that it is a gross interference with State rights, for Uintah is the name both of a county and town, and neither will part with its "h" without war. Asscon expect Utah to be peacefully abbreviated to "Uta."

Two companies have acquired ownership to valuable asphaltic deposits, by some means not altogether understood in the West, though varied tales have been told in type of how it happened, each differing materially, according to environment and bias. By a special congressional or other providence, or happy combinations, the Gilsonite-Asphaltum Company, of St. Louis, somehow secured possession to eight full claims on the strike of a gilsonite vein; or about two miles in the heart of the Uinta Reservation, three miles distant from the military post of Fort Duchesne. "The Strip" has a stirring history, foreign to the purpose of this article. It is alleged that the royalty stipulated in the special act of Congress cutting "The Strip" out of the Uinta, to be paid annually for the benefit of the government's wards, has never been paid nor has any accounting been made. On the other hand, the Assyrian Asphaltum Company, of Chicago, is the fortunate residuary legatee from the erratic jog of a mile to one side left in running a portion of the west line of the Uncompagre boundary and in meanderings of the southern limit of the Uinta Reservation.

From an interesting monograph on these deposits by George Homans Eldridge, given in the *Report of the Geological Survey for 1895-6*, extracts are taken on the rock and vein formation. In the Uinta Basin are a succession of vertical cracks through sandstone, shales, etc., filled with uintaite. These fissures vary in width from a fraction of an inch to 20 ft., and in length from a quarter of a mile to 10 miles or more. The walls are smooth and regular. In mining the material a pick is the only tool used, blasting being unnecessary, if not hazardous. All the veins are approximately parallel, their strike varying from N. 35° W. to N. 55° W. and, with the exception of an occasional short transverse throw, they are absolutely straight in trend. A peculiarity attending the occurrence of these fissures is that though generally parallel with the strike of the strata and the trend of the mountain ranges, in a few instances they cut the strata diagonally to the strike. None of the veins show the irregularities of fissures formed by the tearing asunder of strata, nor are there the evidences of the walls having rubbed against each other that would be apparent had their occurrence been due to displacement.

It has been suggested by Mr. Henry Wurtz—after whom one of the inferior hydrocarbons is named—that these cracks may be shrinkage fissures, due to a former condition of great heat, followed by irregular cooling. This view is not entertained by Mr. Eldridge, who advances the probability of their having been formed in the folding of the strata of the Uinta Basin syncline, the strata being torn asunder from below upward, instead of as in an anticline, from above downward.

These hydrocarbons occur over an approximate area of 10,000 square miles. Uintaite is found chiefly in the Uncompagre; though of the two properties now worked the one owned by the Gilsonite Asphaltum Company is in the north angle between the two reservations, while the Assyrian Asphaltum Company's uintaite mine is in the oddly formed niche to the south, left out of the boundary of either reservation. The associate members of the hydrocarbon series, elaterite, wurtzite and albertite, occur in the southern part of the Uinta; ozokerite—mineral wax—appears in pockets in the vicinity of Soldier Summit, the divide between the Great Basin and the Colorado River; the asphaltic limestones, so far as exploited, are found in Spanish Fork canyon and vicinity, while the asphaltic sandstones are widely distributed throughout this area.

The Duchesne vein, owned by the Gilsonite Asphaltum Company, three miles east of Fort Duchesne, has a trend N. 40° W., is 3 to 4 ft. wide in the mile and a half tested, beyond which it gradually narrows, though it is traceable for three-fourths of a mile in either direction. Mining is carried on at a depth of 200 ft. and the management states there are fully 300,000 tons of uintaite in sight. Supposing that the vein continues at least 1,500 ft. in depth, equal to the proven thickness of the formation as shown in the canyon of Green River, the estimate of probable tonnage is 2,000,000. The average output at present is 100 tons a month, which is limited only by the demand. From Fort Duchesne the material is

hauled by wagon 90 miles to Price station, on the Rio Grande Western Railway, thence shipped to St. Louis and elsewhere.

Mr. Eldridge when engaged in field work found 25 separate and distinct uintaite cracks or fissures on the Uncompagre, besides the Duchesne vein, of which detailed mention is given.

The Gilsonite Asphaltum Company is capitalized for \$500,000. C. O. Baxter is president; W. F. Nolker, vice-president; H. E. Naffy, secretary-treasurer, all of St. Louis, and B. Seabold is superintendent, his address being Fort Duchesne, Utah. The New York office is 82 John street, and A. Brunsch, Hamburg, Germany, is the European agent.

The uintaite vein of the Assyrian Asphaltum Company is at Pariette, near the southeast corner of Wasatch County, in the cape or promontory of the public domain, a valuable tract that oddly separates the two reservations. It is known, colloquially, as the Culmer vein, and is 10 in. to 2 ft. wide. From its northwest extremity it is explored two miles, to the west line of the Uncompagre Reservation, though the vein is traced for eight miles, on its strike, to the southeast. In the two miles worked it is stopped out—if the term is orthodox—15 to 155 ft. deep; regardless of the narrow width, even when but 10 in., the uintaite is all removed without breaking any wall rock. The product is shipped to Chicago, where the company has extensive works. There is also quite a plant at Salt Lake.

The capitalization of the Assyrian Asphaltum Company is \$456,000, or 4,560 shares of a par value of \$100. The officers are J. P. Mallette, president; G. F. Culmer, vice-president and general manager; J. F. Hill, secretary-treasurer, and the head office is 311 Tacoma Building, Chicago.

Uintaite mining is not without attendant dangers, the greatest difficulty being to supply good ventilation. To prevent the accumulation of fire-damp the walls are frequently washed with a copious deluge of water, to deaden the dust containing the explosive gases, and with underground lights ten-fold more care is taken than in a coal mine. Despite all precautions two disastrous explosions occurred in the Duchesne vein, the more recent in November, 1896, when two miners were killed underground and three freighters, standing 300 yards from the vein, were seriously injured.

Prof. H. Hirsching has analyzed numerous samples of uintaite and found a high percentage of light carburetted hydrogen compounds, free hydrogen and free oxygen. As the vein-filling is broken and disintegrated by mining, these inflammable and explosive gases are released. In the explosion of last November the vein was one mass of flames, and it was only after days of labor and the most strenuous efforts that the conflagration was extinguished.

Commonly uintaite is called gum asphaltum. As mined it is almost absolutely pure, in which respect it differs widely from the asphaltites of Trinidad or California. The government analysis of uintaite shows it to be 99.99 pure; in other words it is wholly soluble in benzine, turpentine or kindred hydrocarbon solvents. It contains: Volatile matter, 56.46%; fixed residue, 43.43%; ash, 0.10%.

Its economic value has hardly begun to be appreciated. One of its first uses was as a base for black varnishes, paints and baking japans. It is a perfect non-conductor and has no superior for insulating, being lighter, less friable and better in every respect than glass; it is valuable also for roofing material, while as a dip for pipe or wire the film it leaves prevents oxidation and resists the corroding action of acids. A recent use is a dressing for leather and in one form it furnishes a splendid imitation of patent leather. The writer can testify to its wonderful rejuvenating power when applied to obsolete shoes. A cheap by-product finds a market for coating fence-post, piles, railroad ties and the like. Its wonderful elasticity is shown by coating leather, tin or sheet iron with an uintaite solution, then bending or twisting the material into all kinds of shapes. So long as the leather or metal does not break it is impossible to crack the uintaite film.

The Uinta Basin has other hydrocarbons, attractive from their mode of occurrence and character, but they do not possess the economic value of uintaite. One, not classed by Mr. Eldridge, is styled utahite, possessing a distinctive fracture from uintaite, which is eminently conchoidal. Utahite is partially vulcanized and only about 40% is soluble, the remainder being fixed bitumen.

Albertite gives the same analysis as uintaite, though it is wholly insoluble; hence, of course, it has no economic value.

Elaterite—mineral caoutchouc—is partially vulcanized asphaltum. It is said to be the most elastic substance known. Some hold that it possesses many useful qualities, while others claim there is no place in the arts or trade that is not better filled by uintaite. According to its champions it has no equal as an ingredient in roofing mixes.

Of the cereous hydrocarbons ozokerite is the most important, while its occurrence is the most circumscribed. It is the mineral wax of commerce, readily selling for \$80 per ton in New York; it is used in making cathedral tapers. Bees are said to prefer ozokerite to wax of their own manufacture. Near Soldier Summit it was found in pockets, but the natural supply seems nearly exhausted and an artificial ozokerite is now made from uintaite by-products by a secret process of the Assyrian Asphaltum Company.

Scarcely second in importance to these unique hydrocarbons are the asphaltic limestones and sandstones, occurring in seams along the western rim of Uinta Basin, which form the very best paving mixes.

The present principal source of supply is from a fork of Spanish Fork canyon where there is an asphaltic limestone blanket vein 2 to 10 ft. thick. In Chicago, where it is made into paving mixes, it is known as lime-rock asphalt and is said to closely resemble the choice Swiss asphalt. The average of the vein yields a product of 2½ ft. classified as No. 1 and 1½ ft. of No. 2. Underlying this is 6 ft. of magnesian limestone carrying a small percentage of bitumen of no market moment, then 1½ ft. of No. 1. The vein is reached by two tunnels, 165 ft. and 465 ft. long respectively, and there is a good system of ventilation provided.

Analyses of this lime-rock show a maximum of 72% soluble bitumen and 11% fixed bitumen, the remainder being magnesian carbonate of lime and silica. A general average, however, of 22% soluble bitumen is maintained; in the operations of 1896 the average for the year was 29.70% bitumen, soluble and fixed. A characteristic not shared by the Trinidad or other asphaltums is the absence of organic matter.

Utah asphaltum was used for paving the streets of the business portion of Salt Lake in 1890 and that first put down has endured the traffic o

seven years. No repairs have anywhere been made, nor are any needed. This pavement is entirely sanitary, smooth, elastic, nearly noiseless and laid on a tamped 6-in. concrete base; as in Salt Lake, it is pre-eminently durable. After six years of traffic a section was taken from one of the busiest streets to exhibit to the city engineer and members of the Council of Columbus, O. It was without the slightest fracture or crack, either from evaporation or the constant impact of wagon wheels. In Chicago seven miles of streets are paved with Utah asphaltum; it has given satisfaction in Minneapolis; Columbus, O., has adopted it, and wherever it has been fairly tried its superiority is recognized.

The asphaltic sandstones, though widely distributed, occur only on the reservations, and so far have not been put to use. Several small lots were obtained for experimental purposes by special permit from the government, and a portion of a block in Salt Lake is paved with a compound made up of a mixture of asphaltic sandstone and asphaltic limestone, which, according to some authorities, forms a more lasting, finer grained and better pavement in every way than the asphaltic limestone alone.

At the present time the Gilsonite Asphaltum Company gets its paving material from the Indian Territory, as there is nothing suitable on their Utah ground for this purpose. It has been said that gilsonite-uintaite forms an important part in some of the best paving mixes. This is not true. A very little has been used in some mixes, though its utility is questionable.

The varied industries where the Utah asphaltites are requisites, though growing, can hardly keep pace with the supply. If all the veins on the two reservations were worked there would be small profit in mining uintaite. One of the largest wholesale paint and varnish manufacturers requires only a single carload in six months. In fact the two companies now operating have no difficulty in supplying the demand, and there seems little likelihood that the new uses for which it may prove adapted will largely augment it in the near future. The street paving proposition is very different. If there was general prosperity throughout the country orders for these products would increase as soon as their excellence was recognized.

The shipments of Utah uintaite and asphaltum products, according to the forthcoming volume of *The Mineral Industry*, reached the total of 3,537,355 lbs. in 1895, and of 4,137,800 lbs. in 1896.

Geological Survey of Maryland.—The work already done under the act passed by the Maryland Legislature a year ago is shown by a report from State Geologist Wm. Bullock Clark. A preliminary survey of the State has been commenced to obtain general information in regard to all mines, pits and quarries, and special investigations have been started of all building and decorative stones. An important work under this act is the establishment of a magnetic survey. At the date of the report stations had been established at every county seat in Maryland and at other points, and many of the early stations of the United States Coast Survey, near Chesapeake Bay, had been reoccupied. Topographical maps are also being prepared in co-operation with the United States Geological Survey. Two reports are being prepared on the geology and on the stone-quarrying industry of the State. The commission in charge of this survey is composed of the governor of the State, the comptroller, the president of Johns Hopkins University and the president of the Maryland Agricultural College.

Cost of Electric Railroads.—A table taken from the annual reports of the railroad commissioners of Massachusetts and New York for nearly all of the street railway properties shows some interesting facts. The table gives the number of cars owned, the car mileage per year and the cost of the electric power per car mile and per passenger. Of the 19 companies operating less than 250,000 car miles, 4 are obtaining power at a cost of less than 2c. per car mile, 6 between 2 and 3c., 5 between 3 and 4c., 1 between 4 and 5c., and 3 at more than 5c.; of the 5 companies operating over 5,000,000 car miles per year, 1 obtains the power for less than 1c. per car mile, 3 between 2 and 1c., and 1 between 2 and 3c.; other similar figures are also given between these limits. The Brooklyn Heights Company has the cheapest power, 0.86c. per car mile, followed by the Binghamton with 0.94c.; the cost of power for the Massachusetts roads includes repairs and depreciation of the station plant, which is not the case for the New York roads.

Sinking of a Coal Mining Town.—At Rosdzin, in the coal district of Silesia, a part of the town, comprising about 50 houses, has been undermined, and is about to collapse. Work at Luisengluck and at the Abendstern Pit, at Rosdzin, has been suspended for four years. During that time houses above the mines have shown great cracks in their walls. At last what had long been feared actually happened, although a technical commission only lately gave the opinion that no more subsidences would take place. In the afternoon one-half of the miners' hospital sank 18 in. At one o'clock in the morning the other wing of the building followed suit. At the same time a noise as of thunder was heard, and walls of neighboring houses cracked, vaults and ceilings of rooms fell in, and the inmates fled in a panic with only a few necessities to the market place. The firemen helped to save household furniture, but the shops were left to their fate. A number of houses 500 yards or more from the spot where the subsidence had commenced next threatened to fall in, and had also to be deserted. Nobody has been injured, but 1,000 persons are homeless. The district water-works are demolished, and the town of Myslowitz is without water. The course of the river Rowa is blocked, and a pond has formed and threatened to flood the adjacent Georg pit, which is still working. In the meantime the landslips are spreading in the neighborhood, and more houses are threatened. The sinking is due to carelessness in working a mine for years, the abandonment of which had been ordered by the mining inspectors. The fissures in the ground are more than a yard deep, and the area affected extends over about 650 square yards.

MINING IN ALABAMA.

Written for the Engineering and Mining Journal by W. M. Brewer.

In the coal and iron mining districts, we find that mining brown ore (limonite) is being carried on near Iron City and De Armandville, on the Southern Railway, the ore being shipped to the coke furnace at Anniston, and the charcoal furnace at Rock Run. At Anniston, within the city limits, the Woodstock Iron Company is having ore mined and washed at the rate of about 200 tons per day, at Washer Hill, where the deposits have been worked for years. In 1891 two double-log washers were erected, when S. U. Noble was superintendent, but the furnace was blown out soon after, and all operations suspended until last January, when after relining and thoroughly overhauling one of the coke furnaces, the fires were lighted. The washer plant was at the same time remodeled so that, instead of hauling all the ore from deposits on the hill to the washer, it is now washed down a flume several hundred feet long into the washer, which has been lowered from its original position. After passing through the washer the ore is hoisted by a bucket elevator to picking tables, and dumped from these into bins, thence into the cars. The waste water and sand is hoisted by another bucket elevator and discharged into sluices, thence to the settling ponds which are surrounded by strong dams.

The water used at the washers is furnished from a deep well at the furnace, where it is first used, then pumped to the top of Washer Hill and discharged into the flume, afterward supplying the washer. About 500,000 gals. of water a day is thus furnished from this well, which is 520 ft. deep. The pump valves reach a depth of 120 ft., below which artesian pipe extends to the bottom of the well. Mr. Jos. L. Hunter,



THE HARGROVE COAL MINE, ALABAMA.

from Roanoke, Va., is superintending the entire plant, which is making over 200 tons of pig iron per day. The coke is furnished by the Standard Coal & Coke Company, of Brookside, Ala., and the limestone is quarried at Rock Springs in Etowah County.

Between Anniston and Birmingham, along the line of the Southern Railway, there is comparatively no mineral until the Henry Ellen coal mines are reached, about 25 miles east of Birmingham; these are owned and operated by the Tennessee Coal, Iron and Railroad Company. The accompanying illustration shows the works at the Hargrove coal mine in Bibb County, where the Cahaba Southern Mining Company is operating. The slope is 1,000 ft. in length, and the capacity of the mine is 400 tons per day from four lifts. The vein of coal belongs to the Underwood or conglomerate seam; it is about 5 ft. thick with a good slate roof. The product is a good steam and domestic coal. The location of the mine is near the great fault of the Cahaba field, and the dip of the vein changes from 40° at the surface to 8° at the bottom of the slope.

The outside or hoisting plant is the only one of its kind in Alabama. The coal is hoisted at a high angle and dumped into the tipples without loosening the cars from the chain. One man only is required to handle the product at the tipples. The mines are ventilated with two large fans built in West Virginia and entirely of iron. The cost of mining is 40c. per ton; free labor is employed exclusively, no convicts, and the total number is about 100. A double hoisting engine of 80 H. P. with drum and cable complete is used for hoisting from the slope.

The Manufacture of Aluminum.—Consul Germain writes to the State Department from Zurich, Switzerland, that the new addition to the works of the Neuhausen Company will, when in operation, add 2,700 kg. to the daily output of aluminum. Further, the Neuhausen Company is building new works, with water power to produce 10,000 H. P. at Rheinfelden, Switzerland, and has also acquired water rights for similar purposes at Lend, near Gastein, in Austria. A German-American syndicate has planned the erection of works for the manufacture of aluminum at the waterfalls of Sarpfoss, in Norway. The water power there, it is estimated, will produce 10,000 H. P., and the plant is to be ready for operation some time in 1898.

PERSONAL.

MR. JULIAN KENNEDY, consulting engineer, who spent some time abroad, has returned to Pittsburg, Pa.

MESSRS. SIMON AND WILLIAM GUGGENHEIM are taking a bird's-eye glimpse of the resources of the Kootenai.

MR. E. D. PETERS, of the slate firm of E. D. Peters & Company, of Slatington, Pa., has gone to England in the interest of his company.

MR. ELMO G. HARRIS, civil engineer and professor of engineering, at the Missouri School of Mines, Rolla, Mo., has been in Chicago on business.

MR. WILLIAM KAVANAUGH has been appointed an assistant in the Department of Civil Engineering of the University of Illinois, Champaign, Ill.

MR. RICHARD EAMES, JR., mining engineer, of Salisbury, N. C., has gone to Colorado, and will remain there for a month examining mining properties.

DR. J. B. HERSHEY, of Trinidad, Colo., has gone to Red River, N. Mex., to superintend the development work on some mining property in which he is interested.

MR. FOSTER H. HILLIARD, of Lehigh University, South Bethlehem, Pa., has been appointed an instructor in the School of Civil Engineering of Union College, Schenectady, N. Y.

MR. PERCY L. FEARN, of Messrs. Olcott, Fearn & Peele, of New York, has gone to British Columbia, where he will examine mining properties in the Trail Creek and other districts.

MR. JAMES W. SEARLES, president of the Searles Gold Mining Company, of Goldfields, Ariz., is in Salt Lake, Utah, with his family, and will remain until the passing of the heated season.

MR. J. E. BERGERON, of Murray, Mich., president of the Christmas Gold Mining Company, is in Victor, and will remain in camp for several weeks to start operations on the Christmas mine.

MR. OWEN McDONALD, manager of the Eighty Five mine, in Sierra County, N. Mex., has gone to San Francisco because of failing health, and will place himself under the care of a physician.

MR. C. J. HODGE, the iron manufacturer of Houghton, Mich., has been in Utah for two weeks, where he is operating the North Last Chance mine at Bingham. He has now returned to the East.

MR. M. J. HENEHAN, formerly with Ropers & Brown, pig iron brokers, has been appointed manager of the New York office of Matthew Addy & Company, vice MR. JAMES UMBERGER, resigned.

MR. SAMUEL J. RANDALL, of Philadelphia, Pa., has been selected by the President for the office of coiner of the United States Mint at Philadelphia. His nomination is to be sent to the Senate shortly.

MR. MARTIN J. HELLER, who has been examining properties in Colorado, Utah and Idaho the past year, for a British syndicate, has left Salt Lake for the Mother Lode, California, in the interest of New Yorkers.

MR. WILLIAM VAN SLOOTEN, mining engineer and metallurgist, of New York City, has returned from Montana and the State of Washington, where he spent several weeks in the examination of mining properties.

JUDGE JOHN CALDERWOOD has been reappointed by the Boston & Colorado Gold Mining Company as their local manager at Victor, Colo., to succeed Mr. M. H. ARMSTEAD. Judge Calderwood was the first manager of the company.

MR. W. J. MADDEN, the mining expert, of Denver, Colo., recently returned from a visit to Montana, where he examined a large placer claim, and also the Bannack mining property, under orders from the Moffat-Smith syndicate.

MR. JOHN V. BEEKMAN, who for 30 years has been the superintendent of the Lidgerwood Manufacturing Company of New York, and who has been suffering for the last two years with ill health, has returned and taken up his duties again.

MR. G. LAVIGNINO, at present residing in Salt Lake, Utah, who for several years was one of the operators in Cripple Creek, is again in that city looking after his many interests. Mr. Lavignino was formerly manager of the Rosebud Mill at Mound City.

MR. C. H. WILMERDING has resigned as manager of the Chicago Edison Company. Mr. Wilmerding, who is a supervising and consulting electrical engineer, has established offices of his own in the Old Colony Building, Chicago. He will make a specialty of power transmission, particularly in the mining regions of the West.

MR. JOHN B. FARISH, the well-known mining engineer, has sufficiently recovered from the accident which befell him a few weeks ago while examining a property in Southern Colorado, to leave Denver on June 25th on a professional trip to New Mexico and old Mexico. He expects to return by

way of California, where he is to make some examinations.

MR. EDWARD M. BOGGS, professor of civil and hydraulic engineering and irrigation engineer and meteorologist to the agricultural experiment station, University of Arizona, having been granted leave of absence from the university, extending until September 1st, 1898, has accepted the position of chief engineer of the Southern California Power Company, with headquarters at Redlands, Cal.

MR. W. H. HARRIS, lately manager of the tin-plate department of the Aetna-Standard Iron and Steel Company, Bridgeport, O., is now in charge of the plant of the Baltimore Iron, Steel and Tin Plate Company, Locust Point, Baltimore, Md., which Wheeling capitalists recently purchased. The new manager of the Aetna-Standard Works is MR. CHARLES JENKINS, late assistant general manager.

MESSRS. OCTAVE CHANUTE, of Chicago, and WILLIAM G. RAYMOND, of Troy, N. Y., have been appointed by the Secretary of the Treasury as members of a committee to make an investigation of the United States Coast and Geodetic Survey with a view to ascertaining whether or not the practical results of the work of the bureau cannot be increased and improved. The methods of the field work particularly will be carefully studied. Mr. Chanut is an engineer of high standing and has been president of the American Society of Civil Engineers; Mr. Raymond is Professor of Civil Engineering in the Rensselaer Polytechnic Institute. MR. WILLIAM G. VANDERLIP, assistant secretary of the Treasury, will be the third member of the committee.

MESSRS. J. S. MACARTHUR AND ALFRED JAMES have entered into partnership as mining and metallurgical engineers, with offices in London and Glasgow. Mr. MacArthur recently retired from the managing directorship of the Cassel Gold Extracting Company, Ltd., and will advise on chemical and metallurgical matters, and will make a special department of reports on metallurgical patents and processes. Mr. James, who has been the mining expert of the Cassel Company for the past 11 years, and has visited the Transvaal, Swaziland, Hungary, Australia, New Zealand and the United States in that capacity, will devote himself to the examination of mines and ores, to advising as to equipment and metallurgical treatment, and to the design and erection of the necessary plant. Both partners will make a specialty of the cyanide process.

OBITUARY.

HALSEY B. POMERY, civil engineer of Seattle, Wash., died recently, aged 33 years. He was born in Lockport, N. Y., and was a graduate of the Rensselaer Polytechnic Institute.

H. W. COFFIN, superintendent of the Juniper mine, and formerly a successful mine manager in Nevada, committed suicide by shooting, at Jamestown, Cal., June 28th. It is believed he was temporarily insane from an injury to his head received in a recent accident in the mine.

EDWARD FLORADA, general manager for the Oliver Mining Company, died at his home in Duluth on June 25th, aged 51 years. Captain Florida was a well-known and highly respected mining man and had been in gold, silver and iron operations since the close of the civil war, where he served as a member of a Wisconsin regiment. He was in Montana at the close of the war and was one of the Black Hills pioneers in 1875. He was subsequently in Colorado and on the Gogebic, going to the Mesabi in its beginning. He has been manager for the Oliver Company since its inception.

BENJAMIN H. THROOP, the oldest resident of Scranton, Pa., died June 26th. He was born in Oxford, N. Y., in 1811, began to study medicine in 1829, and followed the practice of medicine until the close of the civil war. He moved to Scranton in 1840 and resided there ever since, associating himself with most of the coal and manufacturing industries of the region. As early as 1853 he made large purchases of coal lands, much of which he sold, but retained a large amount of it under leases on royalty. He was the founder of the mining town which bears his name, and owned many houses which are occupied by miners.

DE VOLSON WOOD, professor of mechanical engineering at the Stevens Institute of Technology, Hoboken, N. J., died June 27th in that city at the age of sixty-five. He was born near Smyrna, N. Y., and was graduated from the Rensselaer Polytechnic Institute in Troy in 1855. He was appointed professor of civil engineering at the University of Michigan the same year, remained there 15 years, then received a call to the chair of mathematics at the Stevens Institute of Technology, and later to the chair of mechanical engineering. He was a member of the American Society of Civil Engineers, the American Society of Mechanical Engineers and of the American Association for the Advancement of Science, of which he was at one time vice-president. He was the first president of the Society for the Promotion of Engineering Education. He is the author of many textbooks which are in use at many technical colleges of the country and which are authorities on higher mathematics and mechanical engineering.

SOCIETIES AND TECHNICAL SCHOOLS.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The preliminary announcement of the 46th meeting of this association to be held in Detroit, Mich., August 9th to 14th, 1897, has been printed in pamphlet form by the local committee. It includes also a preliminary announcement of the meetings of several affiliated scientific societies that will hold their sessions in Detroit.

THE LEHIGH UNIVERSITY.—Among the theses presented by the recent graduates of this institution, at South Bethlehem, Pa., are quite a number on geological, mining and metallurgical subjects that are of special interest. These are as follows: "The Geological History of the American Highlands of New Jersey, Including Their Extension in New York and Pennsylvania," by Joseph Barrell; "Magnetic Separation, with Respect to the Wetherill Process," by E. Williamson Miller; "A Discussion of the Pennsylvania Mining Code," by J. A. Taomson; "Design of a Mill for the Reduction of Silver Ores by the Washoe Process," by H. J. B. Baird; "Determination of the Melting Points and Specific Gravities of Various Alloys of Lead, Tin and Antimony," by T. H. Clagett; "Investigation of the various items of Loss of Zinc in a Spelter Furnace," by S. R. Elliott; "Determination of the Calorific Power of Anthracite Coal from the Mines of the Lehigh Valley Coal Company," by J. G. Mason; "Investigation of Tests for the Presence of Gold in Cyanide Solution," by F. S. Young; "A Comparison of the Old and the New Methods of Mining in the George's Creek Basin, Maryland," by John Stewart, Jr.; "A Discussion of the Relation of Surface Cracks to Squeezes in Mining," by T. C. Thomas; "Analysis of Coal by Means of X Rays," by B. MacNutt and H. R. Van Duyn.

INDUSTRIAL NOTES.

The Ashland (Wis.) Iron and Steel Company's furnace has resumed, after being banked for several weeks.

At East Lebanon, Pa., the new 18-in. rolling mill began operations June 25th. Employment was given to 50 skilled men.

At the Roane Iron Company's furnace at Rockwood, Tenn., work is to begin at once on the erection of another hot blast stove, 30 x 60 ft.

The Otis Steel Company, Limited, of Cleveland, O., has appointed Thorpe, Platt & Company its Eastern agents at 97 Cedar street, New York.

The Elmira Iron and Steel Rolling Mill Company, of Elmira, N. Y., is in the hands of a receiver. The company recently put in a steel plant at an expense of \$60,000.

The Crescent Consolidated Iron Company, of Max Meadows, Va., is equipping an electric light plant for its private use, and making other important improvements.

The Buffalo (N. Y.) Furnace Company held a meeting recently and elected as directors A. S. Hubbell, C. C. Belton, F. E. Bachmann, L. C. Hanna and F. B. Richards.

The Wellman-Seaver Engineering Company, Cleveland, O., has shipped two of the Wellman electric charging machines, of 1897 type, to the Llanelly Steel Works, Llanelly, Wales.

Potts Brothers' Iron Company, Limited, at Pottstown, Pa., resumed work in full on double turn on June 28th. The works had been idle for some time, and several hundred men were benefited.

The Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa., has received the contract for furnishing the new Southern Union station in Boston, Mass., with an electrical plant.

The Whitaker Iron Company, of Wheeling, W. Va., has put on three additional departments and begun the work of transforming three sheet mills into tin plate mills. The puddle mill of the plant was started recently.

The Bard-Coleman furnaces, at Cornwall, Pa., will be put in operation soon. They have not been in blast for a year. The North Cornwall furnaces, owned by James C. Freeman, and which have not been opened for several years, will also be started up soon.

The Colorado Fuel and Iron Company, of Denver, Colo., recently secured an order for material for a 20-mile single-rail tramway to be built at Santa Ana de Sonora, Mexico, after a system known as the Monorail Portatif, which is owned by a French company.

The Ohio River Sheet & Tin Plate Company, incorporated, manufacturer of sheet iron and black plate for tinning, with works at Remington, Pa., has completed an additional mill, giving the company a two-mill plant which is being operated to full capacity.

The Eleanor Iron Works' striking employees, of Hollidaysburg, have held a meeting and decided to resume work. The men had been receiving \$3 per

ton for puddling and the company sought a reduction to \$2.50. The compromise was effected on the basis of \$2.75 per ton.

At the Bath Iron Works, Bath, Me., work is advancing well on the foundation for the extension of the plate shop. As soon as the material arrives, which will probably be in two or three weeks, work will begin on the 30-knot torpedo boats which will be constructed in the new building.

E. E. Souther, president of the E. E. Souther Iron Company, St. Louis, Mo., has returned from Mexico, where he had been seeking a field for profitable investment. He has decided to erect an iron foundry at either San Luis Potosi or Aguas Calientes, to cost \$75,000 or \$100,000.

The McKenna Steel Company, Joliet, Ill., started its mill last week and gave employment to between 150 and 200 men. The mill was erected this spring at a cost of \$90,000. It will re-roll old steel rails. It has orders enough now to run 10 months, and it is the only mill of the kind in the United States.

The Vance Boiler Works Company, of Geneva, Ontario County, N. Y., has been incorporated. The capital stock is \$15,000, and directors: James R. Vance, Stephen D. Parker, George W. Goodwin, William S. Moore, Barney Bergman and F. N. Squires, of Geneva, and James H. Haslett, of Waterloo.

The Bass Foundry and Machine Works, of Fort Wayne, Ind., which went into the hands of a receiver on June 26th, gave trade mortgages for \$700,000. The concern was established in 1853. John H. Bass owned the bulk of the stock of the company. The company's property has been generally valued at \$1,000,000.

Messrs. Hamilton & Company, at the new plant they intend erecting at West Newton, Pa., will construct the main building 100 x 168 ft. in size, to contain two hot mills with 19-in. necks, 24 in. in diameter and 32 in. long and three cold mills 22 x 36 in. The necessary engines, rolls, shears and other equipment will be installed.

The National Tube Works Company, of McKeesport, Pa., said to be the only concern which has successfully made 24-in. wrought iron pipe, will make pipe of the sizes 30 and 36 in. The company is also said to have equipped the department in which these great pipes will be made with new machinery and every device necessary to successfully make them.

Mineral wool is to be manufactured near Joplin, Mo., by a new process invented by George A. Case, who has begun the erection of a mill for that purpose. After considerable experimenting, Mr. Case succeeded in manufacturing mineral wool from the refuse slag that accumulates from lead smelting. It is used for packing purposes, and is said to be worth from \$35 to \$40 per ton.

The Cramp Ship-Building Company reports its gross income for the year ending April 30th, 1897, as \$4,500,000, showing a profit on labor and material of \$770,000. Deducting from this the amount of \$340,000 for all expenses, there is a profit for the year of \$430,000. This shows that the company earned 8.6% on its \$4,848,000 capital stock; besides, its debt has been reduced \$995,000.

The Li Pizo Chemical and Mineral Company, with an authorized capital of \$3,000,000, of which \$1,000,000 is subscribed, and \$100,000 paid in, has been granted a charter. The shares are of the par value of \$1 each, and are held by the incorporators, all of Cincinnati, O., who are W. L. Voight, C. F. Stager, Geo. W. Sommer, C. H. S. Sommer, R. M. Thomson. Charleston, W. Va., is named as the principal place of business.

The Reading (Pa.) Iron Company's Tube Works, employing over 750 hands, which has been idle for some weeks because the puddlers refused to accept a reduction in wages, resumed work June 23rd with a full complement of hands. About half of the 300 men employed at the sheet mill also resumed work. The puddlers announce that their ranks are unbroken and that they will not go back at the reduction.

The Hudson Iron Company, of Hudson, N. Y., capital \$375,000, has been dissolved, Deputy Attorney-General Kisselburgh having appeared before Justice Chester in Special Term of the Supreme Court at Albany on June 26th and secured the necessary judgment. Frank W. Scott, of Scottville, Columbia County, one of the largest stockholders of the company, was appointed receiver on filing a bond in \$25,000. The dissolution was voluntary.

The Pennsylvania Tube Works Company, of Pittsburgh, Pa., has just closed a contract for 100 miles of 12-in. lap-welded steel pipe, and over 300 miles of 30 in. steel riveted pipe. The pipe is to be used for the water supply of Koolgardie gold-fields, in Australia, the work being a government undertaking. Over 20,000 tons of material will be used in the construction of the pipe, and with the rail and steamship freight charges will cost \$2,000,000 by the time it reaches Australia.

The Southern Industries Company, Baltimore, Md., which invested \$100,000 recently in iron ore lands in Unicoi County, Tenn., are now trying to get control of the Carnegie blast furnace at Johnson City, Tenn. If they succeed in the matter they will operate the furnace in connection with

their mines in Unicoi County. The Southern Industries Company has a capital stock of \$5,000,000, of which H. S. Peck, formerly secretary of the Unaka Iron Company, is president.

The Pittsburg Reduction Company, Pittsburg, Pa., recently made a shipment of 50 tons of ferro-aluminum to an iron foundry firm in St. Petersburg. The material was to be used in the manufacture of castings for the Russian government. Ferro-aluminum consists of 90 parts iron and 10 parts pure aluminum. This 50 tons of ferro-aluminum was furnished by the Carbon Steel Company, of Pittsburg, the Pittsburg Reduction Company furnishing the aluminum which entered into it.

The decision of the New Jersey Court of Errors and Appeals, on June 23rd, in favor of the United States Pipe Line Company, on the appeal of the Delaware, Lackawanna & Western Railroad against the Pipe Line company, is an important victory for the independent oil interests, and secures the pipeline crossing of the railroad at Washington, N. J. This is the place at which there was a pitched battle in November, 1895, when the railroad company attempted to tear up the line of the United States Pipe Line Company. The decision assures the independent producers of a line to the seaboard for the pumping of refined oil.

The Denver Engineering Works are now running full time on orders for mining machinery for Colorado, British Columbia and Old Mexico. They have just finished two modern smelting furnaces using blowing engines instead of blowers usually adopted in gold and silver smelters. They are now building several of their patent mine timber framing machines for Mexico and British Columbia. This machine is a great labor-saving device and is being generally adopted by the large mines. They are now working on a 100-ton concentrating plant, the crushing to be done by their new patent Denver rolls. They report the outlook for the balance of the year as being very promising.

The New York & Staten Island Electric Company is erecting at Livingston, Staten Island, a new power-house of modern construction. The walls of the building are brick and the roofs have steel trusses covered with corrugated iron. The roofs are arranged with suitable monitors with skylights for light and ventilation. On the building is a large wire tower of steel construction. The engine-room is arranged for a traveling crane of 15 tons' capacity. The building has been constructed with the idea of having it absolutely fireproof and arranged in an up-to-date manner. The roof of the engine and dynamo portions of the building is lined underneath the corrugated iron with the Berlin Iron Bridge Company's anti-condensation fireproof roof lining. The Berlin Company has the contract also for furnishing and erecting all the steel framework and covering for the plant.

The tin plate and union iron mills throughout the country closed June 30th owing to unsettled wage scales. Several wage conferences will be held within the next week and settlements are expected in time for a resumption soon after July 4th. The biggest Pittsburg mill to close was that of Jones & Laughlins, where a partial suspension occurred at midnight, 1,500 Amalgamated men quitting work. The Amalgamated men are governed by a special steel scale. It was stated by a member of the firm that a reduction averaging 18% had been proposed to these men at a conference held. In some cases the cut is 30%, while in others it is about 10%. This means that the firm rejects the Amalgamated scale. At Youngstown, O., the officers of the Amalgamated Association and the Manufacturers' Committee began the annual scale conference. The men ask that the present scale based on a \$4.50 puddling rate be continued. The manufacturers want a \$4 scale, but it is expected they will concede the present rate owing to a picking up in the iron business. All mills in the Wheeling District, in which the Amalgamated Association has a hold, are preparing to close down, many of them glad to do so in order to make alterations and repairs. The Bellaire Company will be closed throughout July and August, the Shenango Valley Steel Company, at Youngstown, will be idle for a month to make repairs, and will build at the same time a new tin plate and sheet bar mill. The Hainsworth steel plant will be idle for a month on account of repairs, as will the Junction Iron and Steel Company, at Mingo Junction, O.; the Ecna Standard, Bridgeport; La Belle and Riverside, Wheeling. These are closing, whether the scales are signed or not, for repairs. The closing of the glass factories is their annual shut-down.

The Siemens-Halske Electric Company of America, Chicago, Ill., and the Pennsylvania Iron Works, Philadelphia, Pa., have just effected a working combination between them. For some time past the Pennsylvania Company has owned a controlling interest in the Siemens Halske Company, but it was only at a recent meeting of the stockholders of the two companies that actual arrangements for a consolidation were effected. The terms of the consolidation are outlined in a letter to the stockholders of the companies, which has been sent out by the committee in charge, and which is substantially as follows:

"The Pennsylvania Iron Works, of Philadelphia, Pa., has made a proposition to the stockholders of the Siemens-Halske Electric Company of America, and the majority of the stockholders of the latter company have already accepted the proposi-

tion and will exchange their stock at an early date. At the annual meeting the undersigned were appointed a committee to communicate with individual stockholders with reference to the proposition of the Pennsylvania Iron Works Company, and to arrange the details of the exchange of stock in behalf of any of the shareholders who may desire to avail themselves of the offer. The proposition of the Pennsylvania Iron Works Company (whose capital is \$1,750,000 preferred and \$1,500,000 common stock) is to exchange \$1,000,000 of its preferred 6% non-cumulative stock and \$1,000,000 of its common stock, so far as the same may be available by reason of the acceptance of the proposition by the shareholders of the Siemens-Halske Electric Company of America, on the following basis: Each shareholder of the preferred stock is to receive 13-20 shares of the Pennsylvania Iron Works Company in exchange for his preferred share in the Siemens-Halske Company. Each shareholder of the common stock of the Siemens-Halske Company is to receive 3-20 of a share of preferred stock and 10-13 of common stock in the Pennsylvania Iron Works Company."

At the meeting of the Siemens-Halske Company, held in Chicago recently, the following board of directors was elected: Charles T. Yerkes, Chicago; W. L. Elkins, Jr., Philadelphia; R. Suydam Grant, New York; Charles E. Yerkes, Chicago; B. W. Grist, Philadelphia; F. W. Whitridge, New York; W. T. Butler, New York; E. T. Rice, Jr., New York; Martin Maloney, Philadelphia.

The other officers elected are as follows: President, Charles E. Yerkes; vice-president and treasurer, W. F. Furbeck; assistant treasurer and assistant secretary, Willard T. Block; secretary, F. B. Badt; general manager, B. W. Grist.

TRADE CATALOGUES.

A. K. Warren & Company, New York, manufacturers of electric wire, lamps, motors, dynamos, brushes, etc., have sent us a copy of their 91-page 1897 catalogue. The items enumerated in the catalogue are arranged in alphabetical order so they can be quickly and easily referred to. Every description of article required is shown, from the generator to the lamp, or from motors to their source of supply. The stock of supplies kept on hand by the firm is new and up to date, and will satisfy the requirements of the most exacting purchaser.

Earle C. Bacon, engineer, New York, in his latest catalogue of Bacon's hoisting engines, mining machinery, etc., which are standard and in use in all parts of the world, gives a most thorough list of his designs and manufactures. A specialty is made of complete plants, in which material, workmanship and design are all of the very best. Other products are cars, buckets, wire rope, sheaves, gravity incline machinery, ore-picking tables, ore washers, derricks, etc., also wire-rope cableways and tramways. The catalogue is very fully illustrated and includes nearly everything needed for a mining plant.

NEW PATENTS.

UNITED STATES.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

WEEK ENDING JUNE 22D, 1897.

584,771. MELTING FURNACE. Louis Delettrez, Paris, France. Patented in France Dec. 6th, 1895, No. 252,234. The combination of a crucible having a lid, a plurality of extensions or long and narrow flattened tubes, imperforate on their sides and extending up from the lid through which their lower conical ends open into the crucible, a combustion-chamber about the crucible extensions, an air-supply leading into the furnace at the height of the lid, and a perforated socket connected with the lower part of the furnace, and with an air-supply.

584,780. MINER'S LAMP. Charles H. Hobson, Mount Carmel, Pa. A lamp constructed in the main in one piece from sheet metal, the same being bent at about its central portion to form a vertical wick-tube, the terminal portions of the metal being then bent to form a vertical oil-chamber, and the edges of the metal being then brought together and lapped at the back of the lamp and at the point most remote from the point of combustion, such lapped edges being united, combined with a partition arranged within the body of the lamp and provided at its top with an inverted U-shaped flange arranged on the exterior of the body of the lamp at the top thereof, crossing the joint at the back of the wick-tube and forming a clip to prevent the sides of the body from separating at that point.

584,781. PROCESS OF MAKING MOLTEN IRON FOR MALLEABLE CASTINGS. Henry M. Howe, Boston, Mass. The process consists in melting cast and malleable iron, and ferro-silicon, and then adding carbon thereto.

584,783. PROCESS OF REDUCING ARGENTIFEROUS AND AUERIFEROUS COPPER ORES, MATES OR COMPOUNDS. Christopher James, England. The process consists in the concentration of part of the ore to a regulus of 70 to 75% and the calcination of the same at a low temperature, the mixture of raw ore or uncalcined regulus with the calcined regulus, then smelting the mixture adding to the smelting charge a sufficient amount of silica to absorb the oxidized lead into a leady slag, free from the precious metals, and with little copper, the recovery of the lead from the leady slag and the addition of the highly-oxidized slag free from lead to the ore in the early stages of concentration.

584,845. STONE-CHANNELING TOOL. Amos E. Blair, Ba-

tavia, Ill. A tool consisting of the solid shank portion having its walls parallel their entire length, the longitudinal cutting edges bent at right angles to the shank portion, cutting edges at right angles to the longitudinal edges and in parallel planes, and an oblique cutting edge connecting the latter.

584,931. ACETYLENE GAS GENERATOR. Henry F. Fuller, Chicago, Ill. Assignor to Walmsley, Fuller & Company, same place. The combination of a liquid chamber and a generating chamber, a diaphragm chamber in the liquid chamber having an outlet and valve mechanism controlling communication between the chambers, the diaphragm chamber forming a condenser.

584,916. ACETYLENE-GAS APPARATUS. Royer Luckenbach, Philadelphia, Pa. Assignor by mesne assignments, to Cornelius E. Baird, same place. The combination of a retort mounted in a tripod or standard, a hinged cap provided with a spanning clamp and connected with a valve located in a pipe connection from the retort with a holder, a gasometer provided with a dome, means connected with the dome for controlling double bell-cranks levers operating valves of pipe connections from the retort with the gasometer, holder and a water-reservoir.

584,980. TRITURATING AND REDUCING MILL. Charles J. Hea, Chicago, Ill. Assignor of one-half to John H. Vogt, same place. The combination of a rotatable table supported on ball-bearings, with mechanism for rotating the same in one direction, a series of reduction-balls on the table, a weight resting on the balls, mechanism for rotating the weight in a direction opposite to the direction of rotation of the table, and an intermediate framework independent of the table and weight, the framework provided with projecting parts which extend outwardly between the balls and keep them properly distanced from each other, the framework provided with anti-friction-disks adapted to engage the table, and annular bearing-surfaces on the table.

585,018. MINING-MACHINE. Henry H. Bliss, Washington, D. C. The combination, with a bed, a cutting apparatus, and a carriage therefor, of an electric motor having one of its pole-pieces mounted upon the carriage, the chain-driving shaft mounted upon the pole piece, the gearing for actuating the shaft, and the chain driven thereby and adapted to impart motion to the cutters.

585,019. APPARATUS FOR ELECTRIC THERMAL TREATMENT OF METALS, ORES, ETC. George D. Burton, Boston, Mass. The combination of a main tank adapted to receive the electrolytic solution and provided with a well; a second tank provided with a fluid conductor adapted to conduct the solution to the well.

585,056. MAKING INGOTS OR CASTINGS OF IRON OR STEEL. Alfred E. Hunt, Pillsbury, Pa. Assignor of two-thirds to Percival Roberts, Jr., Philadelphia, and Benjamin Talbot, Pencoyd, Pa. The process consists in the addition of carbide of silicon to the molten metal.

585,060. METHOD OF MELTING IRON BY MEANS OF ELECTRICITY. Carl G. P. De Laval, Stockholm, Sweden. Patented in Sweden, March 8th, 1892, No. 4,469; in England, March 8th, 1892, No. 15,793; in Germany, June 12th, 1892, No. 80,462, and in Norway, September 7th, 1892, No. 3,095. The combination of a transverse bridge of refractory material, cavities situated at the bottom of the furnace on each side of the bridge, and fusible pole-pieces received by the cavities.

585,044. TREATMENT OF FERRIC RESIDUE AND APPARATUS THEREFOR. Walter Mills, London, England. The process consists in converting the ferric oxides into ferrous oxides by mixing finely divided metallic iron with the ores and heating the mixture out of contact with the air.

585,051. APPARATUS FOR ELECTRO DEPOSITION OF METALS. Alfred S. Smith, Thomas A. Smith, Roland J. Smith, Sydney Smith, and Thomas Deakin, Walsall, England. Assignors to the Electrolytic Plating Apparatus Company, Limited, same place. The combination with a vat having anodes, of a perforated drum capable of revolution in the vat in an electrolyte therein, contacts loosely suspended from a conducting axial sleeve, and negative and positive wires connected to supply current to the anodes, and to carry it from the suspended contacts, back to the generator of electricity.

585,063. PROCESS OF MAKING ARTIFICIAL STONE. John W. Turner, Covington, La. The process consists in melting the stone from a composition of Portland cement and flint-sand in a plastic condition; then striking off the exposed surface upon which it is proposed to produce the ornamentation, then sifting over the face of the stone, rock-lime and striking off to produce a smooth face; and while the surface is in this condition, engraving the ornamentation upon the same, and allowing the stone to set, and after being removed from its mold, the surfaces of the stone not covered with the engraving or other ornamentation, being coated with a mixture consisting of one-half part of Portland cement, one-fourth part of rock-lime, and one-fourth part of plaster-of-paris by weight, and then applying to the entire surface of the stone a mixture of equal parts of rock-lime and plaster-of-paris.

585,090. AIR-COMPRESSING APPARATUS. Isaac T. Dyer, Chicago, Ill. Assignor, by direct and mesne assignments, to the Dyer Power Company, same place. The combination of rotary heads each containing a circumferential series of radial cylinders having valve-controlled inlets and outlets and provided with pistons on stems, the heads being geared together to cause the rotation of one to drive all and to cause the piston-stems on the respective heads to engage each other in pairs, as the piston-stems approach each other during the rotation of the heads.

585,161. METHOD OF MANUFACTURING MANGANESE STEEL. Robert A. Haeffeld, Sheffield, England. The method consists in decarburizing a portion of iron, recarburizing to a substantially predetermined amount, and incorporating with a weight of the recarburized iron determined while molten a quantity of ferro-manganese weighed after melting.

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 manufactures 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.

MINERS' STRIKE.—It is reported that the executive committee of the United Mine Workers has issued an order to all the members of the union, numbering about 125,000 men, to go out on a strike on Saturday, July 3d. The order includes all the organized miners in Indiana, Illinois, West Virginia, Ohio and Western Pennsylvania. This is the result of the four days' deliberation of the members of the National Executive Board of the United Mine Workers and the district presidents. The mining rate asked for is 69c., based on the thin-vein district in Pennsylvania. This will give 60c. in Ohio, and a corresponding rate in Indiana, Illinois and West Virginia. The strike is designed to check the immense shipment of coal being made to the coke ports. The operators in the Pittsburgh District have been particularly active in their endeavors to get enough coal ahead to last them through a long suspension. Reports from all over the district indicate that the mines supplying the Lake shippers have been running full time for two weeks. It is said that a large number of loaded cars are stored on sidings along the railroads and will be moved along the ports as rapidly as possible.

ALABAMA.

CLAY COUNTY.

(From Our Special Correspondent.)

At the Hollingsworth Watts or Ivy mine, Dr. Phillips, of Birmingham, has everything in readiness to commence making a thorough preliminary test. The material which he has to treat is a micaceous, interlamated with innumerable thin stringers of sugary quartz. He will work the test in a Huntington mill, and will take the material from several openings on the property. Much interest has been manifested by some mining capitalists with regard to these extensive low-grade ore bodies, which can be treated at extremely low cost.

A syndicate from Montgomery is preparing to make a test run on ore from the property known as Horn's Peak, situated about a mile and a half westerly from the Idaho. Apparently the ore body on this property is an extension of that at the Idaho mine.

Local prospectors are eagerly searching for bodies of gold-bearing ore in this county. Most of this prospecting has been done on the lines of strike of the Ivy and Idaho properties, which are located parallel to each other, and about 2½ miles distant as the crow flies.

ALASKA.

ALASKA SUMDUM QUEEN GOLD MINING COMPANY.—This company has filed articles of incorporation to do a general mining business in Alaska; capital, \$100,000, divided into shares of \$5; principal office, Heppner, with a branch office at Juneau. The incorporators are Louis Blumenthal, Mark J. Cohen, E. R. Swinburne, E. J. Slocum and G. F. Mathews.

ARIZONA.

MARICOPA COUNTY.

ARIZONA ONYX COMPANY.—This company, which recently bought the Big Bug onyx claims from Joseph Meyers and others, has executed and filed a mortgage on the property to secure an issue of \$250,000 in bonds bearing 6½ interest. These bonds are dated April 1st, 1897, and are to run 10 years from that date.

PEARCE.—A mill is being built at this mine that will start up with an ability to work 60 tons per day of the ores of that mine. It is, however, being so constructed as to be readily increased to 80 tons per day. The present output of the mine is said to be fully \$250,000 per month. About one-half the output is gold at the present working depth. At first the output was about three-fourths silver.

(From Our Special Correspondent.)

SEARLES GOLD MINING COMPANY.—The capitalization of this company is \$100,000 in \$1 shares. James W. Searles is president; G. M. Gates, vice-president; E. J. Bennett, secretary; Col. William Christy, treasurer; E. B. Gage, J. H. Searles. The company has eight claims near Goldfields, the development exposing several white quartz ledges. One, with maximum width of 18 in., averages \$350 gold. A 50-ft. vein has 7 ft. of \$26 ore, and mills throughout \$8.50 gold. A 60-ton cyanide plant will be in operation August 1st; the company ships its high-grade ore.

YUMA COUNTY.

HARQUAHALA GOLD MINING COMPANY, LIMITED.—Mr. Thomas D. Murphy, assistant manager of this company's mines at Harquahala, reports as follows for the month of April: In the cyanide department the pulp treated was 1,466 tons; the average assay of pulp was \$4.88 per ton, and the average assay of tailings, \$1.77 per ton. Percentage extracted according to assays was 61½. Bullion realized amounted to \$2,629.63. The plant was operated 16½ days. The following is the summary of revenue and expenses: Bullion realized from cyanide plant, \$2,630; royalty and milling Bonanza ore, \$2,303; royalty and milling Golden Eagle ore, \$546; miscellaneous, \$200; total revenue, \$5,739. Cyanide plant and ex-

traneous expenses for March, \$1,078; operating expenses for April, \$2,865; extraneous expenses for April, \$1,327; total expenses, \$5,270; profit, \$469. New zinc was placed in the boxes at the beginning of the month, and considerable gold remains deposited on this which can only be estimated as to value.

CALIFORNIA.

AMADOR COUNTY.

(From Our Special Correspondent.)

ALMA.—The shaft at this mine has attained a depth of 1,000 ft., and crosscutting has commenced at the lower levels. Stations are being opened up and work is progressing satisfactorily. A great deal of good ore is now on the dump.

AMELIA GOLD MINING COMPANY.—This company has just bonded the Muldoon property adjoining and east of the Argonaut, and begun the work of sinking a shaft 300 ft. south from the Argonaut line. It is believed by the purchasers and their experts that the Kennedy and Argonaut lode continues through this ground, and the shaft will be sunk to a depth of 1,000 ft. so as to prove the ledge from the surface down.

BALIO GOLD MINING COMPANY.—The Balio mine, 1 mile from Sutter Creek, is worked from an open cut. It is the most economical mining proposition in the world, according to the report of S. R. Porter, superintendent of the company, at Sutter Creek, addressed to its president. The cost of mining 5,885 tons in April, 1897, was \$1,986.72. The cost of milling the same was \$1,546.70, a total of \$3,533.42 or 60c. and a fraction per ton.

KERN COUNTY.

(From Our Special Correspondent.)

ALAMEDA.—This mine, in the Randsburg district, was bonded last April by Wm. McEwen, from the original locators, the Ashford brothers. At that time the shaft had been sunk to a depth of 20 ft., and the ore was not of a high-grade character, but on June 7th some very rich rock was struck, assaying over \$100 to the ton. There are three parallel leads on the claim from 10 to 20 ft. apart, and it is probable that they will unite in one strong vein as greater depth is attained. This adjoins the King Solomon mine east of Randsburg, and is one mile from Val Verde.

ANTHRACITE COAL DISCOVERY.—It is reported that a large deposit of anthracite coal has been discovered within 12 miles of Randsburg. The vein is said to be 4 ft. thick. The discoverers were Messrs. Anderson, Hoffman, Carley and Quinn. It is probable that the coal is not a pure anthracite, as none has yet been found on the coast.

MARIPOSA COUNTY.

(From Our Special Correspondent.)

ROMA.—This mine, 1 mile from Bear Creek, according to the report of G. W. Parsons, superintendent, has struck a 2½-ft. vein at a depth of 250 ft.

MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—This company's latest weekly official report says that the north drift in the Bullion vein on the 114 level showed 8 in. poor-grade ore. The south drift, Bullion vein, 172-ft. level, was in soft ground showing no ore. Raise No. 4, Black ledge, 265 level, showed 24 in. of ore of somewhat better grade. The north drift, Black ledge, 380 ft. level, ran into new ground and was stopped. The north drift, Fortuna vein, 600-ft. level, was in hard ground, with the ore quite poor. Raise No. 1, same vein and level, showed 6 in. of good ore in the top. Some ore was being stoped on the 336 and 380 levels. The stopes showed no material changes. Fifty feet of the shaft was retimbered. At the mill all of the battery frame, except four or five sticks, is in place, and it was hoped to have everything completed by the end of next week. At No. 1 cyanide plant 389 tons of tailings were treated for the week; at No. 2 plant 365 tons of tailings were treated.

NEVADA COUNTY.

(From Our Special Correspondent.)

SUMMIT.—This mine is flooded with water and when it was found that the pumps were of no avail, the shaft was abandoned. However, a tunnel will be run from Deer Creek at a point below the Providence mine, to tap the shaft at a depth of 450 ft.

SAN DIEGO COUNTY.

GOLDEN CROSS.—These mines, in the eastern part of the county, have been sold to a syndicate of California, Nevada and Arizona capitalists, Isaac Trumbo being at their head. The purchase price was \$1,500,000. The bullion output of the mines is at present is about \$1,000 per day.

TRINITY COUNTY.

(From Our Special Correspondent.)

LA GRANGE MINING COMPANY.—The La Grange mine, owned by a French company, is situated four miles from Weaverville. The sum of \$250,000 was paid for the property, and an additional amount of \$200,000 has been expended in the development of the same. According to the report of W. H. Radford, the superintendent, the estimated yield from this hydraulic property has been \$300,000 per annum. The property is 1,000 ft. wide by 2,000 ft. in length. Large ditches are now in course of construction and it is thought that the output of the mine will thereby be increased.

MOUNTAIN KING.—This quartz mine from which some valuable ore has been taken in the past, has

again resumed operations under the superintendency of William Vollmers.

PAULSEN.—This large gravel property, owned by P. M. Paulsen and others, situated on the south bank of the Trinity River, is represented to have been sold to a New York company. This gravel claim consists of the Dutton Creek mine, 160 acres, and the Union mine of 300 acres. It will probably cost, according to careful estimates, \$26,000 to open this property and place it on a paying basis.

TUOLUMNE COUNTY.
(From Our Special Correspondent.)

ALAMEDA.—The shaft is down nearly 200 ft., and rapid development is being carried on. A new air compressor was recently added to the plant.

DARROW.—This mine, south of Tuttle town, has been taking out some very rich ore lately. It is the intention of the owners to increase their milling plant and mill the full width of the vein.

DUTCH.—Ten stamps and six additional concentrators are being added to this mine at Quartz Mountain. The vein in the shaft shows considerable increase in width, and good ore is being taken from the levels.

GAGNERE MINING COMPANY.—Many improvements were recently made on this company's property, and preparatory work for a 20-stamp mill is under way. Night and day shifts are being worked in the levels which are being driven south, showing steady improvement in the ore value.

NORWEGIAN.—This mine, situated north of Tuttle town, now has a mill in operation. Sinking of the shaft is going on steadily. The present owners are much pleased with the property.

RAPPAHANNOCK.—This property adjoins the Rawhide on the north. The level that is being run from the 600-ft. station is well under way, and the shaft is being sunk an additional 100 ft. Everything about the mine is in first-class condition.

RAWHIDE GOLD MINING COMPANY.—The output of high-grade ore still continues on this company's property, and sinking and drifting is carried on night and day. The entire milling and chlorination works are to be enlarged.

STREET & GRASS.—The shaft in this mine is down about 100 ft. in ribbon quartz showing gold freely. Sinking continues.

COLORADO.
BOULDER COUNTY.

MARCHIONESS MINING AND TUNNEL COMPANY.—This company has started work to run a tunnel from Boulder Canyon $\frac{1}{2}$ mile above the Coburn cyanide mill, under Magnolia mining camp. The trend of the tunnel will cut the Graphic group of mines directly under the ore chute in the Graphic claim, at a depth of 1,100 ft., passing through a portion of the mineral belt that has not been prospected. The Pickwick Gold Mining and Milling Company is said to be furnishing the money for this work, and will soon have machinery and air drills on the ground. The special object is to cut the Pickwick or Dickens group of mines at a depth of about 1,200 ft. below surface and prospect the eastern portion of the Magnolia camp.

CHAFFEE COUNTY.

WHITEHORN DISTRICT.—The first shipment has been made from this district east of Badger, so far as known. It consisted of 1,500 lbs. of gold-bearing quartz that on sampling was found to have a value of \$57.80 a ton. The quartz came from a claim known as the Frankie, owned by F. D. Bale and Mrs. Sarah Clase, of Cripple Creek. The rock was saved in sinking a 28-ft. shaft. There is said to be 6 in. of ore showing regularly in this hole.

EL PASO COUNTY—CRIPPLE CREEK DISTRICT.

ADVANCE GOLD MINING, BONDING AND LEASING COMPANY.—The Mary Jane, on Raven Hill, near the Doctor mine, has been equipped with a fine shaft-house. The shaft has been timbered and a contract has just been let for 100 ft. of sinking and drifting. Half of this work will be done in deepening the shaft, which now measures 80 ft.

BONANZA KING.—From the Claypool lease on this ground a 12-ton shipment of \$30 rock was made recently. The miners are now drifting on the vein at 46 ft., where they have 18 in. of ore. The shipment was the third so far made from the property.

CHICAGO MINING, MILLING AND WATER POWER COMPANY.—One of the neatest plants of mining machinery in the district is that on the Grace Arthur lode in the gulch at the southwest point of Beacon Hill, owned and operated by this company. The shaft-house is 25 x 45 ft. and is equipped with a 70-H. P. boiler and 40-H. P. hoist, water tank, blacksmith shop and complete outfit of tools. The shaft is a 3 compartment, 4 x 12 ft. in the clear, and heavily timbered. A No. 7 Cameron pump is on the ground ready to be put in when needed. The shaft is going down through an immense dike of phonolite.

CRIPPLE CREEK & GOLD HILL TUNNEL.—This tunnel has closed down for a few days. The Davis contract for 2,000 ft. has been completed, and bids for another 1,000 ft. will soon be opened. As soon as the contract is awarded work will begin.

DEAD PINE.—A number of substantial improvements are being made on this property, on Battle Mountain, by Lessee Dennis Sullivan. A Rand air-compressor, with a capacity for three machine drills, and a 60-H. P. boiler have been put in place, and the shaft-house is being enlarged and remodel-

ed. A large amount of ore is being produced from the property.

NIGHTHAWK.—Dr. Funk and others leasing on this property, on Bull Hill, have opened a 2 $\frac{1}{2}$ -ft. vein at bedrock at a depth of 8 ft. from the surface and they are now down 4 ft. on the vein, which shows a good streak of ore from which assays as high as \$90 a ton have been had.

OCEAN WAVE.—Whalen, Fuller & Bartholomew have made a strike on their lease on the northwest end of this property, on the west slope of Squaw Mountain. A 2-ft. vein of brown quartz has been cut that assays \$225 at grass roots. Considerable of the ore has been saved and a shipment will be sent out soon. The lead is thought to be an extension of the Climax No. 1 vein, which is being operated further down the hill by Walters & McLaughlin.

STANDARD TUNNEL COMPANY.—This company has put a shift of men to work on the old 40-ft. shaft 75 ft. to the north of their tunnel face on the west slope of Beacon Hill. The men cleared the shaft of water, and began sinking. It is the company's intention, if the character of the rock after a few days' work seems to warrant it, to put on a plant of machinery. The company is still pushing work on the tunnel with one shift of men. The breast of the tunnel is now about 1,000 ft. into Beacon Hill.

TEMPLE GOLD MINING COMPANY.—The property of this company consists of five claims, called the Honest John No. 13, 14, 15, 16 and 17, located between East and West Beaver Creek, in the Cripple Creek District, about $\frac{1}{4}$ miles from the Victor gold mine. The officers of the company are V. A. Macdonald, president; J. M. Burke, of Buffalo, N. Y., vice-president; H. J. Burke, of Chicago, Ill., secretary, and P. K. Hanscom, treasurer. The management of the property is attended to by Mr. Macdonald. The company is capitalized at \$600,000; par value, \$1; non-assessable. The five claims above referred to were purchased by Mr. Macdonald through an agency for \$1,500, not including commissions. He informed a representative of the *Engineering and Mining Journal* that he will spend from \$5,000 to \$10,000 in developing the property. A contract has been let for the work, and the company will sink a shaft to the depth of 110 ft. The property contains gold and copper. At one time a shaft was sunk 40 ft. The company has placed 300,000 shares of the 600,000 shares issued in its treasury, and 50,000 shares of this will be sold to secure the necessary money to operate the five claims. There were sales of 8,600 shares of the stock at 11c. within the last few days.

VAUGHAN.—This lease on the Mabel M., which was formerly in the hands of Foley and others, is making active preparation to increase the production. A new steam boiler and hoist have been erected and new ore bins are almost completed. A shipment of 20 tons has just been made. The ore comes from the bottom of the shaft, which is 100 ft. in depth, and from a drift just started on the vein at that depth.

HINSDALE COUNTY.

HIDDEN TREASURE.—This mine, adjoining the Ute & Ulay, has made the first shipment since the troubles were settled. A mill is now being erected for treating these ores.

HOTCHKISS MOUNTAIN MINING AND REDUCTION COMPANY.—This company, owner of the Black Crook group of mines, adjoining the Golden Fleece, has in the District Court won its adverse suit over the Hiawasse Company. The Black Crook has since January 1st been a steady shipper of high-grade ore. Sixteen men are employed. The best ore is being taken from the shaft, which is located at a point 600 ft. from the mouth of the crosscut tunnel and this shaft has been sunk to a depth of 40 ft. It is the intention of the manager, G. H. Zacharias, to sink this shaft 60 ft., and then run levels both north and south from the bottom. A drift has been driven north from the 600-ft. tunnel to a distance of 140 ft. and south to a distance of over 200 ft., and good ore is found in the breast of each drift. A carload shipment has just been made.

LAKE COUNTY.

(From Our Special Correspondent.)

DOWNTOWN PROPOSITIONS.—The news reached here the first of this week that the four big pumps which have been built at South Buffalo, N. Y., for the Leadville downtown properties had been tested and were found to be satisfactory. The test was made with 350 lbs. maximum pressure for each pump and they worked finely. The dispatch also stated that the pumps would be taken down at once and shipped to Leadville by fast freight. It can, therefore, be expected that by July 4th or 5th the machinery will be here and then active preparations will be made for a resumption on the downtown mines.

ALLEGHENY MINING COMPANY.—Lessees are operating the Shenango shaft of this company's property, on Yankee Hill. Recently, at a depth of about 420 ft., they encountered a stringer of ore, which was followed, and which has opened up into a good body ore, from which shipments are being made of 50 tons per day.

BIMETALLIC SMELTER.—There is great activity at this plant and a general overhauling of the place has about been completed. Ore is being received and from 150 to 200 tons per day is being put in the bins. It was at first thought that the Bimetallic would start with only one stack, but it now seems

probable that at least two stacks will be started and that the plant will be blown in by July 5th.

DWYER.—Owing to impassable roads during the winter the lessees were unable to ship any ore, but they have their ore bins well filled and have commenced shipments, some of the stuff running 100 oz. silver to the ton.

FIRST NATIONAL.—This well-known property, in Iowa gulch, now idle is, it is understood, to be started up and actively developed at an early date. These people have a good body of sulphide ore to begin operations on, and it is thought that the mine will make a name for itself this season.

GRANITE SECTION.—There is every indication that Granite will produce more ore this season than for some time past. The burned district is being rebuilt as fast as possible and the outlook for the place is very encouraging. There are about 200 men on the pay rolls. The Colorado Mining Company, which is composed of Missouri capitalists, is operating the New Years property. These people have four shafts down 80, 105, 246 and 35 ft. respectively and have 4 ft. of mill dirt, returns from a shipment of which gave \$100 gold to the ton.

On the Magenta an upraise is being run from the 160-ft. level on a streak of ore averaging 18 to 24 in.

On the Midland Terminal property new lessees have just opened up an 18-in. streak of ore which is said to run very high.

On the Twin Lakes Placer property active work is being carried on with about 60 men and the output is said to be from \$5,000 to \$8,000 per month.

New lessees have recently taken hold of the Monte Cristo and are now unwatering that property. It is known that there are 18 in. of good ore in the shaft.

On the Belle of Granite the operators are working on an 18-in. streak of fine ore and are also preparing to make a shipment from their dump.

Eastern capital has taken hold of the Columbine lode, in Lost Canyon, and the shaft is to be sent down to a depth of 400 ft., when drifting is to be commenced.

HIGHLAND MARY.—This property, on Yankee Hill, is being operated by lessees. The shaft is 500 ft. deep and a body of iron sulphides has been cut, from which 15 tons daily of good character of ore is being shipped. The lessees have hopes that the new find may develop into the Mikado ore chute, as they are in the neighborhood of this chute.

MAB.—This new shaft is going down as fast as three shifts can send it, and it is now at a depth of 800 ft. There appears to be not the slightest doubt but that this property will catch the ore chute of the Mahala and become a good producer before the end of this year.

MAHALA MINING COMPANY.—These people are increasing their shipments, as the big iron sulphide ore chute is opening up in good shape. The body seems to be developing into a larger one than the first ore chute, and promises to even exceed the expectations of the management. The work is being carried on from the new shaft, a distance of 700 ft. from the old one, and at a depth of about 200 ft.

MORNING & EVENING STARS.—Some 12 shafts on this consolidation are being operated and shipments are to be increased. Over 250 tons a day of a good quality of iron ore is now being shipped and is being sent to the valley smelters. More of this mineral can be used by the Philadelphia plant from now on and this means another increase in shipments.

SENECA GROUP.—On the Bates shaft, at a depth of about 150 ft., a good iron chute has been encountered and shipments of 20 tons a day are being made. The Ponsardine shaft has been sunk to a depth of 500 ft., and the lessees have good indications.

WESTON PASS.—A number of new prospectors from Leadville went to this section this week and it is learned that the place is rapidly filling up. The strikes that have been made in that part of the camp and the excellent outlook in properties that are being opened up leaves no room for doubt as to the importance of the territory, and a great amount of work will be conducted there during the season.

LA PLATA COUNTY.

VALLEY KING.—This property, at the mouth of Basin Gulch, in which a rich strike was made about the middle of June, has been sold to Pret Trachsler & Company, who will develop it. This company is carrying on extensive mining in the La Plata District.

LARIMER COUNTY.

CAPITAL.—Capt. S. G. Webb and Mr. L. L. Winterstein, of Fort Collins, own and are developing this mine at Rustic Camp, which is producing ore that assays as high as \$118 in gold to the ton. They are also working three copper leads at Livermore.

OURAY COUNTY.

O. & N. TUNNEL.—A shipment of 10 tons of ore has been made from this tunnel to the Omaha & Grant smelter at Denver, and is pronounced by experts to be the most valuable of its size on record. Every hundred weight of it is declared to have assayed 40c to the pound, or about \$800 per ton.

The O. & N. tunnel is being operated by a party of Denver and Eastern capitalists. The tunnel is situated near the town of Ouray, where there has been quite a mining revival.

YANKEE GIRL.—A mining transaction of con-

siderable importance involves the reopening and working of this once famous mine, of Red Mountain, and its probable transfer from English to American ownership. The mine has lain idle since the panic of 1893. Mr. George Crawford, who sold it some 10 years ago in London, secured an option with lease on it, and a party of Eastern gentlemen have joined in the venture of starting it up. The work of pumping it out has begun, and will require several weeks. The shaft is about 850 ft. deep, and for 750 ft. above the bottom all the workings are full of water. Electric power to operate the plant will be obtained from the Telluride Power Company and conveyed 17 miles to the mine. This will be the longest transmission in the State.

(From Our Special Correspondent.)

GERTIE.—This property, in the Sneffels District, showing an 18-in. streak of high-grade ore, was recently started up by its owner, Wm. Clark.

JENNIE LIND.—Dr. Johnson, of Montrose, has engaged a force of men to work on this property, an extension of the Grizzly Bear lode.

OLD DOMINION MINING COMPANY.—This company, organized at Richmond, Va., has at last determined to resume operations on the Humboldt, in the Sneffels District, formerly one of the best producers in the San Juan country. The group embodied by the Humboldt also consists of the Sailor's Fortune and Tom Paine lodes, two properties which developed the vein for over 4,000 ft. and four years ago gave employment to over 1,000 men. Formerly the Humboldt shipped a carload per day of high-grade ore, carrying ruby and brittle silver, gray copper, sulphides and some lead. The mine is developed by two levels, aggregating 1,500 ft., with a crosscut of 500 ft. The main shaft is down 350 ft.

OLD LOUT.—Denver parties have leased this mine in Poughkeepsie gulch and will shortly begin active operations.

OURAY MINING AND EXPLORATION COMPANY.—This company has just been organized to operate mines in Ouray county. Capital stock, \$50,000; incorporators, W. B. Williams, S. A. Osborne and E. P. Miller.

SAN JUAN COUNTY,

(From Our Special Correspondent.)

DEMOCRAT.—Colorado Springs parties have secured control of this property, and will begin operations soon on a large scale.

GOLDEN FLEECE.—This property adjoins the Scotia and has not been worked for some time. However, it is currently reported that the company will in a very short time put on a large force of men and erect several needed buildings for the accommodation of their employees.

GOLD TUNNEL AND RAILWAY COMPANY.—Mr. B. T. Kelly, general manager for this company, has been in town for two weeks past making arrangements for an early resumption of work on the Oro tunnel, owned by this company. The tunnel will be 8 x 9 ft. in the clear, and its length when completed to the North Star lode will be 20,000 ft., and the depth at that point 5,000 ft. from surface. The tunnel is intended to cut all the veins at right angles, passing through Kendal and Round mountains. It will also pass under Deer Park at considerable depth, where many rich discoveries have lately been made. The purpose of the tunnel is to afford a means of cheaper transportation to the surface of the ores from most of the big mines whose ground it intersects, principally the Silver Lake, Iowa and Royal Tiger groups.

INDEX MINING COMPANY.—Several carloads of ore are now awaiting shipment, averaging \$65 per ton. A fine streak of high-grade lead ore was lately encountered in the breast of tunnel No. 1, which gives mill runs of 65% lead, 40 oz. silver and \$8 gold per ton.

MORNING & EVENING STAR.—This mine has been let to a Denver company under bond and lease, and active operations will soon begin. The property several years ago was one of the heaviest shippers in the San Juan District, but has lately remained in a state of idleness.

RIDGEWAY.—This property is in Maggie gulch and will soon be shipping on a large scale. The trails leading up to the mine are being placed in condition, and a crosscut is to be immediately commenced which, when completed, will furnish 75 ft. of stopping ground on \$60 milling ore.

ROYAL TIGER.—Development in this mine lately revealed another large chute of fine galena and gray copper ore. Mill runs give 45% copper and 50 oz. silver.

SCOTIA.—Ras. Hanson, who is operating this property under lease, shipped two cars of gold ore recently, together with 20 sacks of gold ore running very high.

SUNNYSIDE.—A large force of men is employed, breaking low-grade ore, but it would be impossible to handle the output at the mill were the mine to be taxed to a greater extent. Thousands of tons of ore are in sight and 25 tons daily are being sent by means of pack animals to the mill.

TOM MOORE.—Garland & La Grave, of St. Louis, have secured these properties, which are to be consolidated with the Silver Wing group. The Tom Moore has lately been a heavy shipper, and now has a large body of \$30 ore in sight ready to break. The mill belonging to the mine is to be remodeled, and will handle the low-grade output.

SUMMIT COUNTY.

ALEX LEE.—A new strike of about 15 in. of ore has been made on the hill above Lincoln in this claim by Joseph McKinney. The ore was struck in the tunnel, which has been driven for over 300 ft.; it is galena, which carries some silver and about 1 oz. in gold per ton.

GEORGIA.

FORSYTH COUNTY.

TEXAS GOLD MINING COMPANY.—This company, of Nettie, of which Martin Armstrong is secretary, has just launched a dredge-boat 16 x 48 ft. in the Chatahochee River, and will put in hydraulic placer works, for which the necessary machinery is yet to be purchased.

IDAHO.

BOISE COUNTY.

EASTERN.—An important strike has been made in Willow Creek District, in the tunnel of this mine, owned by Col. W. H. Dewey. The tunnel has just cut a ledge at a depth of nearly 300 ft., disclosing 2½ ft. of ore, said to run \$200 in gold. This is the deepest work in the camp.

TWIN SPRINGS.—Work on this placer property has been resumed. It was closed down about a month ago, owing to the death of one of the principal men of the company. This company is expending \$10,000 in getting water in the high bars of the old river channel.

KOOTENAI COUNTY.

CROWN POINT.—William Smith and Martin Christopher, owners of this mine on Blacktail Mountain, have received the returns for two tons of ore recently shipped to the Tacoma smelter. It netted \$222.

KEEP COOL.—This mine, near Lakeview, 26 miles south of Hope, across Lake Pend-d'Oreille, now employs 26 miners and expects to increase the force soon. They are making regular shipments of high-grade galena ore to the Tacoma smelter. The company started another tunnel recently and struck a body of ore that it claims assays 500 oz. in silver. The ore in the old tunnel has been improving with depth.

PEERLESS.—Coyle, Smith & Egan have struck native copper in this claim on Pack River, 5 miles from Hope. Four miners have taken a contract for driving a 50-ft. tunnel. The ore carries some gold.

UNION SILVER STAR MINING COMPANY.—This company, of Blacktail Mountain, reports a rich strike in No. 2 shaft. It claims to have enough ore in sight to pay for the development work. The principal stockholders live in Spokane.

SHOSHONE COUNTY.

MAMMOTH MINING COMPANY.—The Gem mill is to start up again after being idle most of the time for a year, a deal between the Mammoth, Standard and Milwaukee mining companies having been made. By this agreement between the companies the Mammoth Mining Company, besides securing a lease of the Gem mill from the Milwaukee Mining Company, also gets a concession from the Standard Mining Company by which the Mammoth people will use the tramway and upper, or Standard and Banner tunnels of the Standard. Some work will be needed on the mill, and at the mine there will be quite a lot of it. New tracks will have to be laid to connect with the Standard tunnels, and ore chutes will be built down through the old workings. Altogether the work is expected to take six weeks, at the end of which time the mill will start up.

KANSAS.

Governor Leedy has appointed the following persons to be delegates to the international gold mining convention at Denver, Colo., commencing July 7th: O. E. Comstock, Hutchinson; S. G. Issett, Chanute; W. J. Costigan, Ottawa; Ed. Howe, Atchison; John Conaway, Norton; W. B. Washington, Leoti; Otis Nesbit, Washington; C. A. Hammet, Marysville; E. M. Weed, Long Island; T. F. Egan, St. Francis; Frank S. Foster, Ellsworth; J. C. Padgett, Council Grove; F. C. Flory, Howard; G. V. Johnson, Sedan; John Seaton, Atchison; George Burroughs, Abilene; A. J. Bryant, Hays City; D. O. McCray, Topeka; D. P. Elliott, Topeka; Albert Parker, Topeka; S. E. Pendleton, Fredonia; J. W. Sponable, Paola; H. H. Grimshaw, Paola; B. E. Kies, Wichita; J. M. Lewis, Kinsley; T. E. Leftwich, Larned; J. C. Starr, Scott City; Tnos. W. Morgan, Eureka; J. B. Fugate, Newton; G. A. Jones, Gove City.

CHEROKEE COUNTY.

(From Our Special Correspondent.)

GALENA LEAD AND ZINC COMPANY.—They have been pumping for some time and are lowering the water very fast, and quite a number of the operators have gone to work in their mines and are hoisting pay dirt. Peter Rice & Company are operating the Cyclone mines, which were producing 60,000 lbs. of lead ore weekly when the water drove them out three years ago.

HEDGES & COMPANY.—They are operating the Moss Back and Cock Robin mines on the Shebbina lease, and have put up a steam concentrating plant to handle the ore. At present they are hoisting dirt from the Moss Back shaft, which is producing over 100,000 lbs. of lead ore weekly.

LARABEE & SONS.—On the Houghy land they have lowered the water to 78 ft. in the pump shaft

near Short Creek, and in some of the shafts on the high ground they are working on the 100-ft. level. There are about 20 shafts going down and some of them are taking out pay dirt. There has been a steady increase in the output of ore as the water goes down. On the Windsor land at the pump shaft they have the water down to 102 ft. These 10 shafts are going down and several of them are hoisting good lead dirt and have been making a turn-in for three weeks. This is the first attempt to gain ground with Chinese pumps and has been very successful so far.

RICHLAND MINING COMPANY.—All the operators are working and they will turn in about 60,000 lbs. of lead ore and 15 tons of zinc ore. This 10 acres of land has paid the stockholders in royalties from \$400 to \$1,000 per week for two years.

SOUTSIDE COMPANY.—On this company's land there are 13 pumps throwing water, and they have drained the ground to 125 ft. Most of the operators on the company's land have from 4 to 10 acre lots, and agreed to sink one or more shafts to 150 ft., and drain the shaft to that depth, for which they receive a reduction of their royalty. They are nearly all working, and the weekly output of ore is 50,000 lbs. of lead ore, 50 tons of free zinc ore and 500 tons of crush ore. The crush ore they concentrate on two large steam jig plants. This land was idle for over three years on account of the water.

MARYLAND.

CONSOLIDATION COAL COMPANY.—This company just had completed a new wharf at Locust Point, Baltimore, in place of the one that collapsed on April 6th last. On April 17th work commenced on the construction of the new wharf, and in 60 working days it was completed and turned over to the company. On June 28th it was first used for dumping coal from the cars into vessels. The wharf is 400 ft. long, 40 ft. wide and 32 ft. high, according to distance. In the construction all the important modern arrangements in wharf building along the Atlantic Ocean have been introduced, with new ideas of the company, and now Baltimore has probably one of the most complete coal-dumping wharves on the Atlantic seaboard, and is able to handle and load the largest class of vessels. By reason of the improvements, notably the gravity tracks for loaded and empty cars, the wharf has a capacity for dumping 6,000 tons a day, or 1,500 tons more than the old wharf. The loaded cars run to the chutes on one track, and back empty on another. The wharf has capacity for loading four 1,500-ton vessels at one time and in one day, two on each side. There are six chutes on each side, that can be operated as economically as any on the Atlantic Coast. The wharf has all the improved appliances used at Pinner's Point and Lambert Point. There are between 1,000 and 1,100 piles, all of the best Georgia pine, and the flooring is of the same material. The fender piles on the outside of the pier are of white oak.

MICHIGAN.

COPPER.

CALUMET & HECLA MINING COMPANY.—This company recently started three new shafts on the Osceola amygdaloid lode, which will be known as Nos. 13, 14 and 15. No. 15 shaft is down about 50 ft.

FRANKLIN MINING COMPANY.—A new air-compressor has been put in at the Franklin, Jr., property. Timbering is in progress at No. 2 shaft on this property, and a new hoisting plant is to be put in at that shaft.

TECUMSEH COPPER COMPANY.—Notice is given that an assessment of \$1 per share has been levied on the capital stock of this company, payable July 1st by stockholders of record at close of business June 30th, after which date no stock can be transferred until said assessment is paid. Interest from July 1st will be charged on all assessments not paid on or before July 10th. Treasurer Demmon, in a circular to stockholders, states that work has been carried on for the past two years in the way of developing or proving up the Osceola amygdaloid and Calumet conglomerate lodes, and although nothing of value has been found, indications are such at present as to warrant the belief that copper-bearing rock may be found at any time in one or both lodes. He thinks the true policy should be to sink deeper on each lode till the ground is fully settled, then open and prove up these lodes by drifting both north and south. The mine is equipped with machinery sufficient to enable explorations with but little, if any, further expense in that direction. On the Osceola lode openings have been made 600 ft. and on the Calumet lode some 300 ft. It is proposed to sink the latter with all consistent speed. The Kearsarge lode also runs through the Tecumseh property. It is estimated that an expense of \$2,500 per month will be sufficient for development. There are 40,000 shares and the \$1 assessment will give fresh working capital of \$40,000.

At a meeting of the company held in Boston, June 28th, these directors were elected: John C. Watson, president; D. L. Demmon, treasurer; Graham Pope, Paul Faber and Geo. H. Flint. The latter gentleman takes the place of J. W. Davis, deceased.

IRON—MENOMINEE RANGE.

ARAGON.—This iron mine, largely a Bessemer producer, located at Norway, has been sold by Angus Smith, of Milwaukee, Wis., to the Commonwealth Iron Company, of Cleveland, which company takes possession July 1st, and the mine will then resume on full time. The price paid was under \$200,000.

MINNESOTA.

(From Our Special Correspondent.)

In the course of a long interview in Duluth, Franklin Rockefeller, of the firm that operates the Franklin, on the Mesabi and the Zenith, on the Vermilion Range, said in substance that he was being held up by the Minnesota Iron Company by its selling its Mesabi ore at so low a figure, and that he did not consider Minnesota properties of any value while such conditions lasted. He claimed the two big companies were selling ore at about 30 to 40c. less than it cost, full freight added, but that they were probably coming out whole, as they paid only cost for freight. He said the Franklin could not get within 50c. of even on its ore at the prices prevalent, and that he would not take out a ton of ore till conditions changed.

A heavy lawsuit is probable between the Rockefeller Company on the one side and the fee-holders and original lessees of the Lake Superior Mines at Hibbing on the other. The Lake Superior mines are owned in fee by wealthy Michigan lumbermen, and were leased to the Lake Superior Iron Company at royalties averaging 30 and 35c. The Lake Superior Company sold a working contract in its leases to the New York & Missabe Company, a concern that was formed by a one-time lieutenant of Mr. Rockefeller's and on the organization of the Rockefeller concern was merged into it. The Rockefeller Company has since carried on the mining of the Lake Superior group, spending, it is claimed, about \$1,000,000 in development, but mining only 56,000 tons of ore last year, and a little this season. It has lately made a request of the fee owners for a reduction in royalties and the fee owners have returned a proposition that it reduce ore freight rates, which it naturally scorned to do. Now it is claimed that the Rockefeller Company will mine only the minimum, 20,000 tons a year, from each of the three properties, though there are 40,000,000 tons in sight, and the Lake Superior company sees not only its profits but its only asset, its lease, go glimmering. It has served notice on the Rockefeller company that the condition of the lessees are not being complied with, and suit is probable unless some settlement can be made. The fee-holders, in the meantime, will make no effort to force any change, being very willing to let the ore remain in the ground till the expiration of the leases, 15 years hence.

The Minnesota Iron Company is handling at its docks and over its railroad 20,000 tons of ore daily, and is shipping the same. A total of 908 25-ton cars, the greatest in the history of the company, was received at the docks one day this week. Last week's shipments were carried on 40 vessels, making an average cargo of about 4,000 tons.

IRON—MESABI RANGE.

(From Our Special Correspondent.)

FRANKLIN MINING COMPANY.—Loading from the stockpiles of this company has begun at both Franklin and Vulcan shafts. There are about 80,000 tons in stock, which is all to be cleaned up. No mining is yet in sight.

MAHONING ORE COMPANY.—This company is shipping about 5,500 tons a day, its greatest work since first opened.

MOUNTAIN IRON COMPANY.—Another record-breaking day was noted at the steam shovel this week, there being loaded in 8 hours and 50 minutes 232 20½-ton cars. Had the full 10 hours been put in the record would have been at least 250 cars, or 6,000 tons. This shovel has a 5-ton dipper, which is obliged to swing more than twice a minute to make such a record.

NORMAN IRON COMPANY.—The stockpile at this mine has been cleaned up and the shovel at work there has gone to the Auburn for a like duty. About 18,000 tons were removed. The rumor that the Norman had been abandoned by the Minnesota Iron Company, doubted in this correspondence last week, is authoritatively denied.

OHIO MINING COMPANY.—This property, now owned by the Rockefeller combination, is shipping some 500 tons a day, hand-mined from the stripped area. In all this season some 20,000 tons have been shipped.

OLIVER MINING COMPANY.—This company is shipping about 4,000 tons a day.

PENOBSCOT MINING COMPANY.—Water has again troubled this mine. While men were setting the foundation for a new pump the other day it broke in, rising in the shaft to the first level despite the 2,000 gals. per minute of the present pumping plant. It will be some little time before the mine is pumped out, as it will have to add boiler capacity for the work. All the Hibbing basin mines are very wet.

SPARTA IRON COMPANY.—At this new property ore has been uncovered at one end of the stripping, but no mining will be done for some weeks to come. About 100 men are working in the stripping day and night.

MISSOURI.

JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN ORE MARKET.—Excellent conditions prevailed all week for mining and marketing the ores, and the sales were an increase of 16 carloads of zinc ore, but a decrease of 2 carloads of lead ore. Compared with the corresponding period of 1896, the sales were an increase of 13 carloads of zinc ore with a decrease of 8 carloads of lead ore. The zinc

ore was nearly all cleaned up about the mines of Joplin, Webb City, Cartersville and all the outlying camps, except at Galena, where they have a surplus of about 500 tons. There is a very small surplus of lead ore in the entire district. Lead ore was bought close all over the district, showing that the product is decreasing while the market is exceptionally strong. The output of zinc ore is steady, with very little fluctuation at this season, though prospects in course of development indicate an increased production of zinc ore rather than of lead ore. The highest price paid during the past week for zinc ore was \$21 per ton, a full third of the Joplin product going at that figure. Two hundred tons of the Webb City and Cartersville ore, and the Oronogo, Alba and Springfield products also brought \$21 per ton. Lead ore was steady all the week at \$20 per 1,000 lbs. until Saturday morning, when the Picher Lead Company advanced the price to \$20.25 per 1,000 lbs. The same period last year zinc ore sold at \$21 per ton, top price, and lead ore brought only \$16.50 per 1,000 lbs.

Following are the sales of zinc and lead ores for the week ending June 26: Joplin zinc, 1,313,270 lbs.; lead, 188,800 lbs.; value, \$17,571. Cartersville zinc, 961,230 lbs.; lead, 130,290 lbs.; value, \$11,914. Webb City zinc, 665,159 lbs.; lead, 39,910 lbs.; value, \$7,118. Galena, Kan., zinc, 2,610,000 lbs.; lead, 363,640 lbs.; value, \$31,415. Aurora zinc, 670,000 lbs.; lead, 25,000 lbs.; value, \$6,542. Carthage zinc, 125,960 lbs.; value, \$1,323. Alba zinc, 114,000 lbs.; value, \$1,197. Springfield zinc, 44,000 lbs.; value, \$642. Oronogo zinc, 45,780 lbs.; lead, 5,040 lbs.; value, \$513. Belleville zinc, 28,730 lbs.; lead, 470 lbs.; value, \$310. District totals for last week: Zinc, 6,578,120 lbs.; lead, 762,150 lbs.; value, \$78,545. District totals for 25 weeks: Zinc, 161,416,830 lbs.; lead, 23,563,300 lbs.; value, \$2,307,534.

CHITWOOD MINING COMPANY.—This company is operating a lease on the Zelliken land, at Tuckahee, and has made a good strike of lead ore at 85 ft. in open ground. They will lay the lease out in mining lots and sub-lease them to operators.

LEADVILLE HOLLOW.—The scarcity of water at the north end of this district is greatly retarding operations. The branch has gone dry and all water used in the concentrating plants is used over again.

PRICE, PHILLIPPI & COMPANY.—The Burlington plant in Leadville Hollow is shut down now, but will start up in a few days. They shut down to put in a new 65-H. P. boiler to run the plant, pump and air compressor. They have a large face of ore on 115-ft. level.

PROVIDENCE MINING COMPANY.—They have a lease on 120 acres of land, 10 miles east of Joplin, where they have developed a large body of ore under 80 ft. of limestone. They are now sinking a large pump shaft with steam drills. The company is composed of capitalists of Providence, R. I.

YALE, MOORE & COMPANY.—They are developing 40 acres of the Taylor Land and Mining Company's land, on College Hill, east of Joplin. Two shafts have been sunk and pay dirt struck at 78 ft. Last week they made their first turn-in of 8 tons of zinc ore and 5,000 lbs. of lead ore.

MONTANA.

MADISON COUNTY.

(From Our Special Correspondent.)

ABBINGTON-BOSTON-PARNELL.—What is outlined as a handsome free milling proposition is this tract, consisting all told of over 100 acres, just secured by Mr. Samuel Newhouse. There are several veins; one on Parnell ground, 15 ft. wide, almost solid quartz, is exposed, while on Abbingtown there is another parallel to it, 8 to 10 ft. A 20-stamp mill has been ordered to be operating in the shortest possible time and another of 20 stamps will probably be added shortly after the first batteries begin pounding. This venture is the result of Mr. Newhouse's last visit to Montana.

BALD MOUNTAIN.—It is reported that Captain Mather, Dr. Rea and others will soon start up this gold property, which is located about 20 miles from Norris. They have a water power 10-stamp mill which can be started up at short notice.

CHILL.—This gold mine, located about four miles from Sappington on the Northern Pacific Railroad, has been running steadily for about three years, producing ore for a 10-stamp mill. Recently, a lease and bond was secured on the property by Dr. Grigg, of Butte, who reports that the mine is showing up well. This gentleman is also erecting a 10-stamp mill on the McVey claim, which he owns, located about one-half mile southwest from the Chill.

DAN O'SHEA GROUP.—These silver-gold claims, located about 7 miles from Norris, are producing 100 oz. ore. They are operated under lease and bond by Linneman, Smith, Mullins & Coghlin, of Butte. About 16 men are employed developing the property, which has every indication of becoming an important silver producer.

LITTLE KID.—This gold mine, located about 18 miles from Norris, is shipping \$100 gold rock to the smelters. The ore is not strictly free-milling, and the managers find it more profitable to ship the higher grade ore than treat it in their 20-ton Bryan mill. The incline is down 125 ft. below No. 3 tunnel and has 7 ft. of ore on the bottom.

MOHEGAN.—This gold mine, located at Red Bluff, which was considered a prominent dividend-payer, was shut down and the pumps taken out on June 7th.

REVENUE.—This gold mine, located at Richmond Flat, furnishes its usual amount of ore for the cyanide plant. It is reported that the owners recently purchased the Kelliher property, located about 3 miles from Norris, for \$60,000.

SILVER BOW COUNTY.

(From Our Special Correspondent.)

ALICE GOLD AND SILVER MINING COMPANY.—Important improvements are noticeable at this well-known property, the latest being a large new shaft-house at the Valdimere claim, located in the city of Walkerville. Sinking will soon commence. The Alice, Blue Wing and Magna Charta produce enough ore to keep the mill going. Despite the low price of silver this property paid a substantial dividend last year, and appearances indicate a new era of prosperity for this company.

BUTTE & BOSTON CONSOLIDATED MINING COMPANY.—This company is steadily developing its mines, with a view of resuming the extraction of ore in the near future. Sinking is in progress at the Blue Jay. At the East Gray Rock men are at work sinking for a foundation for a new air compressor. At the West Gray a new boiler has been added to the power plant, while crosscutting and drifting are in progress on the 300, 500 and 700-ft. levels. Lessees on the company's ground, who have been shipping their ore to other works, are requested to ship to the company.

COLORADO SMELTING AND REFINING COMPANY.—The Gagnon mine employs about 230 men, is 1,500 ft. deep, and produces about 500 tons of ore per day. The vein in places is 60 ft. wide, and has produced some exceedingly rich silver and copper ore. From the 300, 400 and 500-ft. levels large quantities of ore are taken out now that were considered to low grade years ago. On the 1,500-ft. level four drifts are in progress on two streaks of ore. Crosscutting south for the Gold Hill vein is also in progress, with the expectation that it will soon be encountered.

W. A. CLARK'S PROPERTIES.—The Colusa Parrot mine is producing good copper-silver ore from the 1,200-ft. level. At the Original ore is hoisted from the 1,000-ft. level and shipped by the electric cars to the smelter.

NEVADA.

ELKO COUNTY.

(From Our Special Correspondent.)

DEXTER.—An electrifying ore uncovering is just made at 135 ft. in the new Parsons shaft of quartz carrying over \$400. Of course the paying body is not all such rock, though it is good high grade. This shaft is to be the main working artery on which a steam hoist is about installed. Superintendent Parsons is elated over the accuracy of his forecast, as the ore body was cut within 8 ft. of his estimate of the vein's probable depth. Vertically it is 48 ft. below the upper workings and 70 ft. on dip. To determine the extent of the new find will require some little time.

RESCUE GOLD MINING COMPANY.—This is a Park City, Utah, corporation, owning the Octorora group of gold mines, 70 miles north of Elko, on which is a 10-stamp mill and one vanner. James Messimer, of Pioche, has obtained a lease and bond, and will commence operations at once. The property produced some gold in 1895, but the management being unsatisfactory to the stockholders, it was closed down and has been idle for a year.

WHITE ROCK GOLD MINING COMPANY.—For 4 miles along Borrette Canyon, in White Creek Mining District, is a stretch of rich placer ground owned by this Utah company of Salt Lake. Ditch construction began near the end of April. It is ¼ mile, carrying 250 in. All obtainable water is owned by the company, and, if desired, 500 ft. pressure can be had. In the channel a 400-ft. flume has been built, the upper end in bedrock. Hydraulicking commenced June 16th. Throughout, the dirt is good pay, while bedrock is well covered with coarse gold; hence the outlook is encouraging. The capital stock is made up of 200,000 shares, par \$2.50 each. Officers and directors are: L. P. Marix, president; James Shute, vice-president; H. B. Cole, secretary-treasurer; W. M. Hicks, and W. D. Higginbotham, general manager at the mine.

ESMERALDA COUNTY.

(From Our Special Correspondent.)

BLAIR MINES.—The story of the recent examination of this group at Silver Peak, to which reference has been made in previous issues, is an interesting one. L. J. Hanchett held a bond on the mine—conditions, expenditures of \$200,000 in mills and development and \$750,000 purchase price. John I. Blair, of New Jersey, the owner, was dissatisfied with Hanchett, and without the latter's knowledge gave John W. Mackay verbal option. Mackay engaged George W. Maynard, the New York economic geologist, to examine the property, and the latter was accompanied by George D. Roberts to look after the legal details. In the meantime J. B. Hazgin approached Blair, who changed his mind readily and gave Hazgin a written agreement to sell. In this double dealing it was necessary to exclude the Mackay experts from the mine, and Blair took Hanchett into his confidence regarding the deal with Mackay, but not in regard to Hazgin. As a result, Maynard and Roberts were not permitted to make their examination. Roberts at once proceeded to buy up all available water, within a radius of 30 miles, this move being subsequently endorsed by Mr. Mackay. Later, Han-

chett left the mines, when Ellsworth Daggett, of Salt Lake, slipped in and made the examination for J. B. Haggin, assisted by J. D. Hague and Alexander Womble, and when Hanchett learned of the affair and realized he had been duped by Blair he secured the arrest of Hague and Womble on a charge of house-breaking and stealing ore (their samples), Daggett having gotten out of the country. They were held to answer to the grand jury and their trial fixed for July 7th. Hanchett also planted a suit against Blair, which will be contested on the ground that the terms of the option were not complied with. Haggin's experts have examined the mine and it is believed have made a favorable report and have whetted his desire to purchase. There is no wood in the region and electrical current is the only prospective source of power, but George D. Roberts, for Mackay, is carrying all the water in the country in his inside pocket.

As the matter stands, Haggin may have the mine, but it is useless without water. Mackay has the water but no market for it unless he gets the mine. The situation may be compromised between the two magnates, but Hanchett would still push his criminal action against Haggin's experts, and if he obtains redress for his real or his fancied wrongs it will of necessity be by an action at law.

EUREKA COUNTY.

(From Our Special Correspondent.)

CARLIN GRAVEL MINES.—J. O. A. Moore, of Carson, and Postmaster C. E. Barnard, of Carlin, have located a tract of cement gravel on the Humboldt River, west of Carlin. The cement is 5 ft. deep, resting on a bed of slate, and is said to be worth from \$20 to \$40 per ton, gold, while the broken slate bedrock carries the metal in rich quantities. An experimental shipment of the cement is now being sent to Salt Lake. This cement and some free washing gravel extends about 7 miles along the river. The gold is fine but not floured and carries an alloy of silver.

HUMBOLDT COUNTY.

(From Our Special Correspondent.)

ADELAIDE COPPER MINE.—The machinery for the new concentrator and lumber for the shell are now being delivered at Golconda. The concentrator will have a daily capacity of 200 tons, and is to be completed by September 1st. Development work at the mines is being pushed in order to guarantee a supply to the full capacity. Otto Statmann and Joseph Farron, of Salt Lake, are on the ground directing operations.

LANDER COUNTY.

(From Our Special Correspondent.)

AUSTIN MINING COMPANY.—This company, of which Allen C. Washington, of New York, is president, and P. T. Farnsworth, of Salt Lake, is general manager, has just put its new concentrator of 150 tons capacity into commission. The plant will be supplied by a number of veins cut by the Clifton tunnel.

GOLD NOTE.—A 100-ton lot—value about \$200 gold—is being shipped to California from this mine, near Kennedy. The property is owned by J. A. Blossom, of Battle Mountain.

LINCOLN COUNTY.

(From Our Special Correspondent.)

MIDWINTER.—Development work in this mine, owned by Henry Welland, of Pioche, has uncovered a 30-in. vein of carbonates, carrying 53% lead, 44 oz. silver and \$13 gold.

STOREY COUNTY—COMSTOCK LODE.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The official statement of the operations in the mine for the week ending June 19th is as follows: 1,000 level—West crosscut No. 1 has been advanced 26 ft., passing through soft porphyry, showing clay seams with lines of quartz; total length, 349 ft. 1,550 level—The double compartment incline upraise No. 1 has been carried up along the footwall 15 ft.; total height, 148 ft.; top of opening in porphyry streaked with quartz in the lower half of the face, assaying from \$2 to \$7 per ton. 1,650 level—From the 9th floor south drift the upraise has been carried up 8 ft., passing through a quartz formation, assaying \$1.50 per ton; total height, 72 ft. Along the south end of incline upraise No. 1 from the sill floor upward for 50 ft., we have worked south 8 ft.; total distance south from the upraise, 18 ft.; the ore in the south face shows a width of from 6 in. to 1 ft., assaying from \$5 to \$10 per ton. We have extracted from this point 15 tons of ore, assaying per mine car samples \$25 per ton. North from No. 2 upraise we have upraised 13 ft., passing through a streak of ore 2 ft. wide, assaying from \$15 to \$30 per ton; total height, 40 ft. on the slope above the sill floor. In the top of this opening the ore is 1 ft. wide, assaying \$39.85 per ton. We have extracted from this point, together with the 15 tons mentioned, 105 tons of ore, assaying per mine car samples \$46.81 per ton. The total extraction of ore for the week amounted to 105 tons, the average assay value of which, per samples taken from the cars when raised to the surface, was \$44.99 per ton. We have shipped to the Morgan mill during the week 454 tons and 1,280 lbs. of ore, assaying, per railroad car samples, \$61.25 per ton. The average assay value, per battery samples, of all the ore worked at that mill during the week, 335 tons, was \$56.20 per ton.

WASHOE COUNTY.

(From Our Special Correspondent.)

OLINGHOUSE CANYON.—An incipient gold stampede has been started in this direction, due to some remarkable quartz discoveries recently made on a butte of slate. From reports brought in it is learned that H. H. Beck, of Reno, obtained values of \$40,000 gold from his sample of a narrow ledge cropping from the slate. Hand mortars have been pressed into service and by this medium Brooks McLane has obtained \$800 gold from 28 lbs. of quartz. Another miner secured \$490 from 24 lbs. Already a small mill has been moved in and a town (McLaneburg) established.

WHITE PINE COUNTY.

(From Our Special Correspondent.)

CHAINMAN GROUP.—As a result of development of this group, a new town is started, christened Lane. A concentration mill is being erected, the machinery being en route from San Francisco, and a dam and ditch for generating electric current for power is completed in Murray Creek. The Mormon Church owns a large farm on Murray Creek, using the waters for irrigation, and an injunction has been obtained preventing the Chainman company from diverting the fluid. The suit will be contested on the defense that the waters are returned to their natural channel, at a point above where they are retaken for irrigation.

NEW MEXICO.

BERNALILLO COUNTY.

CROWN POINT MINING COMPANY.—The stockholders of this company, operating in the Cochiti District, held the annual meeting June 17th and elected the following officers to serve during the ensuing year: President, Benjamin Johnson; vice-president, James D. May; treasurer, M. W. Flournoy; secretary, Henry Lockhart.

ISABELLA.—Work on this property, a continuation of the Albermarle lead, is to be resumed shortly by R. S. Philpot.

SIERRA COUNTY.

HILLSBORO MINES.—The output of the gold mines at this place for the week ending June 10th was 225 tons; total since January 1st, 3,645 tons.

RICHMOND.—For five years past no work has been done in the lowest level of this mine, but recently Manager Fiske began work at a depth of 375 ft. and struck good pay ore.

SOCORRO COUNTY.

ROYAL MINING COMPANY.—This company has been organized in Socorro, by the election of J. M. Tyler, president; Joseph Price, vice-president; W. M. Driscoll, secretary; E. L. Browne, treasurer. The company owns the Mogul group of claims in Bull of the Woods mining location, and begins work at once, a contract for 250 ft. of development having been let.

TAOS COUNTY.

MONTEZUMA GOLD MINING AND PLACER COMPANY.—This company has about 50 men at work on the lead and placer properties, in Red River District. One tunnel is in 109 ft. and another 110 ft. On the placer property there is a steam pump and whim at work sinking a hole 8x16 ft. to bedrock, which is thought to be about 50 ft.

OJO CALIENTE.—A new mining district has been discovered within a few miles of this place and 50 men are now on the ground staking claims. The assays of surface rock are said to run from 2 to 10 oz. in gold, 2 to 20 oz. in silver and from 10 to 20% copper.

PIONEER.—This gold mine, on Gold Hill, Red River District, shipped two tons of ore recently of the same grade as that on which they received an assay of \$1,876 to the ton. They now have a shaft down 70 ft. and the main tunnel is in 104 ft., with several crosscuts. Float on this property is reported to run \$16 to the ton.

NORTH CAROLINA.

NEW HANOVER COUNTY.

NORTH CAROLINA PHOSPHATE COMPANY.—The land, phosphate mines, mill and other property of this company have been sold for \$16,000 to William H. Chadburn, of Wilmington. It is said that he will work the property on a larger scale than the old company.

OREGON.

PORTLAND MINING EXCHANGE.—Articles of incorporation have been drawn up and a copy filed with the clerk of Multnomah County for record, and another forwarded to Salem to be filed in the office of the Secretary of State. The incorporators are: R. L. Durham, I. W. Pratt, H. W. Monastes, F. K. Arnold, Col. Jas. Jackson, Charles L. Fay, E. B. McFarland, J. F. Batchelder and L. L. Hawkins. The capital stock is \$2,500, divided into 100 shares, at \$25 each. The organization, as stated by the incorporators, is for the purpose of gathering and disseminating, by mail or otherwise, reliable information regarding the mineral resources of Oregon and Washington.

JACKSON COUNTY.

HICKS MILL.—To this mill in Ashland a latest improved concentrator has been added to the 5-stamp mill. The owners also have the old Ashland mine tailings, which run \$7 per ton. The mill will start up immediately on a lot of ore from the Asland mine.

LAYTON HYDRAULIC MINES.—J. T. Layton owns and operates two hydraulic mines, one on Applegate and the other on Williams Creek. These are now running on full time with a force of 10 men, and are expected to continue until clean-up time, which will be about August 1st. The water supply is obtained from Williams Creek and is taken out in two ditches, one 18 and the other 20 miles long, one of these having been recently enlarged and extended, at an expense to the owner of \$20,000.

STEAMBOAT.—King Brothers, proprietors of this quartz mine, have discontinued work, having exhausted all available ore. Their mill has been disposed of to parties near Merlin, Josephine County.

JOSEPHINE COUNTY.

TAYLOR & CROW.—This firm has had a carload of ore crushed at the Hicks mill, making about the same amount of bullion as the last shipment, \$3,000. Their property is located back of Galice creek and the ore is first moved on pack animals, then by team and then by rail from Merlin to Ashland. This costs them \$35 per ton to lay the ore down at the mill in Ashland. The ore is free milling and works about \$200 per ton.

PENNSYLVANIA.

ANTHRACITE COAL.

DELAWARE, LACKAWANNA & WESTERN COAL COMPANY.—After three months' idleness the Woodward mine, owned and operated at Kingston by this company, resumed operations on July 1st. All the company's mines in the valley with the exception of the Avondale and Nanticoke are in operation.

OAK HILL COAL COMPANY.—This company, of Scranton, with a capital of \$60,000, has been chartered at the State Department.

BITUMINOUS COAL.

CRUMP'S MINE.—Over 300 coal miners employed in this mine, at McKeesport, went out on strike June 29th. The men were notified that a reduction of $\frac{1}{4}$ ¢ per bushel would be made. They were being paid \$2 per 100 lbs., or 2¢ per bushel.

DOUGLASS COAL COMPANY.—This company, at Douglass station, in the vicinity of West Newton, has been sold to J. C. Pierce, of Blythedale. The coal is owned by James H. Douglass, who has leased the plant to Mr. Pierce. The mine has been idle over a year. It will be put in operation in a short time, and about 75 miners will be employed.

PITTSBURG & BELLEVERNON COAL COMPANY.—Receivers of this company have been granted leave to lease for a six months' term the Enterprise mine, near McKeesport, to Evan Morris, of Girard. The receivers are to be paid a royalty of 8¢ a ton for all coal mined, and Morris is to have the option of purchasing the property within six months for \$32,000.

ROCHESTER & PITTSBURG COAL AND IRON COMPANY.—This company has given orders to fire up all the plants at Punxsutawney. This order is given in view of the fact that the iron-works are likely to start up within 30 days.

SOUTH CAROLINA.

EMPIRE MINING COMPANY.—This company has been organized by William D. Chisholm and others to mine phosphates in Coosaw River.

UTAH.

(From Our Special Correspondent.)

GOLD MINING CONVENTION.—It is at last quite apparent that Utah is neither to be largely, nor properly, represented at the First International Gold Mining Convention, to convene in Denver on July 7th. At this writing no delegates are selected, save those at large appointed by Governor Wells, and of these the majority have signified they do not propose to attend. Such is the present status of the matter, which is somewhat different from what appeared on the surface a fortnight ago. What, perhaps, is the most strange, in Mercur, the only distinctive gold region of the State yielding largely at present, less interest, if possible, is shown than in other leading camps. But one conclusion can be drawn, which is, that those chiefly interested in mining in Utah do not believe any beneficial results will follow from the deliberations of the forthcoming gathering. Are they mistaken? will they regret their action, or, more correctly, their lack of action?

SHIPMENTS FROM SALT LAKE.—During the week ending June 26th there were shipped East: 27 cars, or 1,789,840 lbs., lead-silver bullion; 2 cars, or 80,544 lbs., copper bullion; 46 cars, or 895 tons, lead-silver ore. For June the total eastbound shipments aggregated 106 cars, or 5,065,293 lbs., lead-silver bullion; 8 cars, or 471,738 lbs., copper bullion; 150 cars, or 2,975 tons lead-silver ore, and 1 car, or 23 $\frac{1}{2}$ tons, argentiferous slag.

JUAU COUNTY.

(From Our Special Correspondent.)

GOVERNOR.—This Tintic prospect, worked by Olson Bros., of Eureka, made its initial shipment this week; the carload averaged 8% copper, 29 oz. silver, \$1.40 gold.

SWANSEA MINING COMPANY.—On June 22d, at Salt Lake, the annual meeting was held, 91,000 shares out of the 94,000 issued being represented. Receipts for the year were \$91,659.47, of which \$88,771 was from ore sales; expenses, \$46,983.53. In the past 12 months 8 dividends of 5¢ were paid, a total of \$40,000. All told, the development during

the year was 1,965 ft., of which 261 ft. were shaft, 265 ft. drifts, 439 ft. wings, besides stoping above 450-ft. level. Ore averaged 51 $\frac{3}{8}$ oz. silver, 11 $\frac{1}{2}$ % lead and .02 oz. gold; average received per ton, \$27.65; net over mining freight and treatment, \$13.15. General Manager Geddes thus concluded his report: "It is with some degree of pleasure that at the close of a year of pronounced business depression and disaster your directors are enabled to submit results that show a prospect turned into a well-developed mine that has given to the stockholders \$40,000 in dividends, turned a deficit of a year ago into a surplus of over \$2,000." Shaft is 690 ft. deep, South Swansea north line being 40 ft. from shaft; seven levels, lowest 650; greatest lateral development 330 ft. all in ore, on 550 level face, in handsome lead carbonates, which have continued for 75 ft. A peculiar feature is this occurrence of carbonates below sulphides. When first entered this carbonate zone presented almost a clean cut vertical surface while drifting on a strong galena body—galena on south, carbonates north. Carbonate chute averages 4 ft., maximum 8 ft.; runs high in lead, 50 to 100 oz. silver, \$1 gold—a remarkable fissure vein uncovering. Sufficient is made from development for monthly \$5,000 dividend, so no stoping is now done. Forty men are employed. Ore shipments 300 to 400 tons a month. Officers and directors for the current year are: George P. Holman, president; Theron Geddes, vice-president-treasurer-general manager; S. O. Snyder, secretary; William Hatfield, Joseph Brinker and J. J. Judson.

TREASURE HILL MINING COMPANY.—Articles of incorporation have been filed by this company, with a capital of \$25,000 in 81 shares. Officers are W. H. Dodge, president; W. F. Ercanbrock, vice-president; William Pischel, secretary; Sharp Walker, treasurer; C. F. Ercanbrock; F. B. Cook. The company owns lease and bond on Treasure, Ercan, Valley and Cornucopia claims in Tintic mining district at Silver City. Property was famous during the carbonate era of Silver City, but, like all other mines there, was abandoned when the barren pyrite zone was reached. The incorporators have sunk 325 ft. and will cut the vein on its dip in 70 ft. additional. F. B. Cook is manager.

TINTIC SHIPMENTS.—For the week ending June 26th: Bullion-Berk, 20 cars; Centennial-Eureka, 3; Gemini, 10; Uncle Sam, 6; Ajax, 5; Carissa, 1; Swansea, 3; South Swansea, 6; North Star, 5; Governor, 1; Sioux Mill, 1 car concentrates.

PIUTE COUNTY.

(From Our Special Correspondent.)

ANNIE LAURIE.—As the outcome of a recent visit of the directors to this mine is the letting of a contract to extend the tunnel 50 ft. While not a large piece of work, it is believed to be sufficient to tap the extension of the rich Blue Bird vein.

GOLDEN STAR MINING AND MILLING COMPANY.—The capitalization of this company is \$1,500,000 in 85 shares. Timothy Egan is president-treasurer-manager; Patrick Ryan, vice-president; C. E. Hudson, secretary. The company owns the Blue Bird, Grasshopper, Red Bird, Last Chance and three fractional claims in Gold Mountain Mining District. The greatest development work is on the Blue Bird, where a tunnel has crosscut two veins, the principal one 5 ft. thick averaging \$60 in gold, with 18 in. of \$200 ore. A carload shipped to Salt Lake this week sold on controls of 8.35 oz. gold and 24.95 oz. silver. The mine is capable of a present output of one car each fortnight of such ore.

SALT LAKE COUNTY.

(From Our Special Correspondent.)

DIPPER GOLD MINING AND MILLING COMPANY.—The capitalization is \$100,000 in 81 shares. William Davis is president; William H. Evans, vice-president; R. P. Morris, secretary-treasurer; Gill S. Peyton, general manager. The company has a bond on the Alix, Dipper and Evans claims, at the mouth of Little Cottonwood Canyon, for \$50,000; the first payment has been made. Development consists of 300 ft. of tunnel, shaft 75 ft., exposing a small vein of very rich gold ore in porphyry. Some small shipments have been made, running \$180 gold; at present a 12-in. streak, averaging \$80, is being followed.

FRISCO.—President E. W. Genter last week placed an order for a 40-H. P. hoist, guaranteed to work 1,200 ft. depth, to be up in a month. Accounts from the mine are very good. A new main shaft with cage, pumps, etc., is to be sunk, and systematic development is to be the new order.

HIGHLAND BOY.—It is an open secret that the object of Mr. H. A. Keller's recent visit to this Bingham property was to advise whether the copper-gold products as mined had better be concentrated by water or heat. He favors the latter and a matte smelter is under consideration. To say that Mr. Keller was enthusiastic after his sight-seeing underground is a tame statement. Particulars of this ore body have already been given in these notes. No. 6 tunnel, to cut the big ore channel 150 ft. below No. 5, is to be started so soon as Manager Thomas Weir returns from his visit East, or in about a week. The mill will be completed ready for its initial run by August 15th.

NORTH LAST CHANCE.—This is an old-time Bingham producer now being rejuvenated by C. J. Hodge, of Houghton, Mich., with the aid of a concentrator. Mr. Hodge is installing a number of jigs of his own invention (patented) of the same pattern as 56 installed at the Tamarack on the Lake, last

March. A good grade of concentrates is being made by the one jig now in use at the North Last Chance concentrator, and experiments are bringing the percentage saved up to a point where the vaners can do no more.

SUMMIT COUNTY.

(From Our Special Correspondent.)

ONTARIO.—A shipment of 39 bars containing 22,716 fine ounces silver was made from the Ontario mill this week.

PARK CITY SHIPMENTS.—For the week ending June 26th: Silver King, ore, 310 tons; concentrates, 276 tons; Daly-West, 234 tons.

UTAH CENTRAL.—By all odds the best piece of news heard in Park City for months is the announcement of the purchase of the Utah Central Railroad connecting Salt Lake with Park City, by the Rio Grande Western. Under an arrangement between the Union Pacific and the receiver of the Utah Central, all ore shipped went out via U. P., which often proved a hardship. This will now be changed, while a more equitable freight and passenger service may be counted on, and in other ways it will be a great advance in improvement on the old regime.

TOOLEE COUNTY.

(From Our Special Correspondent.)

BLACK BESS.—This is the name of a group of two claims in Spring Creek District, Deep Creek region, where George Silks, of Salt Lake, has uncovered a 14-ft. white quartz ledge averaging \$28 gold. A tunnel of 130 ft. opened the vein. The poorest material carries \$14.40 gold, while specimens plainly showing free gold are frequent. Wood and water are abundant. The group adjoins the Queen of Sheba, operating a mill by water-power.

CHLORIDE POINT.—At 120 ft. in Gladstone shaft, on June 23, an unlooked-for ore body was tapped. A sample from an 8-ft. face returned 71% lead, 90% oz. silver, \$2.40 gold. Its horizon is fully 40 ft. above the level of the drift from the main tunnel to make an air connection with the shaft. So far it appears a well-defined independent chute, as the mineral in the old workings adjacent carries but 4% to 3% lead, 12 to 20 oz. silver, \$3 to \$12 gold. The development has occasioned a lively interest and given renewed hope to owners of nearby properties. Mr. Gill S. Peyton, of the company, who corroborates the foregoing, states that work is being energetically pushed to prove the extent of the new find.

GRANITE MOUNTAIN.—Of late mining men are taking a business-like interest in this portion of Tooele County in a way that promises results before the end of the present season. D. Edmunds, interested in the Emma group, is in Salt Lake with ore from a 69-ft. ledge carrying copper, cobalt and bismuth, which is to be thoroughly tested. George W. E. Dorsey, Perkins Bros. and others also have claims that are being prospected. The formation on the east slope is slate, cut by numerous strong north and south veins. At the surface they are all wide. Though some 20 miles from the railroads at Tintic the locality is easily accessible. Water is abundant, but wood is scarce. This is in the Erickson mining district, which runs over into Juab County.

GOLD DUST.—At a recent meeting of the directors, it was decided to make a trial run in the old Marion cyanide mill before proceeding with the construction of the projected mill, the plans for which have been approved and a site selected.

WASHINGTON.

STEVENS COUNTY.

LITTLE SIX MINING COMPANY.—This company's properties are on Huckleberry Mountain. The assays from the bottom of the shaft are said to give \$157 to the ton in copper, gold and silver. The ore carries as high as 67% copper. This ore is taken from a depth of about 70 ft. and former assays from 30 ft. depth gave \$19. The work is in charge of Shelby Combest, the original locator. As soon as the present workings are timbered the force will be increased and the shaft continued to a depth of 150 ft. The ledge is about 5 ft. wide with a 22-in. pay streak.

MARY M. CORMICK.—Michael Purtle, owner of this property, 5 miles from Northport, on Grouse Mountain, says he is now down 24 ft. on his property, and that he has assays ranging from \$57 to \$250 silver and lead. He reports that he now has from 8 to 10 tons of ore on the dump.

WYOMING.

CARBON COUNTY.

SAVERY.—Gough Bros., of these placer mines, made a 20 days' clean-up from their claim, which yielded just 1 $\frac{1}{2}$ lbs. of gold. Gough Bros. will put in hydraulic works.

FOREIGN MINING NEWS.

AUSTRALASIA.

QUEENSLAND.

MOUNT MORGAN GOLD MINING COMPANY.—This company reports that during May 7,304 tons of ore were worked, the yield being 16,670 oz. gold, an average of 2.25 oz. per ton. This is above the usual grade of ore. For the five months ending May 31st there were 33,977 tons of ore worked, the result being 68,969 oz. gold, or an average of 1.73 oz. per ton.

TASMANIA.

MOUNT LYELL MINING AND RAILWAY COM-

PANY.—This company reports that during the four weeks ending June 3d a total quantity of 4,587 tons of ore has been treated, assaying copper 5.06%; silver, 3.42 oz. per ton; gold, 0.223 oz. per ton, and there was produced 389 tons of converter matte, containing silver 17,947 oz.; copper, 224 tons; gold, 1,172 oz. Furnace No. 1 running 24 $\frac{1}{2}$ days; furnace No. 2, 26 days. The actual return obtained from the ore was 4.88% copper, 0.26 oz. gold and 3.59 oz. silver per ton.

WESTERN AUSTRALIA.

In a recent issue a statement was given of the quantity of gold entered for export in the five months ended May 31st, amounting in the aggregate to 211,973 oz., in contrast with 84,465 oz. in the corresponding period of last year. The West Australian Chamber of Mines in London has now issued its monthly return for May, showing the crushing results cabled by the English companies, or by companies in which English shareholders are interested. The total yield recorded is 42,766 oz. gold, obtained from 19,551 tons of ore, the average having been a little over 2.15 oz. per ton treated. For the five months the returns furnished to the Chamber exhibit the under-mentioned results:

	Tons crushed.	Gold, oz.	Per ton, oz.
January.....	11,265	28,099	2.45
February.....	11,967	24,581	2.05
March.....	14,063	31,502	2.10
April.....	14,452	31,957	2.10
May.....	19,551	42,766	2.15
Totals.....	71,298	158,885	2.25

The West Australian Proprietary Cement Leases, says the London *Economist*, has set a good example by giving particulars of its estimated profits—£2,800 in April and £7,000 in May, the crushings from the returns issued on May 12th to June 2d having been 716 tons, yielding 2,420 oz. of gold, or, roughly, 3 $\frac{1}{2}$ oz. to the ton; and now that a start has been made in furnishing shareholders with the kind of information they have the right to demand, it is to be hoped that the system initiated by this company will become general.

HARQUAHALA GOLD MINING COMPANY, LIMITED.—Mr. Robert M. Raymond, manager of this company's Kalgoorlie mines, reports as follows for the month of April: "The crosscut from the south shaft at the depth of 125 ft. has been run 23 ft. to the east, where the lode was encountered, and a drive has been run on this 60 ft. to the south. Along this drive the quartz runs continuously, and small cross-feeders occur through the lode. As yet no ore of value has been encountered. We are just getting under the ore body opened up on the 50-ft. level, and better results are to be hoped for. The shaft has been well timbered from top to bottom, and we are ready for deeper sinking if it is found desirable. The crosscut from the west shaft has been advanced to 63 ft., the latter part being through undecomposed diorite. Nothing of value has been encountered yet. Expenses for the month were £200 for labor and £160 for supplies, including timber.

CANADA.

BRITISH COLUMBIA—AINSWORTH DISTRICT.

TWIN.—This mineral claim, at Ainsworth, bonded by A. W. Morris, of Montreal, from D. F. Strobeck and J. B. McArthur, is being developed under the management of L. J. McAtee, and shows 18 in. of ore in the face of the tunnel, and the remainder of the full width is good concentrating ore. The second payment on the bond has been made.

BRITISH COLUMBIA—KOOTENAY DISTRICT.

(From Our Special Correspondent.)

CANADIAN PACIFIC EXPLORATION COMPANY, LIMITED.—This company has erected an office on the high ground, immediately above Spokane street, Rossland. The capital stock is £500,000. The following comprise the board of directors: Lord Powerscourt, chairman; A. Joshua, London, England; H. McLean, M. P. for Cardiff; T. B. Edwards, London; Dr. Trouver, London; G. H. Hayward, London; B. Rey, Paris; H. B. Chesby, Callow, secretary, London; W. H. Cabould, general manager. Mr. Cabould's assistant in the Rossland office is Mr. A. B. Irvine. This company is doing a very conservative business. One of the chief rules of its management is that owners of claims which are offered for sale must first produce satisfactory evidence to the management that there is a sufficient showing to justify investigation. The company does not limit its operations to the Kootenay District, though at present this is the field of its operations.

BRITISH COLUMBIA—RAINY LAKE DISTRICT.

Gold has been discovered on the Oak Point Island, in Rainy Lake, which may lead to an international boundary dispute between Great Britain and the United States. According to the maps of the Geological Survey the island is in Canadian territory, but according to the wording of the treaty of Ghent the island is a part of the State of Minnesota. Canada has issued patents to several valuable mining locations on the island, and vigorous protests are being sent to Washington by American prospectors. The miners throughout the Rainy Lake District are considerably wrought up over the matter, and there is probability of trouble unless something is done. The way things now stand the United States loses entire control even of her waters in Rainy Lake, as, according to the Geological Survey, the United States cannot get a boat into Rainy Lake without first going into Canadian waters.

BRITISH COLUMBIA—SLOCAN DISTRICT.

ARGO.—A first shipment from this mine has been made. The property was formerly owned by William Sudrow, John H. Thompson John A. Whittier and bonded to Leighton & Williams, of Sandon, on behalf of Victoria and Nanaimo parties. Development work has since been prosecuted with energy. The property is located near the town of Sandon.

HALL MINES.—A train of eight cars loaded with copper bullion and matte from these mines left Revelstoke June 28th for Montreal, for shipment to England. This is the first copper made in Canada and goes high in silver and gold. Its value is about \$500 per ton.

NOBLE FIVE MINING AND MILLING COMPANY.—The directors of this company met at the office of the company in Spokane on June 15th, and C. D. Rand, of Vancouver, was elected director, vice J. F. Cutler, resigned. F. J. Holman, of Spokane, was elected secretary, vice J. F. Cutler. This change in the directorate is due to the recent big change in stocks, Mr. Rand having purchased over \$200,000 shares of Noble Five. Work at the mine was resumed the same week, and both concentrator and tramway are at work and shipments have been made.

PILOT BAY SMELTER.—A party of smelting men, made up of J. B. Grant, of Denver; Nash, of Omaha; Braden, of Helena, and E. J. Mathews, of Kaslo, were in Nelson recently, and during their sojourn made a trip to Pilot Bay in company with C. Sweeney, of the Bank of Montreal. On their departure rumors were in circulation that the smelter at Pilot Bay had changed owners, and that it would be started up at once. The Nelson Tribune states that the terms for a deal have been submitted, and it is not unlikely that they will be agreed to by the parties interested. If agreed to, the smelter will be in operation within a month.

BRITISH COLUMBIA—TRAIL CREEK DISTRICT.

(From Our Special Correspondent.)

LE ROI MINING COMPANY.—This company has just declared another dividend amounting to \$25,000, making \$125,000 in all.

O. K.—Mr. Goodhue, the new manager of this mine, says that the company will run the mill for custom work. It has been lately treating I. X. L. ore, and this creek is working on Golden Deep ore. The reserve ore bodies belonging to the O. K. have remained untouched. A plan has been projected to open up this reserve.

SUNSET.—The management of this property on the South face of Deer Park Mountain, in the South Belt, under the immediate direction of Mr. Adams, recently made some important discoveries. Two new ledges have been uncovered running parallel to the old ledge, all of which run in an easterly and westerly direction, at distances varying from 150 to 300 ft. apart. At three places on these two new ledges cuts have been made, giving a fine showing of good grade ore. The ore in the center ledge shows a width of 10 or 12 in. on the surface, but this has increased to 2 ft. at a depth of about 10 ft. Assays of this ore run from \$3 to \$25 in gold, with 21 oz. of silver and 22% copper. On the third ledge the cut shows 4 ft. of solid good grade ore at about 12 ft. from the surface. The iron cap is very distinct, but a short distance down the slope of the mountain from the cut the iron cap disappears, the solid ore showing itself at the surface. Fifteen men are at work on the property. Development work on the old workings is being vigorously prosecuted.

SOUTH AMERICA.

BRAZIL.

ST. JOHN DEL REY GOLD MINING COMPANY.—The report states that the profit in Brazil for the year ended February 28th, after deducting gold charges and the expenses of the Rio agency, was £39,488. The London expenses for the same period were £3,035, while the bond and other interest incurred during the year amounted to £20,758, leaving a net profit of £15,695. The directors have applied the balance of profit shown to February 29th, 1896, toward providing a sinking fund to amortize the interest paid during the construction of the surface works and recovery of the lode, up to the time the new mills and plant were started; they also propose applying the balance of profit of the past year to the same fund, after declaring a dividend of 6d. per share, free of income tax, which will amount to £10,991. The legal question as to the payment of dividend before amortization of the whole amount of interest paid during construction will be settled under the authority of a court of law, as explained to the proprietors at previous meetings.

BRITISH GUIANA.

BARIMA GOLD MINING COMPANY.—This company's return for June shows 380 tons of ore worked, with a recovery of 211 oz. gold; an average of 0.56 oz. per ton.

COLOMBIA.

TOLIMA MINING COMPANY.—The report lately issued in London states that the operations for the year 1896 produced an estimated net profit of £9,156. The directors have declared a dividend of 5% on the entire capital, payable June 30th being a further installment of the profits of 1894, and making, with the previous distributions of 10% in June, 1895, and 5% in March, 1896, 20% for that year.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 2.

Statement of shipments of anthracite coal (approximated) in tons of 2,240 lbs., for the week ending June 25th, 1897, compared with the corresponding period last year:

	1897.		1896.
	Week.	Year.	
Pennsylvania Railroad.....	53,323	1,611,725	1,750,194

PRODUCTION OF BITUMINOUS COAL in tons of 2,000 lbs. for week ending June 25th, and for years from January 1st, 1897 and 1896:

	1897.		1896.
	Week.	Year.	
Shipped East and North:			
Allegheny, Pa.....	46,772	1,115,476	1,171,187
Bailey, Pa.....	622	22,724	321,398
Beech Creek, Pa.....	68,458	1,733,932	1,594,118
Broad Top, Pa.....	9,703	202,886	221,563
Clearfield, Pa.....	85,811	2,173,575	2,563,686
Cumberland, Md.....	81,119	1,697,676	1,624,712
Kanawha, W. Va.....	554,901	1,520,729	1,545,274
Phila. & Erie.....	747	158,231	32,803
Pocahontas Flat Top.....	164,683	1,150,436	.....
Totals.....	412,796	9,775,655	8,774,729

	1897.		1896.
	Week.	Year.	
Shipped West:			
Monongahela, Pa.....	35,839	678,317	510,122
Pittsburg, Pa.....	30,882	832,197	924,398
Westmoreland, Pa.....	37,034	910,425	987,231
Totals.....	103,746	2,420,939	2,421,751

Grand totals..... 516,542 12,196,604 11,196,480

Production of coke on line of Pennsylvania Railroad for the week ending June 25th, 1897, and year from January 1st, 1897, in tons of 2,000 lbs.: Week, 82,638 tons; year, 2,131,115; to corresponding date in 1896, 2,211,561 tons.

† For two weeks ending June 12th. ‡ For week ending June 7th. * For week ending June 21st. †† For year ending July 4th. ††† For year ending July 11th.

Anthracite.

The hard coal trade shows no great change this week so far as volume is concerned. The increased business that was expected at the close of June was realized, but it was not in proportions that would make it necessary to report anything in the nature of a rush. Orders have been placed by those who are able to make prompt payment, they realizing that the trade is firmly in the producers' grasp, and that nothing could be gained by delaying orders longer. The better grades of coal find a ready sale now, as for some time past, at prices above the ruling circular, and on most of these grades, it is said, no order for delivery before July 15th would now be accepted. The highest grades have been sold ahead for the entire month of July, so that no orders could be accepted for them now if it were specified that delivery had to be made before August 1st. Several of the largest producing companies have during the week issued a new circular, advancing prices 25c. per ton on all prepared sizes. All of the remaining companies have likewise made the advance, but without the formality of issuing a circular. Some of the sales-agents report having already booked orders at these advanced prices. Generally speaking, however, it cannot be expected that the entire advance in the price will be realized immediately. It most likely will require the same gradual work that has brought the market up to its present stable condition. The tonnage for July seems to have been settled at 3,000,000 tons. This is a very conservative advance, and will readily permit of the disposal of the entire output at satisfactory prices. Though the market may be able to take more than this output, it is said sales will be limited to this amount, and anything further will have to go over into August.

The new circular makes the price of anthracite coal as follows: Broken, \$4; egg and chestnut, \$4.25; stove, \$4.50 per ton f. o. b. New York.

NOTES OF THE WEEK.

The Schuylkill Coal Exchange gives notice that the Philadelphia & Reading colleries drawn to return prices of coal sold in June, 1897, to determine the rate of wages to be paid, show an average price of \$2.55, and the rate of wages to be paid for the last half of June and the first half of July, 1897, is 2% above the \$2.50 basis.

The statement of the Lehigh Valley Coal Company for the month of May shows, as compared with May, 1896, a decrease in gross earnings of \$111,439; a decrease in expenses of \$148,018; and an increase in net earnings of \$36,579. For the six months of the fiscal year from December 1st to May 31st there was an increase of \$310,116 in net earnings.

The statement of the Philadelphia & Reading Coal and Iron Company for May and the six months of the fiscal year from December 1st to May 31st is as follows:

	May.	Six months.
Gross receipts.....	\$1,637,609	\$8,957,059
Expenses.....	1,727,888	9,563,248
Net loss.....	\$90,279	\$606,189

Expenses include colliery and other improvements.

Bituminous.

The Eastern seaboard soft coal trade is unchanged. The lower classes of coal are showing a continued

demoralization, seeming rather to take any price they can get, for the sake of tonnage, making the market unsteady and irregular. The market ran along a month or so ago on a basis of figures for individual coals that could be counted upon with some show of assurance, but even these figures of late have been varied from, mostly in the wrong direction, putting the condition of affairs into their present shape. One of the larger feeders, which mines coal through a sub-company owned and controlled by it, reaching both the Pennsylvania and the Baltimore & Ohio railroads, seems to be working along without the pretense of making money on the coal, but merely for the freight that is in it for the railroad, that it may keep going until the territory through which it runs is built up. This condition, of course, is most demoralizing, and the worst of it is there seem to be no signs of improvement. Labor troubles have again come to the fore this week, the demoralization and low price for coal having forced a reduction in the miners' wages in parts of the regions supplying the lower classes of coal in the Virginias and Pennsylvania. There has been some talk of late with the labor leaders of a strike in regions foreign to those supplying the Atlantic seaboard. There seems to be a likelihood of a strike in these foreign regions, which will drag in parts of such regions as have reduced their price for mining, with the further possibility, through sympathy, of including the regions supplying the Atlantic seaboard. At this time the labor leaders appear to recognize the poor conditions under which they will have to call their men out and hesitate to do so, while the operators rather seem to think a strike, instead of hurting them at this time, would do them good.

Trade from the far East is coming forward slightly better than last week. Long Island Sound trade is more quiet, if anything. New York harbor trade is slow. All-rail business keeps about in the same volume as it has for some time. Of transient trade there is none. Trade local to the shipping ports is quiet. Transportation from mines to tide is again poor, there being a blockade of more or less extent on the main lines which the railroads are trying to straighten out by discontinuing the empty car supply to such operators as may have coal in quantity on the road for which vessels have not been chartered.

Car supply is governed by the despatch given by the individual operator. In the coastwise vessel market vessels are scarce and in demand. We quote current rates of freight from Philadelphia to Boston, Salem and the Sound ports, 50@55c.; Portland and Portsmouth, 55@60c.; Wareham, 70c.; Lynn, 65@75c.; Newburyport, 65c.; Dover, 90c. and towage; Saco, 75@80c. and towage; Bath, 60@65c.; Gardiner, 60c. and towage; Bangor, 65@70c. Five and 10c. above these rates is asked from Baltimore, Norfolk and Newport News.

Buffalo.

July 1.

(From Our Special Correspondent.)

The anthracite coal trade remains in a state of quietude. Few, if any, incidents connected with the business are floating around. Whether any change will be made in quotations to-day remains to be seen.

The bituminous coal business is fairly active, with the market comparatively strong. No changes made in quotations, and the supply is fully up to the necessities of the trade. Stocks are moderate.

Lake freights continue to rule low and the movements very light. Down freights are a shade better, so that vessel owners about pay the cost of running their craft, and do not grumble so much.

The shipment of coal westward by lake from Buffalo for the week ending June 26th inclusive aggregated only 42,543 net tons, distributed as follows: 11,850 tons to Chicago, 8,500 tons to Milwaukee, 11,600 tons to Duluth, 2,580 tons to Toledo, 3,200 tons to Superior, 1,500 tons to Saginaw, 1,238 tons to Fort William, 400 tons to Sault Ste. Marie, 1,000 tons to Green Bay and 675 tons to Kenosha. The rates of freight were 20c. to Chicago, Milwaukee, Duluth, Toledo and Superior; 25c. to Fort William, Racine, Kenosha, Bay City, Sbeoygan, Green Bay and Sault Ste. Marie; 35c. to Saginaw and 30c. to Algona Mills.

The following is on a subject of very great interest to Buffalonians, and our coal merchants, shippers and others are deeply interested in the movement. Articles of incorporation were filed last week for a Grand Pan American Exhibition Company. The said exhibition to be held at La Salle, an island in Niagara River, between Buffalo and Niagara Falls, commencing May 1st, 1899, will illustrate the progress of the New World during the nineteenth century. The incorporators include ex-Governor Roswell P. Flower, Chauncey M. Depew, Daniel O'Day, H. Walter Webb, Edgar Van Etten and E. B. Thomas, all of New York City.

Chicago.

June 30.

Anthracite.—Hard coal has continued in fair demand, principally because of the rumors that the price is to advance soon. The situation as it is at present does not really bespeak an advance in prices, for numerous concessions in the way of deliveries and prices are made. In both the wholesale and retail trades there is a great deal of cutting being done, as high as 50c. per ton in some cases. Anthracite coal prices as per circular rates are: Grate, \$5.35; egg, stove and chestnut, \$5.60.

Bituminous Coal.—There continues a moderate buying of soft coal, particularly that for steam purposes. Contracts are being booked from week to

week amounting to a considerable tonnage and a great deal of the business is from manufacturing concerns who have evidently struck an upward turn in business. Prices are yet in the dumps, and but little tendency is observed toward firmness. Business of late in soft coal certainly bespeaks a much better industrial condition. Some prices of soft coal are: Raymond, \$3; Hocking Valley, \$2.40; Youghiogheny, \$2.50; La Salle, \$1.10; Blossburg, \$3.40; Indiana Block, \$2.05.

Pittsburg. July 1.

(From Our Special Correspondent.)

Coal.—The market was devoid of animation, and the only business in the pools for local purposes: the mills which use coal have closed down, and others will follow by the end of the week. In the railroad districts mines are generally running full. The rates for mining are still a vexed question, there being a wide difference in the views of contending parties. The situation on the Pittsburg & Lake Erie Railroad and the Erie Railroad will be considerably improved from now on, as these companies have arranged to lease about 1,000 gondola cars from the Ohio Southern and the Cleveland, Akron & Columbus railroads.

The only obstacle to freeing the Monongahela River from tolls is now removed. The river men purchased a piece of ground in dispute at Loek No. 7, paying \$1,200 for the same. The deed and papers are now at Washington. This is what the Navigation Company should have done some time ago.

At Uniontown, Pa., options have been taken on coal lands on the farms of James E. Sayers, 192 acres; J. A. J. Buchanan, 101 acres; Charles H. Church, 93 acres, and the land of Dr. Iams.

The daily papers are full of rumors of a general strike of the coal miners in all the States, to be inaugurated on July 1st. A meeting has been called to be held in Pittsburg on Saturday to decide what action will be taken.

Connellsville Coke.—The trade during the week showed up fairly well; production was a little short, but the demand showed a gain; the demand for coke in the West was about 100 cars short, but a better trade was done in Pittsburg and the list increased fully as much as was lost from the West. The steadiness in the demand was very encouraging. The Frick Coke Company fired up 300 ovens at the different plants in their region to meet the increased demand; business had been dragging along for months at about the same rate, but this week a spurt took place which will run the production and output up. A new coke plant of 150 ovens is being erected on the McCreary farm in the vicinity of Tranger station and a railroad 7 miles long is to be built near Greensburg to connect the plant with the Pennsylvania Railroad. W. J. Ratney is building an addition of 80 ovens to the Paul plant in the Vanderbilt region. Ovens in blast, 10,376, with 8,001 idle. Production of the region, 103,997 tons, as against 104,836 the preceding week. Shipments: To Pittsburg, 2,713 cars; shipped West, 2,213 cars; sent East, 1,408 cars; total, 6,334 cars.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 2, 1897.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From		From	
	July 3, 1896.	July 2, 1897.	Jan., '96.	Jan., '97.	Tons.	Tons.
Anthracite.	41	25,900	24	13,800	755,738	449,886
Coke.....	135	161,179	107	152,900	4,483,649	3,838,314
Charcoal....	19	6,139	15	3,453	142,410	129,536
Totals	195	193,209	146	170,150	5,391,797	4,417,736

The volume of trade has somewhat decreased, as it is evident that many large purchasers have filled their requirements and placed all the contracts for raw materials which they care to carry, even at present prices. No new buyers are coming forward just now, and it looks as if the usual midsummer quiet was settling down over the market.

The special feature of the week is the closing down of many large plants, nominally for the usual summer repairs and stock-taking. It is understood that in many cases they will not start up until the question of wages is settled. The usual yearly discussion over the schedule of the Amalgamated Association of Iron and Steel Workers is in progress, and it promises to be a prolonged one. Many manufacturers claim that they are in no position to stand any increases or even to continue the old scale, while the men do not seem disposed to make concessions.

The labor question, in fact, is the weak spot in the market, and there is a very uneasy feeling about it. Many concerns have reduced wages, and in most cases the reductions have been accepted; but strikes here and there, with general discussion and some friction, have caused apprehension of trouble.

As we anticipated, the greater buying of the past few weeks has not brought about any increase in prices. The continued pressure to sell and the very sharp competition for business have prevented that. An increase in the price of merchant bars has been ordered, but it is not being carried out as yet.

The export trade continues to be a feature of the market. The big order for steel pipe for Western Australia has not been let, in spite of rumors to that effect, but figures have been made on it and there is a strong probability that it will come here. The

order will take over 20,000 tons of steel. The latest report—for which the usually well-informed London correspondent of the New York Evening Post is responsible—is that two of the leading railroad companies in British India have placed large orders for rails with American mills, at a price about £1, or \$5, below English makers' figures. If correct this would put the price of the rails here at about \$17. Indian railroads have gone to Belgium for material sometimes, but never before to this country.

NOTES OF THE WEEK.

In discussing the Tariff bill, the Senate has amended the paragraph on iron ore, which continues the duty at 40c. per ton, by adding provisions, taxing manganese ore \$1 per ton, and also putting a duty of \$1 per ton on basic slag.

The American Pig Iron Storage Warrant Company reports the following for the six months ending June 30th:

	1897.	1896.	1895.
Received, tons.....	44,600	11,300	18,470
Delivered, ".....	23,700	5,500	7,400
In yard, July 1, tons.....	221,600	112,000	122,200

For June, 1897, the receipts of pig iron amounted to 4,600 tons, and the deliveries to 6,000 tons. During the month sales of warrants on the New York Metal Exchange were 100 tons, June delivery, at \$6.45, 100 tons, July, at \$6.60; 2,000 tons, August, at \$6.60, and 500 tons, September, at \$6.60. We may repeat here in answer to inquiries that these contracts are based on No. 2 foundry, with differences on other grades as follows: No. 1 foundry, deliverable at 50c. above base; No. 1 soft, equal to base; No. 2 soft, at 50c. below; No. 3 foundry, at 50c. below; No. 4 foundry and gray forge, at 75c. below. Transactions in warrants on the Exchange are for not less than 100 tons.

New York. July 2.

Pending trouble in labor circles has reacted noticeably on the local iron market, which had been showing some signs of improvement recently. Sales agents here are therefore moving along slowly, and are taking what orders offer, in some cases at very low figures.

Apparently the large consumers of cast-iron pipe feel indisposed to accept the bids of manufacturers for which they have advertised. It will be remembered that in February last the Brooklyn City Water-Works received bids for 1,630 tons of cast-iron pipe. The contract is still to be let, although the Addyston Pipe and Steel Company, of Cincinnati, O., put in the lowest bid of \$18.48 per ton, delivered. Other concerns have had interviews with the officials of the city, but without success.

The Binghamton, N. Y., contract for about 11,000 ft. of 36-in. water pipe, principally ball-jointed, which was to have been let on June 21st, has been withdrawn and the bids received disregarded, as they exceeded in amount the expectations of the city engineer. In explanation we learn from manufacturers that straight cast-iron pipe is worth between \$18 and \$19 per ton, and would no doubt have answered the same purpose as the ball-jointed pipe, which is worth a much higher figure. At any rate new bids will be asked for soon. Specifications have been sent out for about 250 tons of pipe for the village of Pittsford, Monroe County, N. Y.

Structural material showed a narrow market this week, the only large order being for 500 tons for a building at Sixteenth street and Sixth avenue. In plates we understand that manufacturers are looking for several contracts; among them may be mentioned the Arbuckle sugar refinery in Brooklyn and the changes in the Grand Central depot. The latter was to be let to-day, but it has been postponed another week. A close watch is kept on the Arbuckle contract, for which there are 29 bidders, all over the country.

A contract for some 550 tons of material for strengthening the New York elevated roads is on the market, and low bids have already been made upon it.

In rails we note a number of small orders for standard section tees and girder rails, the largest being for about 2,000 tons for Brooklyn.

The Wrought Iron Bridge Company, of Canton, O., has received the contracts for the Saratoga, N. Y., steel bridge, at \$14,480, and for two others in New Jersey, one at Sergeantsville, and the other at New Germantown. Besides these, this company obtained the new steel bridge at Noyes Beach, near Westerly, R. I., at \$1,397. An iron lift bridge is going to be constructed over Coney Island Creek, and bids for it will be received until July 12th. Rock-away will also have two iron bridges, for which bids will be open until July 8th.

The city engineer of Syracuse, N. Y., received seven bids on June 21st for constructing the steel girder bridges over Onondaga Creek at Temple and Seymour streets. The lowest bids were those of the Buffalo Bridge and Iron Works, \$3,900 for the Temple street bridge and \$4,793 for that at Seymour street.

Several of the wire nail mills expect to shut down during July. It is a usual thing for them to clean up their plants two or three weeks in the slow time of the year. However, there is talk to the effect that the mills will make an effort to secure better prices and that in the event of a reorganization of the steel billet pool the Nail Association will be revived. Of course, this is still a matter of conjecture.

In the export trade developments within the last week or so have been rather favorable. Japan is

sending in many orders of one kind or another; exports to that country last week from New York included a quantity of steel rails, valued at \$18,275; iron bars, at \$1,250; iron pipe, at \$12,492, and 4,200 kegs of nails, at \$9,721, besides other manufactures. Several of the other foreign countries have been buyers of iron and steel, while the South American States continue to purchase considerable quantities of nails and like manufactures. We note shipments of \$10,739 worth of steel rails, and of \$1,180 worth of iron pipe to the Hawaiian Islands, and of \$1,400 worth of mining machinery to the Dutch East Indies.

It is rumored that the American Russian Mining and Metallurgical Company, of Maranpol, Russia, is negotiating with the Delaware Iron Company for the erection of a new pipe mill. The Russian concern will also require considerable new machinery for making pipe, as an addition to their own mill.

Pig Iron.—The local market shows an increase in purchase by consumers, but prices are still low. We understand Buffalo No. 2 foundry iron was sold in fair-sized quantities to foundries that can be reached by water, at \$10.50 per ton. The outlook is presumably better, and prices for future deliveries show a slight advance. The Southern furnaces recently advanced their prices 25c. Quotations are: Northern No. 1 X Foundry, \$12@12.50; No. 2 X Foundry, \$11@11.25; No. 2 plain, \$10.50@11; gray forge, \$9.75@10.25; Southern No. 1 Foundry, \$10.50@10.75; No. 2 Foundry, \$10@10.25; No. 1 soft, \$10.75@11; No. 2 soft, \$10.25@10.50; gray forge, \$9.50@9.75; Basic, \$10.50@10.75. All prices are for tidewater delivery.

Cast-Iron Pipe.—There is a better feeling as regards purchases in this market, but prices are still low. We refer to contracts above.

Spiegeleisen and Ferro-Manganese.—The market shows some inquiries, but an order for 1,000 tons of ferro-manganese has been cancelled. The export demand continues light. Quotations are: Spiegeleisen, 20%, \$19@19.50; ferro-manganese, 80% foreign, \$46, delivered at buyer's mill.

Steel Billets and Rods.—The local billet market remains quiet, with prices slightly weaker, at about \$14@14.25 for billets delivered at buyer's mill in Pittsburg.

Merchant Iron and Steel.—Business is distributed sparingly among the trade, and prices are easy. Quotations are: Common bar, 1@1.05c.; refined, 1.10@1.15c.; soft steel bars, 1.05@1.10c.; steel hoops, 1.35@1.40c.; steel axles, 1.50@1.60c.; tire steel, 1.05@1.10c.; spring steel, 1.40c., base; links and pins, 1.50@1.60c.; light cotton ties, 50c. per bd. at mill.

Plates.—Orders are principally small just now and prices unchanged. We quote for universal mill plates 1.15@1.20c. For steel plates prices are: Tank, 1.10@1.15c.; boiler shell, 1.20@1.30c.; flange, 1.35@1.40c.; firebox, 1.60@1.75c., and 2.25@2.50c. for locomotive firebox, according to quality. Charcoal iron plates are 2.25c. for shell, 2.75 for best flange and 3.25 for firebox. Rivets are 3@3.25c. for iron and 1.75@1.85c. for steel. Prices are for tidewater delivery in large quantities.

Structural Iron and Steel.—The local market is favorable and some fair-sized orders have been closed. We quote for angles, 1.10@1.15c.; tees, 1.35@1.50c.; channels, 1.25@1.50c. The price of beams, New York delivery, is 1.25@1.30c. for ordinary sizes, 1.45c. for 20-in., and 1.50c. for 24-in., carload lots.

Steel Rails and Rail Fastenings.—Market is generally very quiet. Mill quotations are \$19@20 per ton for standard sections and \$23 for girder rails. Lighter rails are figured on by a reliable concern as follows: 12-lb. rails, \$26 per ton at mill; 16-lb., \$24; 20-lb., 25-lb. and 30-lb., \$22 per ton.

For rail fastenings quotations are: Angle bars, 1.05@1.10c.; spikes, 1.50@1.60c.; bolts, 1.75@1.85c. for square nuts and 1.80@1.85c. for hexagon nuts.

Wrought-Iron Pipe.—Business is quiet and discounts are as follows: For plain pipe, out of store: 1½ in. and over, 67, 10, 10, 10, 10 and 10%; 1¼ in. and under, 50, 10, 10, 10 and 10%; Galvanized pipe, 1½ in. and over, 55, 10, 10, 10 and 10%; 1¼ in. and under, 50, 10, 10, 10 and 10%. For fair-sized orders these discounts are made with an additional 5% for less than carload lots. For carload lots this additional discount is 7½% to 10%.

Nails.—There is practically little demand for wire nails locally, and prices are \$1.50@1.55 per keg. Cut nails are quiet, and \$1.20 base at mill rules.

Old Material.—Old steel rails are somewhat active, and sales are reported of 400 tons at \$10.50 per ton, and of 600 tons at \$11.65, New York. Negotiations are pending for about 1,000 tons of tees, and 800 tons of street rails, side and center bearing and girder rails. In old iron rails we note a sale of 350 tons heavy section tees, suitable for export, at about \$12 per ton, New York. About 1,000 tons of same section tees are offered for sale at about \$13 per ton, delivered at New York. Offerings of steel scrap suitable for remelting, are rather easy just now, and a sale of 500 tons is reported at \$8.50 per ton, delivered f. o. b. cars, Jersey City. Some holders are asking \$9@10 per ton for the same delivery. Quotations for other material are: Machinery cast, \$9@10 per ton; car wheels, \$10@10.50; burnt iron, \$5@6; cast borings, \$6@7, delivered at buyer's works; hammered car axles, \$15.50@17.50 per ton; wrought pipe and tubes, \$7@8, delivered at New York.

Buffalo. June 30.

(Special Report of Rogers, Brown & Co.)

Business continues steady at the increased volume which we previously noted. There is no change to record in the way of prices further than that Southern iron is stiffer and there is an entire absence of special lots pressing on the market. Stocks of pig iron in the hands of local producers are gradually lowering and in every way the situation appears to be slowly improving. We quote below on the cash basis f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$10.75; No. 2 strong foundry coke iron, Lake Superior ore, \$10.50; Ohio strong softener No. 1, \$10.75; Ohio strong softener No. 2, \$10.50; Jackson County silvery, No. 1, \$14; Southern soft No. 1, \$10.75; Southern soft No. 2, \$10.50; Niagara malleable, \$11.

Chicago. June 30.

(From Our Special Correspondent.)

Pig Iron.—The combined sales of pig iron did not foot up to as large a total for the past week as for the preceding week, when the total was 25,000 tons; this week it is about 15,000 tons. Inquiry still continues brisk and there is a prospect of a further continuation of the enlarged buying that characterized this market during the month of June. There is said to have been but little speculative buying of iron in all of the large tonnage placed recently. Consumers have come into the market with large orders, the probability being that they are stocking up at the prevailing low cost of iron. Sales have been made in which delivery extends forward a great many months, though the majority of the sales ask delivery within the year. Northern iron has been in most demand. Prices are beginning to approach firmness, and the quotations given below represent more nearly correct prices than has been the case for some time.

Quotations are as follows: Lake Superior charcoal, \$13@13.25; local coke foundry No. 1, \$10.50@10.75; No. 2, \$10.25@10.50; No. 3, \$10@10.25; local Scotch foundry No. 1, \$10.50@10.75; No. 2, \$10.25@10.50; No. 3, \$10@10.25; Southern coke, No. 1, \$10.25@10.50; No. 2, \$9.75@10; No. 3, \$9.50@9.75; Southern No. 1 soft, \$9.75@10.25; No. 2 soft, \$9.75@10; Jackson County silveries, \$13@15; Ohio silveries, \$13@15; Ohio strong softeners, \$12@12.25; Alabama car wheel, \$15.50@16; coke Bessemer, \$11.50@12.

Bar Iron.—Some fair contracts were booked during the week, but business has not panned out in as large quantities as expected. Some of the mills, especially the larger ones, have closed considerable business in the past few weeks, and are not competing so much for the smaller trade; this enables the smaller mills to obtain somewhat better prices. Prices are still weak, and are for common iron 1@1.10c.; guaranteed, 1.10@1.15c.

Billets and Rods.—But few sales of billets and rods have been made. Quotations are for billets \$16 and for rods \$21.

Steel Rails.—Orders for a few thousand tons of the larger sizes of rails have been received during the week, and in the lighter sections a very fair business has been transacted. Rails are still quoted \$19@21 Chicago, according to section.

Structural Material.—An office building in Chicago requiring 1,000 tons and a few smaller buildings in other cities constitute the main business in this market during the past week. There is some run on bridge material for railroads, the track elevations and the elevated railroads about this city consuming a fair tonnage. Prices are: Beams and channels, 1.15@1.20c.; tees 1.30@1.40c.; angles 1.10@1.15c.; plates \$1.10@1.15.

Cleveland. June 30.

(From Our Special Correspondent.)

Iron Ore.—The fight between the two leading interests in the Mesabi Range has had the effect of bringing Fayal ore down to \$2.10 in Cleveland, which is somewhat lower than it was quoted at the outset of the season. The offering of ores outside the agreement has had the additional effect of stimulating the sales, and a number of furnacemen have made purchases. None of the sales during the past week have been large, the buyers confining themselves mostly to mixtures. While the business of the week has not been heavy, it has been fairly satisfactory, nearly all the parties interested having had a share in the transactions. Outside of the Fayal sales, all the ore sold was on the following basis: Specular and magnetic ores, Bessemer quality, \$3@3.75; specular and magnetic ores, non-Bessemer quality, \$2.50@2.75; hematite ores, Bessemer quality, \$2.50@3; hematite ores, non-Bessemer quality, \$2@2.50.

While there has been no change in the Lake freight rates, they are stiffer than they were last week. The rate from the head of the lakes to the Ohio ports is still 50c. and from Escanaba 40c.

Pig Iron.—Pig iron has been weakened somewhat by the contest between the two leading interests on the Mesabi Range, but the quotations are the same as last week. There has been a slight increase in the transactions, but the business is not large. The sales have been mostly of foundry irons. Following are the quotations: Lake Superior charcoal, \$13.25; Bessemer, \$9.75@10; No. 1 foundry, \$10.25@10.50; No. 2, \$9.75@10; No. 1, Ohio Scotch, \$10.40; No. 2, \$9.90; gray forge, \$8.50@8.75.

Philadelphia. July 2.

(From Our Special Correspondent.)

Pig Iron.—Makers of pig iron, especially for steel purposes, their agents and brokers, have been forc-

ing the market at about the worst possible time. The result to-day is weaker quotations, even after several heavy transactions have been closed, buyers preferring that these depressed quotations are going to stand. Since Monday quite a good volume of business has been transacted, but the improvement is in spots and lacks the symptoms we are watching for—a general demand from big and little buyers all around. Foundry and forge buyers have not done what was expected of them. Average quotations are, No. 1 X foundry, \$11.75@12.50; No. 2 X foundry, \$10.75@11.25; plain, \$10@10.50; standard forge, \$10@10.50; ordinary, \$9.75@10.50. Basic iron sold at \$10.50, shaded. Low phosphorus is selling at \$14.75@15.

Billets.—One sale was made early this week of a large lot and another may go through to-day. The shaky ore quotations have their influence on buyers, who imagine billets may yet be had at less than \$16. Brokers declare such a thing is impossible. Under the circumstances business is light.

Merchant Bars.—Business is better at all the mills, but not to the point of influencing prices. Manufacturers are canvassing every nook and corner and are being repaid by satisfactory results, though on a rather small scale. Common iron orders have been taken within a day or two at exceptionally low rates. Refined is 1.05@1.15c.

Pipes and Tubes.—A general improvement is in sight, but the contemplated business will be mostly small. Tubes are being called for and there is a promise of good summer business.

Skelp.—Several sales of encouraging proportions have reached our mills and agents are in communication with buyers who desire to take advantage of the low prevailing rates.

Sheet Iron.—Large consumers of sheet iron have been induced to place some season orders at remarkable concessions. In fact, buyers seem to expect unusual inducements to buy largely, while, on the other hand, makers think they ought to have stronger quotations for deferred delivery.

Merchant Steel.—There is an improving demand for all lines of merchant steel, some of the buyers figuring on stock to run them to the close of the year.

Plates.—Mills are picking up a good deal of work from day to day and they are now in good shape. There is a promise of big summer orders, but so far as prices can be known they are distressingly low. Ordinary quotations are: Tank, 1.15c.; universals, 1.20c.; flange, 1.30c.; firebox, 1.50c.

Structural Material.—Work is accumulating at mills, and there is no promise of improvement.

Steel Rails.—Quotations, \$19@20. There are signs of a revival of competition.

Old Rails.—There is some little business at \$11.50 for iron; old steel rails are \$10.

Scrap.—The general improvement in the iron trade is being reflected in the scrap yards in a small way. There are a good many parties looking for scrap, but they are not quick to buy at asking prices.

Pittsburg. July 1.

(From Our Special Correspondent.)

The last week in June is generally unsatisfactory; the present one will be no exception to the general rule. There are several reasons for this: The Amalgamated scale expires at noon on June 30th, and workers in the mills which belong to that association have no scale of prices for their guidance. From present indications it looks as if there was trouble ahead for both sides; a new scale has been prepared by the Association, dated July 1st, for one year, but so far it has not been signed, and many of the large plants say prices must be reduced before it will receive their signature. Indications clearly point to a strike unless the scale is signed. How the matter will be decided time alone can tell. The iron market is firm, but not very active; prices, however, were fairly maintained. As things look at present most consumers have about as much iron on hand as they are disposed to carry until matters pertaining to scale are arranged; the result of the week's business may be set down as fairly satisfactory to the producers of iron and steel, and prices for all crude and finished products have become firmer with something of an upward tendency for certain grades of pig iron. General improvement appears to be the course of the market, though the pace is not rapid. With the usual midsummer suspension of work, and the labor troubles at various points unsettled, it is useless to attempt to forecast the future with any degree of confidence; however, the outlook at present is believed to be favorable. Concessions from current quotations are regarded as extremely improbable, unless on specially desirable orders. The movement in the local pig-iron market is reasonably active and would have been larger had sellers been willing to accept all the business offered them at the prices generally quoted.

For finished material there was a good demand, caused no doubt by the fact that several mills are expected to close down for repairs and stock taking. For wrought-iron and steel pipe the market is firm and active; several large sales being reported principally for large-sized pipe. Wire nails are in moderate demand at current rates; the supply on the market is ample.

The Latest.—Considering the time of the year, and the amalgamated scale situation, the market

may be termed an active one; how matters under consideration will be settled in regard to the scale will be learned later. The firmness noted last week has been maintained, while the outlook for a large fall trade is very bright. To-day's prices are: Bessemer, Pittsburg, \$9.50@9.85; Valley Bessemer, \$9@9.25. Billets are all the way from \$14@14.75; muck bar, \$18; wire rods, \$20.50@21; sheet bars, \$16.85@17.25. Old steel rails are firm, prices tending upward; scrap material is more inquired for.

COKE, SMELTED, LAKE AND NATIVE ORE.		Tons.	Cash.	Tons.		Cash.	
5,000 B., J., A., S., Val.	\$9.25	500 Bill, J., Pitts.	14.50	300 Bill, A., S., Pitts.	14.10	200 Bill, spot, Pitts.	14.15
3,000 B., J., A., Pitts.	9.65	MUCK BAR.					
3,000 B., S., O., N., P.	9.60	1,000 Neu., Pitts.	\$18.25	500 Neu., Pitts.	17.50	250 Neu., Pitts.	17.60
2,500 B., A., S., Valley	9.10	SHEET BARS.					
2,000 B., A., S., Pitts.	9.60	1,000 Aug., Pitts.	\$17.25	400 July, Pitts.	16.50		
1,500 Bess., J., to S., P.	9.90	STEEL WIRE RODS.					
1,000 B., A., S., Val.	9.45	500 Delivered, Pitts.	\$20.50	500 Delivered, Pitts.	21.00		
1,000 B., J., A., S., P.	9.40	SCRAP MATERIAL.					
1,000 Mill L., J., S., Val.	8.00	100 No. 2 Foundry,		500 Old Wb., gross, P.	\$8.75	500 Heavy Scr., gr., P.	9.00
1,000 Bess., J., A., P.	9.50	all ore, Pitts.	10.35	500 No. 1 Wr., gr., P.	11.00	300 No. 1 Wr., gr., P.	10.25
500 Hess., J., A., P.	9.50	25 No. 2 S'y., P.	11.60	300 Cast Scr., gr., P.	8.50	300 O. Ir. Axles, gr., P.	15.00
500 Mill L., J., S., Val.	8.00	50 No. 2 Foundry,		300 Cast Bor., gr., P.	6.25	250 Cast Bor., gr., P.	6.25
500 Bess., J., A., P.	9.75	all ore, spot, P.	10.35	25 No. 2 Fdy., Pitts.	9.75		
100 No. 2 Foundry,		25 No. 1 Fdy., Pitts.	10.50	CHARCOAL.			
all ore, Pitts.	10.35	125 Cold Bl., Ex., P.	\$26.50	50 Cold Bl., Pitts.	21.00	50 Cold Bl., Pitts.	21.00
100 No. 2 S'y., P.	11.60	50 Cold Bl., Pitts.	21.00	50 No. 2 F., Pitts.	15.60		
50 No. 2 Foundry,		BLOOMS, BILLETS, SLABS.					
all ore, spot, P.	10.35	1,250 Bill, J., Del., Pitts.	\$14.66	1,000 Bill, A., S., Pitts.	14.75	500 Bill, J., A., Pitts.	14.50
25 No. 2 Fdy., Pitts.	9.75	OLD RAILS.					
25 No. 1 Fdy., Pitts.	10.50	500 S. R., gr., P.	\$9.50	300 S. R., gr., P.	9.50	200 S. R., gr., P.	9.40
FERRO-MANGANESE.							
3.0 80%, delivered.... 46.00							
BLOOMS, BILLETS, BARENT S.							
500 Billet Ends, P.... \$9.80							

METAL MARKET.

NEW YORK, Friday Evening, July 2, 1897.

Gold and Silver.

Prices of Silver per Ounce Troy.

June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	June & July.				
					St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	
26	4.87 1/4	27 1/2	60 1/2	.465	30	4.87	27 1/2	60 1/2	.465
28	4.87	27 3/4	60 3/4	.467	1	4.87	27 3/4	60 3/4	.465
29	4.87	27 3/4	60 3/4	.466	2	4.87	27 3/4	60	.464

No new features have presented themselves in the silver market. Demand has been moderate and supplies have not been pressing. Statements in some of the newspapers to the effect that a monetary conference would be called to discuss silver have received passing attention. Nothing definite on this point has yet been developed, however, and London bullion dealers have stated that such a conference was rather improbable.

The United States Assay Office in New York reports the total receipts of silver at 47,000 oz. for the week.

Average Monthly Prices of Silver

In New York and London, per ounce Troy, from January 1st, 1897, and for the years 1896 and 1895.

Month.	1897.		1896.		1895.	
	Lon- don. Pence.	New York. Cents.	Lon- don. Pence.	New York. Cents.	Lon- don. Pence.	New York. Cents.
January	29.74	64.79	30.69	67.13	27.36	59.69
February	29.68	64.67	31.01	67.67	27.47	59.90
March	28.96	63.06	31.34	68.40	28.33	61.98
April	28.36	61.85	31.10	67.92	30.39	66.61
May	27.86	60.42	31.08	67.88	30.61	66.75
June	27.58	61.10	31.46	68.69	30.47	66.64
July	.....	.....	31.45	68.75	30.48	66.75
August	.....	.....	30.93	67.34	30.40	66.90
September	.....	.....	30.19	65.68	30.54	66.90
October	.....	.....	29.68	65.05	30.89	67.64
November	.....	.....	29.46	64.98	30.79	67.42
December	.....	.....	29.70	65.24	31.40	66.47
Year	.....	.....	30.77	67.06	29.53	65.28

The New York prices are always per fine ounce, or ounce of pure silver; the London quotation is per standard ounce, or for metal .925 fine.

Gold and Silver Exports and Imports

At all United States ports, May, 1897, and years from January 1st, 1897 and 1896.

Coin and bullion.	Exports.		Imports.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
GOLD					
May	\$9,466,711	\$559,958	\$1,260	\$389,118	E. \$8,518,895
1897	17,376,839	3,064,897	93,058	1,779,674	E. 12,625,326
1896	36,020,485	24,351,762	87,341	560,298	E. 11,195,766
SILV.					
May	4,337,342	766,704	12,200	1,990,080	E. 1,592,758
1897	22,808,137	3,465,007	250,150	8,556,468	E. 11,045,712
1896	25,579,452	4,956,084	589,916	6,929,276	E. 14,284,008

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

Gold and Silver Exports and Imports, New York
For the week ending July 2d, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

Week	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1897..	14,147,961	\$50,118	\$762,083	\$80,907	E. 2631,058
1897..	14,147,961	1,850,425	20,507,258	1,370,799	E. 31,434,004
1896..	33,802,952	17,206,930	18,248,446	1,151,438	E. 33,692,130
1895..	32,546,317	24,026,452	16,896,205	8,219,921	E. 24,594,179
1894..	65,739,913	9,673,695	18,850,815	783,681	E. 73,932,452

There were no gold exports this week; of the silver \$443 went to South America, and the balance to London. The gold and silver imported came chiefly from Central and South America and the West Indies.

FINANCIAL NOTES OF THE WEEK.

Business continues generally in a dull and halting condition and little change can be reported. An effort is being made in certain quarters to manufacture "prosperity" by newspaper reports, but business men do not accept the statements thus presented. The tariff discussion has progressed a little, but the end is still some way off. There are, it is true, some hopeful indications here and there, but they are not wide enough to affect the general situation materially.

The gold movement seems to be at an end for the present, and no exports are noted this week. Unless there is a further change, or more sales of securities, it does not seem probable that any more gold will be sent abroad at present.

The United States Treasury figures, as made up to date, show receipts during June of \$33,212,595, of which \$19,285,056 has been from customs, \$12,203,138 from internal revenue and \$1,724,401 from miscellaneous sources. The expenditures during June have been only \$22,976,000, of which \$10,041,000 has been for pensions, \$296,000 for interest on the public debt, \$5,487,000 for civil and miscellaneous objects, \$2,870,000 for the War Department; \$3,377,000 for the Navy and \$905,000 for Indians. The receipts for the fiscal year have reached \$343,812,615, of which \$174,041,296 has been from customs, \$145,557,317 from internal revenue, and \$24,212,002 from miscellaneous sources. The expenditures have been \$365,849,141, of which \$141,054,936 has been for pensions. These figures are all subject to rectification by later reports and returns from disbursing officers, but the corrected figures will reduce rather than increase the apparent deficit of \$22,036,526 for the fiscal year.

The statement of the United States Treasury, on Thursday, July 1st, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	June 24.	July 1.	Changes.
Gold	\$143,591,357	\$140,751,114	D. \$2,840,243
Silver	28,839,873	31,102,355	I. 2,262,482
Legal tenders	32,357,235	35,761,622	I. 3,404,387
Treasury notes, etc.	29,827,350	30,500,752	I. 673,402
Totals	\$234,619,045	\$238,118,843	I. \$3,499,798

Treasury deposits with national banks amounted to \$17,330,935, an increase of \$79,617 during the week.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending June 26th gives the following totals, comparisons being made with the corresponding weeks in 1896 and 1895:

	1895.	1896.	1897.
Loans and discounts	\$513,421,300	\$474,999,300	\$521,621,600
Deposits	570,436,300	496,974,700	597,094,600
Circulation	13,159,000	14,584,900	13,870,900
Reserve:			
Specie	65,231,400	62,015,300	90,400,200
Legal tenders	111,603,600	84,145,700	108,112,600
Total reserve	\$176,835,000	\$146,161,000	\$198,512,800
Legal requirement	142,609,075	124,433,675	149,273,650
Surplus reserve	\$34,225,925	\$21,727,325	\$49,239,150

Changes for the week this year were increases of \$3,130,800 in loans, \$4,565,400 in deposits, \$350,000 in specie, \$1,630,800 in legal tenders and \$848,200 in surplus reserve; decreases were \$121,800 in circulation.

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

Banks.	1896.		1897.	
	Gold.	Silver.	Gold.	Silver.
N. Y. Asso.	\$62,015,300	.....	\$90,400,200	.....
England	242,426,280	.....	284,402,515	.....
France	408,245,475	\$251,400,359	240,962,400	\$246,449,300
Germany	217,931,000	.....	235,020,000	.....
Austria-Hun.	136,210,000	64,294,000	179,720,000	63,407,000
Netherlands	13,178,000	35,086,000	13,153,000	35,183,000
Belgium	19,269,000	.....	20,151,000	.....
Spain	42,028,000	56,811,000	44,537,000	54,418,000
Italy	60,650,000	10,345,000	58,880,000	10,795,000
Russia	443,165,000	.....	479,590,000	.....

The return for the Associated Banks of New York is of date June 26th; all the others are of July 1st, except the Bank of Italy, May 20th, and the Bank of Russia, May 22-June 4th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England and the Bank of Russia report gold

only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to June 17th are reported by Messrs. Pixley & Abell's circular as below:

	1896.	1897.	Changes.
India	£1,771,798	£2,381,450	I. £609,652
China	492,360	67,627	D. 425,233
The Straits	500,532	93,935	D. 406,627
Totals	£2,765,190	£2,542,982	D. £222,208

Arrivals for the week this year were £92,000 in bar silver from New York, and £31,000 from Chile; a total of £123,000. Shipments for the week were £62,000 in bar silver to Bombay, and £3,600 to Penang, a total of £65,600.

Indian exchange has been stronger, in anticipation of a new issue of rupee paper, which, it is understood, will be made in July. All the Council bills offered in London were taken, the applications considerably exceeding the amount offered. The average rate obtained was 14½d. per rupee.

The coinage executed at the mints of the United States during June and the six months of 1897 is reported by the Treasury Department as below:

Denomination.	June.		Six months.	
	Pieces.	Value.	Pieces.	Value.
Gold	129,314	\$2,100,547.50	3,144,358	\$47,117,217.50
Silver	3,286,965	1,856,754.15	11,713,676	10,094,005.39
Minor	6,237,290	175,051.62	29,212,974	617,876.98
Total	9,653,569	\$4,132,353.27	47,070,938	\$57,829,099.78

In addition to the domestic coinage there were coined during the month of June, 1897, 360,140 dollars for the government of San Domingo.

Prices of Foreign Coins.

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

	Bid.	Asked.
Mexican dollars	\$.47½	\$.49
Peruvian sole and Chilean pesos	.42½	.45
Victoria sovereigns	4.88	4.90
Twenty francs	3.87	3.90
Twenty marks	4.78	4.80
Spanish 25 pesetas	4.78	4.85

Other Metals.

A decision of some importance to smelters has been given this week in the United States Circuit Court at Trenton, N. J., in relation to the duty on base bullion. The case before the Court was an appeal taken on behalf of the government from a decision of the Board of General Appraisers on a matter brought before it by the Balbach Smelting and Refining Company. The point at issue was whether in assessing duty on base bullion composed chiefly of lead, brought here to be refined in bond, the weight of the metals other than lead, and of dross and waste, should be deducted when the duty is paid. The collector assessed the duty upon the whole weight of the bullion; but the Board of General Appraisers did not agree with him, and held that the bullion was metal in a crude form, requiring refining or smelting; and that duty should be assessed on the refined metals obtained from it, and not on the gross weight of the bullion. As the other metals—gold, silver and copper—obtained from the bullion are not dutiable, this left only the lead to be paid. The Court now holds that it is not the legal rule, and that the duty must be paid on the gross weight as lead. The lead contents of this bullion are usually from 97 to 98%, the remainder being usually silver and gold, with some dross and waste. Whether the case will be carried up to the Court of Appeals we do not yet know.

Copper.—The market is bare of any new features, and it has throughout the week ruled very quiet indeed. Manufacturers are fairly busy, but new orders are not coming in to an extent which would warrant the purchase of further supplies. On the other hand, producers have very large orders on their books for both the domestic and foreign trade, which will for quite some time absorb their output. This explains why prices have remained very steady, and are likely to do so in the near future. We quote Lake 11½@11¼¢; electrolytic, in cakes, wirebars or ingots, 10½@10¼¢; electrolytic copper in cathodes, 10½@10¼¢, and casting copper, 10¼¢.

The foreign market is somewhat easier, g. m. b.'s closing last week at £48 7s. 6d., and to-day at £48 15s. for spot, and £49 2s. 6d. for three months prompt. We are advised that consumption continues at its wonted rate, and orders for refined copper have come in more freely during the last few days, at prices but slightly lower than those established during the earlier part of last week. We quote manufactured sorts: English tough, £51@£51 5s.; best selected, £51@£51 10s.; strong sheets, £58, India sheets, £53@£54; yellow metal, 4¼d.

Statistics on June 30th showed an increase of 300 tons.

Tin opened very brisk at the beginning of the week, prices showing quite an improvement over the figures established a few days previous, but the improvement could not be maintained, even in the face of a very favorable showing in the statistics, which for the month of June show a decrease in the visible supplies of 1,700 tons. The movement was more or less a speculative one, but when it became apparent that there was no support from the consuming element, prices gave way, declining fully

½¢, the quotation to-day being 14¢ for spot and 13½¢ for more distant deliveries.

The London market, which closed last week at £62 10s., opened on Monday at £63 2s. 6d., but steadily declined during the week, closing to-day at £62 10s., so that the entire improvement established early in the week has been lost since.

The visible stocks of tin on July 1st are estimated as follows, in long tons:

	In store.	Afloat.	Totals.
London	20,225	937	21,162
Holland, Banka and Billiton	4,400	1,500	5,900
" Straits	474	436	910
U. S., exc. Pacific ports	2,005	2,100	4,105
Totals	27,104	4,973	32,077

This compares with 34,436 tons on June 1st, showing a decrease of 2,359 tons, and with 31,137 tons on July 1st, 1896. The total shipments to the United States in June are estimated at 1,300 tons from the Straits, 50 tons from Australia and 795 tons from Europe, a total of 2,145 tons. Consumption in the United States for the month was 1,900 tons.

Lead has been very active, values advancing quite sharply to 3½¢, and even at that price refiners appear very reluctant sellers. Although the tendency had already within the last few weeks been in an upward direction, the fact that the Senate agreed to impose a duty of 1½¢ on lead in ore and 2½¢ on lead in pigs, exercised an additional impetus. It is claimed by parties whose judgment is reliable that even if the duty question had not come up, the market would, nevertheless, have experienced an improvement, if not now, certainly in the very near future, because supplies appear to be inadequate to the demand. In that case we would have to supply part of our needs from foreign sources, which to-day could not be done at less than 4¼¢, this being the equivalent of 1½¢ duty on ores and the price that can be realized abroad for their lead contents. Even if the duty should ultimately be fixed at 1½¢, as it is claimed will be done, it will not admit of our keeping lead here at less than about 4¢.

The foreign market has scored another advance, the price for Spanish having risen to £11 3s. 9d., and for English £11 7s. 6d. Supplies continue to be very limited.

The total arrivals of lead at New York in June, as compiled by the New York Metal Exchange, were 4,450 long tons, 50 tons from Europe and 4,400 tons from Mexico. Exports of Mexican lead in bond were 3,580 tons, 15 tons going to Canada and 3,565 tons to Europe. Withdrawals from bond were 100 tons. The stocks in bond at New York and near-by ports on July 1st are estimated at 2,370 long tons.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead continues to advance rapidly. Latest sales are on a basis of 3½¢ for Missouri and 3½¢ for corroding argenticiferous lead. Offerings are decidedly limited, and in all likelihood we shall see still higher prices.

Imports and Exports of Metals.

Port.	Week, July 1.		Year, 1897.	
	Expts.	Impts.	Expts.	Impts.
*New York.				
Aluminum, boxes	4	.....	1,536	.....
Antimony ore, short tons	.....	25	.....	728
" regulus, casks	.....	.....	.....	474
Brass, old, short tons	820	.....	36.5	95
Copper, fine, long tons	1,897	90	16,943	4,138
" matte, " "	.....	.....	4,469	111
" sulphate, " "	830	.....	.....	.....
Ferro-manganese " "	\$230	.....	1,294	52
Iron ore, " "	.....	.....	.....	9
Iron, pig, bar, rod " "	\$336	20	6,062	1,625
" pyri. es., " "	.....	.....	.....	5,570
Lead bullion, " "	1,200	504	19,435	31,508
Manganese ore, " "	.....	.....	.....	3,545
Nickel, " "	.....	.....	775	20
Rails, old, " "	\$1,246	.....	4,061	.....
Spiegeleisen, " "	.....	100	9,123	11,462
Steel, billets, rods " "	\$270	459	12,983	10,882
Tin, " "	.....	30	1,119	2,799
" dross, " "	.....	.....	.....	41,793
" and black plates, boxes	.....	1,278	.....	67,271
Zinc, long tons	\$822	.....	1,110	.....
" dross, " "	\$18	.....	344	.....
*Baltimore.				
Chrome ore, long tons	.....	.....	10	5,511
Copper, fine, " "	.....	.....	17,285	.....
" sulphate, " "	.....	.....	1,527	.....
Ferro-manganese " "	.....	.....	.....	125
Ferro-silicon " "	.....	.....	.....	69
Iron ore, " "	.....	.....	.....	130,470
" pig, bar, etc., " "	.....	.....	88	1,661
Lead, " "	.....	.....	120	300
Manganese, " "	.....	.....	.....	4,759
Spiegeleisen, " "	.....	.....	.....	785
Steel, " "	.....	.....	2,710	920
wire, bundles	.....	.....	1,567	7,764
Tin, long tons	.....	.....	611	4,317
" and black plates, boxes	.....	.....	.....	18,407
Zinc, long tons	.....	.....	.....	48
" dross, " "	.....	.....	46	115,202
*Philadelphia.				
Antimony, casks	.....	5	.....	2,712
Copper ore, long tons	.....	3,350	.....	18,350
Ferro-manganese " "	.....	.....	.....	.....
Iron ore, " "	.....	.....	.....	.....
Manganese ore, " "	.....	3,250	.....	62,505
Tin, " "	.....	50	.....	398
" and black plates, boxes	.....	.....	.....	.....

*New York Metal Exchange returns. †From our Special Correspondent. ‡Week ending June 25. §Week, June 24.

Spelter remains quiet but steady at about 4-10c. St. Louis and 4-30@4-35c. at New York.

The foreign market is unchanged at £17 5s. for ordinaries and £17 7s. 6d. for specials.

Antimony.—Quotations remain unchanged at 7½c. for Cookson's; 7c. for Hallett's; 6½c. for U. S. Star, and 6¼c. for Japanese.

Nickel.—Business continues quiet, and no change in prices can be reported. We quote for ton lots 33½@36c. per lb., and for smaller orders 35½@38c. London prices are 14@16d. per lb., according to size of order. The London price is about on a parity with New York, allowing for the duty of 6c. per lb.

Platinum.—Prices are firm at \$14@15 per oz. New York. The London quotation is 55s.@56s. per oz.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams, for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams; Crucibles and dishes, 54c., 55c., and 56c. per gram. Wire and foil are 52c., 53c. and 54c. per gram.

Quicksilver.—The New York quotation remains unchanged at \$40 per flask. The London price has been reduced 2s. 6d., and is now £7 5s. per flask, with £7 3s. 9d. quoted from second hands.

The Minor Metals.—Quotations are given below for New York delivery:

Aluminum:	Bismuth, 99 lb.	\$1.50@1.80
No. 1, 98% ingots, 37 lb.	Phosphorus, 50 lb.	50@55c.
No. 2, 94% "	Tungsten, 70 lb.	70c.
Ingots, scrap, "	Tungstic acid, 45c.	45c.
Roll sheets, "	Ferro-tungsten, 6% 60c.	60c.
Alum.—Nickel, "	35@40c.	

Variations in price depend chiefly on the size of the order.

Average Monthly Prices of Metals

In New York, for the years 1897 and 1896; in cents per pound.

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.
Jan.....	11 75	9 87	13 41	13 02	3 01	3 08	3 91	3 75
Feb.....	11 92	10 61	13 59	13 44	3 28	3 13	4 02	4 03
March....	11 80	11 03	13 43	13 30	3 41	3 14	4 12	4 20
April....	11 48	10 98	13 31	13 34	3 32	3 07	4 13	4 07
May.....	11 05	11 15	13 44	13 51	3 26	3 03	4 21	3 98
June.....	11 11	11 67	13 77	13 59	3 33	3 03	4 21	4 10
July.....	11 40	11 40	13 63	13 49	2 93	2 96	3 97	3 76
August....	10 98	10 98	13 49	13 49	2 73	2 73	3 73	3 60
Sept.....	10 66	10 66	13 15	13 15	2 77	2 77	3 77	3 72
October..	10 66	10 66	12 91	12 91	2 89	2 89	3 72	3 72
Nov.....	11 23	11 23	13 09	13 09	2 96	2 96	3 99	3 99
Dec.....	11 28	11 28	12 96	12 96	3 04	3 04	4 14	4 14
Year	10 88	10 88	13 29	13 29	2 98	2 98	3 94	3 94

CHEMICALS AND MINERALS.

(For current prices of chemicals, minerals and rare elements see page 30.)

New York. July 2.

Heavy Chemicals.—Business has continued very dull throughout the week, the only bright side of it being the assurance that conditions must improve as soon as the agitation at Washington ceases. The latest influence on the market from this source has been felt in bleaching powder, upon which the duty has been reduced to ¼c. per pound.

We quote: Caustic soda, 60%, \$2.10@2.15; 70@75%, \$1.90@2 per 100 lbs. Alkali, 58%, 60c. for 50-ton lots and over, and 70@80c. for smaller quantities; alkali, 48%, \$1@1.20 for jobbing lots. Carbonated soda ash, 48%, 90@95c. per 100 lbs.; 58%, 75@80c. per 100 lbs. Bleaching powder, prime brands, \$1.75@1.87½; Continental, \$1.55@1.75 per 100 lbs.; Continental F brand, \$1.60@1.65. Bicarb. soda, English, 1.75@2c. per lb.; American, bulk, \$1.50@1.55 per 100 lbs., according to brand. Sal-soda, English, 60@65c. per 100 lbs.; American, 55@60c. (in barrels), and 75@80c. in kegs. Chlorate of potash, 9c. per lb.

Acids.—A fair amount of business has been done during the week on deliveries for present consumption, and quite a large trade for July delivery. Prices are firm and unchanged. Quotations per 100 lbs. in New York and vicinity in lots of 50 carboys or over are as follows: Acetic acid, commercial No. 8 (in barrels), \$1.40 @ \$1.50; in carboys, \$1.50@1.65; redistilled, 28% in bbls., \$1.70@1.80; in carboys, \$1.90@2.05, muriatic acid, 18%, 75@85c.; 20%, 85@95c.; 22%, \$1.15@ \$1.25, according to make and quantity. Nitric acid, 36%, \$3.50@4; 40%, \$4@4.50; 42%, \$4.50@5.50. Oxalic acid, \$7.25 ex-dock and \$7.50 ex-store. Mixed acids, according to mixture. Sulphuric acid, 66%, 85c.@ \$1 in carload lots, 10@15c. higher for small quantities. Chamber acid, \$6@6.50 per ton at factory. Blue vitriol, \$4@4.25, according to grade and order.

Brimstone.—Uniform quietness continues in this market with prices practically unchanged. Best unmixed seconds are still quoted at \$20 per ton for spot sales, and \$19.50@19.75 for shipments. Thirds are 50c. per ton less.

Fertilizing Chemicals.—A further advance took place during the week in the price of dried blood, high grade Western being now \$1.77½ per unit, New York, and \$1.57½ per unit, f. o. b., Chicago. During the last week or 10 days some very large sales have been made in this market. We quote:

Sulphate of ammonia, gas liquor, \$2.12½ for shipment, and \$2.20 for spot; bone, \$2.05@2.10 per 100 lbs. Dried blood, high grade Western, \$1.77½ per unit New York; f. o. b. Chicago, \$1.57½ per unit. Azotine, \$1.67½ basis New York. Concentrated phosphate (30% available phosphoric acid), 57½c. per unit. Acid phosphate, 13%@15%, av. P₂O₅, 54@65c. per unit at sellers' works in bulk. Dissolved bone black, 17%@18% P₂O₅, 80c. per unit. Acidulated fish scrap, \$9.50, and dried scrap \$17.50@18, f. o. b. fish factory. Tankage, high grade, \$14 per unit; concentrated, \$1.32½ per unit, f. o. b. Chicago; New York, \$18.50; low grade, \$16.50@17. Bone tankage, \$19@ \$20; ground bone, \$21@23. Bonemeal, \$19.50@22.50.

Sulphate of Potash: 90%, New York and Boston, \$1.90½; Philadelphia, Baltimore and Norfolk, \$2.01; Southern ports, \$2.03.

Double Manure-Salt: Quotations for 48@49%, less than 2½% chlorate, are 1.01@1.01½c., to arrive, and 1.02@1.03c. on spot; basis of 48%. High grade, 90@ 98% sulphate of potash, 1.96½@2.00½c. to arrive; basis of 90%. In bulk 24@36%, 36½@37½c. per unit O. P.

Muriate of Potash: We quote: New York and Boston, 1.75@1.78c. Philadelphia and Norfolk, 1.76@1.79½c.; Charleston, Savannah, Wilmington and New Orleans, for 80@85% basis of 80%, 1.78½@ 1.81c. in lots of 50 tons and upward.

Kainit.—Invoice weights, as taken at port of shipment, per ton of 2,240 lbs., testing 12.4% actual potash, equivalent to 23% sulphate of potash, \$9.25. Actual weights, ex-vessel at port of New York per ton of 2,240 lbs. (testing as before), \$9.50.

Nitrate of Soda.—Prices have gone still lower on this commodity, one quotation for spot sales received having been 1.72c. In general we quote: For spot, 1.77½c.; to arrive, 1.72½c.; for shipment, 1.67½@1.70c.

Liverpool. June 23.

(Special Report of Joseph P. Brunner & Co.)

In consequence of the Jubilee celebrations business is practically at a standstill this week and holidaying is the general rule. Shipments of chemicals to the United States continued on a large scale up to the end of last week, but a lull has now set in pending the actual date of the new tariff being definitely fixed.

Quotations all round are nominally unchanged and range as to market may be called about as follows: Leblanc ash, 48%, \$4 10s @ \$4 15s. per ton; 58%, \$4 15s. @ \$5 per ton, net cash; ammonia ash, 48%, \$3 7s. 6d. @ \$4 per ton; 58%, \$3 12s. 6d. @ \$4 5s. per ton, net cash. Bags 5s. per ton less. Special terms for American business.

Soda crystals in barrels, £2 17s. 6d. per ton. Bags £2 10s. 6d. per ton, less 5%. Special terms for American orders.

Caustic soda, 60%, £6 3s. 9d. @ £6 5s. per ton; 70%, £7 3s. 9d. @ £7 5s. per ton, net cash; 74%, £8 2s. 6d. @ £8 5s. per ton; 76%, £8 15s. @ £9 5s. per ton, net cash.

Bleaching powder, hardwood casks, £6 15s. @ £7 per ton, net cash.

Chlorate of potash, 4d. per lb. Bicarb. soda, 1-cwt. kegs, £6 15s. per ton, less 2½%; usual allowances for larger packages.

Sulphate of ammonia, £7 16s. 3d. @ £8 per ton, less 2½%.

Nitrate of soda, £7 17s. 6d. @ £8 per ton, less 2½%. Carb. ammonia, lump, 3d. per lb.; powdered, 3¼d. per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 26, 27 and 28 of mining stocks listed and dealt in at:

Aspen.	Helena.	London.
Baltimore.	New York.	Mexico.
Boston.	Philadelphia.	Paris.
Butte.	Pittsburg.	Rossland.
Cleveland.	Salt Lake.	Shanghai.
Colo. Springs.	San Francisco.	Valparaiso.
Denver.	Los Angeles.	

New York. July 2.

There has been a somewhat better feeling in the local mining stock market this week, and the silver stocks have attracted the most attention. Reports of rich strikes in different mines have been instrumental in lifting prices. There is little actual selling, though.

The Comstock group of stocks show better prices this week than last, especially Sierra Nevada, which has been on a gradual increase. Some rich ore, it is said, has been struck on this property, and mainly on this account orders have been taken for the rest of the Comstocks. At the opening last week Sierra Nevada was quoted at 35c. on the Consolidated Stock and Petroleum Exchange, and at the close this week it stands at 63@60c.; sales were made of 900 shares at 63@80c. Consolidated California & Virginia was an exception to the general advancing tendency of these stocks, and dropped 20c. this week.

The Colorado Stocks, especially those in the neighborhood of Leadville, showed good prices this week, and Mollie Gibson was notably higher. Last week this stock was down to 35c., but there was a subsequent advance of 2c. to 50c. At the close the stock continued to rise, but there were no offerings to speak of. This rise is due to the fact that word has been received from Colorado Springs to the effect that another rich strike has been encountered on the 13th level of the Mollie Gibson property. As our readers will remember, we already referred to the strike which was made in May last, and stated then that the company had been work-

ing for several years in anticipation of recovering the "bonanza" which had been cut off on the sixth level by a complicated system of faulting. Hopes were then entertained that the vein would be struck on the 12th or 13th level, and the announcement referred to above seems to have satisfied these expectations.

Lacrosse remained fixed at 13c., with sales of 900 shares. This property is showing up well, and we are told the company is receiving regular royalties from its lessees, averaging \$2,000 per month.

The Cripple Creek stocks as dealt in on the Mining Exchange are receiving fair support, and Portland especially has made an advance of 16c. this week, to 82c.

Isabella shows an advance of 6c. in its quotations and is now changing hands at from 29 to 32c. The Isabella Gold Mining Company, of Cripple Creek, has issued its statement for the quarter ending May 30th, 1897, which shows that the aggregate receipts were \$79,647, and the expenses \$69,757, netting a profit of \$9,890 for this period. The company paid \$11,250 in dividends from March to May, 1897, inclusive, and had a cash balance in the treasury on June 1st of \$100,589. Payments to the lessees of the Isabella territory were \$9,423. The company is carrying on its development work actively, and some of the ore taken out is understood to show good value.

Anaconda gold has fallen in price, opening at 51c. and closing at 41c. bid; there were no purchases, however.

Of the other stocks to show heavy trading is Miami, a "sister corporation" to the Annetta Gold Mining Company. The stock opened at 21½c. last week, and at the close to-day it is offered at 27½c. This stock is called on the Mining Exchange. The Miami Mining and Milling Company is capitalized at \$3,000,000, of which \$1,000,000 is in the treasury. The par value of the stock is \$1. Practically the same people as are interested in the Annetta have also a hand in the Miami company. The latter is operating a tunnel, called the Wilcox, at Idaho Springs, Colo., which is said to be in 1,500 ft. in ore. There are 13 claims, three of which are patented. The cost of running the tunnel is between \$25 and \$30 per foot, and so far, we are informed, the company has spent \$60,000 in working it.

Boston. July 1.

(From Our Special Correspondent.)

There has not been as much activity in the copper stocks the past week, but prices have generally been well maintained, and the outlook for the future is still promising. Boston & Montana, after opening at \$132½, sold up to \$135, with subsequent reaction to \$132½, recovering to-day to 132½. Butte & Boston declined to \$21½, sold up to \$22½ and back again to \$21½. Calumet & Hecla declined from \$305 to \$385, and recovered to \$300. Quincy was better, selling up to \$116, a gain of \$2 for the week. Tamarack sold up to \$128, but in later dealings went off to \$125. O-coala sold at \$33 dividend on and at \$32½, ex-div., losing only ¼ in closing sales. Atlantic was steady at \$22, but Franklin declined from \$16 to \$15, on moderate sales. Kearsarge sold at \$19 and declined to \$18 later. Tamarack, Jr. has been heavy. The advance of last week was too rapid to hold and the stock declined from \$22 to \$19½. Wolverine has ruled quite firm at \$10½@ \$10½. Arnold was also steady at \$3@3½. Tecumseh sold at \$1½. On the announcement of an assessment of \$1 per share the stock declined to 50c., with recovery later to 75c. Centennial sold at \$7½ and declined to \$7¼.

In the gold stocks Pioneer was the most active on good reports from the mine and sold up from \$4¼ to \$6, with decline later to \$4½. Gold Coins has ruled steady at \$4¼@4¼. Santa Ysabel declined from \$14 to \$13½, and Merced from \$28½ to \$8. Napa Quicksilver advanced ½ to \$6½.

At the afternoon call Boston & Montana advanced ½ to \$133; Butte & Boston to \$21½. Tamarack, Jr. declined to \$19, but rallied and closed strong at \$20½. Kearsarge declined to \$17½, but Old Dominion was firm at \$19. Santa Ysabel dropped to \$13, and Pioneer advanced from \$4¼ to \$5½.

Cleveland. June 30.

(From Our Special Correspondent.)

The Cleveland mining stock market has not suffered materially on account of the war between the operators on the Mesabi range, and all the stocks remain as firm as usual. During the week prospective buyers offer \$3 less for Cleveland-Cliffs stock, and investors offer \$3 per share more for Chandler. The quotations on the other stocks offered for sale in this market remain the same.

San Lake City. June 26.

(From Our Special Correspondent.)

Five dividends in the month, aggregating \$70,000 on silver-lead securities, is the only bright spot in the gloomy conditions attending this line. Swansea aid the regular dividend of 5c. on June 10th, and at the annual meeting declared an extra of 5c. (\$5,000), payable July 3d. South Swansea paid 5c. (\$7,500); Silver King, 25c. (\$37,500); Ontario, declared, payable June 30th, 10c. (\$15,000). Outside of this bright feature the silver-leads are not attractive, and the non-dividend class and those having suspended dividends are not in demand; prices low, correspondingly, and an inactive week. An advance on gold and copper shares is to be recorded, slight as it may be.

Ajax, of the latter class, stiffened up and though it sold at 45c. it was held higher at the close, with but small lot in sight. Anchor is in demand at lower prices and is easy in the hands of holders.

Alliance absolutely without movement. Brick Consolidated (California) is regularly offered on this market at 70c., but has done no business. In the absence of prospects of dividends—suspended after March—Bullion-Beck remains inactive and is offered down without takers. Buckeye of Tintic is in moderate demand at prices too low for sellers. Centennial-Eureka has not yet closed a smelter contract and dividends are still in the future. The stock is offered under \$50. Dalton is wanted at shaded figures, but is held back to await result of newly started development. A wide diversity exists between bidders and holders on Dalton & Lark, tenders of 1½ being made against offerings at 15. Daly is flat with a difference of 35% valuation between buyer and seller, while Daly-West, though held close, is not in demand. Dexter, a fancy Nevada gold security sold during the week at \$1.75, but advanced five points at the close. Eagle, under a moderate advance, stiffened a point, and did business at improved figures. Repeated demands for Emerald at 5c. failed to locate the stock, and the week closed without transactions. Four Aces fails to come out in response to 5c. bids; on the other hand, East Golden Gate is hunting buyers in vain at 1c. Geyser is still doing business at good figures, while the successor of the stock, Geyser-Marion, is in good demand. The June dividend of 3c. (\$9,000), declared June 19th, is payable June 30th. An assessment of 1c. has depressed Homestake; it is offered at 2c. Little Pittsburg holds the advance it made a month ago, but is doing but little business. Mammoth is in strong demand at improved figures, recording an advance of 12½c. in the week. The new hoist is installed and connection is about complete, via the main shaft, between the 1,500 and 1,700 levels. Mercur paid its June dividend of \$25,000, but the event had no effect on the stock, which is held around \$8, with bids a few points under and a strong demand. Northern Light fluctuates on the local market, quotations unaccountably opening one day several points in excess of the knockdown price of the preceding day. Omaha is in good demand at average prices. A suit is in progress involving the ownership of the control. Ontario is weak on the market, regardless of the June dividend. Sacramento is in demand at lower figures, with the stock within easy reach. Swansea and South Swansea are the favorites of the silver-lead class, and easily maintain their prices. Tetro, a stock that puts in an occasional appearance, sold at 2c. and a fraction.

After June 30th, the brokers' call on the Salt Lake Stock Exchange will be discontinued until August 15th, allowing a vacation of a month and a half.

San Francisco. June 26.
(From Our Special Correspondent.)

The market opened weakly on Monday with very little business, and on what few sales were made prices were hammered down, the quotations being the lowest we have had for some time. The dullness continued pretty well through the week, and business was so light that it was hardly worth while to report it. The weekly statements from the Comstock had little or nothing in them, and were read without interest.

While business continued light there was a little stiffening up toward the close, and prices were a shade firmer, with some prospect of a better opening next week—unless the big buyers should decide to let matters go over the holiday. Some quotations noted are: Consolidated California & Virginia, \$1.35@1.37; Cnollar, 77@80c.; Ophir, 62@64c.; Best & Belcher, 40c.; Ophir, 39c.; Yellow Jacket, 32@33c.; Mexican, 27@28c. There were a few sales of Standard Consolidated at \$1.40.

Next week will be a short one, the Exchanges having voted to adjourn over from Thursday, July 1st, to Tuesday, July 6th, thus cutting two business days out of the week.

The Virginia City *Enterprise* says that the failure of the Comstock Tunnel Company to take some action on the proposition submitted by the directors of the American Flat Development Company, the time for which action expired June 15th, has only constituted one of the many obstacles encountered by the company in carrying out its plans. The claim owners all along the line of the proposed tunnel extension from the Alta to the Rock Island have seemed to emulate each other in following the example of the Comstock Tunnel Company. Most of these claim owners are impetuous; their claims are practically valueless and must remain so until developed to a depth. Notwithstanding this, they appear to be better satisfied to hang on to their claims and do only assessment work from year to year than to make any concession to the Development Company, which to a certainty would multiply the value of their claims, increasing their wealth and at the same time contribute to the expenses of running the drain tunnel, which would cut them hundreds of feet below any point to which they had been previously worked. These holders of the line of the proposed tunnel extension have adopted a dog-in-the-manger policy, which made the plans of the Development Company well-nigh not feasible. This constitutes another of the obstacles to the original plan, but there are others. Notwithstanding all this, the proposition has by no means been abandoned, and the directors of the company are as enthusiastic of success as ever. They say the mines of the American Flat will be drained in the course of a few years. The plan of the tunnel extension from the Alta to the Rock Island has not been abandoned, but other plans are now under consideration, one of which is a tunnel

from the river at Dayton through Silver City into the American Flat country, and still another is to run a tunnel from the Dayton mine at Silver City to the Rock Island shaft.

The Santa Rosalia Mining Company has declared a dividend of 10c. per share, payable July 1st.

The delinquency in office of the assessment of 10c. per share levied by the Grayson board of directors of the Hale & Norcross Mining Company has been further postponed to July 28th, and the day of sale to August 18th.

The Brunswick Consolidated Gold Mining Company of Grass Valley has levied an assessment of 3c. per share, delinquent July 22d.

London. June 23.
(From Our Special Correspondent.)

The report of Fraser & Chalmers, Limited, for the past year shows that the company has again arrived at a dividend-paying stage, after having surmounted the many difficulties of the past few years. A profit has been made of £50,000, but in order to increase the current balance only £16,000 has been paid as dividend. A more important announcement than the dividend question is that the firm has bought out Edward Chester & Company's sole agency for South Africa. Before Fraser & Chalmers established themselves in England, Edward Chester & Company undertook to act as agents for the firm in Africa, and a cast-iron agreement was drawn up giving Chesters the sole perpetual agency for that continent. Seeing that Africa was one of the largest buyers of mining machinery it is no wonder that Fraser & Chalmers have been in difficulties, for one of their best sources of profit was shut off. Chesters got all the profit on African transactions and there was none left for Fraser & Chalmers. It goes without saying that Fraser & Chalmers must have given Chesters a very large sum of money to get rid of the agreement. Whether the firm itself or its controllers, Wernher, Bert & Company and the Exploration Company, found the cash remains to be seen.

The Harris Fraser River Gold Recovery Company, Limited, is the name of a company which is being formed to dredge five miles of the Fraser River, near the town of Harrison, on the Canadian Pacific Railway. The promoter is Colonel Josiah Harris, who has been connected with mining and other schemes in all parts of the world. He was until recently in Chile, and during the last year or two has been occupied in booming a project for building a railway from Hudson Bay to British Columbia. The prospectus does not specify the particular five miles to be worked, nor does any report by a mining engineer appear to have been made. Reliance is chiefly on the fact that Chinamen wash the gravels in that locality. The purchase price is not in cash or shares but is to take the form of one fifth of the net profits of the company.

In September, 1895, I mentioned that the Mammoth Gold Mines, Limited, working the Mammoth and other mines in Pinal County, Ariz., had come to the end of its tether, and was proposing to reconstruct. That reconstruction was carried through, and a new company, called the Mammoth Collins Gold Mines, Limited, was formed to take over the mines, and also to acquire the adjoining four claims known as the Collins mines. The capital of the new company was £100,000 in 2,000,000 shares of 1s. each. The new properties were reported on favorably by Mr. Arthur Pearce, a London mining engineer. Nothing appears to have been done toward working the mines, a fact which is perhaps accounted for by the death of the promoter, Mr. Emilio Zuccani, of London. Some of your readers may know what is going on at the mine; if they can supply you with information, English shareholders will be glad.

Paris. June 20.
(From Our Special Correspondent.)

The mining stock market has been rather quiet this week, partly because speculation is very light just now, and nearly all the men who are most interested have gone to different points for the summer. The holidays in London, which have closed the exchanges for the best part of a week, have had their effect also. Just now we are overrun with princes, grand dukes and the like, on their way to or from the Jubilee in London. It is tantalizing to read of the ceremonies there and then think how much better they could be managed here. Our British friends do not excel in conducting a fête.

The market for the gold stocks showed no disposition to collapse on the news of Barney Barnato's death, and there was less feeling here than in London. The fact is that Barnato was never much in vogue in Paris. Perhaps we worship money as much as our brethren in London; but we do not set it on a pedestal and bow down to it, as they do across the Channel. Our worship is at least more decorous.

Poor Barney! everyone says, and the news of his untimely end softens our recollections, which are not altogether pleasant. That strong, but grotesque personality did not attract Paris at all. Perhaps we saw the grotesque side rather than the strength; at any rate he was not a success here, and few men were willing to admit him as a friend. The failures and losses of the last year or so have also rather impaired his reputation.

The market for the copper stocks has fluctuated, and the investment demand having been pretty well satisfied, prices have fallen off a little. The fall is not serious, and there will doubtless be a recovery soon. The great demand for copper is

still maintained, and some experts promise us an increase.

The demand for all the metals is good, and we do not hear of any lower prices. The shares of the lead and zinc companies continue quite enough in demand to keep up their prices, almost without exception.

The discussion over the extension of the Bank charter still continues in the Chamber of Deputies. Many amendments to details of the bill have been offered, and some of them will be accepted; but the bill will be adopted with its main features unchanged, and the Socialist proposition for the substitution of a State bank will surely fail. The main point in dispute is the demand that long-time agricultural acceptances shall be discounted on the same terms as shorter-date commercial paper. The Bank has had experience enough with such bills and it is quite clear that it does not wish more.

Quiet preparations, I am told, are being made to exploit the gold mines of Madagascar. The report of the experts sent out recently is very favorable, so far as they have gone. Who knows? Fianarantsoa may yet be another Witwatersrand. The resources of our great island colony are just beginning to be understood. A strong syndicate is ready to undertake the development of these new mines.

Rossland, B. C. AZOTE,
June 23.

(From Our Special Correspondent.)

The festivities connected with the Jubilee celebration absorbed much attention from all classes in the camp, the American residents joining heartily in the proceedings. These are now over, and renewed activity in the staple industry of the camp is promised.

The production of Rossland mines to date has reached 31,332 tons of smelting and concentrating ores. Of this quantity 2,472 tons represent free-milling ore from the O. K. mine and 230 tons from the I. X. L., both of which have been treated at the O. K. stamp mill. The entire quantity as above, viz., 31,332 tons, represent about three-fourths of the whole product for 1896.

In round numbers, since the beginning of the year, the Le Roi has shipped 20,000, the War Eagle 5,500, Columbia and Kootenay 1,000, Iron Mask 1,700, Josie 400, Cliff 300, O. K. 172 tons of smelting ore. These may now be considered the regular shippers, though the O. K. must be temporarily counted out, yet its mill will be kept constantly running on ore belonging to I. X. L. and Gold Drip.

There are several properties in the camp which have been before the public for some time—two or three since 1891. These are the Center Star, the Iron Horse, Lily May, Crown Point, Homestake Group and St. Elmo. These companies are said to have in their shafts and tunnels considerable bodies of shipping ore, yet they have not shipped. In two or three instances, the management is said to be waiting until there were better and cheaper smelting facilities in the camp.

The next 60 days will in all probability be marked by a great increase in the production, together with an increase of the shippers, and some important strikes such as the genuine ones the other day in the Sunset.

MEETINGS.

Best & Belcher Mining Company annual meeting at 309 Montgomery street, San Francisco, Cal., on July 12th at 1 p. m.

Monte Cristo Mining Company, annual meeting at Everett, Wash., on July 14th at 12 m.

Mountain Tunnel Mining Company, annual meeting, at 219 Sansome street, San Francisco, Cal., on July 22d at 1 p. m.

Rainy Mining Company, annual meeting, at Everett, Wash., on July 14th at 1 p. m.

Union Consolidated Silver Mining Company, at 309 Montgomery street, San Francisco, Cal., on July 19th at 1 p. m.

LATE NEWS.

H. C. FRICK COKE COMPANY.—Changes took place in this company July 1st by which Mr. Frick retires as president and the active head of the company, and becomes chairman of the board of directors, a new office created for him. Thomas Lynch, of Greensburg, general manager, becomes president; W. C. Magee, vice-president; G. B. Bosworth, second vice-president and treasurer; M. M. Bosworth, secretary; O. W. Kennedy, of Uniontown, will be general superintendent.

The National Executive Board of the United Mine Workers of America has ordered a general strike of bituminous coal miners for July 4th as a result of the meeting held in Columbus, June 24th-26th. The demand is for the scale of prices adopted at the convention in January, which is as follows:

Pennsylvania (Pittsburg District), pick mining, 60c. per ton; Ohio, 60c. per ton; Indiana (bituminous), 60c. per ton; Illinois (Grape Creek), 55c. per ton. Machine mining to be paid three-fifths per ton of the price for pick mining, except in Indiana (bituminous), where the price shall be four-fifths per ton of the price paid for pick mining; other mining sections a corresponding increase in price that will place them on a relative basis.

The order for the strike was decided on and issued July 2d. It is expected that it will be generally carried out.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Alamo, Alice, Anaconda, and others, with columns for location, par value, and prices for various dates from June 26 to July 2.

BOSTON, MASS.

Table of stock quotations for Boston, Mass., listing companies like Alamo, Alice, Anaconda, and others, with columns for location, par value, and prices for various dates from June 25 to July 1.

* Official quotations Boston Stock Exchange. * Bid and ask quotations. Total sales, 51,033.

BALTIMORE, MD.*

Week ending June 30.

Table of stock quotations for Baltimore, Md., listing companies like Atlantic Coal, Howard C. & U., and others, with columns for location, par value, bid, and ask prices.

* Official quotations Baltimore Stock Exchange.

CLEVELAND, O.

Table of stock quotations for Cleveland, O., listing companies like Aurora, Chandler, and others, with columns for par value, bid, and ask prices.

ASPEN, COLO.

June 25.

Table of stock quotations for Aspen, Colo., listing companies like Agnes C, Alita Argent, and others, with columns for location, capitalization, par value, and quotations.

COLORADO SPRINGS, COLO.†

Table of stock quotations for Colorado Springs, Colo., listing companies like Alamo, Anaconda, and others, with columns for par value, bid, and ask prices.

* Official quotations Colo. Springs Mining Stock Assoc. Total shares sold 251,840.

COAL AND INDUSTRIAL STOCKS.

Table of coal and industrial stock quotations, listing companies like American Coal, Col. Fuel & L., and others, with columns for par value and prices for various dates.

* Official quotations New York Stock Exchange, mining, 7.0 shares; other stocks, 50,408 shares; Consolidated Stock and Petroleum Exchange, mining, 4.15 shares; Mining Exchange, 87,553 shares. Total shares sold, 153,133. * Bid and ask quotations. † Ex-div.

PHILADELPHIA, PA.†

Table of stock quotations for Philadelphia, Pa., listing companies like Cambria Iron, Choce & Co., and others, with columns for location, par value, and prices for various dates.

* Official quotations Philadelphia Stock Exchange. * Bid and asked quotations Total sales, 5,934.

PITTSBURG, PA.*

Week ending June 29.

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

* Official quotations Pittsburg Stock Exchange.

STOCK QUOTATIONS.

DENVER, COLO.:

Table of stock quotations for Denver, Colorado, listing various companies like Addie C, Etina Gold, Alamo, etc., with columns for Par value, Bid, Asked, and Sales.

*Official quotations Colorado Mining Stock Exchange. *Bid and ask. quotations. Total shares sold, 1,346,250.

BUTTE, MONT.

June 25.

Table of stock quotations for Butte, Montana, listing companies like Am. Dev. & M., Bald Butte, etc., with columns for Par value, Bid, Asked, and Price.

HELENA, MONT.*

Week ending June 24.

Table of stock quotations for Helena, Montana, listing companies like Am. Dev. & M. Co., Bald Butte, etc., with columns for Location, Company's office, Par value, Bid, Asked, Shares sold, and Price.

*Special Report of Samuel K. Davis. Total shares sold, 7,000.

SAN FRANCISCO, CAL.*

Table of stock quotations for San Francisco, California, listing companies like Alpha Con., Alta, Andes, etc., with columns for Location, Par value, and Price.

*Official telegraphic quotations, San Francisco Stock Exchange.

LOS ANGELES, CAL.*

Table of stock quotations for Los Angeles, California, listing companies like Anaconda, Brown Duke, etc., with columns for Location, Par value, Bid, Asked, and Sales.

*Official quotations, Los Angeles Mining and Stock Exchange. Total sales, 203,100 shares.

SALT LAKE CITY, UTAH.*

Week ending June 26.

Table of stock quotations for Salt Lake City, Utah, listing companies like Ajax, Alliance, etc., with columns for Stocks, Number of shares, Par value, Bid, Asked, and Actual selling price.

*From Our Special Correspondent. † Utah companies. ‡ Mines in Vanderbilt, Cal. § Mines in Tuscorors, Nev.

ROSSLAND, BRITISH COLUMBIA.*

June 16.

Table of stock quotations for Rossland, British Columbia, listing companies like Alberta, Big Chief, etc., with columns for Name of Company, No. of shares, Par value, Selling price, and Name of Company, No. of shares, Par value, Selling price.

*From Our Special Correspondent.

MEXICO.

Week ending June 23.

Table of stock quotations for Mexico, listing companies like Alianza, Amistad y Concordia, etc., with columns for Name of Company, State, No. of shares, Last dividend, Last assessment, and Prices (Opening, Closing).

NOTE.—In most of the older Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Many newer companies have a nominal par value, usually \$5 or \$100. Prices are in Mexican dollars.

STOCK QUOTATIONS.

LONDON.

June 18.

Table of stock quotations for London, listing company names, countries, authorized capital, par value, last dividend, and current quotations.

Dividend pending. Rights pending.

DIVIDENDS.

Table of dividends for various companies, including company name, current dividend, paid since Jan 1, 1897, and total to date.

NOTE.—This table does not give all the dividends paid by mining companies, as it is impossible to obtain a complete list of dividends declared.

PARIS.

Week ending June 11.

Table of stock quotations for Paris, listing company names, countries, products, capital stock, par value, and prices.

VALPARAISO, CHILE.

May 8.

Table of stock quotations for Valparaiso, Chile, listing company names, locations, capital paid, and prices.

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

SHANGHAI, CHINA.

May 21.

Table of stock quotations for Shanghai, China, listing company names, countries, and prices.

* Special Report of J. P. Binnett & Co.

The prices quoted are in Shanghai taels.

ASSESSMENTS.

Table of assessments for various companies, including company name, location, number of shares, and assessment amounts.

* New assessment.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table containing two columns: 'DIVIDEND-PAYING MINES' and 'NON-DIVIDEND-PAYING MINES'. Each column has sub-headers for 'Name and Location of Company', 'Capital Stock', 'Shares' (No., Par Val), 'Assessments' (Total Levied, Date and Amount of Last), and 'Dividends' (Total Paid, Date and Amount of Last). The table lists numerous mining companies with their respective financial details.

G. Gold, S. Silver, L. Lead, C. Copper, B. Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends and the Cons. \$42,390,000. § Dividends paid since consolidation. ¶ Bodie, Bulwer and Mono transferred to Standard Cons., January, 1897. †† Dividends have not been paid in several years.

NOTE.—This table is corrected up to July 1. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

RARE ELEMENTS, CHEMICALS AND MINERALS—CURRENT PRICES.

Note.—This table is revised up to June 8th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable.

CHEMICALS AND MINERALS.

These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts.

Table listing various chemicals and minerals such as Abrasives, Acids, Alcohols, Alum, Aluminum, Ammonia, Ammonium, Antimony, Argols, Arsenic, Asbestos, Barium, Barytes, Benzene, Bismuth, Bone Ash, Borax, Bromine, Cadmium, Calcium, Cement, China Clay, Chrome Ore, Cobalt, Copper, Explosives, Feldspar, Fluorspar, Gypsum, Gold, Iodine, Iron, Kaolin, Lead, Lime, Magnesite, Magnesium, Manganese, Marble Dust, Mercury, Mica, Mineral Wool, Nickel, Oils, Petroleum, Potash, Potassium, Pyrites, Quartz, Saltpeter, Selenium, Silica, Sodium, Strontium, Sulphur, Tellurium, Tin, Tungsten, Vanadium, Zinc, and Zirconium.

Table listing various chemicals and minerals with columns for Cust. Meas. and Price. Includes items like Cement, China Clay, Chrome Ore, Cobalt, Copper, Explosives, Feldspar, Fluorspar, Gypsum, Gold, Iodine, Iron, Kaolin, Lead, Lime, Magnesite, Magnesium, Manganese, Marble Dust, Mercury, Mica, Mineral Wool, Nickel, Oils, Petroleum, Potash, Potassium, Pyrites, Quartz, Saltpeter, Selenium, Silica, Sodium, Strontium, Sulphur, Tellurium, Tin, Tungsten, Vanadium, Zinc, and Zirconium.

Table listing various chemicals and minerals with columns for Cust. Meas. and Price. Includes items like Petroleum, Zinc, Zirconium, and various salts and acids.

Table listing various chemicals and minerals with columns for Cust. Meas. and Price. Includes items like Silica, Sodium, Strontium, Sulphur, Tellurium, Tin, Tungsten, Vanadium, Zinc, and Zirconium.

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

Table listing rare elements such as Argon, Barium, Beryllium, Boron, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Glucinum, Helium, Iridium, Lanthanum, Lithium, Molybdenum, Niobium, Osmium, Rhodium, Rubidium, Ruthenium, Selenium, Strontium, Tantalum, Thallium, Thorium, Vanadium, and Wolfram.

ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with columns A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. Each column lists advertiser names and their corresponding page numbers. Includes sub-sections like 'Situations Wanted' and 'Meetings'.

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| III. Searching for Coal. | XI. Ventilation. |
| IV. Shatt-Sinking. | XII. Incidental Operations. |
| V. Driving of Levels or Narrow Work. | XIII. Surface Work. |
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POSITIONS VACANT

Free Advertising.

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

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

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

1532 WANTED—A GOOD SMELTER AND Refiner who knows how to handle tin and lead drosses and other refuse metal, making of Brazine Spelter and Babbitts; competent, practical men only need apply. Address **SMELTER, ENGINEERING AND MINING JOURNAL.** June 12.

1533 WANTED—COMPETENT MAN FOR position in neighborhood of New York, experienced in running a steam electric plant. Address **ELECTRIC, ENGINEERING AND MINING JOURNAL.** June 12.

1534 WANTED—AN EXPERIENCED Placer Mining Foreman; one who is capable of taking full charge of a placer mine and is able to put in such improvements as will be required: building dams for holding water in reservoir, digging ditches, and putting in pipe and giant. Must also be familiar with under-currents. Must come with best recommendations as to ability and honesty. State experience and salary expected. Mines are located in Oregon. Address **PLACER FOREMAN, ENGINEERING AND MINING JOURNAL.**

1535 WANTED—MILL SUPERINTENDENT for Peru; must fully understand the amalgamation of silver ores by the latest processes. House rent and table board furnished free. State experience, salary desired and references. Address **PERU, ENGINEERING AND MINING JOURNAL.**

1536 WANTED—AN ASSAYER AND Chemist for the City of Mexico; preferably one having had experience in Western smelter practice. Salary \$150 Mexican currency per month. Address, stating age, experience and references, **PUNTE, ENGINEERING AND MINING JOURNAL.**

1537 THERE IS AN OPENING ON THE staff of the ENGINEERING AND MINING JOURNAL as Mining News Editor. The duties call for an experienced newspaper man, with experience in mining and familiarity with the mining districts of the West. Address, stating full particulars, experience, salary expected, etc., **EDITOR ENGINEERING AND MINING JOURNAL.**

SITUATIONS WANTED.

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

A MAN, 27 YEARS OLD, WITH TECHNICAL education, previously assistant chemist at a large smelter and now with a consulting engineer, desires a position in the fall with a milling, smelting or refining company. Good references. Address **C. D., ENGINEERING AND MINING JOURNAL.** No. 18,040, Aug. 14.

A MINING ENGINEER 26 YEARS OF AGE, now under engagement with well-known mining company, desires change; has been continuously employed for past five years in every capacity; thorough assayer and chemist. Address **MINING, ENGINEERING AND MINING JOURNAL.** No. 18,030, Aug. 14.

POSITION AS MINE MANAGER WANTED by an experienced man; satisfactory references. Address **EXPERIENCED, care Mariner & Hoskins, 81 S. Clark St., Chicago, or ENGINEERING AND MINING JOURNAL.** No. 18,033, July 10.

YOUNG MAN DESIROUS OF BECOMING an electrician desires position in electrical engineering firm. Address **EWEN, ENGINEERING AND MINING JOURNAL.** No. 18,048, July 10.

ELECTRICIAN, WHO HAS HAD GOOD practice with electric mining and electric haulage machinery, first-class repair man on electric machinery, with practical and theoretical education, wants to change his position. Good steam engineer and mechanic; industrious workman. Best references from present employers. Address **J. M. S., ENGINEERING AND MINING JOURNAL.** No. 18,051, July 31.

A MINING ENGINEER OF EXPERIENCE is open to an engagement as superintendent and general manager; in the prime of life. Full references given as to former record; also refers to present employers. Can organize and manage men, and is thoroughly posted in designing and operating machinery and in all construction. Address **Box 802, ENGINEERING AND MINING JOURNAL.** No. 18,044, July 24.

WANTED—POSITION BY A COMPETENT and thoroughly experienced metallurgist in copper or lead smelting, who is just now free to make a new engagement. Address **C. S., ENGINEERING AND MINING JOURNAL.** No. 18,054, July 10.

A MINING ENGINEER OF NINE YEARS' experience will be open for engagement after August 1st as Manager, Assistant Manager, Superintendent or any responsible position; 30 years of age; a thorough assayer, surveyor and bookkeeper; best of references from former and present employers. Address **WESTERN, ENGINEERING AND MINING JOURNAL.** No. 18,043, July 24.

SUPERINTENDENT.—POSITION AS MINE Superintendent wanted by an experienced man now under engagement with well-known mining company; first-class mechanic; understands all details of mining from the sinking of shafts to the development of same. Specialties: reduction of costs and increase in production of output. Address **PRACTICAL, ENGINEERING AND MINING JOURNAL.** No. 18,042, Aug. 7.

POSITION WANTED BY AMERICAN MINING Engineer, age 27, one year's practical experience mining in Mexico. Certificate from Freiberg Mining Academy and from the Royal Saxon Works. Is familiar with copper smelting, lead smelting and de-silverizing, and is well posted in metallurgical chemistry. Speaks English, German and Spanish; has high references. Address **D. A., ENGINEERING AND MINING JOURNAL.** No. 18,045, July 24.

CONTRACTS OPEN.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., July 8, 1897.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 10th day of August, 1897, and opened immediately thereafter, for all the labor and materials required for the erection and completion (except heating apparatus, vault doors and tower clock), of the U. S. Post Office, etc., building at Paterson, N. J., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Paterson, N. J. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids, and to waive any defect or informality in any bid, should it be deemed in the interest of the government to do so. All proposals received after the time stated for opening will be returned to the bidders. **CHAS. E. KEMPER, Acting Supervising Architect.** Orig.

CEMENT, BROKEN STONE, ETC.—United States Engineer Office, 166 Granby Street, Norfolk, Va. Sealed proposals for furnishing and delivering cement, broken stone and yellow pine lumber at Fort Monroe, Va., will be received here until 12 o'clock July 31, 1897, and then publicly opened. Information furnished on application.

IRON LIFT BRIDGE, Brooklyn, N. Y.—Bids will be received until July 12th for preparing and building an iron lift bridge over Coney Island Creek, including 300 ft. of pile trestle. Plans, etc., may be seen at office of Engineer of Construction and Repairs, Room 33, Municipal Building; deposit, \$1,500; surety, \$20,000.

WATER - WORKS.—Wauson, Ohio.—Sealed proposals will be received by the Water Works Trustees of Wauson, Ohio, until 12 o'clock noon of the 14th day of July, 1897, for furnishing machinery, materials and labor for constructing the following: one pumping plant, 750,000 gallons capacity; building for same; service reservoir, 102,000 gallons capacity; stand-pipe, 13x120 ft.; distribution system comprising about 5 miles of 10, 8, 6, and 4-in. pipe; 35 hydrants, with valves, etc., etc., as per plans and specifications.

Each proposal must be accompanied by a certified check of \$1,000 on a Wauson, O., bank in the sum of \$1,000, made payable to C. E. Guilford, Secretary. In case bid is only for part of work, then said check shall be in an amount equivalent to 10% of bid. All bids must be made out upon the proposal blanks attached to the specifications. Plans and specifications are on file at the office of the Water Works Board, and at the office of the Engineer at Chicago.

STAND-PIPE—Flushing, N. Y.—Bids for furnishing and erecting a steel stand-pipe, 36 x 105 ft., at Flushing, L. I., will be received by the Board of Trustees of said village, at the Town Hall, Flushing, until 8 p. m. on the 14th day of July, 1897. The right is reserved to reject any or all bids. For specifications and general information apply to the undersigned at 20 Main street, Flushing, N. Y.

ELECTRIC LIGHT PLANT, Chester, S. C.—Sealed proposals will be received until Friday, July 16th, by the Commissioners of Public Works, in the City of Chester, S. C., for furnishing machinery materials and construction work for an electric light plant. The equipment required will be approximately as follows: One 65-H. P. high-speed engine; one 50-H. P. high-speed engine; one 50-arc light dynamo; one 500-light alternator; one switchboard; 45 arc lamps; 237 poles; 7 miles arc line wire; 5 miles incandescent wire. Lightning arrestors, line cut-outs, lamp suspension, etc., etc. Plans and specifications can be seen at the office of the Secretary of Commissioners, Chester, S. C., or at the office of the engineers, 150 Nassau street, New York. Each bid must be accompanied by a certified check of \$1,000, payable to the Secretary of the Board. The right is reserved to reject any or all bids.

CONSTRUCTION MATERIALS.—U. S. Engineer Office, 1428 Arch St., Philadelphia, Pa.—Sealed proposals for furnishing and delivering at government wharf, near Delaware City, Del., cement, broken stone, sand and cut stone, will be received here until 11 a. m., July 12th, 1897, and then publicly opened. Information furnished on application. **C. W. RAYMOND, Major Engrs.**

GUN EMPLACEMENT.—U. S. Engineer Office, Burke Building, Seattle, Wash.—Sealed proposals for constructing gun emplacements on Admiralty Head, Washington, will be received here until 2 p. m., July 31, 1897, and then publicly opened. Information furnished on application. **HARRY TAYLOR, Capt. Engrs.**

STONE ARCH BRIDGE, Evansville, Ind.—Sealed proposals will be received at the office of City Water-Works until 5 o'clock p. m., July 10th, 1897, for furnishing material and doing the work of constructing a stone arch bridge across Bee Slough, upon the site of the present stone and wood bridge, at the meeting of the River Road and Bayless Street.

For particulars apply to trustees, who will furnish plans and specifications for examination and making estimates of cost. Each proposal must be accompanied by a cash deposit of \$1,000, or a certified check to that amount, as a guarantee that the bidder, if awarded the work, will execute a contract therefor, with approved security, within five days from notification that he has been awarded the work. Failing to do so, said deposit or check for \$1,000 will belong to the City of Evansville, as liquidated damages.

Approved security in the sum of \$6,000 will be required from the successful bidder as a guarantee for the completion of the contract. The bids will be opened in the presence of the bidders at the above office, by the trustees and their counsel at 7 o'clock, p. m., July 10th, 1897. The trustees reserve the right to reject any and all bids.

BOILERS.—Lancaster, Pa.—Proposals will be received at the Mayor's office up to 5 o'clock p. m., Thursday, July 15th, 1897, for the furnishing and erection of four 100 or two 200-H. P. steel boilers, guaranteed to carry 150 lbs. steam pressure, for the Lancaster City Water Works. Bidders will furnish with their bids drawings and specifications of the boilers and settings. All the necessary steam, water and smoke connections ready to serve steam to the engines. All bids must be accompanied with names of two or more responsible parties, trust or security company, willing to become security. Also with a certified check to the amount of 10 per cent. of the bid, which will be forfeited to the city in case of failure to accept the contract if awarded. The committee reserves the right to reject any or all bids. The successful bidder must be prepared to give security and enter upon the prosecution of the work immediately after signing the contract.

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DIVIDENDS.

ISABELLA GOLD MINING COMPANY,
COLORADO SPRINGS, COLO., June 10, 1897.
DIVIDEND NO. 11.
A dividend of ONE-HALF CENT PER SHARE (\$11,250) has been declared, payable June 25th, 1897, to stockholders of record June 15th, 1897.
The stock transfer books will be closed June 15th, 1897, at 3 o'clock p. m., and will be reopened on the morning of June 26th, 1897.
PERCY HAGERMAN,
Vice-President and Treasurer.

NEW YORK AND HONDURAS ROSARIO MINING COMPANY.
No. 18 BROADWAY, NEW YORK, July 6th, 1897.
DIVIDEND NO. 36.
The Trustees of the Company have this day declared a dividend of TEN CENTS per share on its capital stock, payable July 20th, 1897.
The transfer books will be closed from July 10th to 20th, 1897.
S. JACOBY, Treasurer.

CONTRACTS OPEN.
Continued from Page 18.

GENERAL EXCAVATING, PILING, FOUNDATION, etc.—Treasury Department, Washington, D. C.—Sealed proposals will be received at this office until 2 o'clock p. m., Wednesday, the 28th day of July, 1897, and opened immediately thereafter, for all the labor and materials required for general, excavating, piling, foundations, etc., for the U. S. Post Office, Court House, etc., at Chicago, Ill., in accordance with drawings and specifications, copies of which may be on application at this office or at the office of Henry Ives Cobb, Architect, 100 Washington street, Chicago, Ill. In requesting plans, etc., bidders must state what similar work they have performed. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids, and to waive any defect or informality in any bid, should it be deemed in the interest of the government to do so. Proposals received after the time stated will be returned to the bidder. Proposals must be made upon blanks furnished by this office, and enclosed in a sealed envelope marked "Proposals for Foundations, etc., for Chicago Building," from (give name and address of bidder), to be addressed to **HENRY IVES COBB, Architect** U. S. Government Building at Chicago, Ill., Treasury Department, Washington, D. C.

DREDGING, BREAKWATER EXCAVATION.
—U. S. Engineer Office, 537 Congress street, Portland, Me.—Sealed proposals for dredging, building breakwater and boulder excavation at Bigaduce River, Carver's Harbor, Union, Kennebec, Sasanoa and Saco Rivers, Me., and Little Harbor, N. H., will be received here until 12 m., July 21st, 1897, and then publicly opened. Information furnished on application. **R. L. HOXIE, Maj., Engrs.**

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SAND, STONE AND CEMENT.—U. S. Engineer Office, Army Building, New York.—Sealed proposals in triplicate, for delivery of sand, stone and cement for concrete at Fort Hamilton, N. Y., will be received here until 12 m., July 17, 1897, and then publicly opened. Information furnished on application. **WILLIAM LUDLOW, Lieut. Col., Engrs.**

GUN EMBLEMMENTS, MINING CASEMENT.—U. S. Engineer Office, Munsey Building, New London, Conn.—Proposals for building gun emplacements and a mining casemate on Plum Island, N. Y., will be received until noon, July 28th, 1897, and then opened. For information apply to **SMITH S. LEACH, Maj., Engrs.**

DREDGING.—U. S. Engineer Office, 601 Eighteenth street, N. W., Washington, D. C.—Sealed proposals for dredging in Occoquan, Aquia, Nomin and Lower Macnodoc creeks, Va., will be received here until 12 m., July 20, 1897, and then publicly opened. Information furnished on application. **CHAS. J. ALLEN, Lieut. Col., Engrs.**

DREDGING.—U. S. Engineer Office, 601 Eighteenth street, N. W., Washington, D. C.—Sealed proposals for dredging in Mattaponi and Pamunkey rivers, Va., will be received here until 12 m., July 24th, 1897, and then publicly opened. Information furnished on application. **CHAS. J. ALLEN, Lt. Col., Engrs.**

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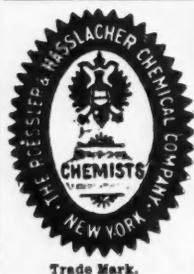
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