

THE ENGINEERING AND MINING JOURNAL



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

VOL. LVII. MAY 12. NO. 19.

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THE SCIENTIFIC PUBLISHING CO., Publishers.

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THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS: R. P. ROTHWELL, Pres. & Gen'l Mang. P. O. BOX 1833. SOPHIA BRAEUNLICH, Sec'y & Treas. 253 Broadway, New York.

LONDON OFFICE: 20 Bucklersbury (Room 366), London, E. C., England. Edward Walker, Manager.

CHICAGO OFFICE: "The Rookery," Room 531.

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We regret to have to record the resignation from the United States Geological Survey of Major John Wesley Powell, who for the past thirteen years has been its chief. Under his management the survey has accomplished a vast amount of valuable work which will always be a monument to his industry and ability.

After many delays and postponements the validity in South Africa of the MacArthur-Forrest patents is at last to be brought to test in the High Court of the South African Republic, in which the African Gold Recovery Company has begun suit against Messrs. Lacey & Tompson, who have been applying the cyanide process at some of the Transvaal mines without license from the company.

The returns so far received from the blast furnaces show that production has dropped temporarily. The April report showed 144 furnaces in blast, with a weekly capacity of 129,550 tons of pig iron, but May opens with only 124 furnaces active and an output of not over 108,000 tons a week.

The tariff bill as finally reported by the Finance Committee to the Senate contains many changes, generally in the direction of an increase of the duties provided for in the bill as it passed the House.

It appears now, unfortunately, that the minority in the Senate has adopted a policy of delay, and the prospect for the early passage of a bill is not encouraging.

IMPROVEMENT IN SOUTHERN MINING AND METALLURGICAL PRACTICE

The annual report of the Tennessee Coal, Iron and Railroad Company, an abstract of which will be found on another page, shows well the remarkable progress which has been made in the introduction of economical methods and better practice in the Southern iron furnaces and mines.

Taking Ensley furnaces as an example: When they were constructed it was stated that with their 80 ft. in height, and 22 ft. bosh, the largest in the South, they would produce 200 to 250 tons per day.

One improvement has followed another since that time: The ore was more carefully treated; better practice was observed at the furnace, and last of all, attention has been given to improving the coke.

\* "Engineering and Mining Journal," January 30th, 1892.

Lake Superior ores, we know that it has been brought to a point which, comparing the unit fuel with the unit of material smelted, is equal to, if not actually below, the best Northern practice.

#### THE GERMAN IRON TRADE.

The production of pig iron in Germany in 1893, as given by "Stahl and Eisen," was 4,986,003 metric tons, and the imports were 361,288 tons, making a total of 5,347,291 tons. From this must be deducted the exports, 1,688,221 tons, which leaves as the approximate consumption for the year 3,659,070 metric tons, or 72.5 kilos per head of population. The production was 98.7 kilos per head. The consumption of pig iron per head increased very steadily from 1861 up to 1888, but since then there have been some remarkable fluctuations, the figures standing at 66.6 kilos in 1888; 76.3 in 1889; 81.7 in 1890; 69.7 in 1891; 74.3 in 1892, and 72.5 kilos in 1893. Production has been much steadier than consumption, the variation being found chiefly in the amount of exports.

The production of iron castings of all kinds last year was 1,019,273 tons, of wrought iron 1,170,228 tons, and of steel 3,102,202 tons. Of the steel, 1,031,064 tons were sold by the works in the shape of bloom and billets and 2,171,138 tons in bar, plate and other manufactured forms.

The German iron works did not have a prosperous year, judging from the statements of their dividends. The Laura Works paid 3 per cent. last year, against 4 in 1892, 8 in 1891 and 11 per cent. in 1890. The Bochum Works paid 3½ per cent., against 6½ in 1892 and 1891, and 10 per cent. in 1890, while the Dortmund Verein paid only 1 per cent., though only the same small amount was paid in 1892, with 2 per cent. in 1891 and 4 per cent. in 1890. The iron-makers, however, as well as all the other German manufacturers, are hoping for a great increase in business from the new commercial treaty with Russia, which opens that country to their products, after a practical cessation of exports for several years. This has sent up the quotations of their stocks sharply; that of the Laura Works, which sold about the close of 1893 at 95 marks per share, being now quoted at 132.6 marks, while Bochum stock has risen from 110.25 to 139.25 marks, and Dortmund Verein from 46.25 to 68.30 marks per share.

#### THE POORMAN CONSOLIDATED MINES, IDAHO.

We have received several communications on this subject referring to recent remarks in these pages. Our correspondent, Mr. Leech, who built the mill, says that Mr. Kemp Van Ee negotiated for the Ralph mill in September, 1893, and finally purchased it in March, 1894. The Poorman company, we believe, purchased the Leonard Mill in 1892.

Quite a number of correspondents appear to think that our unfavorable information, concerning the property comes directly or indirectly from Mr. Henry Bratnober, who, it is asserted, has a private quarrel with Mr. Kemp Van Ee, and other promoters of the Poorman mines in London; and we have received quite a number of copies of a pamphlet entitled "In or out of a Deal; Mr. Henry Bratnober, his opinions of a mining property under both conditions," which relates to certain transactions between Mr. Bratnober and promoters of the Bonanza, Nelson or Mahoney gold mines of Sierra County, California. The documents are certainly not creditable to Mr. Bratnober or to some others mentioned in them, but as we understand Mr. Bratnober is now in Australia or on his way there, and as the only connection between this and the Poorman enterprise is that some of the same people are interested in each, we shall not now take up the question of the Bonanza, or Mr. Bratnober.

Our unfavorable information concerning the Poorman came from many different sources and we have as yet heard no official explanation of the false reports of large production of the mine in 1892 and 1893 which were published each month in London, and on faith in which the public purchased the stock.

It is true the company has recently been reorganized as a New Jersey corporation—which would certainly lessen the responsibility of the promoters in London—but the control of the enterprise remains, we believe, in the same hands. Surely an enterprise which under one name was guilty of making false reports can scarcely be a good one for investors while it remains under the same control though called by another name, and this would be true even if there were no question as to the value of the mine or the ownership of the mill.

It may repay the London stockholders to investigate the relations of the directors and promoters of the Poorman Consolidated Company to the "Mercantile Assets Company" of New Jersey, which may be called "the little joker of the Poorman." Incidentally it might interest the stockholders to know the prices at which this "little joker" company purchases the property which it sells to the Poorman company at high figures, and who it is that gets the profits on the transactions.

#### THE WEALTH OF THE UNITED STATES.

The census bulletin recently issued showing the wealth of the United States in 1890 presents some interesting figures. At the close of the census period the total valuation of the real and personal property in the

country amounted to \$65,037,091,197, of which \$39,544,544,333 represented the value of real estate and improvements, and \$25,492,546,864 that of personal property, including railroads, mines and quarries. At the same time the total assessed value of real and personal property taxed was \$25,473,173,418, of which \$18,956,556,675 represented real estate and improvements thereon, and \$6,516,616,743 personal property.

The true valuation for 1890 is classed as follows: Real estate and improvements, \$39,544,544,333; live stock and implements on farms, \$2,703,015,040; mines and quarries, \$1,291,291,579; gold and silver coin and bullion, \$1,158,774,948; machinery of mills and product on hand, \$3,058,593,441; railroads and equipment, including \$293,893,519 street railroads, \$8,685,407,323; telegraphs, tele-phones, shipping and canals, \$701,755,712; and miscellaneous, \$7,893,708,821, the total amounting to the figures already given, viz., \$65,037,091,197. Comparing these figures with the returns by previous census investigations, it is seen that in 1850 the total valuation for the country was \$7,135,780,228; in 1860 to \$16,159,616,068; in 1870 to \$30,068,518,507; and in 1880 to \$43,642,000,900. This shows that in the decade from 1850 to 1860 the gain in the wealth of the country amounted to 128 per cent.; from 1860 to 1870, to 87 per cent.; from the latter year to 1880, 45 per cent.; and from 1880 to 1890, 51 per cent.

But the most remarkable showing is in the increase per caput. In 1850 the valuation per caput was \$308. In 1860 this had increased to \$514, or 66 per cent.; in 1870 to \$780, or 50 per cent.; in 1880 to \$870, a gain of 11 per cent., and in 1890 to \$1,039, or an increase of almost 20 per cent. Separating the valuation into five divisions, the North Central division, consisting of Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North and South Dakota, Nebraska and Kansas, has the greatest total value, amounting to \$25,255,915,549, but the Western division, Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon and California, has the greatest wealth per caput, amounting to \$2,250, as against \$1,129 in the North Central division and \$1,232 in the North Atlantic division, consisting of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Pennsylvania, in which the total valuation is \$21,435,491,864, or \$3,820,423,685 less than Ohio and the other States of the Northern Central division.

Considering these divisions in the order of their wealth per caput, in the Western division the greatest proportion of the valuation is in real estate with improvements, and second in railroads; mines and quarries amounting to but 8 per cent. of the total. In the North Atlantic division, Maine to Pennsylvania, 60 per cent. of the wealth is in real estate; 8 per cent. in machinery and mills, and about 7 per cent. in railroads. The North Central division, Ohio to Kansas, has 60 per cent. of its wealth in real estate, about 12 per cent. in railroads, and a little over 5 per cent. in live stock and implements on farms. The South Central division, consisting of Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Texas, Oklahoma, Arkansas, and Indian Territory, has 55 per cent. of its wealth in real estate; 60 per cent. in railroads, and 6 per cent. in live stock, while its mines and quarries are valued at \$40,916,904, or 0.6 per cent. of the total wealth, and machinery of mills, and products on hand are valued at \$133,553,243, or 2 per cent. of the total. In the South Atlantic division, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida, the total valuation of which is \$5,132,980,668, or \$579 per caput, real estate amounts to 49 per cent. of the total, railroads to 18 per cent. and live stock and farm implements to 3.8 per cent.

#### NEW PUBLICATIONS.

INLAND WATERWAYS: THEIR RELATION TO TRANSPORTATION. By Emory R. Johnson, Ph. D. Philadelphia: the American Academy of Political Science. Pages 164; paper covers. Price, 35 cents.

The revival of interest in water transportation which has been so marked a feature of recent commercial and engineering history in Europe, has only just begun to be felt in this country, possibly because we have always been accustomed to the use of an extensive system of waterways, and possibly because our railroad systems have been developed on different lines from those of Europe. The present work, however, is both timely and serviceable, in calling attention to the lines which we have, to the methods adopted in using and preserving them and to their possible future extensions. It is in large part historical and statistical, giving many interesting particulars as to our canals and rivers, the amounts yearly spent upon them and the extent to which they are used. To this is added some consideration of the proper relations between water and railroad transportation lines, and of the economic importance to the people of the United States of their present waterways.

Most of us have a general idea of the great share in our commercial and industrial development which has been borne by the great water lines formed on the north by the great lakes and the canal and river lines connecting them with the ocean, and on the west by the Mississippi and its tributaries; but few appreciate fully the part which those lines have taken in regulating the railroads and in giving us what are really the cheapest railroad rates in the world. In discussing this question Dr. Johnson is evidently an earnest believer in the "regulation of all lines through the competition of one"—as the principle was defined and laid down by Mr. Charles Francis Adams in one of those admirable monographs which years ago made the work of the Massachusetts Railroad

Commission of such prominence—and he has stated with a very fair degree of clearness and emphasis the usefulness of the waterways in this direction. It would be well if those who are interested in the subject would read and consider his arguments.

To the sections already referred to the author has added a chapter on the leading works now in progress in the United States for the improvement and extension of the waterways, and on the new works proposed. He has also given us an interesting chapter on the Nicaragua Canal and its commercial importance.

It will not be out of place here to refer to the public service which the American Economic Association is doing in presenting this and many similar monographs in a cheap and readable form which puts them within the reach of every reader.

**NORTH CAROLINA GEOLOGICAL SURVEY: BULLETIN No. 1. IRON ORES OF NORTH CAROLINA: A PRELIMINARY REPORT.** By Henry B. C. Nitze, Assistant Geologist. Raleigh, N. C.; State Printer. Pages 239; illustrated with figures and map.

This is the first official bulletin issued by the Survey since J. A. Holmes became geologist in 1891, and marks a new and commendable departure in the methods under which the Survey has been conducted. When Dr. W. B. Phillips was attached to the Survey in 1883, and was acting as the chief officer in charge, after the retirement of Dr. W. C. Kerr, he urged upon the Board of Agriculture, under whose charge the survey was, the importance of preparing just such reports, dealing with special subjects, and leaving out much purely geological discussion. The advice was not taken at the time, and soon afterward the Survey was practically suspended. It was not revived until 1891, when Dr. Phillips' earlier suggestion was revived, the first result being the present excellent monograph.

Mr. Nitze has discharged his task with conspicuous caution and a full sense of its importance. He has worked over much old material collected years ago, carefully separating the unimportant matter, and has added, what indeed is the best thing in the report, the results of his own careful and painstaking observations along the great belt of magnetic and hematite ores of the western portion of the State. Mr. Nitze is a careful and accurate worker, and presents the facts gathered as fully as possible. The conclusions offered on the subject of concentrating ores may, however, be open to some doubt, not because of any misrepresentation of facts, but because the results obtained and presented are very liable to be misunderstood. Those results are in themselves interesting and touch upon a subject worth careful investigation, since it is of much importance, not only to North Carolina miners, but elsewhere. It is to be hoped that the survey will follow up this subject. It is also to be hoped that it will prepare and issue other monographs of the same kind on the varied mineral resources of the State, for they cannot fail to be of much service to its people.

#### 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 supercede review on another page of the Journal.

*The Uses of Compressed Air.* By Addison C. Rand. The New York Printing Co. Pages 134. Illustrated. Price \$1.

*Annual Report of the Board of Regents of the Smithsonian Institution to July, 1892.* Government Printing Office. Pages 811; illustrated.

*Mine Ventilation Made Easy.* By William Fairley, Ph. D., M. E. The "Colliery Engineer Company," Scranton, Pa. Pages 110. Illustrated.

*Year Book of The Engineering Society of the School of Mines, Columbia College: 1893-94.* Published by the Society. Pages 86. Illustrated.

*Weather Making, Ancient and Modern.* By Mark W. Harrington. Washington, published by the National Geographic Society. Pamphlet, pages 40.

*Progress in Flying Machines.* By O. Chanute, C. E. New York; the "American Engineer and Railroad Journal." Pages 308; illustrated. Price, \$2.50.

*Preliminary Report on the Geology of a Portion of Central Ontario.* By Frank D. Adams, Ph. D., Geological Survey of Canada. S. E. Dawson, Ottawa, Printer. Pages 15. Price 10 cents.

*Iowa Geological Survey; Volume II. The Coal Deposits of Iowa.* By Charles Rollin Keyes, Ph. D., Assistant State Geologist. Des Moines, Iowa; published for the Survey. Pages 536; illustrated.

*New Calculation Tables for Multiplication and Division: Also Tables of Roots and Powers.* By Levi W. Meech. Norwich, Conn.; the Henry Bill Publishing Company. Pages, 1,000; with introduction. Price, \$10.

*How to Run Engines and Boilers: Practical Instruction for Young Engineers and Steam Users.* By Egbert Pomeroy Watson. Second edition. Spon & Chamberlain, New York and London. Pages 125. Illustrated. Price \$1.

*Twenty-third Annual Report of the Railroad and Warehouse Commission of Illinois: Railroads for year ending June 30th, 1893; grain inspection, October 31st, 1893; office expenses, December 1st, 1893.* Published by the State, at Springfield, Ill.

*Ammonia and Ammonia Compounds.* A Practical Manual for Manufacturers, Chemists, Gas-Engineers and Drysalters. By Dr. R. Arnold. Translated from the German by Harold G. Colman, Ph. D. Second Edition. Lamps Low, Marston, Searle & Rivington, London. Pages 130. Illustrated.

#### CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

All letters should be addressed to the MANAGING EDITOR.

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

The Poorman Consolidated.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Referring to your statement in the "Engineering and Mining Journal" of April 14, I beg to say I am not a partner of Mr. Kemp Van Ee. I sold all my holdings adjoining the Poorman mine, including the Ralph mill, to him. This trade was made in September, 1893, though not fully completed until March, 1894.

Astoria House, New York, May 10th.

M. F. LEECH,

The Lawrence Land Company, Cripple Creek, Colo.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir—In accordance with your request we have made inquiries with regard to the properties advertised in your paper under the title of the Lawrence Land Company. There is but very little to say about these properties; both these companies own a number of unpatented claims, which may have some merit, though it is very difficult for us to give an opinion on that point. So far as we can find out, only the assessment work required by law has been done and not even a survey for patents has so far been made. They are doing no work at the present time, and we do not suppose that either of the companies will be in a position to do any work until they have sold sufficient Treasury stock to pay for the same. Comparing the price at which they offer these stocks for sale to that at which many of our best stocks are selling for to-day, we should say that they are far too high and we regard an investment in them as a very hazardous one.

The following statements in the advertisement are entirely unfounded: "These companies owning some of the most valuable property in the Cripple Creek district, and officered by some of the most responsible mining men of the State." The company owns no property until the claims are patented; and we would caution capitalists never to invest in the stock of any company which does not have title to its property. J. K.

Professor Tarr on Metallurgy.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: On a visit to the Mechanics' Library in San Francisco a new book, "Economic Geology of the United States," by Prof. Ralph S. Tarr, attracted my attention. On page 113 I found a short paragraph on the "Reduction of Ores." The information there given is so curious and valuable that some quotations will interest the readers of the "Journal."

We are informed in this paragraph that "Each different ore is treated in a different manner, but in general three different methods are used: amalgamation, smelting (the dry way), and metallurgy (the wet way). The process of amalgamation is chiefly used for the extraction of gold and silver. . . . For the extraction of gold from its silver and other alloys finer methods are used. The affinity of mercury for other metals is also made use of, as, for instance, in the extraction of silver from certain of its ores. Several processes are used, but in general they consist in the use of mercury, the crushed ore and some salt, which are all stirred together, in the Mexican mines by driving mules back and forth over the ore, but more commonly by machinery. A chemical reaction, not well understood, takes place. . . . Ores differ very markedly in the strength of the affinity which binds the metal and the mineralizer together. The chloride of silver can be extracted by very gentle heat the chlorine being driven off and pure silver left. With other ores a high heat does the same, and, again, by the use of some other mineral at a flux, upon the application of high heat the metal is driven from its mineralizer, which enters into combination with the flux, while the metal remains free. Some ores have to be smelted again and again, and some are so difficult to obtain that they are not mined. . . . Before smelting some ores it is necessary either to calcine them—that is, to allow them to decompose in the air at ordinary temperatures, or to roast them. . . ."

Professor Tarr's metallurgical treatise—which covers a little less than two pages—is unique and highly instructive; it fills a long-felt want. It is metallurgy in a nut-shell. It reminds us of the descriptions of metallurgical processes given by newspaper reporters of local mining papers after an interview between the reporter and an unfortunate inventor of a new process for extracting gold and silver from ores.

OAKLAND, April 17, 1894.

C. A. STETEFELDT.

Microstructure of Steel.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In your last issue you published, under the heading "Segregation in Iron and Steel," some remarks which Mr. H. M. Howe made regarding my paper on the "Microstructure of Steel," at the International Engineering Congress. I have replied to Mr. Howe's criticism in a note which will shortly be published by the American Institute of Mining Engineers. The following is the substance of the same:

Mr. Howe says that running through my paper "there is a tacit assumption that there is a constant and known relation between the coarseness of the grain of steel and its quality, or physical properties." The above assumption was not taken tacitly. On the contrary, it is based upon the very experiments embodied in my paper. Indeed most of those experiments were undertaken with that end in view, i. e., to ascertain the existence of such a relation. I believe I have made this clear in my paper and will refer to it as the best refutation of the above criticism.

I fully agree with Mr. Howe when he says that we do not study microstructure for itself, but as a key to the physical properties of the metal, although in that I am somewhat partial, for I have constantly held that view and always conducted my investigations accordingly.

Mr. Howe calls attention to the fact that of two pieces of manganese steel, originally from the same bar, the coarser one shows the greater strength and ductility. Mr. Howe refers to the fracture of the piece. I have considered the microstructure independently of the fracture, and I do not think that a coarse fracture necessarily means a coarse microstructure. It would be interesting to examine microscopically a polished and etched sample of each piece to see if, indeed, in that special case, the larger micro-grain gives more ductility. The same remark applies to Mr. Hadfield's references to some German castings which gave good results in the testing machine and showed a coarse fracture.

Again, I should like to say that in my experiments only carbon steels were considered, and it would be hazardous to extend our conclusions to manganese steel and other steel alloys, of such radically different behavior, without further investigations.

ALBERT SAUVEUR.

SOUTH CHICAGO, May 8, 1894.

[The full text of Mr. Sauveur's paper was published in our issue of August 12th, 1893—EDITOR E. AND M. J.]

## THE GOULD SYSTEM OF EXCAVATION.

When ground for a spoil bank has been provided alongside of, and is co-extensive with, a cut, the shortest haul for the excavated material is obviously by tracks leading directly out of the cut by steep inclines. In connection with these, however, certain difficulties arise when the ordinary steam excavator or steam shovel is used. Its travel, if longitudinal with the cut, takes it away from the incline, rapidly increasing the haul from shovel to incline if the latter is stationary. If, to avoid this, the incline be made movable and keeps pace with the shovel, its aggregate travel must equal that of the shovel, and in wide cuttings, such as occur in canal construction, both shovel and inclines must repeatedly travel the entire length of the cut whenever, as has been the usual practice, the longitudinal method of excavation is followed.

The Gould excavator, by its peculiar mounting, is adapted to the transverse excavation of the cut, and the Gould conveyor is equal in capacity to the shovel, and their use obviates this excessive travel of the entire excavating and conveying plant. The tracks for its support extend on and across the bottom of the cut, the forward travel of the excavator being provided for by the simple slewing and straightening of these tracks. In wide cuts, such as those for the Chicago Drainage Canal, with 16 to 20 ft. depth of face for each lift of the cut, this forward movement of the shovel would have to be made but once for each 10-hour shift. The travel of the incline, both in frequency and amount, is correspondingly reduced; and it is claimed by the inventor, Mr. C. L. Gould, civil engineer, of Chicago, that the incline, with the traveling loop extending from it, provides the best substitute for the standard conveying plant of locomotives with their usual complement of cars and track, and is superior thereto for a class of work of frequent occurrence, such as the construction of levees, large irrigation or drainage ditches and canals, wherein ground for spoil banks lies alongside the cut; inasmuch as the expensive items of long tracks and their constant adjustment on the freshly deposited material of the dump, to provide for further addi-

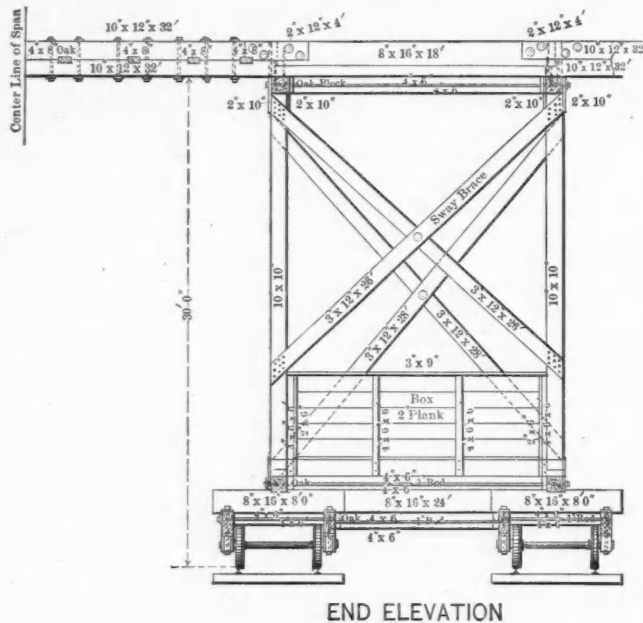


FIG. 3.

tions to the dump, their maintenance in fit condition for operation, the vexatious delays in getting back the empty cars for the shovel for reloading, and other causes incident to the locomotive plant, are completely eliminated, and at the same time the first cost of the plant is smaller.

The illustrations show a plant of this description which has been designed for an earth section of the Chicago drainage canal. The conveyor, consisting of the traveling incline and loop, is mounted on flats, which travel on tracks laid parallel to the sides of the cut. The deposit into spoil banks must, by contract requirement, all be beyond the 80 ft. berm; extending back from which the sides of the deck carrying the straight portions of the loop track are projected out beyond the ends of the supporting flats. One side of the deck, from which the dumping is principally done, extends far out, so that the slope of the dumped material does not extend to the flats; the other side not so far out, as ordinarily the dumping from it will be limited to such amount of material as is needed to level up ahead for the tracks, laid in short sections, on which the flats advance.

In the illustrations Fig. 1 is an elevation, Fig. 2 a partial plan, and Fig. 3 an end view of one of the flats carrying a conveyor; Fig. 4 is an elevation showing a general elevation of the plant, and Fig. 5 is a general plan. From these illustrations the system will be readily understood, and its general features seen. The conveyor shown is arranged for cars carrying six cubic yards, and is, of course, much heavier in construction than would be required for smaller cars.

As shown in the plan, Fig. 5, there are, across the pit and parallel to the tracks along which the shovel makes its lateral travel, two tracks extending up the incline, beyond the knuckles of which they diverge, then run along the edge of the projecting sides of the deck and reunite at the end of the conveyor, forming a complete loop. The track farthest from the shovel reaches the knuckle at a higher elevation than the other track coming up the incline, and from the knuckle has a descending grade quite around the loop to the level, at the knuckle of

the lower track. From alongside the shovel two tracks, with crossover connection, extend to join the tracks leading across the pit to the foot of the incline, and may be mounted on platforms so as to travel along together as the shovel moves from one position to another in its travel across the cut.

The empty car runs to the shovel over the track next to it, the loaded car taking the outside track, and when it has reached the track leading to the incline, is pushed to and up the incline by the "Barney" or push-car attached to the haulage rope leading to one of the two drums of a hoisting engine suitably mounted with its boilers on the flats beyond the berm. Having reached the knuckle, the loaded car gravitates quite around the loop, the "Barney" meanwhile being lowered to its first position. Automatic dump cars are used, discharging at the same time from both their sides, and wherever the dump block is set. The car, now empty, having completed the circuit of the deck and having been eased down to a stop car at the knuckle (the rope from the stop-car extending to the other drum of the hoist), is with the stop-car lowered by the hoist to the inner platform at the rear of the shovel, and passed on to one of the loading platforms, the stop-car then being drawn back to its former position at the knuckle. For the above arrangement, haulage by endless cable may be substituted, the cars automatically gripping the cable at the foot of the incline. Four cars is a sufficient number to make it certain that one of them shall always reach one of the loading platforms before the car standing on the other loading platform has been filled.

In the illustrations the bottom width of cut is 110 ft., with side slopes 2 to 1. The conveyor shown is of the size proper for disposing of the top lift, 20 ft. in depth; the vertical section across spoil-bank being 230 ft. at bottom, 30 ft. in height, with slope of 2 to 1 to the berm and 1½ ft. to 1 to the boundary line of the right of way. The total length of conveyor, including incline, is 330 ft.; width on deck, 66 ft.; clear height, 30 ft.

The cost of conveyors of this class ranges from \$12,000 to \$18,000, as the average capacity desired for a shift of 10 hours is from 800 to 1,200 cu. yds. The plant is intended to be run both day and night, as all work about it and the shovel will be in comparatively small compass and easily lighted.

Incidental to the transverse method of excavation are also better drainage facilities and many other advantages not herein recited. Patents have issued to the inventor both in the United States and Great Britain, and a wide range of usefulness for the plant seems probable, not only in connection with excavations, but also in the handling and storage of coal, ores and similar work.

## FLORIDA KAOLIN DEPOSITS.

By C. J. Memminger.

The chief kaolin deposits are situated in Lake County and occur at intervals along and contiguous to Palacalaha Creek, which flows a northerly course, emptying into Lake Harris, a distance of about 30 miles. The country is rather hilly, being one of the highest portions of Florida. So far as known these deposits appear to be sedimentary, resting upon the hard micaceous sandstone lying above the eocene limestone. This sandstone is depressed in places, forming pockets some 25 to 50 acres in extent, which are filled with kaolin intermixed with a very fine white sand. On washing, the mass yields from 25 to 50% of kaolin.

The deposits are covered by an overburden from 2 to 6 ft. in thickness, and vary in thickness from 15 to 30 ft. The area is estimated at from 1,000 to 1,500 acres. Practical tests in Europe and this country show the clays to be equal to the English and French clays.

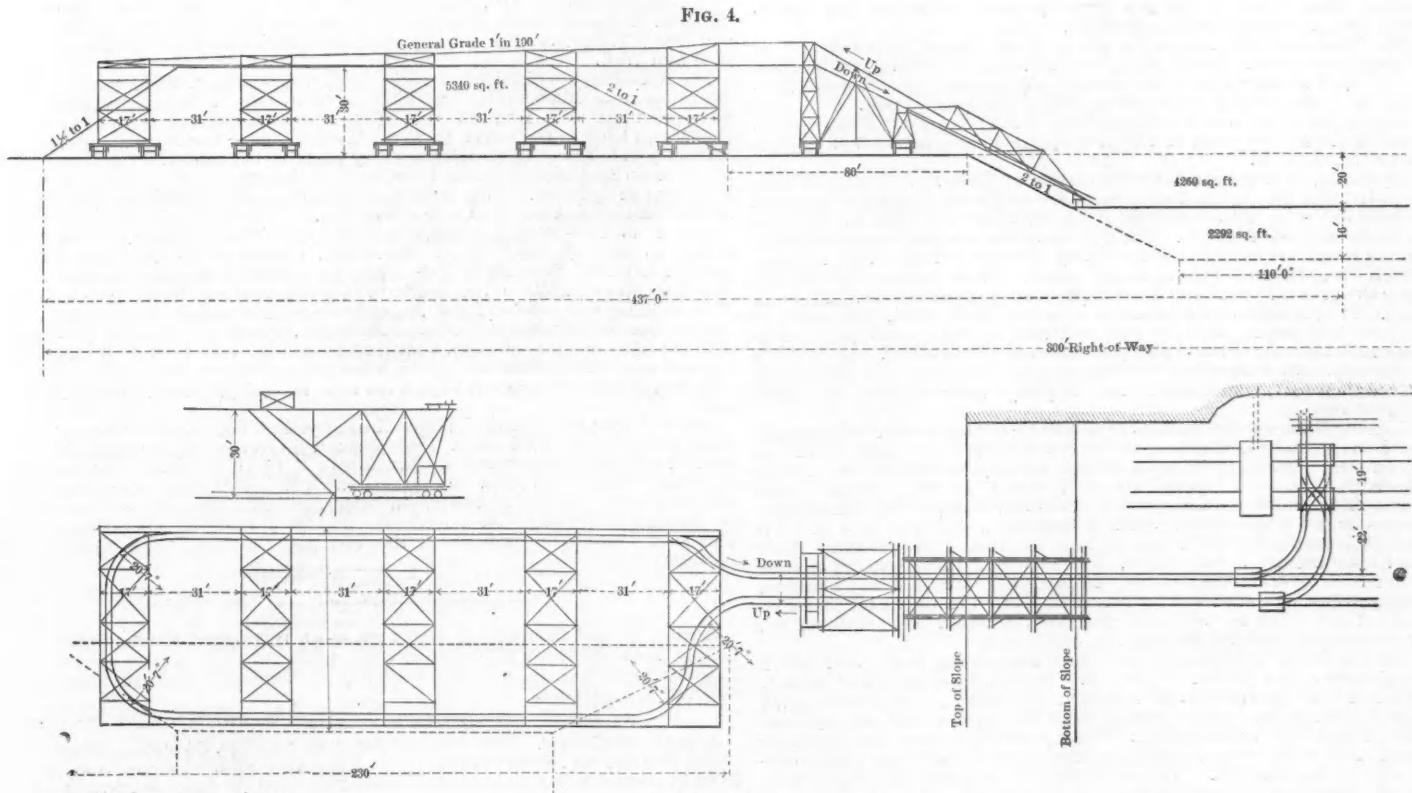
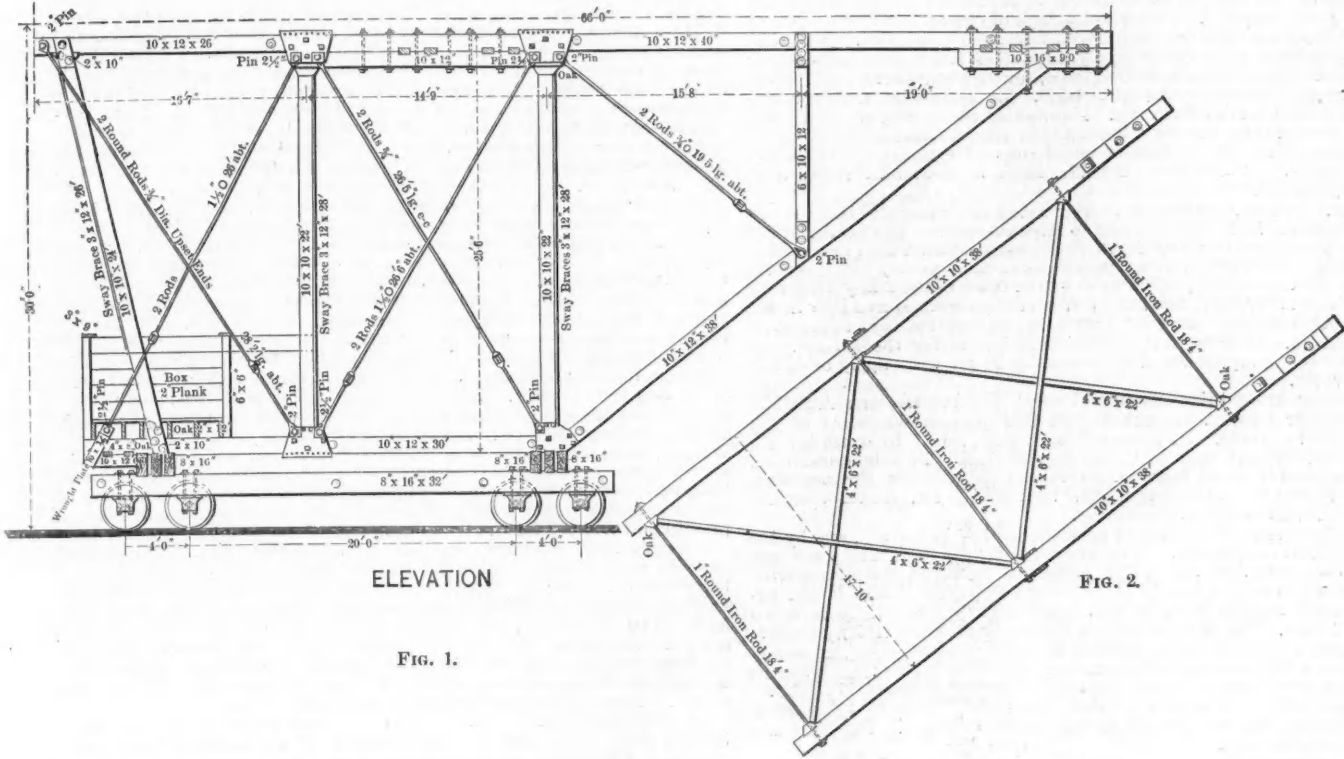
At present two mining plants of small capacity are at work shipping the kaolin to New Jersey and Ohio. Besides these two points it has been sent to leading potteries throughout the United States in sufficient quantities to enable them to test it thoroughly, and without exception they have expressed a willingness to use it exclusively for the manufacture of the finer grades of ware so soon as they are assured it will be produced in large enough quantities to enable them to depend on a sufficient and steady supply.

The following is copy of analysis made of kaolin from these deposits by Messrs. Johnson & Sons, 23 Cross street, Finsbury, London, E. C.: Silica, 46.11; alumina, 39.55; iron, 0.35; sulphur, 0.07; magnesia, 0.14; oxygen, water of combination, etc., 13.78; total, 100.00.

Mineral Production of Greece, 1893.—During the past year the mineral output of this kingdom was as follows: Iron ore, 142,445 tons; manganese ore, 157,756 tons; chrome iron ore, 1,470 tons; manganese, 11,716 tons; magnesite, 10,100 tons; emery, 1,479 tons; lead ore, 2,380 tons; galena, 24,769 tons. The production of peat fuel was 8,500 tons.

Utilizing the Central Heat of the Earth.—In an address recently made before the *Chambre Syndicale des Produits Chimiques* in Paris, Mr. Berthelot proposes to utilize the central heat of the earth by sinking a shaft or shafts to a depth of 4,000 meters. At the bottom of these shafts he believes that a temperature of 160° to 200° Cent. would be found and the pressure developed could be used for running machinery. M. Berthelot believes also that at this depth we would reach a source of thermo-electric energy almost without limit.

Magnetic Separator Patents.—At the April term of the United States Circuit Court, held in New York, Judge Coxe entered an interlocutory decree on Magnetic Separator Company against William D. Hoffman. It was declared that the defendant infringed patents the property of the Magnetic Separator Company, and granted to Clinton M. Ball and others, by making, using and selling systems or plants for the concentration of iron ores, as exhibited and operated at the Clover Hill mines and Croton magnetic mines, Westchester County, New York, at the mines of Wetherbee, Sherman & Co., near Port Henry, N. Y., and at the mines of the Chateaugay Ore and Iron Company, Clinton County, New York. The Court decreed the payment of profits derived from such infringement by the defendant, any damage sustained thereby and the costs of the suit, and also enjoined the defendant from further infringement.



## THE GOLDFIELDS OF WESTERN AUSTRALIA.

Written for the Engineering and Mining Journal by Albert F. Calvert.

Western Australia has at present three great obstacles to its progress. The first is physical—lack of water, which can only be combated by science. The second, scantiness of population, is being slowly removed. The third can readily be surmounted, if confidence in its mineral resources is once inspired. I refer to her lack of capital.

Every district is more or less hampered from lack of water. Mr. Renou, the superintendent of water supply, in his recent report on the water supply at Southern Cross and Coolgardie, draws attention to the disasters which drought may yet bring in its train. He points out that the district is the most arid in Australia. Natural watercourses, or permanent surface waters, there are none, not a single stream finding its way to the sea for many hundreds of miles on either side. The rainfall is both slight and uncertain. At Southern Cross Mr. Rollo is at present engaged in boring operations.

Science, however, has come to the aid of the miner and bushman in other quarters, and may be said to have vanquished this horror of the desert. Queensland and New South Wales have demonstrated that plenty of water may be obtained by artesian boring. Day by day fresh reports come in of the striking of water in one or other of the many holes now being drilled all over the dry belt of Western Queensland and New South Wales. An enormous area of that arid territory has been found to be water-bearing, and drought is fast losing its terrors for the farmer. As yet there is no indication of a diminution in the vast supply of underground water.

A perfectly straight line north and south divides Western Australia from the other colonies. It includes all that portion westward of 129 degrees east longitude. Its greatest length from north to south is 1,450 miles, and its breadth from east to west 1,000 miles. Two thousand miles of the seaboard is on the Indian Ocean, and 1,000 miles on the Southern Ocean. There are six land divisions, viz.: Southwest, Eastern, Eucla, Gascoyne, Northwest, and Kimberley.

The Southwestern division is at present the most important, and by far the most thickly populated. It naturally subdivides itself into three sections. On the east, the line of river watershed separates the more settled neighborhood from the wild interior; then the great forest lands, extending about 15 miles from the sea; and lastly, the coast districts on the south and west. The Great Southern Railway runs from Albany to Beverley through the first-named section; the finest timber grows on the second, which is likewise rich in stream tin, while coal and other minerals only await development. The third is an excellent agricultural region.

The Eastern division is only partially explored, but is in many parts richly grassed, and suitable for raising cattle and sheep. This includes the Yilgarn goldfields.

Of the Eucla division only a portion has been explored. It contains some excellent pasture-lands, and when the water difficulty has been overcome by artesian wells and other scientific resources, it will, doubtless, prove an advantageous field for settlement.

The Gascoyne division is watered by several rivers. Horses, cattle and sheep are successfully raised, and gold has been found in large quantities on the Murchison, Gascoyne, and Ashburton rivers.

The Northwestern division is watered by the De Grey, Shaw, Coongan, Fortescue, Sherlock, and other rivers having their sources in the granite ranges of the interior. This is a very important grazing district, and includes the extensive Pilbarra goldfields.

The Kimberley division, to the north of the colony, covers an area of 34,000 square miles. The climate is tropical, but it is rich in pasture land, and its gold resources have been abundantly proved. Distance and difficulty of access have of course prevented its full development.

According to the latest computations, the total area of Western Australia is 678,400,000 acres, or 1,060,000 square miles, containing a population of 60,000 souls.

In dealing with the geological formation of Western Australia it may be stated that the general character of the auriferous country is a series of belts following in the south the coast line which is a little to the west of north and east of south. The gold reefs traverse the lower Devonian schists which are more or less altered by the action of the dioritic bosses which have distorted them in many places. These schists lie directly upon the granite, which has lifted them to an angle of between 30 to 45 degs. The granites do not appear in a mountainous form, but take the shape of low ranges, which in many districts have not outcropped more than sufficient to give the country an undulating character. It is these north and south belts where the diorites and sometimes trachytes have played their part, which are of exceeding importance from an auriferous point of view.

Leaving these auriferous belts of Lower Devonian schists, we approach more level country, which may be characterized as Upper Devonian sandstones. These appear to be almost entirely devoid of animal and vegetable life, and there are vast tracts of them whose fauna might be reduced to the spinifex (*Triodia irritans*). The annoyances caused by this plant are not realized elsewhere, but the very name is enough to send a thrill of horror through the Australian bushman. These sandstones occupy a large area, and here and there patches of clear plains have several inches of salt. In fact, they are in many instances highly saline, and after sinking for water it often turns out too brackish to be of any value for domestic purposes; whereas wells sunk in the schists near the granites are pure and wholesome.

The auriferous belts following the coast line, nearly north and south, are deemed to be a system of parallels. Two of these have been already traced at intervals and proved to be rich, but a third parallel may possibly exist further in the interior, though up to the present time its existence has not been fully demonstrated. These parallels extend northward for about 1,000 miles, when the coast suddenly alters its geographical contour and runs eastward. The auriferous belt has accommodated itself to this change, and, departing from its original line, swerves round and follows the line of the coast, taking a direction of a few degrees north of east. This is an illustration of how the geographical features correspond with the geological; or rather how the geological conditions have evolved the present coast line.

Whether gold was actually found during the sixteenth century in

Australia, it is impossible to say for certain. Indeed, where and by whom the continent itself was first discovered is extremely doubtful. We can affirm with safety, however, that the navigator—whether Dutch, Spanish, Portuguese or French—who first landed on Australian shores found himself on the coast of Western Australia, and all authenticated discoveries, such as that of Dirck Hartog, were made in this quarter. Its geographical position, which placed it nearest the Old World, and in the track of vessels, assured the colony of this pre-eminence. If the gold was found in Terra Australis or Java Major by any of the old-time voyagers, the nuggets must have been picked up in Western Australia. I myself have observed cartographic indications that the existence of gold was known or suspected in a Portuguese map of the sixteenth century, in which the western portion of the continent is marked with the legend *Beach Provincia Aurifera* (the first word being a corruption of the word *Loech* or *Lochac*). For various reasons, however—the foremost being international jealousy—the truth concerning these early discoveries whether of territory or treasure, is obscured by clouds of doubt and mystery.

The old "traveler's tales," whether true or false, seem to have been utterly ignored by the early settlers in this Colony, and it was not until 1840 that rich deposits of lead and copper were found in the Champion Bay district. Several very rich lodes between Geraldton and the Murchison, and adjacent to the coast, were worked by English companies, in a raised belt of country extending from the Geraldton mine on the Murchison River in the north almost to Geraldton in the south. The ores in these lodes usually consist of galena and cerussite, associated with quartz calcite, barytes and blende. The galena occurs massive and crystalline and contains very little silver. Most of the old workings are now abandoned and full of water. There are some lodes, however, which have never been touched and others that have been little worked. Although a railway was constructed 34 miles in length from Geraldton to Northampton, these mines have been practically deserted for about 13 years, the chief reason being the fall in prices of copper and lead. It is believed, however, that the lead mining industry would prove remunerative if proper smelting works were established, and the Government offers a premium of £10,000 for the first 10,000 tons of metallic lead produced.

A small local company was formed some time ago, but collapsed through want of capital, after producing several tons of pig lead, and thereby proving the practicability of the scheme if adequately managed and supported. According to the Government geologist, lead ore dressed up to 83 or 84 per cent. can be obtained in this district, while the coal seams on the Irwin River, about 60 miles distant, are quite suitable for smelting purposes and there is an abundance of ironstone. Since 1845, when the first shipment was made, 7,917 tons of copper and 31,105 tons of lead ore have been exported from this neighborhood.

In 1846 the Messrs. Gregory found coal seams in the bed of the north branch of the Irwin, and Dr. Von Sommer, who reported thereon, soon after stated that there were two seams of 6 ft. and 8 ft. in thickness, respectively. Two thousand five hundred and sixty acres were declared, but nothing was done for many years. This field, such as it is, has now passed into the hands of the Midland Railway Company, who intend to test its value.

Other minerals are found in Western Australia. Of this there is abundant proof, although the prospectors and miners who have tried to test the mineral wealth could make but little investigation on a territory of 700,000,000 acres. A few of the discoveries are as follows: Silver has been found associated with lead ores in the Northampton and Roebourne districts. Copper exists in large quantities in the Northampton district, and also at Mullewa, Murgoo, up the Murchison near Roebourne and at Whim Well.

The Northampton district is rich in lead, which also occurs in smaller quantities near Roebourne. The Western Shaw and Pilbarra districts have produced tin. Iron is found throughout these districts, and one of the largest lodes in the world is in the Weld Range. The Northampton district yields zinc. Coal exists in many parts of the colony. The Gascoyne River and Northampton district show the presence of graphite in considerable quantity. Mica exists near the Shaw and on the Gascoyne. At the Nullagine, kaolin has been discovered.

A belt of gold-bearing country extends from Philip's River, in the south, up through the Yilgarn, Murchison, Gascoyne and Ashburton goldfields. Then there seems to be a parallel farther to the east, extending from Dundas Hills in the south to Ularring and Kimberley Range, then passing the heads of the Murchison and Ashburton rivers, and possibly reaching to Marble Bar and Nullagine, where the belt may possibly be intersected by another, which, running east and west, cuts it at right angles. This latter assumption is not put forward as an ascertained fact, but merely as a possible suggestion as to the general run of the gold reefs.

Many of the alluvial deposits have already yielded considerable returns without the use of machinery. This cannot, however, be expected to last. The future prosperity and permanence of the goldfields lies in the working of the quartz reefs. To do this efficiently demands enterprises on a large scale, backed by capital and scientific skill. Then the element of chance will be reduced to a minimum, and gold mining conducted on a basis of systematic calculation, like any other branch of technical industry.

(To be continued).

Maritime Canal Company of Nicaragua.—At the recent election held in New York the following directors were elected to serve three years: Franklin Fairbanks, C. Goodwin, Frederick F. Thompson, Richard Shannon and S. E. Killner.

A Large Oil Carrier.—The steel sailing ship "Dirigo," recently completed at Bath, Me., started on her first voyage April 25th, when she sailed from Philadelphia for Hiogo, Japan, laden with 1,210,300 gallons of refined oil, valued at \$69,592. Her arrival at that port will be awaited with considerable interest, as she was constructed with a view to great speed. Shipping men were much surprised at the immense carrying capacity of the "Dirigo," which is the first American sailing ship built wholly of steel. She takes out the largest cargo ever placed on board a vessel of her proportions, and floats it on a draught within 23 ft. of water.

THE DAUBER GAS PRODUCER.

Recently Herr August Dauber, of Bochum, Germany, devised and patented an upright kiln furnace for roasting ores, which resembles in its principle and general arrangement the Davis-Colby ore roaster, which was described in the "Engineering and Mining Journal" of December 30th, 1893. This furnace was applied to the roasting of zinc blende and pyritic ores, and was furnished with arrangements for disposing of the gases. Herr Dauber has now arranged some modifications of his original plan, by which the furnace can be used as a gas producer on a large scale. The modified form is shown in the accompanying illustrations, Figs. 1 and 2 being sections of two forms, differing chiefly in the arrangements for feeding. Fig. 1 shows also a supplementary grate, e, for starting the fire, and a separate blast-pipe, z, and passages, a. In other respects the furnaces are of similar construction.

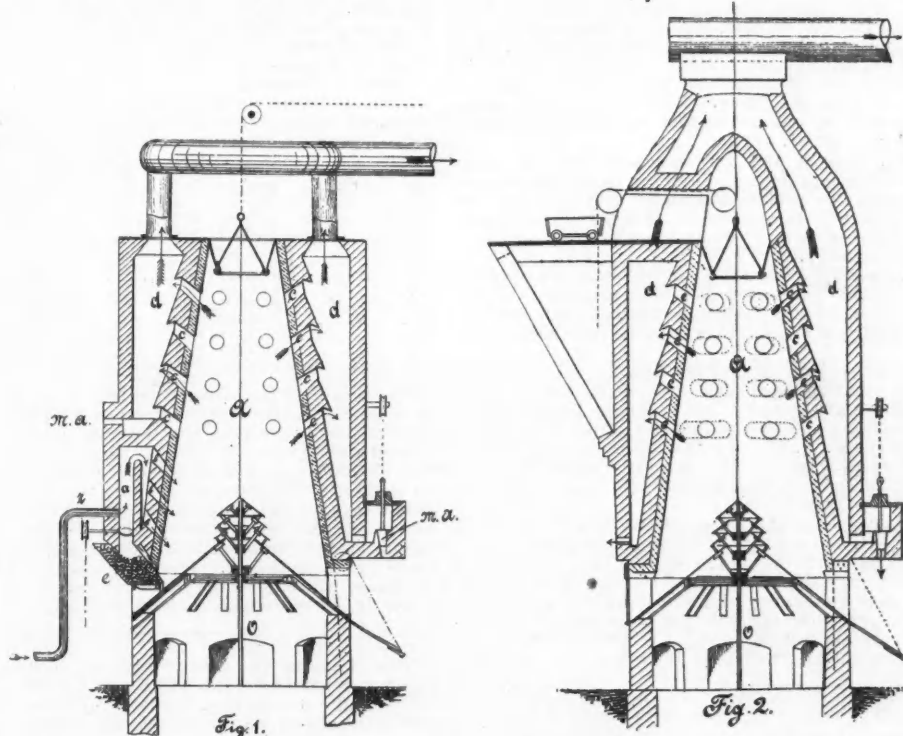
The method of operation is, when the oven or retort A is heated, to fill it nearly full of the coal or other material from which the gas is to be made. The feeding is done from the top, as shown, and the fuel is subjected to a gradually increasing heat as it passes into the lower part of the retort. The coke or residue is removed from the openings at the bottom, and the gas passes through the openings c c c into the gas chamber d d, and thence into the flue above. The valve m x at the side is used for removing residues or deposits from the gas chamber. A steam-pipe O is provided, by which steam can be introduced when desired, in order to produce a water-gas. Provision can be made also for enriching the gas when necessary.

The inventor claims that this application of his furnace will produce gas

VARIATIONS IN BILBAO IRON ORE.\*

Three distinct kinds of iron ore are found in Bilbao, and while there are intermediate qualities, the three types are easily distinguished. Campanil ore is essentially an anhydrous oxide of iron with a calcareous gangue. It is stony, with a bright red dust. The texture is compact, but often crystalline. Numerous fragments present rhomboidal nodules transformed into peroxide of iron. The large number of analyses which have been published enable us to define Campanil as an ore containing 6 to 9% of silica and 3 to 5% of lime and magnesia—that is to say, having a self-fusible gangue. The proportion of iron varies from 53 to 54%. Vena ore is an anhydrous peroxide of iron, compact, but friable, with a small quantity of clayey gangue, which causes it generally to have an earthy appearance. When dry this ore is very rich, and frequently yields as much as 64 and even 65% of iron. Practically, however, it rarely yields more than 58 to 60% on account of the large quantity of water contained. The gangue exists as an aluminous silicate, which is readily fusible. Rubio ore is an hydrated peroxide of iron with silicious gangue. But as the gangue is silicious, it has to be mixed with limestone in the blast furnace. While Campanil and Vena are ores of clearly defined type, Rubio is, on the contrary, an ore varying from one extreme to the other. There are all the intermediate varieties from rich Rubio with 54 to 56% of iron and 8 to 10% of silica, down to ordinary Rubio with 48% of iron and 15 to 18% of silica, and even to actual ferruginous sandstone.

Ironworkers in earlier times were quite able to distinguish the qualities of the ores. As long as the metallurgy of iron was represented solely by the Catalan furnace, and the Chenot furnace and its varieties, the only



DAUBER'S GAS PRODUCER.

at a very low cost, and that, while it can be applied to the production of illuminating gas, it is especially adapted to making fuel-gas or motor-gas. It can be used with any grade of coal, and also with lignite, peat, wood, sawdust, brush or slabs and similar materials, which can either be converted by themselves or mixed with coal. The plan has been approved by Dr. Schilling, Professor Bemte and other German authorities on gas.

Working Days in Various Countries.—The average number of working days in various countries, according to the London "Engineer," is as follows: In Russia, 267; in England, 278; in Spain, 290; in Austria, 295; in Italy, 298; in Bavaria and Belgium, 300; in Saxony and France, 302; in Denmark, Norway, and Switzerland, 303; in Prussia, 305; in Holland and North America, 308; and in Hungary, 312. One conclusion, at least, can be drawn from these figures, viz., that the number of working days of a country has nothing to do with its national wealth.

The Proposed New York-Philadelphia Ship Canal.—In response to a call issued by a number of prominent citizens, a meeting was held in the mayor's office in Philadelphia recently to consider the expediency of the construction of a ship canal between Philadelphia and New York. Mayor Stuart presided. Thomas Martindale, a director of the Philadelphia Trades League, presented a resolution requesting the mayor to send a communication to councils and recommend the appropriation of \$10,000, with which to make a preliminary survey of the proposed waterway. Mr. Martindale stated that the building of the canal was advocated by the Boards of Trade of Philadelphia, Camden, Trenton and New Brunswick, N. J., and by the American Philosophical Society. Addresses favoring the project were made, and after some discussion the resolution offered by Mr. Martindale was then adopted unanimously. Mayor Stuart said he would transmit it to councils at their next meeting, and would urge early action upon it. The mayor appointed a committee to be known as the Citizens' Canal Commission, and the meeting adjourned.

ore worked was the Vena, which the miners obtained with difficulty by means of tortuous and primitive subterranean galleries. For blast furnaces where wood was employed, Campanil soon became the ore par excellence. Being porous and easily penetrated by gases, it required no mixture to be added, and furnished pig of a perfectly uniform character, even in the smallest furnaces. In the treatment of Rubio, especially ordinary qualities, it was necessary to employ hot air, and coke furnaces of large capacity, and now that rich ores have become rare, Rubio with 15 to 18% of silica forms the principal element of the charge for the furnaces of the Nervion Valley.

The following analyses show the composition of some of the typical ores:

	Franco-Belgian Company of the Somorostro mines.				Orconera Iron Company, Ltd.			
	Vena.	Rubio.	Campanil.	Raw Roasted hematite.	Red hematite.	Brown hematite.	Rubio.	An-dr.
Loss from heating.....	5.90	7.17	9.60	36.28	7.70	9.60	8.25	10.55
Silica.....	1.05	11.30	6.00	2.70	3.60	5.91	8.10	8.80
Alumina.....	0.15	2.07	0.83	.....	.....	0.21	1.44	1.15
Lime.....	1.00	0.30	5.00	2.87	1.17	3.61	1.00	0.50
Magnesia.....	0.20	.....	1.70	3.21	4.26	1.65	0.55	0.02
Perox. of iron.....	traces	.....	.....	50.18	.....	.....	.....	.....
Perox. of iron.....	99.70	77.33	75.86	5.31	81.82	78.03	79.96	78.29
Perox. of manganese.....	1.30	.....	.....	1.00	.....	.....	.....	.....
Red ox. of manganese.....	.....	1.54	.....	.....	.....	8.88	0.70	0.71
Iron pyrites.....	.....	.....	traces	0.45	traces	.....	.....	.....
Phosphoric acid.....	traces	traces	traces	.....	.....	0.05	0.03	0.02
Totals.....	100.30	99.71	100.10	102.00	99.39	99.91	100.18	100.16
Metallic iron.....	64.55	54.11	35.10	42.96	56.57	4.62	55.97	54.80
Metallic manganese.....	1.05	1.14	0.48	0.77	1.013	.....	.....	.....

In commerce only these three qualities of ores are recognized, but there

\* Extract from La Sidérurgie en France et à l'Étranger, by M. Cyriaque Héson.

is a fourth which, before long, will assume great importance—viz., carbonate of iron. This ore is found in thick masses at certain points. It is of crystalline texture; its gangue, which does not exceed 8 to 9%, is formed of practically equal parts of lime, magnesia and silica, yielding only 40 to 42% in the raw state, but which is easily increased to 54 to 56% by roasting. Hitherto this ore has been unworked, and scarcely recognized by the Spaniards, who underrate its importance. It is this ore which forms the whole of the Erzberg of Styria and the Erzberg of Carinthia, and the working of which is the basis of the metallurgy of the Austrian Alps. The ore is somewhat pyritous, but this is not a defect of great importance. This element disappears with careful roasting.

#### MINING INDUSTRY OF BRITISH COLUMBIA, 1893.

Written for the Engineering and Mining Journal by S. S. Fowler.

The mining season of 1893 in British Columbia opened with promise of good results. Not only was the now well known West Kootenay country anticipating a prosperous year, but even the old and far-off Cariboo gold district was preparing for such improvements and expenditures as were expected to increase its output. The Kaslo-Slocan division of West Kootenay had sprung prominently into notice, and had already, although but a year and a half old, become a producing and shipping camp. The cleanness and richness of its ores had attracted so much capital and so many men that its neighbors expected to derive much benefit from Slocan's overflow.

This result was actually taking place early in the spring, as the search of several thousand men in Southern, East Kootenay and Southern Yale was being rewarded by good ledges of gold, silver and copper when the discouraging news of the fall in silver reached the various camps. The general result it is, of course, unnecessary to state. Nelson and Kaslo, in particular, were largely deprived of their floating population, while the little heard of Fort Steele, in East Kootenay, which had suddenly taken on new life after a long period of rest subsequent to the excitement of placer days, again lapsed into silence.

Illecillewaet, Fish Creek, Lardeau and various camps of Yale abandoned most of their projected operations, and now, on the whole, British Columbia mining districts may be said to be as quiet as American ones; with this difference, however, that since the industry is but in its infancy, the effects of the depression in silver and lead have not been so severe or ruinous as in Colorado, for instance.

Examining the country more in detail, the principal event in Cariboo has been the transfer of several of the better hydraulic properties to one new concern and the combination of certain water rights, which will enable more efficient work during 1894, and, it is expected, result in an increased output of gold.

The several projected railways into the country between the Canadian Pacific line and Cariboo are still on paper, but a prospect of their construction will certainly induce attention to that immense area which is known to lie largely in the main gold belt of British Columbia.

In Yale on the line of the C. P. Ry. we find the magnetite mine of Kamloops Lake idle this year. Its ore of a high iron tenure has previously been in demand at Tacoma, and about 8,000 tons have been exported.

The cinnabar and native copper of this same vicinity, as yet unworked, are deserving of development, and are now attracting some attention.

South from Kamloops and north as well, some Tertiary coal occurs, while in the interior of Yale good dry silver ores are found, but their distance from railway renders profitable working now out of the question.

The gold quartz of the region south of Okonogan Lake have been further prospected this year, and the ten-stamp mill of the Reynolds syndicate was worked in the early summer with results which are not well known.

Lying half way between the Columbia River and Osoogos Lake is the Boundary Creek districts. The veins here, which were discovered in 1892, seem large and strong, and with work are improving, showing up good bodies of dry silicious silver ores more or less auriferous. Forty tons shipped since June, '93, to Tacoma from the properties of the Spokane & Great Northern Mining Company, of Spokane, have averaged 235 oz. silver, 2½ oz. gold. These shipments were made by wagon to Marcus, Wash., 60 miles, and thence via S. F. & N. Ry. and Spokane to Tacoma. Direct rail communication would make possible the handling of large quantities of 60 oz. ore.

Trail Creek Camp, just west of the Columbia River, at the boundary, has some large bodies of auriferous magnetic and copper pyrite. The better claims carry about 2 oz. gold and 6 or 7% copper, and from these, notably the Le Roi, some 100 tons have been shipped.

Nelson and the Toad Mountain district have recently taken on new life by reason of the completion of an extension of the Spokane Falls & Northern Railway to Nelson. The importance of this direct railway communication with the States can hardly be overestimated.

The completion of the negotiations relating to the transfer of the Silver King group of claims and the early prospect of an active prosecution of work on this property are gratifying.

The gold claims, Whitewater and Poorman, with Huntington mill and 10 stamps respectively, have been idle during the year, although work is intended at the latter this season. Ainsworth, or Hot Springs Camp, so favorably situated on the west side of Kootenay Lake, continues development with highly encouraging results. The claims carry a variety of dry ores, averaging, say, 100 oz. silver, and much heavy lead ore running about 45 oz. silver and 60% lead.

On the east side of the lake the Pilot Bay smelting plant is still incomplete, and it will probably remain so for some time. Its ultimate success would seem to depend largely either on the construction of the Crow's Nest Railway, thus making good fuel possible, or the reduction of duty on lead imports into the States, or both.

Northwest from Ainsworth, the various camps of the Slocan district were affected more by the fall in silver than others, primarily because of the high silver contents of their ores, the average of some 2,500 tons shipped being not less than 150 oz. and 60% lead. Still the persistence of the deposits and the certainty of an early solution of transportation diffi-

culties have so far fostered a practical and efficient moneyed interest in Slocan during the whole year that it stands to-day the most active and prosperous mining district of British Columbia. This winter finds at least 15 properties producing ore, most of which will be held until the railways now building are finished in the spring.

The Canadian Pacific Railway has nearly finished a branch from its main line at Revelstoke to deep water on Upper Arrow Lake, and this, in conjunction with the line from Na Kusp, on the same lake, to the center of Slocan mines, will, in the spring, take ores to American smelters at a reduction in freights of at least \$30.

North of Kaslo, on Kootenay Lake, in the Lardo and Duncan River country, many good prospects have been brought to light. The galenas are often auriferous, but the claims lack transportation facilities. Passing again northward to the Canadian Pacific Railway, Illecillewaet and Fish Creek have remained idle or nearly so. The region of the "Big Bend" of Columbia River, has received some attention this summer, resulting in the location of good gold quartz, but the 60 miles of bad trail intervening between the district and a base of supplies certainly handicap it now.

From East Kootenay, of which Golden is the most important town, no ore has been shipped this year and a well-equipped smelter at Golden remains idle. In the McMurdo region several strong but narrow silver-lead veins have been more or less developed. On Vermont Creek especially about 150 tons have been shipped averaging 100 oz. silver and 63% lead. Northward from Vermont claims the Bobby Burns and surrounding gold claims averaging about \$15 have been idle pending transfers.

The locally well-known North-Star property near Fort Steele has been considerably developed this year and the final purchase, \$30,000, money was paid. The future of mining in this vicinity is largely dependent on the Crow's-Nest Railway's construction.

The hydraulic properties in Wild Horse Creek near Fort Steele have been transferred to an English company which has been putting in new plant. At Field the Monarch has made no shipments. Its ore, although carrying 50% lead, is too low in silver and too zincy for profitable handling. Along the center of the Columbia-Kootenay Valley there are several copper prospects of promise, all within six miles of navigation.

Year	Value	Year	Value	Year	Value
1858	\$520,353	1871	\$1,799,440	1884	\$735,965
1859	1,615,072	1872	1,610,972	1885	713,738
1860	2,228,547	1873	1,305,749	1886	905,652
1861	2,668,119	1874	1,844,619	1887	694,759
1862	4,246,266	1875	2,474,904	1888	616,731
1863	3,735,851	1876	1,786,648	1889	588,923
1864	3,491,205	1877	1,608,181	1890	494,435
1865	2,662,107	1878	1,275,204	1891	429,811
1866	2,480,868	1879	1,290,059	1892	399,526
1867	2,372,972	1880	1,013,827	1893	379,535
1868	1,774,979	1881	1,046,737		
1869	1,336,956	1882	954,085	Total	\$53,892,997
1870		1883	794,252		

On Vancouver Island the Alberne district has produced a lively season by reason of the discovery of some gold quartz whose value and extent are not fully known as yet. On the east coast of the island the coal product so well known along the Pacific has been kept up, despite the competition in California of large amounts of English and Australian material. In 1892, of a total tonnage raised on the island of 826,355 tons, 640,579 tons were exported, and 425,000 entered California ports, whose total imports were 1,511,066 tons. Thus British Columbia supplied 28% of California fuel, despite the fact that the other foreign coals are brought there largely as ballast. The placers of the Similkameen River and its branches, which for some years have produced about \$10,000 in platinum annually, have dropped to about \$3,500.

Opal Mining in New South Wales.—Considerable quantities of opal are found at White Cliffs, on the River Darling, about 57 miles from Wilcannia and 783 miles from Sydney. The existence of opal in this remote part of the colony was unknown until within the last few years, but since its discovery large numbers of miners have found employment in the district, there now being a population of 700, where, some four or five years ago, there was only one inhabitant to the square mile. The opal is found in thin veins in sandstone, the various leases being worked principally on the tribute system, the tributaries in some instances being supplied with food and tools and getting half the proceeds of the gem. Some £17,000 worth of opals was sold from the field during 1893.

President Diaz, of Mexico, on the Mexican Mining Industry.—In his message to the Mexican Congress on April 1st, President Diaz said: "During the period embraced by this report (six months), the number of applications for mining grants has been 1,234, which, added to those filed since the new mining law of July 1st, 1892, came into force, give a total of 5,396, covering 36,937 claims of 1 hectare each. Title deeds have been issued to the number of 1,037, embracing 6,241 claims of 1 hectare; 218 applications have been rejected on account of the dilatoriness of applicants, and the remainder are running their time in the several mining agencies. Throughout the country there are 3,167 mining properties in operation, of which more than two-thirds are of Mexican ownership, the remainder being in the hands of foreigners. The country also possesses important metallurgical establishments, owned by Mexicans and foreigners, such, for instance, as the great smelting works of recent erection in the States of Nuevo Leon, San Luis Potosi, Chihuahua and Durango.

"The Geological Institute is contributing on a large scale toward bringing to light the mineral wealth of the country, for having completed its studies in the petrology and paleontology of the Valley of Mexico, and on the fossil fauna of the Catorce Mountains, it has turned its attention to the exploration of the auriferous and auro-argentiferous deposits of the Sierra of Durango, of the districts of Mezquital del Oro, La Yesca and the Tepic range, of the gold-bearing region situated in the northern part of the State of Guerrero on the confines of Michoacan. It is also completing the geological survey of Chiapas, Tabasco, Campeche and Yucatan, and is examining the recently discovered gold mines at Nuevo Laredo."



## THE BROWN HORSESHOE FURNACE.

This furnace is of a circular form, about four-fifths of its area comprising a roasting hearth and one-fifth an open span for cooling the stirrers.

The roasting hearth comprises the central part of the annular furnace between the main outside walls. By means of vertical partitions (one-half being built in the floor and the other half forming part of the arch), with their adjacent ends a little distance apart, the tracks and working mechanism are entirely cut off from the roasting hearth, thus protecting the moving mechanism and the tracks from the direct action of the heat, fumes and dust of the furnace.

A difficulty with the double hearth furnaces has been keeping up the center wall between the upper and lower hearth, owing to the heat to which it was subjected, and to make a furnace that would keep in sufficient alignment for ordinary purposes it required quite an expense for brickwork and a heavy expense for necessary buck-stays and binding rods. In the "horseshoe" furnace this has been overcome by building but one arch, which is exposed to heat on one side, and also has elasticity enough to rise and fall with the varying heat of the furnace without severe strains on the outer walls.

In the practical operation of this furnace there are no new features developed, so far as the metallurgical process is concerned, the whole practice being to expose the ore regularly and uniformly to a proper heat and a proper amount of oxygen.

The ore is charged into an automatic feeder, so arranged as to feed any given amount with the passage of each stirrer. By means of a fluted wheel the ore is forced out on to an apron which, when loaded, drops down, depositing the ore on the hearth. In the act of dropping, all the feed mechanism is thrown out of gear and the balance weight so far forward that the apron remains down, and all feeding stops until the passing of a stirrer, which strikes a projecting lever, throws the machine again in balance and the operation is repeated. The two ends of the roasting

The position of the stack, as regards the furnace, is not so important, so any existing stack may be utilized by running a proper dust flue from the furnace.

This furnace is adapted for roasting any material that can be roasted by hand. Ores carrying from 30 to 40% of lead have been successfully roasted in the mechanically stirred reverberatory furnaces, and no tendency toward forming accretions of the matte upon the hearth has been observed. As long as the charge is stirred thoroughly, there is no trouble experienced in the melting down or matting of the charge; but in case there should be, from any cause, a stoppage of the stirring mechanism, and the attendant should neglect to open the draught doors so as to prevent overheating, there might be accretions formed next to the fire-boxes. As a matter of precaution, a manhole is built in the roof of such furnaces as are designed for working lead ores, and where mattes or highly fusible charges are used, a short distance in front of each fire flue. Through this manhole or opening a steel bar can be inserted, so as to bar off any accretions. The doors are in duplicate at each end of the hearth: one closing before the other door opens prevents any sudden influx of cold air, which would have a tendency to check the draught and cool down the furnace.

In the case lead ores, matte or other ores which are to be matted or sintered are being roasted, a discharge hopper is placed just back of the inside door, in which the red hot calcined material is deposited by the passing stirrers. This can be drawn into a car and discharged while red hot directly to the matting or other furnace. This plan has been adopted by the Anaconda Smelting Company, Anaconda, Montana, and is found to make a saving in the heat and time necessary for matting the charge.

The capacity of any roasting furnace is governed largely by the nature of the material to be roasted. When crushed reasonably fine, say to a four-mesh screen, a duty of one ton of calcines for each 33 square feet of roasting hearth area can be expected, reducing the sulphur to below



hearth are closed by means of swing doors which allow the passage of the stirrers. From the feeder the ore is gradually plowed along by the passing of the stirrer points until it enters the roasting hearth, and is worked gradually forward until it travels the entire circle and is deposited at the discharge end, not far from where it entered.

To prevent overheating the stirrers, two stirring carriages are left standing in the open space between the adjacent ends of the roasting hearth. These are at rest, and cool rapidly by being exposed to the air. There are four carriages in each furnace, two of which are always in motion and two at rest.

When the forward moving carriages come in contact with the two carriages which are at rest they are pushed forward, and the one in the lead is attached to the driving cable by means of an automatic grip, while the one which has just come out of the furnace is released by means of an automatic stop and becomes stationary. It requires about two minutes for each stirrer to make the circuit of the hearth.

The driving of the stirrers is accomplished by means of a cable arranged on the plan of a cable railroad going around a curve. This runs continuously, and one-third of it is all the time in the open air. There is also a little air admitted at each guide sheave or wheel, entirely around the furnace, so that there is a constant inflow of cold air, which assists in keeping the tracks and driving cable cool. The guiding wheels are so arranged that three-fourths of their entire surface is in the open air. The means employed for driving the cable consist of a grip-wheel, with a tightener and guide sheaves, so as to keep the rope always at the proper tension.

The fireboxes are adapted to the nature of the fuel to be used, and are constructed independent of the furnace walls, and the heat is conveyed into the main roasting hearth by means of a cross arch leading from the firebox to an opening in the roof, or arch, of the main roasting hearth.

It requires about 1½ H. P. to drive the mechanism for stirring the furnace, which can be made of any desired diameter and capacity.

4%. Where there is a large percentage of zinc, it requires a little more time to properly desulphurize than in ores carrying but a small percentage. The ratio of duty, however, with any class of ore, is about the same as similar classes in an ordinary hand furnace. The 55-foot furnace of the "horseshoe" type is intended to have an average capacity of 30 tons per day of such ores as are usually treated by smelting furnaces. It requires only about one cord of wood for each 6½ tons of ore roasted, or its equivalent in coal or other fuel. By giving the ore a trifle more time in the furnace, which can be done at will, the percentage of sulphur can be brought as low as desired. The cost of roasting will be from 75 cents to \$1.00 per ton, depending on the cost of fuel and the nature of the material being roasted.

One of these furnaces is now in operation at the works of the Collinsville Zinc Company, Collinsville, Ill., roasting zinc blende. The furnace is manufactured by Fraser & Chalmers, Chicago.

Petroleum and Coal in Java.—In a recent British consular report on the trade of Java during 1893, Acting-Consul Fraser, of Batavia, states that petroleum was imported on an abnormally large scale, the total number of cases which passed the customs being 4,208,109, as against 3,064,626 in 1892 and 2,595,054 in 1891. Prices receded continuously during the year, and the closing rates were about the lowest ever touched. Stocks at the end of December were excessive, being 1,375,978 cases, as compared with 531,990 cases at the close of 1892 and 684,600 cases at the close of 1891. The Java production has so far not been much extended, but fresh boring operations are being undertaken in mid-Java, where new oil-bearing strata are said to have been discovered. It still remains uncertain how far the quality and cost of the Ombihoen and Koetei coals will enable them to compete in the open market with English and Australian kinds.

## OPEN-HEARTH STEEL FURNACES.

In the discussion at the Virginia Beach meeting of the American Institute of Mining Engineers, Mr. George W. Goetz, after commending highly Mr. H. H. Campbell's exhaustive paper on the "Open-hearth Process," presented at the Chicago meeting last year, said that he had given some attention to the combination of the open-hearth and the converter, and must agree with Mr. Campbell that the duplex system is not economical for most American circumstances. He had made a number of duplex charges under the superintendency of Mr. S. T. Wellman, transferring three Bessemer heats, each of 5 tons, to make up one heat of 15 tons in the open-hearth furnace. The average time required for transfer of the three heats, getting the desired dephosphorization and carbon, and tapping, was about three hours. The heats were taken from the acid Bessemer to a magnesia-lined open-hearth furnace. It is true that a good dephosphorization can be attained by blowing the heats to be transferred, in such a manner that the first heat to be transferred is left hard, whereas the following heats are blown somewhat soft. The reaction which ensues upon pouring one heat into the other will then cause a rapid dephosphorization when sufficient basic additions are present. But as soon as the reaction has subsided, the dephosphorization proceeds slowly.

The oxidation going on during the melting is very important, not only as to carbon and silicon, but also as to phosphorus; and the above experiments showed that the dephosphorization was made far more satisfactory in the long run by melting the entire charge in the furnace. Many consecutive duplex heats are also very destructive of the bottom, especially when a reaction is caused by the mixture of two or more heats from the converter. The time gained by using liquid pig-iron in the open hearth, as well as in the puddling furnace, is more than offset by the advantages derived from the oxidation going on during melting.

In Austria the duplex process is carried out by a combination of the basic Bessemer and basic open-hearth processes. He had had an opportunity to see the process, but found a combination of circumstances, especially as to the availability of scrap, and the dependence upon certain grades of pig iron, which do not exist here. Mr. Campbell gives the main reasons why the duplex process is not economical at present for American circumstances.

As to the construction of furnaces, his opinion is that the tipping-furnaces present the advantage of being able to pour off slag and to regulate

As an instance, however, of the care with which general conclusions should be formulated, I would say that I have performed the same experiment of pouring fully-blown Bessemer metal into an open hearth-bath of about 0.50% carbon, and there was no violent ebullition. These contradictory results will show that there are many factors in metallurgical history which are imperfectly understood, and a variation in which, although perhaps unnoticed, may make important changes in the nature of the result."

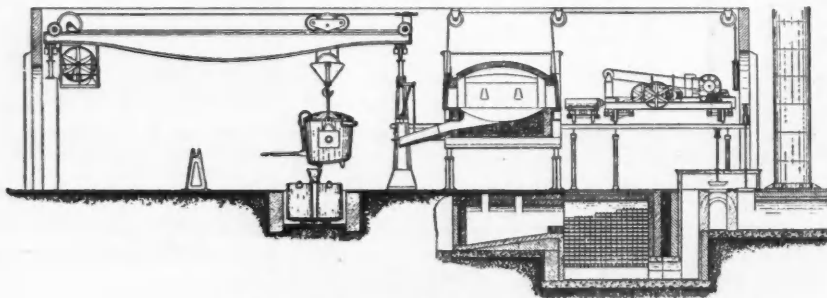
## THE EMERALD MINES OF MUZO COLUMBIA.\*

In December, 1881, while in the employ of the Government of Columbia, S. A., I was ordered to proceed from Bogotá to Sámaca, in the State of Boyaca, for the purpose of inspecting the iron works there upon which the government had expended about \$500,000.

I set out December 5th, and went first to the iron works, arriving there in three days' time. I then went to the emerald mines, situated in the ancient Province of Velez, about two hours' ride from the Town of Muzo, in the State of Boyaca.

These mines have been worked for upward of 200 years, and were known of long before the Spaniards explored and took possession of the country, and they are still said to be the richest emerald mines in the world. The entrance is at the end of a ridge, near the junction of two mountain streams. The rock is bituminous black limestone, for the most part laminated like slate, the slabs being 2 or 3 in. thick. These are separated from each other by layers of a black powder. This formation is thickly crossed by innumerable veins of carbonate of lime, in the intersection of which veins the emeralds, in a rough state, are found, generally associated with crystals of a transparent quartz and a yellow mineral not yet classified. The finest stones are found in the black powder. The mine itself is in a deep basin, excavated back of a sharp ridge, and is about 600 ft. in diameter and 100 ft. deep. The water from the mine is drained from it through a trough about 150 ft. to an adjoining brook. In the rainy season this brook becomes a furious torrent.

In the center of the mine, a little to the left, is placed a small shed where the superintendent can watch the operations of the miners. The only tool these miners use is an iron crow-bar, three-quarters of an inch thick, with a chisel edge, and weighing 25 lbs. With this instrument the rock is broken and allowed to fall into a sluice-way beneath. Water is



THE WELLMAN OPEN-HEARTH STEEL FURNACE.

the flow of metal into the ladle. A sudden rush of a large quantity of slag and steel when tapping, which sometimes causes the ladle to run over, can thus be avoided.

The stationary furnace, a sketch of which is shown in Mr. Campbell's paper, do not represent the latest construction in use at some of our principal works. The sketch herewith shows a 20-ton furnace, as designed by Mr. S. T. Wellman, of the Wellman Iron and Steel Company. The high and straight roof, the pockets in front of the regenerative chambers, and the placing of the latter under the charging-floor, instead of under the furnace, are the special features. The mushroom valves shown, as well as the doors, are manipulated by compressed air. This furnace has given excellent results during the last five years. A charging machine is also shown in the sketch.

In his chapter on furnace-gases, Mr. Campbell, the writer believed, overlooked the importance of the hydro-carbons in securing a strongly luminous flame in the furnace. As to the quantity of heat, his figures are correct, but he has not considered the effect of a luminous flame on the economy of smelting, and the fact that the hydro-carbons are necessary to obtain this luminosity. A 10 ton furnace could not be brought up to a steel-melting temperature by a producer-gas made out of coke, although the carbonic acid was below 2%; but as soon as sufficient soft coal was charged upon the coke to make the flame luminous, the furnace heated up very rapidly. Natural gas fills up a checker-work with solid carbon very rapidly, but this can be prevented by admitting a little steam with it, and then all deposition of carbon is prevented.

In replying to these remarks, Mr. Campbell said: "The criticism on the absence from my paper of a drawing of a properly constructed furnace of the common type, is in some measure deserved. The omission was due to the desire to condense as much as possible in matters of detail. It is possible to build a furnace in various ways and have it meet the requirements, and it was considered sufficient to point out a common fundamental error. For this purpose there was selected a drawing which had been published within a year or two as the new design of a firm of metallurgical engineers. The drawing of the tilting furnace was given, not as the only properly arranged furnace, but as embodying a feature which is new and valuable. It is elsewhere stated that for some reasons vertical chambers are preferable to horizontal ones. The arrangement of the parts to the best advantage will always remain a detail of construction, determined by local conditions and inventive ingenuity. The opinion expressed by Mr. Goetz on the duplex process are corroborative of my own, and are of interest in these days, when this method is so often mentioned as applicable to southern districts.

collected in a tank above. When the quantity is sufficient, it is let fall on the mass below, and by this means the debris is washed away, leaving the emeralds in the sluices. Every evening the sluices are carefully examined and the emeralds collected. Even the close watching of the superintendent, however, fails to get all the emeralds for the mine owners, for a great many of the stones are stolen by the miners, who, as a general rule, are not very honest. A former manager of the mines, with whom I was acquainted, told me that perhaps 25% of the gems never went into the hands of the company, but were taken by workmen and sold on their own account. The demand for the stones influenced the number of workmen employed. The number varies at times from 50 to 500. They are fed by the company, and it costs 20 cents a day to feed each man. Their wages vary from 20 to 40 cents a day.

The mines, of which there are two, are owned by the Columbian Government, but are operated by an English company, which rents them from the owners.

Electrical Smelting of Iron.—Recent Swedish reports say that an application of electricity to the smelting of iron is to be tried on a commercial scale at Trollhattan, in Sweden, where a great water-power is available to run the dynamos. The process is the invention of Mr. G. de Laval, whose steam turbine attracted much attention at Chicago last year.

Austrian Manufactures.—The statistical office of the Austrian Board of Trade has compiled extracts from the reports of all the chambers of commerce in the Empire, and is thus able to give an account of the condition of Austrian industry in 1890. The number of manufactories in 1890 was 10,755, with 18,514 motors representing 479,523 H. P., and employing 845,946 persons. The busiest part of the monarchy was Bohemia, with 35% of all the undertakings, 38% of the horse power and 41% of the persons employed. The greater number of motors and persons employed was absorbed by textile industries. Of the persons employed in manufacturing concerns 593,586 were men, and 252,360 women; of the men 33,375, and of the women 19,432, were under 16 years of age; 458,152 men and 202,021 women were employed within the precincts of the factories; 64,220 men and 30,236 women were employed for manufacturers, but at their own homes. These statistics would be of much greater interest if they were brought up to a later date; figures three years old are of comparatively little use.

\*Abstract of an article read before the Engineering Society of Western Pennsylvania, by Thomas B. Nichols.

## RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

SUPREME COURT OF PENNSYLVANIA.  
Rights of Lessee in Coal Leases.

Where an instrument contemplated the sale of the coal under leased premises at a fixed price, to be increased \$100 if the quantity of coal reached the proportions described in it, the right of removal to be exercised within 100 years, the fact that the instrument is in the form of a lease is not material when the character of the transaction is apparent. A written contract, though not under seal, granting the privilege of digging all the coal or ore on the vendor's land, is equivalent to a conveyance of the title to the coal or ore in fee. Such a conveyance operates to sever the surface from the underlying stratum of coal; and after such severance the continual occupancy of the surface by the vendor is not hostile to the title of the owner of the underlying estate, and will not give title under the statute of limitations. To affect the title of the owner of the coal, there must be an entry upon his estate, and an adverse possession of it. But the contention that a right to mine coal in the land of another is an incorporeal one cannot be successfully maintained. The grant of such a right is a grant of interest in land. When the grant is, in terms or in effect, a grant of all the coal on the lessor's land, this amounts to a severance of the coal from the surface, and vests a title to the underlying stratum in the grantee. This underlying estate may be conveyed under the same general rules, as to notice, as to recording, and as to actual possession, as the surface. After such a severance the possession of the holder of each estate is referable to his title. The owner of the surface can no more extend the effect of his possession of his own estate downward than the owner of the coal stratum can extend his possession upward, so as to give him title to the surface, under the statute of limitations.

The owner of the surface can be affected only by the invasion of the surface. The owner of the underlying stratum is not bound to take notice of the invasion of the estates that do not belong to him, but when his own estate is invaded he is bound to take notice. A lease granting to the lessee the right to explore for oil, and in case oil is found in paying quantities on the leased premises, to drill wells and raise the oil, paying an agreed royalty therefor, has been held to convey no interest in the land, beyond the right to enter and explore, unless the search for oil proves successful. If it proves unsuccessful, and the lessee abandons its future prosecution, his rights under the lease are gone. So it might be with a similar lease of lands supposed to contain coal. If the lessee entered, explored the leased premises, and, finding nothing, gave up the search, he would no doubt be held to the same rules, upon the same provisions in the lease, as were applied in the case cited. The difference in the nature of the two minerals, and the manner of their production, have, however, resulted in considerable differences in the forms of the contracts of leases made use of. When oil is discovered in any given region, the development of the region becomes immediately necessary. The fugitive character of oil and gas, and the fact that a single well may drain a considerable territory, and bring to the surface oil that, when in place in the sand rock, was under the lands of adjoining owners, makes it important for each landowner to test his own land as speedily as possible. Such leases generally require, for this reason, that operations should begin within a fixed number of days or months, and be prosecuted to a successful end, or to abandonment. Coal, on the other hand, is fixed in location. The owner may mine when he pleases, regardless of operations around him. Its amount and probable value can be calculated with a fair degree of business certainty. There is no necessity for haste, nor moving with equal pace, together with adjoining owners. The consequence is that coal leases are for a certain fixed term, or for all the coal upon the land leased, as the case may be. All idea of haste in development or operating is excluded by the terms of the instrument, and the time for commencing the work of mining is left to the discretion of the lessee. The consideration of the grant was, not the development of the mineral value of the land, but the price fixed by the agreement, and actually paid to the lessor in money. *Plummer v. Hillside Coal and Iron Company*, 28 At. Rep. 852.

SUPREME COURT OF OREGON.  
Right of Miners to Liens.

Section 1 of Session Laws 1891 of Oregon gives the following liens: (1) To every person who shall do work or furnish materials for the working or development of any mine, etc.; (2) to every person who shall do work or furnish materials for the working or development of any such mine, in searching for such minerals or metals; and (3) to all persons who shall do work or furnish materials upon any shaft, tunnel, incline, adit, drift, or other excavation designed or used for the purpose of working or draining any such mine, lode, or deposit. If the term "any such mine" in the second clause relates to and means any mine lode, mining claim, or deposit yielding metals or minerals, then a lien could not be acquired unless the search had been rewarded by a discovery of metals or minerals. It is hardly probable that the legislative Assembly intended that the miner who had, at the request of the owner, performed labor or furnished materials in developing a mining claim or in searching for metals or minerals, would be denied the benefit of a lien, because his labor had not brought to light the hidden treasures of the earth. If that were the rule then the miner who, in developing a claim, discovers indications of metals or minerals, could be discharged just before bringing to light the object of his search, and be deprived of any remedy against such claim for his labor or materials, while the employer, with a single blow of the pick or an additional blast, might reveal the wealth for which the laborer had toiled. Such a harsh rule could never have been intended, as its manifest effect would be to discourage the development of mines and the search for metals or minerals by men of moderate means. Under the law, the prospector or discoverer of lands supposed to contain certain metals or minerals is able to secure aid in prosecuting his search, as the miner is much more willing to give his services in developing mining property when encouraged by the assurance of reward for his labor which a lien on the property is likely to afford. Both parties would thus have a common interest in the development of the claim, and, though a lien

would probably not amount to much unless a discovery were made, the miner, though he might be disappointed, would not be deceived thereby.—*Williams v. Toledo Coal Co.*, 36 Pac. Rep., 159.

**Assam Coal.**—The chief coalfields in Assam, says "Indian Engineering," lies along the northwestern face of the Eastern Naga Hills, the greatest of them being that of Makuma, where there is a seam 100 ft. thick containing at least 78 ft. of solid coal. Some very large seams in this field have been traced for more than a mile without diminution. The coal was scarcely worked until 10 years ago. Since that time the output has risen steadily, and last year reached the respectable total of 164,000 tons. The coal is of excellent quality, not surpassed by any and equaled by few coals in India, and it is now exported in large quantities for the use of ocean-going steamers. There are other coalfields in the province, besides those at Makum—but awaiting development.

**Gold in the North of Scotland.**—A committee of the Sutherland County Council has tried to arrange with the Duke of Sutherland to reopen the Kildonan goldfields, but he declined, on the ground that the results of former workings were not such as to encourage any present operations.

**Russian Manufacturing Industries.**—According to the latest statistics, there are in European Russia 82,241 manufactories, which afford employment for 1,206,289 persons. In the Caucasus and the portion of Russia which lies in Asia there are 2,502 manufactories, employing 27,454 hands. In addition to these there are believed to be in Russia about 8,000,000 persons who are engaged in various small industries carried on at home, but there are no particulars available with reference to these. The greatest number of manufactories, viz., 4,236 factories, with 242,847 hands, are in the Moscow district, and in the St. Petersburg district there are 2,256 factories. In the Warsaw district, which comprises five governments, there is an aggregate of 1,368 factories, but some are on a larger scale than in most other parts of Russia. The government with the smallest number of manufactories is the Olonetz Government, in the north of Russia, which boasts only 32 manufactories.

**Tunnel Under the Seine.**—In order to irrigate the land appropriated to the reception of 2½ million gallons of the sewage of Paris, it has been necessary to construct a tunnel under the Seine, which forms a part of the main conduit, having a total length of 8½ miles. The tunnel, which is practically a long branched siphon, has been advanced and built under the river for a length of 700 ft., and commences at the bottom of a well or shaft 82 ft. deep and 8 ft. in diameter. It has a total length of 1,540 ft., of which 1,000 ft. are actually under the river, and the remainder serves to effect a connection with the main conduit of masonry, which starts from the Rue de Château at Asnières, at a depth below the ground level of about 7 ft. The lowest point or bend in the siphon occurs at Clichy, from which depth it rises by a continuous incline toward Asnières. Compressed air supplied by powerful machines is used for carrying on the work, and a shield protects the cast iron sections, having a diameter of 1 ft. 9 in., from all leakage which might result from a pressure of water of 56 ft. When completed 7,000½ tons of cast iron will have been used in the tunnel tube, and 60,000 bolts required to make good the joints.

## PATENTS PUBLISHED IN GREAT BRITAIN.

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

WEEK ENDING APRIL 21st, 1894.

- 4,037 of 1893. Obtaining Cyanides from Blast Furnace Gases. H. Aitken, Darroch Scotland.  
6,137 of 1893. Electric Pickling Vats. A. J. Smith, Kingston on Thames.  
8,867 of 1893. Sampling Machine. T. Clarkson, London.  
10,425 of 1893. Rope Haulage Systems for Mines. W. S. Parkes, Walsall.

## PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

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

TUESDAY, MAY 1st, 1894.

- 518,955. Roller Grinding Mill. William Hudnall and Lorenzo D. Beary, Helena, Mont.  
518,981. Lift Pump. John Wock, Canton, O.  
518,986. Portable and Adjustable Support for Hose Nozzles. Wesley A. Cain, Medicine Lodge, Kan.  
519,012. Drills for Wells, etc. Charles E. Wyman, Martinsburg, Ind.  
519,013. Vertical Flue Boiler. Christopher Ahrens, Cincinnati, O. Assignor to the American Fire Engine Company, same place, and Seneca Falls, N. Y.  
519,015. Boiler. William H. Berry, Eddystone, Pa.  
519,023. Fuel Economizer. John Milne, New York, N. Y.  
519,039. Water Gas Apparatus. Arthur G. Glasgow, London, England.  
519,059. Steam Generator. Alexander W. Finlayson, Detroit, Mich. Assignor, by mesne assignments, of two-thirds to the Finlayson Boiler Company, Limited, same place.  
519,063. Roasting and Calcining Kiln. Luke Houze, Montpelier, Ind.  
519,079. Smoke Consuming Furnace. Thomas Dark, Sr., Buffalo, N. Y.  
519,084. Machine for Joining and Rolling Sheets of Metal. William S. Grafton and Ralph R. Spears, Wheeling, W. Va. Assignor to the Wheeling Corrugating Company, same place.  
519,086. Device for Drawing Tubes. Carl G. Larson, Sandviken, Sweden.  
519,094. Blast Furnace Charging Apparatus. Frank C. Roberts, Philadelphia, Pa.  
519,111. Process of Extracting Copper from Its Ores. George W. Goetz, Milwaukee, Wis.  
519,129. Process of Smelting Ores. Herbert Lang, Tacoma, Wash.  
519,132. Machine for Making Sheet Metal Tubes. James Gould, Jr., Oakland, Cal.  
519,202, 519,200. Rock Drill. George W. Pickett, Denver, Colo., Assignor of nine-sixteenths to Samuel Lesem, same place.  
519,217. Process of Converting and Smelting Precious Ores. Charles M. Allen, Butte, Mont.  
519,218, 519,219, 519,220. Converter for Smelting Ores. Charles M. Allen, Butte, Mont.  
519,221. Smelting Furnace and Refining Converter. Charles M. Allen, Butte, Mont.  
519,225. Pump for Compressing Air or Gases. George E. Belliss and Alfred Morcom, Birmingham, England.  
519,228. Ore Crusher. Frank Bishop, Ogden, Utah.  
519,245. Apparatus for Extracting Gold from Black Sand. Samuel G. Derr, Buffalo, N. Y.  
519,257. Steam Boiler Furnace. James McMillan, Chicago, Ill.  
519,285. Boiler. Charles S. Hopkins, Arlington, N. J., Assignor to the Electric Boiler Company, Rochester, N. Y.

## PERSONALS.

Mr. W. H. Baldwin has been chosen secretary of the Ohio Steel Company at Youngstown, O.

Wyatt & Saarbach, consulting analytical and technical chemists, have removed their offices from 12 Park Place, New York, to 12 Old Slip.

Mr. Theodore Voorhees has resigned the position of general manager of the Lehigh Valley Railroad Company, and the office has been abolished.

Mr. Hartwig A. Cohen, who for a long time has operated the Morey, Nev., mines, has been appointed manager of the Monitor and Jim Crow group of mines in the Ferguson district, Lincoln County, Nev., which were recently purchased by Capt. J. R. De Lamar.

Mr. Herbert Lang, general agent of the Selby Smelting Company, of San Francisco, has been visiting British Columbia, with a view to extending the business of his company, especially with the ores of the Slocan district, which seem to be adapted for treatment by smelting.

The President has appointed the following commissioners to attend the Antwerp Exposition on the part of the United States: George V. Massey, of Delaware, Commissioner General; Henry W. Gilbert, of New York; E. A. Ewing, of Illinois; F. A. Gamon, of Washington State; and Alphonse Le Duc, of Louisiana.

Mr. T. A. Rickard, who requires no introduction to the readers of the "Engineering and Mining Journal," is now general manager of the Enterprise mines at Rico, Colo., the Yankee Girl at Red Mountain, and the Gold Consols at Summitville. Mr. Rickard retains also his office as consulting mining engineer at 207 McPhee Building, Denver, Colo.

Capt. J. H. Taylor, who has been for many years superintendent of the Ashland mine in the Gogebic iron district, has resigned his position. Captain Taylor is one of the pioneers of the Lake Superior region, and has held important positions in the Marquette, Menominee and Gogebic ranges. He was at the Isle Royale mine in Houghton County in 1867, and has been in the Lake Superior region ever since.

Mr. Elbridge H. Beckler has opened an office as consulting civil engineer in the Monadnock building, Chicago, and is prepared to make reports, surveys and estimates on railroad, mining and irrigation work. His engineering work has been chiefly in Montana, Idaho and Washington, in which States he has had charge of important railroad work. In 1880 he was with the Northern Pacific, and as resident engineer had charge of the section which included the Bozeman tunnel. Later he was on the Canadian Pacific on the construction of the Rock Mountain section, and in 1886 became principal assistant engineer of the Montana Central, and about a year later chief engineer of that line, and had charge of its construction into Helena. In 1889 he was appointed to take charge of the surveys for the extension of the Great Northern line to the Pacific Coast, and he remained in charge of that work until January, 1893, when the road had been completed to the Pacific Coast.

## OBITUARY.

Mr. E. N. Robinson, the well known civil and mining engineer, of San Francisco, Cal., died in London, England, April 28th.

Theophile Adrien Ferron died at Paris, France, on May 6th. He was born in 1830, was educated at the Polytechnic School, and entered the engineer service of the French army in 1852. He served in the Crimea, in Algeria and in the Franco-Prussian war. He passed through all the different grades until he became a general of division, in 1886. He was Minister of War under Premier Rouvier in 1887. He wrote several works on military subjects. He was made a grand officer of the Legion of Honor in 1887.

Campbell B. Herron, a well-known iron manufacturer of Pittsburgh, died at his residence in Allegheny City, May 5th. Mr. Herron was born in 1828, received his education in the common schools, and commenced his business career as a shipping clerk with the firm of Spang & Co., who were engaged in the iron business in Pittsburgh more than 50 years ago. In 1858 Mr. Herron organized with a junior member of the Spang family the firm of Spang, Chalfant & Co., into which the older firm afterward merged. In this concern he was a partner and maintained his interest up to his death. For some years Mr. Herron was chairman of the Wrought Iron Pipe and Tube Manufacturers' Association, and was also chairman of the Spang Steel and Iron Company.

## SOCIETIES AND TECHNICAL SCHOOLS.

Colorado Scientific Society.—The regular monthly meeting was held on the evening of May 7th, in its rooms in the Boston Building, Denver. Prof. Wm. C. Strong read a paper on "The Sanitary Chemical

Character of Some of the Artesian Waters of Denver."

Canadian Society of Civil Engineers.—The officers for the current year are as follows: P. Alex. Peterson, president; Alan Macdougall, P. W. St. George and H. Wallis, vice-presidents; Prof. C. H. McLeod, secretary; K. W. Blackwell, treasurer; W. McNab, librarian. Directors: H. Abbott, P. S. Archibald, J. D. Barnett, H. T. Bovey, O. Chanute, G. C. Cunningham, H. Donkin, G. H. Duggan, J. Galbraith, G. H. Garden, W. Haskins, H. A. F. McLeod, H. Peters, H. N. Ruttan, L. A. Vallee.

American Society of Civil Engineers.—At the meeting of Wednesday evening, May 2d, the first paper read was by M. Meigs, on the "Use of Canvas in Water-tight Bulkheads." The writer considers this method especially adapted to the following cases: The construction of coffer-dams, especially on rock bottom; the suppression of leaks in embankments, such as levees during high water, and the suppression of leaks in foundations, such as important reservoir dams. It has long been in use for raising sunken vessels on our Western rivers. The second paper was by Addison M. Scott, on the "Great Kanawha Improvement, Tripping Bars and Improved Hurters on Chanoine Wicket Dams," etc. This paper was largely a discussion on the paper presented by F. Guillaun on navigation works in France, presented at the Engineering Congress. Both papers were followed by brief discussions.

Engineers' Society of Western Pennsylvania.—The first meeting in the society's new quarters, Carnegie Lecture Hall, Pittsburgh, was held on the evening of the 19th of April. Fitting memorials were read and resolutions passed relating to the death of Mr. Jas. B. Scott and the recent secretary, Mr. R. N. Clark. Mr. Gustave Kaufman presented the report of the sub-committee on pure water supply for Pittsburgh and Allegheny, and in accordance with its recommendation a standing committee was appointed consisting of Messrs. Davison, Harlow and Kaufman to consider matters relative to a pure water supply.

Dr. Phillips exhibited specimens of large glass tubes made by the Appert process and read a paper pertaining to their manufacture.

Mr. Thos. H. Johnson read his paper entitled "The Theory of Dynamic Work Applied to Static Forces." An animated and lengthy discussion followed in which Messrs. Swensson and Deforth took a leading part in opposition to the views expressed by the author of the paper.

Technical Society of the Pacific Coast.—At the regular April meeting in San Francisco Dr. Frederick Solatke presented and read a paper, the "Origin of Petroleum," in the opening of which he said that the various views on the origin of petroleum can be classified into two distinct groups: 1. The hypothesis of inorganic origin, or the so-called "emanation hypothesis." 2. The hypothesis of organic origin of petroleum. This latter is divided into three distinct theories: Hypothesis of animal origin, hypothesis of vegetable origin, and hypothesis of animal and vegetable origin. He then proceeded to summarize the various theories which have been brought forward. A discussion of some length was held in respect to a proposed technical congress to be held in San Francisco in June of the present year, under the auspices of the Technical Society of the Pacific Coast, at which would be presented and discussed papers on the scientific, industrial and economic interests of this State. The proposition being favorably received, a resolution was passed requesting the President to appoint a committee of two members to act in conjunction with himself and the Secretary of the Society to consider the expediency and practicability of holding such a congress. Messrs. G. W. Dickie and John Richards were appointed as such a committee.

Foundrymen's Association.—The regular monthly meeting of the Foundrymen's Association was held in Philadelphia May 2d., with a good attendance of members. The Executive Committee reported proceedings of last meeting. Its members believed that the discussions on "Chemistry for Foundry Practice" would bring about good results finally, but they thought the subject a little deep for the average foundryman, as he did not understand the matter from a chemical point of view. He selected his iron by fracture and general appearance, and then found out how strong it was by the use of a testing machine, as all specifications of orders for castings were given out subject to strength. The foundryman, as a rule, had not found it necessary to go to the expense of employing a chemist. How long such a condition would last they did not know, but it seemed that sooner or later they would follow in the footsteps of car-wheel and steel manufacturers, whose entire success had been brought about by chemists. A paper on "The Erratic Square Test Bar: A Study of the Physical Analysis of Cast Iron," was then read by Thos. D. West. W. C. Henderson then read a paper by John E. Fry, of Pittsburgh, on "Foundry Chemistry." Both papers were discussed by the members present.

Boston Society of Civil Engineers.—At the regular meeting Messrs. William T. Barnes and Sumner Hollingsworth, of Boston, and Mr. William F. Williams, of New Bedford, were elected members. The following by-law was adopted: Any member of any other society in the association of engineering societies, in good standing, may become a member of this society, when duly elected as described in By-law 7

without paying the entrance fee, and with a release from the annual dues for such period, not over one year, as he may show by certificate he has paid in advance in the society from which he comes.

The Committee on Weights and Measures submitted its annual report, bringing to the attention of the society the latest information on the subject. Mr. William B. Fuller read the paper of the evening upon "Street Grades and Intersections." Mr. A. L. Plimpton, Chief Engineer of the West End Street Railway Co., then gave a very interesting account of the experience of that company in welding its tracks electrically. Mr. Plimpton illustrated his remarks by blackboard sketches and specimens of the rail joints as welded.

At the next meeting of the society, to be held May 16th, 1894, Mr. F. P. Stearns, Chief Engineer of the State Board of Health, will describe the proposed improvement of the Charles River, as recently recommended to the Legislature of Massachusetts. Mr. F. C. Coffin will read a paper entitled "Experiments on Cement Joints for Pipe Sewers."

Engineers' Club of St. Louis.—At the regular meeting, May 2nd, the secretary reported that the Boston Society of Civil Engineers had adopted a by-law providing for exchange of members with other societies in the association. The following societies had previously taken similar action: Civil Engineers' Club of Cleveland; Civil Engineers' Society of St. Paul; Wisconsin Polytechnic Society; Montana Society of Civil Engineers, and the Engineers' Club of St. Louis, where the movement originated. The secretary read a letter from the English Society of Engineers thanking the Associated Engineering Societies for their entertainment during the Columbian Exposition. Mr. Robert Moore then read a paper on "The Filtration of City Water Supply in the Light of Recent Researches." He described primitive water supplies, and explained the development of the public water system for distribution over wide areas under pressure. Mr. Moore placed the cost of a filter system for the city of St. Louis at \$2,000,000, and the annual expense of operation, maintenance and interest charges at \$150,000. As the filtration of water supply would undoubtedly reduce the number of typhoid cases by half, to say nothing of other advantages, the adoption of filtration for water supply was strongly recommended. In the discussion, Mr. Holman stated that plans were being made and experiments conducted upon various systems. The water department would be ready to act in the matter when funds were available. Those who participated in the discussion were Messrs. Seddon, Kineally, Crosby, and Drs. Green, Ravold, Sanger and Bryson.

International Congress on Internal Navigation.—The sixth meeting will be held this year at The Hague, Holland. The Congress will be opened July 23d, 1894, at the Academy des Beaux-Arts, and will continue for six days. Members of the Congress will be delegates from governments and delegates accredited from chambers of commerce, railroad and navigation companies and other transportation associations, technical and scientific societies, and other interested persons. The sessions of the Congress will comprise general meetings, meetings of sections and of excursions. The following subjects will be discussed: 1. Construction of Navigation Canals Affording Operation at High Speed. 2. Plant and Ports of Navigation. 3. Means for Preventing Ice Blockades. 4. Traction and Propulsion upon Canals, Canalized Rivers, and Rivers of Natural Flow. 5. Tolls on Navigable Ways. 6. Relations Between the Configuration of Rivers and the Depth of their Channels. 7. Regulation of Rivers at Low Water. Forty-one papers have already been received from engineers and others. Two excursions are now announced to take place during the week of the Congress—one to Rotterdam and the other to Amsterdam. There will also be three other excursions held after adjournment of the Congress: one to the Haarlem-Mer and to several places below sea level; one to the new mouth of the Meuse, and the third to the Zuiderzee, the Island of Urk and the Province of Overysel.

Membership in this Congress, which carries with it the papers and discussions printed in either French, German or English and the right to take part in the meetings and excursions, can be secured at a cost of \$5. Subscriptions may be sent to the Secretary of the American Society of Civil Engineers, at 127 East Twenty-third street, New York City.

## INDUSTRIAL NOTES.

The Stewart Iron Company has put its furnace at Sharon, Pa., into blast.

The Muncie Iron and Steel Company has started up its new merchant iron mill at Muncie, Ind.

The Enterprise Boiler Works, Youngstown, O., are running full time, with a number of orders to fill.

The Berlin Iron Bridge Company, East Berlin, Conn., paid in April the regular quarterly dividend 1½% on the stock.

The State Ore Sampling Company, of Denver, Colo., has issued a handy little book containing the value of metals and coins, and other useful information.

The Industrial Works, Bay City, Mich., have received the contract for a 20-ton electric traveling

crane for the Lincoln Foundry and Machine Company, of Pittsburgh.

The Carborundum Company, Monongahela City, Pa., is filling orders for carborundum wheels for the rifle works at Dantzig, Germany, and for the Navy Department in Greece.

The Oil Well Supply Company, Pittsburg, recently made a shipment of drilling machines for the new Kansas oil field, while a large shipment of the same kind was also recently made to Japan.

The Sylvan Steel Company, a new organization, proposes building steel works and a rolling mill on Sylvan Island, near Davenport, Ia. Mr. G. Watson French is president; I. B. Carson, secretary and treasurer.

The Youngstown Bridge Company is building four spans for the Richmond & Danville Railroad, and has also been awarded the contract for the State Exposition Buildings at Springfield, Ill., and the new Lyceum Theatre at Memphis, Tenn.

The Harrison Safety Boiler Works, Germantown Junction, Philadelphia, Pa., has issued a neat little circular descriptive of the Cochrane feed water heater. Numerous cuts are given showing sectional views and connections.

In Roanoke, Va., May 3d, the stockholders of the Roanoke Machine Works elected the following board of directors: F. J. Kimball, C. H. Clark, Joseph H. Doran, W. C. Bullitt, Joseph H. Sands, W. G. McDowell and M. C. Jameson. The directors re-elected the present officers.

The annual meeting of the stockholders of the Fuel Gas and Manufacturing Company of Pittsburg was held in that city last week. The following directors were elected: George Westinghouse, president; Lemuel Bannister, John Caldwell, Robert Pitcairn, H. H. Westinghouse, J. R. McGinley and A. L. McKaig.

The Saltsburg Rolling Mill Company of Saltsburg, Pa., has been formed with a capital stock of \$100,000. The directors are Samuel A. Gourley, Glibreth Still, W. W. Leech, of Apollo, Pa., Wm. F. Still, of Saltsburg, Pa., and Wm. F. Leason, of Kittanning, Pa. The new concern will establish a plant at Saltsburg, near Pittsburg, on the Baltimore & Ohio road, for the manufacture of iron and steel sheets for tinning purposes.

A charter has been granted to the Pyrites Chemical Company, at Norfolk, Va. The capital stock will be \$1,000,000. The directors of the company will be Chas. R. Flint, Wm. M. Ivins and Dr. A. R. Ledoux, of New York City; Capt. Boyd Smith, of Washington, D. C., and Wm. H. White, of Norfolk, Va. The object of the company is to mine pyrites for its use and for sale, and to manufacture acids, superphosphates and heavy chemicals generally. Captain Smith will have general management of the interests of the company, and Mr. A. D. Ledoux, a chemical engineer of Richmond, Va., will have charge at Norfolk, Va., where the works will be erected.

The Berlin Iron Bridge Company, of East Berlin, Conn., will furnish two large bridges for the new terminal facilities for the New York, New Haven & Hartford Railroad, at Providence, R. I. These bridges will carry 16 tracks over Gaspee street, Promenade street and Woonasquatucket River. The bridges will be plate girders resting on abutments on the street line and columns on the curb line. There will be no floor beams or stringers used, but in the place of these will be a metal floor supporting ballast in which the ties and rails will be bedded. The work will require about 4,500 tons of open hearth steel material. The Berlin company is to be allowed six months in which to complete the work.

A department of physical tests, with Mr. Charles F. McKenna as director, has been added to the analytical and assay laboratories of Dr. Gideon E. Moore, New York City. The plant includes a Riehle U. S. Standard, screw-power, testing machine of 100,000 lbs. capacity, with all accessories requisite for exact determinations of tensile, transverse and compression strength of wrought and cast iron, steel, alloys, timber, bricks, cement, concrete, building stone, cordage, etc., etc. The plant also includes a Riehle U. S. Standard cement testing machine of 2,000 lbs. capacity. In addition the laboratory is provided with special apparatus for testing the strength of textile fabrics, and for determining the lubricating value of oils, etc.

#### MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

#### GENERAL MINING NEWS.

##### Oil.

The "Derrick's" monthly report of new wells completed in April shows in the New York, Pennsylvania and West Virginia a total of 261 new wells with a production of 7,412 barrels daily. There were 564 wells in progress April 30th. In the Buckeye field in Ohio the report gives 205 new wells with 5,586 barrels production, and 225 wells drilling at the close of the month. The Southeastern Ohio field shows 17 new wells with 172 barrels production, 14 new wells in progress. In the Indiana field there were 80 new wells completed, with a daily production of 3,175 barrels. There were 96 wells under the drill at the close of the month.

##### ALASKA.

Alaska Treadwell Gold Mining Company.—The April statement of this company gives the following results: Shipment of bullion, \$25,216; ore milled, 13,110 tons; sulphurets treated, 134 tons; of bullion there came from sulphurets, \$3,229. The estimated gross expenses for the month have been \$19,301. The net profits available for dividends for the first 11 months of the present financial year are about \$394,000.

##### ARIZONA.

###### Graham County.

Arizona Copper Company.—The directors in England have invited applications for £100,000 of terminable debentures bearing interest at 5%. These debentures are to be issued for the purpose of repaying to the Arizona Trust and Mortgage Company the amount of its issue of 5% debentures (£50,000), and of its prepaid capital (£30,300), and of detraying the cost of new works recently erected at Clifton. The prospectus states that besides having the general obligation of the company the debentures will be secured by an assignment of the un-called capital and by mortgages forming a first charge upon the company's real properties, including the Arizona & New Mexico Railroad. The debentures will be issued in three series, repayable in 5, 7 and 10 years. They will be in sums of £20, £50, £100 and £500. The prospectus adds that after the payment of interest on the debentures there will remain an annual margin in the accounts of £31,817, on the basis of last year's returns.

##### ARKANSAS.

Memphis, Heber Springs & Northwest Arkansas Railway Company.—This company has been organized in Little Rock by the following gentlemen: J. R. B. Moore, of Heber, Cleburne County; R. P. Hitchcock, W. H. Ragland, F. P. McMullen, C. Ben Meyers, State Land Commissioner; S. C. Dowell, of Walnut Ridge, and S. C. Martin, of Little Rock. The length of the proposed road is estimated at 32 miles, beginning at Bald Knob, where a connecting link is to be made with the Memphis Branch of the Iron Mountain Road, and running north through White County to Heber, the county seat of Cleburne, all in Arkansas. The object is to develop that section of North Arkansas rich in mineral, timber and agricultural lands, and an extension later into the mineral regions of upper White River. They propose to build the road to Heber Springs this year.

Some years ago a preliminary survey was made for a road over the same route, but a new survey will be made just as soon as a chief engineer and corps can be selected to enter the field.

The estimated cost of the road is placed at a half million dollars. J. R. B. Moore is president, R. P. Hitchcock, vice-president; C. Ben Myers, secretary, and W. H. Ragland, treasurer.

##### CALIFORNIA.

The California Debris Commission has issued a permit to the Kate Hayes Company to work the Manzanita mine, near San Juan, Nevada County, by the hydraulic process. A permit has also been issued to John Melton to operate the Stewart hydraulic mine, near Placerville. The required restraining works have been constructed in both instances. The business of the commission is very light this spring. The only application received during the past month was from Dickhouse Bros. to operate the Nip and Tuck mine at Bangor, in Butte County.

(From our Special Correspondent.)

There is a decided tendency toward a mining boom in Southern California this year. Never within 10 or 12 years has such general interest been manifested as is shown at present. There are more new enterprises, and apparently substantial ones, than ever before. In Los Angeles county renewed activity has developed in the placer district along the Soledad canyon, and these are likely to lead to operations on a more extensive scale. Placer mining is being successfully carried on, too, in Lytle Creek, where miners are hydraulicking and ground sluicing with good results. Some men are said to be working up on Mount San Antonio, 8,000 ft. or more above the sea, on both vein and placer mines. The oilfields near Newhall, which have been yielding a profitable product for years, are now being vigorously prospected and the known extent of the basin is likely to become greater. The wells are from 300 to 900 ft. in depth.

Some work is in progress at Acton and on Mount Gleason in this county, but the operations are present limited. In Kern County the new district

about Red Rock and Goler is promising good results. A large number of men have stampeded to the new field and many are doing well in the placers. Water is scarce at present, but arrangements are being made to pipe it to the district, and as the field is large and as yet quite unknown, it is likely to come into greater prominence than it now has. Prospectors searching for veins have found many. Some of them are well defined and contain (besides gold) copper, lead and other base metals. Some of the larger veins are what may be called infiltrated deposits, in which the quartz occurs as a partial replacement of the much altered country rock. The ores of this class have a talcose appearance and unctuous feel, but still show the original crystalline structure of the normal rock inclosing the deposit. Such veins are usually unreliable.

On the north side of the San Bernardino range in San Bernardino County, at Holcomb, Bear and Lone valleys, mining is receiving more attention than for some time. The Rose mine is running steadily with satisfactory results. The old Morongo King is being reopened, and the outlook is favorable to a lively season. At Vanderbilt, 40 miles from Goff's Station, the new mill is running. Vanderbilt is a district now four years old, but it has some of the most promising prospects in the country. Among those largely interested in the district are Green Cambell, W. S. Lyle, and Mackay and Flood of Bonanza fame. The mill at Ibox is about ready to start up. There is some rich gold rock in the Ibox mine. At the Needles there is now talk of building a large smelting plant to cost \$250,000. Yuma talks in the same strain. It is difficult to say which, if either, of them will materialize. The smelter talked of for Los Angeles is a scheme of the past. A bare timber frame marks the spot. The project is being revived, however, quietly, but San Pedro or Santa Monica are spoken of as the most feasible points. This may simply be an outcome of the agitation in the Colorado River towns.

In Riverside County, Halesworth and McRae are working at Virginia Dale, 30 miles south of Cadiz Station. There are a number of mining districts in that region lying between the Atlantic & Pacific and the Southern Pacific roads, which require capital and energy, with experienced management. The mines are there, but wood and water are absent. Water can usually be obtained by sinking in the dry washes, and petroleum is looked to for fuel. It is claimed that three barrels of oil will make as much steam as a ton of good coal. In many of these desert camps oil can be laid down at from \$4 to \$8 a barrel. This would be equal to paying \$12 to \$16 for a ton of coal. All of the mines will be worked in the future and a large amount of gold produced. The districts are Twenty-nine Palms, Virginia Dale, Monte Negras and Eagle Mountain. The veins are from one to four feet wide and the ore is high grade.

In San Diego County on the Colorado River at Pecacho, a large pumping plant is in operation raising water to work placer ground by hydraulic method. In the Cargo Muchacho district 30 miles north of Fort Yuma, the Cargo Muchacho and Gold Rock mills are running. This district has been worked for a great many years and is but little known yet. Water is pumped to the district 14 miles from the nearest point on the Colorado River.

A small mill is working in the Lang mine 20 miles north of Indio. Dr. Jayne, of medicine fame, is operating placer mines on the Colorado River 20 miles above Yuma. Nothing is heard this year of the lost "Pegleg" mine, but two or three years ago there were over a hundred men searching over the broad expanse of burning sand for this ignis fatuus. Four of them lost their lives and one had the misfortune to blow one of his hands off with giant powder.

##### Mono County.

The official letter from the mine for the week ending April 29th says: East crosscut from Burgess winze, 50 ft. below the 200 l level, was extended 7 ft. South drift from same point as above crosscut was extended 5 ft. There are about 12 in. of fair-grade ore in the face. North drift from No. 1 west crosscut, 300-ft. level, was extended 4 ft. The ore in the face is from 8 to 10 in. wide and of good grade.

##### COLORADO.

Syndicate.—This mine, near Silverton, is working 75 men and shipping high grade silver ore.

##### Dolores County.

Rico-Aspen Consolidated Mining Company.—This company has purchased all the ground rights and effects of the Rico Townsite Company, which includes all the mineral rights purchased by that company from the town in 1892.

##### Eagle County.

Ground Hog and Belden.—These mines, according to advices from Red Cliff, are the most active on Battle Mountain. On the former the leases are all looking well, the Nottingham lease in particular, which last week opened up a large ore cave. The Belcher records another strike in the left-hand crosscut from the 600-ft. level. The full extent of the strike is not yet determined, but the body now is said to be 12 ft. thick of sand carbonates and increasing. The lime crosscut to the right of the 600-ft. level is going rapidly forward.

##### El Paso County.

Amazon Mining Company.—Judge Rucker has decided the injunction suit of Steele and this com-

pany vs. Lennox, Giddings and others. The judge restrains Lennox, Giddings and the Battle Mountain Company from selling, conveying, or in any way encumbering the Anna Lee and Doubtful lodes, or from assigning or transferring the lease which they hold on the above two lodes; also restraining E. W. Giddings from default in the case of Giddings vs. Lennox, which is the White House-Doubtful case, and the court also refuses the application to strike the amended complaint of the Amazon company from the file. An important point for the defendants, however, is this, that the judge refused to grant the application restraining the lessees, Lennox and others, from working the two lodes, but he gives the Amazon people permission to seek another injunction on this particular point.

#### Hinsdale County.

Golden Fleece.—An 8 ft. vein of tellurium and ruby silver has been encountered in the third level of this property. The mine is now employing 30 men, and no especial effort is being made to take out ore, the work being for development purposes. The monthly shipments, it is said, run over \$30,000 in value. The owners are G. W. Peirce, Dr. S. K. Fisk, D. K. Lee, E. A. Kent, Biddle Reeves and S. S. Kennedy, all of Denver.

#### Lake County.

Advices from Leadville state that an important mining enterprise will be commenced within a very few days. It consists of the sinking of a deep shaft by a large syndicate here to catch the ore bodies which underlie the city. A lease for 19 acres of the Pearl placer has just been given to Messrs. H. I. Higgins, president of the American Smelting Company, R. D. Estey of the Union Leasing and Mining Company, and S. W. Mudd of the Small Hopes Mining Company. This syndicate will, it is said, prosecute work upon a large scale and has already commenced preliminary arrangements for sinking the new shaft. This shaft will be located within the city limits and within a short distance of the old Sixth street shaft.

Belle of Colorado Group.—An excellent lease has been secured on this group which consists of the Belle, Treasure, Devlin and Monterey claims. The old shaft on the Treasure is being sunk rapidly. It is thought that a further sinking of 50 ft. will disclose an ore body.

Big Chief.—Owing to the low price of silver this property has now closed down entirely. The Glass-Pendery, owned by the Iroquois Mining Company, has closed down entirely for the same reason.

Big Six Group.—This consolidation on Breece Hill is shipping through the Nettie Morgan shaft.

Bison.—Very little development work is being done. There is plenty of iron in sight, but with silver at the present price the management does not care to ship.

Breece Hill.—The Leadville gold belt section shows the greatest activity. The Ibez Mining Company with the Little Johnnie mine is meeting with success. The Golden Eagle Company has leased its property, and is receiving handsome royalties. The Fanny Rawlins people have gotten into an ore body that promises well. The Garbutt has a good streak of ore.

Early Rose Group.—This group includes the Early Rose, Luckv Boy and Maid of Erin claims lying at the foot of Dwyer Mountain. Work is to be resumed very soon, as good indications of mineral have been found from previous work performed.

Far Down.—After an idleness of two years work was resumed on this property last month, and a fair body of lead ore has been encountered, from which steady shipments will be made.

Leadville and Chicago Gold Mining Company.—F. L. Roubenush, Robert W. English and J. S. Fillmore have filed articles of incorporation of this company, with a capital stock of \$1,000,000, divided into 200,000 shares. The gentlemen mentioned above and J. A. Vickers and W. A. Watkins are the directors, and will have charge of the affairs of the company for the first year. While the company is to carry on work in Lake county, their principal office will be in Denver.

Maid and Henriett.—A heavy flow of water is being handled by the new compound pump recently placed in the property. It is expected to continue sinking, as the water can now be readily controlled.

#### Pitkin County.

Little Annie Mining Company.—The annual meeting of the stockholders of this company was held in Aspen, on May 31st. There were 1,832,068 shares of stock voted, of which B. Clark Wheeler and his friends voted 1,078,168 and the Woodbury-Hagerman combination 753,205. Mr. Woodbury received the total vote of the meeting excepting 1,000 shares, which went to R. J. Bolles. The new directory is as follows: R. W. Woodbury, E. W. Young, J. W. Atkinson, B. Clark Wheeler, George B. Sherman. A resolution offered by L. S. Smith instructing the directors to begin suit to cancel certain obligations of the company made to secure funds advanced, was referred to a committee, which is to report at an adjourned meeting June 5th. Work has been resumed on the famous tunnel which is destined to drain Richmond Hill when completed. B. Clark Wheeler is the projector of this enterprise. The Little Annie property will be worked through this tunnel at a saving over the present cost of operation, and the mine is now preparing to push work extensively. A

concentrator is being erected near the mouth of the tunnel, which will be ready for operation within a short time, most of the machinery being on the ground now.

Smuggler Mining Company.—This company last week hoisted to the surface intact a piece of ore weighing 3,300 lbs., and containing a silver value of \$25,000. According to the local papers there is a large amount of this ore in sight, but owing to the low price of silver no attempt is being made to increase the output beyond what is taken out in the course of development work. A new plant of machinery is arriving, and within a short time the old hoister will be replaced by a heavier one. One of the largest pumps in the camp is being placed in position to handle the heavy flow of water recently encountered.

#### Pueblo County.

Pueblo Smelting and Refining Company.—This company re-elected its old board of directors at its annual meeting held on May 2d.

#### Saguache County.

Amethyst.—During April this mine, at Creede, averaged 40 tons a day in shipments.

#### FLORIDA.

##### Levy County.

Portland Chemical and Phosphate Company.—This company has closed a contract with Gen. E. B. Bailey to mine on its property at Albion at a fixed rate per ton. The contractor has put 75 at work removing overburden and doing preparatory work.

Swain & Dixon Mine.—This mine, near Phoenix, is being opened up on a large scale. Some 400 tons of rock have already been taken out.

##### Marion County.

Stonewall Phosphate Company.—This company has completed its new plant at Blue Springs, and work is going on steadily.

Victor Phosphate Company.—This company, at Newton, has a large force of men at work. Two new beds of high-grade rock have been opened and are being thoroughly explored.

##### Polk County.

Fort Meade Phosphate Company.—Mr. Kenlo, lessee of this company's property at Fort Meade, has completed and started his new crusher, which has a capacity of 100 tons daily.

#### GEORGIA.

##### White County.

Sal Mountain Asbestos Company.—The new machinery is now in position, and within a week the plant will be in operation. The plant was recently described in the "Journal."

#### IDAHO.

##### Boise County.

Banner Tunnel.—The contract to run the long tunnel in to a point 3,300 ft. from the mouth, will be completed this month, when the company will take charge and reach the Banner mine with all possible haste. Superintendent Barney intends to start the mill as soon as the mine can be put in shape for yielding ore in sufficient quantities to keep it going. The company contemplates putting an electric plant on the Payette River to furnish power for the mills and hoisting works.

Bella Mining Company.—In this company's Edna mine in the Beaver district, recently, a cross-cut from the long tunnel opened up a 5-ft. ledge of ore that will mill at least 100 oz. of silver per ton, besides gold. The vein was thought to be the Edna, but it is now ascertained that it is not the Edna, but a parallel vein.

##### Owyhee County.

Banner Gold Mining Company.—This company, says the Silver City "Avalanche," owns a group of claims which is located in Coffee gulch, on the south slope of Florida mountain, and consists of the following claims: Star Spangled Banner, Rajah, Mammon, Harmon, Cuckoo and Rescue. The company was recently organized and is composed of California capitalists. Mr. Dave Farmer, who was largely interested in the property and who negotiated the deal, is in charge of the company's affairs here, and is superintending the development work now in progress. The company is now reopening the old tunnel driven five years ago on the Banner claim, and is running a crosscut to the Rajah.

Black Sack.—The mill has been closed down for repairs, which will take about two weeks.

De Lamar Mining Company, Limited.—Capt. John W. Plummer's report for March, after giving an account of the prospecting work done, says: The level on the clay dyke on the 7th east has to all appearances entered the main section of ground, that is (allowing for the sinuosities of the clay dyke) a continuation of the productive blocks found at the 3d, 4th and 5th levels. The face of the level (7th east, produces more or less ore, and of good grade. We have extended a raise above this level and towards No. 5 level for a distance of 118 ft. We are therefore prepared to further develop this section at any time by intermediate drifts or stoping. The other sources of shipping ore are the 77 ft. vein on 7th level, 77 ft. vein on 8th level, 7th vein on 7th level, 5th vein on 8th level, and various stopes above the 5th level east.

The work in the milling department has for the month past been steady. The clean up at the end of month and the repairs consumed the usual time (about 16 hours). Table of work performed for March shows: Wet tons crushed, 3,639; dry tons crushed, 3,268; assay value of the pulp in gold, \$22.82, and in silver, \$6.39; assay value of the tailings in gold, \$3.76, and in silver, 94 cents; gold produced, 2,867 fine oz.; silver produced, 31,327 fine oz. The value of gold produced was \$57,349; and of silver \$18,796; of ore shipped during the month \$13,500; miscellaneous revenue was \$324, making a total of \$90,029. The costs and expenses for the month were \$39,012, leaving an estimated profit for the month of \$51,017. The heavy and deep snow has stood in the way of doing work on the outside. The Pelton wheel is now in operation. The deep snow prevented its early commencement, but the company will be compensated by being able to operate it longer than heretofore owing to a greater abundance of water than usual.

Trade Dollar.—A large and valuable body of ore was cut in the face of the adit tunnel early this week says the Silver City "Avalanche," demonstrating beyond question that the vein is a true fissure. The foot wall is solid granite and the hanging wall porphyry, both firm and smooth, and from 5 to 6 ft. of ledge matter intervening. There are fully 2 ft. of solid quartz in the face, which will mill from 300 to 400 oz. of silver per ton. In the short line air drills are being worked and connections will be made within a day or two, which will shorten the tunnel about 500 ft. Miners are at work in the 170-ft. level and are sending down ore. A force of ore-sorters is working on the dump, sacking rich rock for shipment. The tram from the tunnel to the mill is being shoveled out and put in shape for running ore. Wm. Rickenberg, who has been put in charge of the mill, is now engaged in getting it in shape for a long run. Mr. Rickenberg will experiment with a steam ejector for running the slime from the tanks into the pans.

##### Shoshone County.

Tiger.—This mine, says the Wallace "Miner," continues working as usual with 50 men. This week they suspended the sinking of the shaft temporarily on account of an increased flow of surface water. The shaft is now 45 ft. deep from the seventh level. Drifting still continues west on that level and the ore still holds out well, the vein being about 11 ft. in width in the breast. So far they have not suffered any for lack of fuel or running timbers, but they are getting both pretty well cleaned up. Both the hoisting plant and the pumps are now utilized to get rid of the flow of water incident to the spring season. There are 500 to 600 tons of fine concentrates all in one pile.

#### INDIAN TERRITORY.

Choctaw Coal and Railway Company.—It is officially denied that arrangements have been completed by this company for the construction of the gap in its railroad between South McAlester and Oklahoma, and the building of a road from Wister Junction, its eastern terminus, to Little Rock or Memphis.

#### MARYLAND.

##### Alegany County.

Reports from Frostburg state there is a likelihood of all the coal miners in that district joining the strike. There is a rumor that some of the mines which are operating may reduce their working force in any event, but this is yet subject to confirmation.

Swanton Mines.—This coal mine has been leased by Walsh Brothers, of Lonaconing, from the owners, S. S. Lee & Son. The lessees are making preparations for active work.

#### MICHIGAN.

##### Copper.

There was some tall hoisting done at No. 3 shaft, North Tamarack, April 28th, says the "Native Copper Times." In 12 hours 315 skips were hoisted a distance of 3,500 ft. Each skip contained 2½ tons of rock, and in doing this work the skip traveled about 208 miles, or over 17 miles per hour. This beats all former records, as far as reported, and was done under charge of Captain Erick. The best previous record at this shaft was made under Captain Waters, when 278 skips were hoisted in the same time. Trammers at No. 10 shaft, South Hecla, say the above is pretty good, and that they sent to dump 229 skips in 9 hours, equivalent to 305½ skips in 12 hours, or 9½ skips under the record made at North Tamarack.

Atlantic Mining Company.—The April output of this mine is 208 tons 1,535 lbs. copper.

Central Mining Company.—The product for the three months ending March 31st is reported at 150 tons of mineral.

Quincy Mining Company.—The April report shows a product of 800 tons of copper for the month.

Tamarack Mining Company.—The new shaft rock-house at No. 3, North Tamarack, is completed, and ready for the machinery, which will be put in as soon as it arrives. The locations for two additional shafts to be sunk on this property, provided the North Tamarack shafts strike the conglomerate rich, have been staked out. One of the proposed shafts will be sunk about a quarter of a mile west of the Red Jacket shaft, and between Nos. 2 and 3 Tamarack shafts, and the other is to go down a short distance north of No. 4 shaft, North Tamarack.

**Wolverine Mining Company.**—In April this mine turned out 80 tons 285 lbs. copper.

**Iron—Gogebic Range.**

**Tilden.**—Work has been resumed at this mine, the receivers having accepted orders for 100,000 tons of ore.

**Iron—Marquette Range.**

**Pittsburg & Lake Angeline Mining Company.**—Last week this company put on a force of 125 men, and will add 75 more as fast as they can be profitably employed. More shafts will be worked.

**Iron—Menominee Range.**

**Chapin Iron Company.**—The reorganization of this company has been so far completed that work has been begun at the mine, which has been closed down since the Schlessinger failure last August. A force of about 500 men will soon be employed.

**MISSOURI.**

**Jasper County.**

(From our Special Correspondent.)

Joplin, Mo., May 6.

We must again report a dull week in the mining industry of this lead and zinc district. Heavy rains retarded the production of all of the small operators and particularly in Possum Hollow, where everything was flooded and a large damage caused by the caving in of the mines. This particular district has been a heavy producer of lead and many of the mines were quite shallow in depth and operated by small companies and prospectors who will now suspend operations for some time. N. E. Perry, of Casterville, shut down his pumps the latter part of the week, which threw about 100 miners out of employment. The operators here are beginning to realize the fact that they must unite their efforts and devise ways and means to increase the use of the metal produced from zinc ore, for if some united effort is not put forth in this direction the crude zinc ore of this district will soon be a drug on the market, and the price will be on the decline. At the present time the average price paid for ore is not above \$16 per ton for the best grades, and the low grades only bring from \$12 to \$14 per ton. The fact is that the ore cannot be produced at such prices, and owing to the large fields from which it is produced, and the varied conditions under which the mines are operated, the productions cannot at present be controlled by any combinations, so the only thing that will give immediate relief is an increased use of the metal. Jasper County is now building two new large court houses one at Carthage and the other at Joplin, and a movement is on foot to have these buildings roofed with zinc shingles; also two new school houses will be built, and we are informed that the specifications call for zinc shingles. Lead ore remains unchanged at \$18@18.25 per 1,000: Following are the sales of ore from the different camps: Joplin, 934,370 lbs. of zinc ore and 352,500 lead; value, \$13,890; Webb City, 292,100 lbs. of zinc ore and 42,320 lead; value, \$2,708; Carterville, 974,100 lbs. of zinc ore and 136,420 lead; value, \$8,786; Zincite, 68,990 lbs. of zinc ore and 48,910 lead; value, \$1,413; Oronogo, 45,250 lbs. of zinc ore and 75,860 lead; value, \$1,004; Galena, Kan., 1,070,000 lbs. of zinc ore and 126,000 lead; value, \$10,757; Springfield, 90,000 lbs. of zinc ore; value, \$697; Aurora, 1,191,000 lbs. of zinc ore and 200,000 lead; value, \$10,102; lead and zinc belts, total value, \$49,357.

**MONTANA.**

**Dawson County.**

**Box Creek Placers.**—There is some local excitement over a reported discovery of rich placers on this creek near Miles City.

**Jefferson County.**

**Elkhorn Mining Company.**—In this company's detailed report for March the most important statement is that on the 1,350 ft. level south; the cross-cut into the footwall from the north end of the stope has developed a body of silicious and smelting ore which averages 83 oz. and 10% lead for a width of 8 ft. The length of the cross-cut is 51 ft., and the ore occurs at the inside end. The ore is sorted for the smelter and mill. The extension of this body northerly and in the back is now being proved. In the prospecting department the 1,650 ft. level south was advanced in March 216.5 ft.; total length April 1st, 433 ft. During the month two small ore bodies were passed through at points 390 ft. and 410 ft. from the shaft respectively. The outer body was all sulphide, assaying 58 oz. and 20% lead. The inner body was partially oxidized, and assayed 38 oz. It is not yet in far enough to meet the downward extension of the main chute. The total amount of ore hoisted was 2,183 tons. The table of mill work shows for the month: Dry tons panned, 1,055; average assay value, 39.58 oz.; percentage salt used, 14%; value of tailings, 3.61 oz.; percentage saved, 92.75%; silver obtained, 43,692 fine oz.; gold obtained, 33,656 fine oz. The batteries were in service 28 days; the pans 29 days; the estimated value of bullion shipped was \$25,890; and the actual returns for ore shipped \$12,364; making a total of \$38,254. The current expenses, including salaries, labor and supplies, were \$23,562; leaving profit for March \$14,692. During the month everything went on in regular order and the snow began to disappear.

**Silver Bow County.**

**Anaconda Mining Company.**—This company's new converter plant is now completed and has been started. The new building is composed entirely of

iron, and is 380 ft. long by 125 ft. wide and contains 25 converters, with a capacity of turning out every month no less than 10,000,000 lbs. of copper. It is fitted with all the latest improvements, including traveling cranes, hydraulic cylinders for blowing engines, etc. This will give employment to 124 men. The foundations are all of a massive character. The machinery also stands on solid masonry. Messrs. Dwyer & Cosgrove were the contractors for the masonry work in this new building. The machinery was furnished by Fraser & Chalmers, of Chicago. The Berlin Iron Bridge Company took charge of the construction of the iron work, including girders, trusses, braces and outside covering. The plans for everything, including the machinery put in place, were made by H. W. Hixon and J. A. Dyble.

**Ground Squirrel vs. Monitor.**—The Secretary of the Interior has given a decision in this case, which involved the title to a mining location in the Kemper addition to Butte. The decision is in favor of the so called Ground Squirrel location, which was made in 1882, when Mr. Kemper secured a placer patent to the ground. Afterward a quartz vein was discovered, and the Monitor located and a contest at once started against the placer. While the contest was pending the Ground Squirrel was located and worked under the placer title by Mr. Kemper, and was afterward sold to J. B. Haggin. The quartz locators tried hard to get the placer patent set aside, but the decision of the Secretary of the Interior settles the matter in favor of the placer.

**NEVADA.**

**Storey County—Comstock Lode.**

**Alta Mining Company.**—The Alta mill is now working on ore from the mine, says the Virginia "Enterprise," and should the vein in the vicinity of the 725 level continue to widen and improve as rapidly as it has during the past 10 days, the mill will be kept in constant operation.

**Hale & Norcross Mining Company.**—Up to May 1st, 534 tons of the accumulation of Hale & Norcross ore had been shipped to the Brunswick mill, and by this time the remainder has probably gone. The mill began to crush ore on Monday last.

**Sierra Nevada.**—A streak of ore 4 in. in width was cut through from the lateral drift from the intermediate tunnel in the upper workings on Cedar Hill. This ore assays from \$20 to \$30 per ton in gold. The ground now being explored is in a region which has produced a large amount of gold bullion from the surface workings, and a far more important development is among the probabilities.

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

**Best & Belcher.**—On the 850-ft. level we have cleaned out, retimbered and otherwise repaired 45 ft. of the main north drift, making its total length 435 ft. from the shaft. This drift is now nearing the point where there is known to exist a large body of quartz, and in which he hoped to find ore, as this portion of the mine has been neglected in the past. We have now about completed our dead work, and in a few days will be ready to thoroughly prospect this portion of the mine. We have hoisted during the week 38 tons of fair grade ore.

**Crown Point.**—The south drift on the 600-ft. level from the top of the raise from the 700-ft. level is out 89 ft. A large portion of the week has been occupied in timbering. The face of the drift is in porphyry. The south drift from the seventh floor of the 700-ft. level raise is out 85 ft. It has reached and connected with the south stope from the 700-ft. level. The south drift on the 500-ft. level is out 73 ft. The face is in porphyry and low grade quartz.

**Justice.**—The south drift from the bottom of the winze from the Blaine tunnel has been advanced 14 ft., making its total length 102 ft. The face shows a width of 6 ft. of fair grade ore. The Taylor mill was started up yesterday, crushing ore from the mine.

**Savage.**—On the 1,050 level the north drift from the shaft station was advanced 6 ft.; total length, 88 ft. At a point in this drift 45 ft. from the station they have started east crosscut 1 and advanced same 12 ft.; face in porphyry. The upraise in the north drift has been carried up a total distance of 24 ft. The top is in quartz giving low assays. On the 1,500 level the north drift from the shaft was advanced 17 ft., making its total length 195 ft.; face in porphyry and quartz. From the face of this drift they have started an east crosscut, No. 2, and advanced the same 5 ft.; face is in quartz and porphyry giving low assays. During the week they have hoisted 35 cars of ore. Car samples average \$40.25.

**Segregated Belcher.**—The west crosscut from the end of the north drift on the 1,150 level has been carried to a total length of 25 ft., where it reached the footwall and was discontinued. Opposite it an east crosscut has been started and is now out 8 ft. The face is in porphyry and bunches of low grade quartz. There is no change of moment to report of the stope from the south raise, 1,150 level.

(From our Special Correspondent.)

**Belcher Mining Company.**—The draining and repairing of the main north drift, 850 level, has been completed, and is now closely approaching the point where a large body of quartz is known to exist, and where it is hoped ore of good quality may be found. Detailed statements regarding the recent find have not been forthcoming in the weekly reports, but, as heretofore stated in the "Engineering and Mining

Journal," it was of such a nature as to warrant the belief that a valuable find may be developed in the near future. The portion of the mine now being opened has been neglected hitherto, and it is proposed to thoroughly prospect it. With this end in view a night shift has been put to work.

**Consolidated California & Virginia Mining Company.**—At the delinquent sale held this week only 6,107, out of 216,000 shares forming the capital stock, were sold. This, in some measure, indicates the interest being taken just now in the bonanza mine. The reports being received each day from the lode all tend to inflame the public mind, and, if they are fully warranted, indicate that the old mine may have a new lease of life. The ore body struck on the 1,650 level is increasing both in magnitude and in value. The ore is said to be making away from the old workings toward the west and south into new ground, and so its boundaries have yet to be defined. Men have been under current danger from gas in the vicinity of the new ore development. Superintendent Lyman, who was in San Francisco this week, took the opportunity, however, to deny such allegations, and stated that the find is 300 ft. north of the burnt district. Indeed it is doubtful if there is any gas in the mine, and it is reasonably certain that the fire in the burnt district has exhausted itself for want of material to feed upon, as it has been bulkheaded for over three years.

**Hale & Norcross Silver Mining Company.**—Several hundred tons of good ore is being shipped to the Brunswick mill, the proceeds of which will, at least, defray running expenses for a little time.

The following is the weekly tabulated statement of ore hoisted from Comstock mines and milled, with the average car sample and battery assays, bullion product, etc.:

Mines.	Ore Hoist'd	Car Sample Assay.	Ore Milled	Av. Battery Assay.	Bullion for Week.	Total.
Belcher.....	38 <sup>1</sup>	.....	.....	.....	.....	.....
Con. Cal. & Va. ....	52	\$79.20	.....	.....	.....	.....
Occidental. .	8	46.00	.....	.....	.....	.....
Savage ..	33 <sup>2</sup>	40.25	.....	.....	.....	.....

<sup>1</sup> Fair grade ore. <sup>2</sup> Cars of ore.

**NEW MEXICO.**

**Sierra County.**

(From our Special Correspondent.)

**Inter-Republic Gold and Silver Mining Company.**—This company's property is situated on what is called Animas Peak, an isolated volcanic cone 1,000 ft. high, and which, it is believed, has been the center of the upheaval and eruption of the Hillsboro gold mining district. The company is now driving into the peak a tunnel 1,500 ft. long, and has so far opened up about two-thirds of that distance. At 1,500 ft. it is expected that the rich Sailor Boy lode will be encountered. The tunnel is 5 x 7 ft. in its least dimensions. About 6 ft. per day is made, the rock being a syenite, with alternate bodies of diorite and porphyry. Rand compressor and drills are used, and have done excellent work. The company has purchased 12 claims besides the Sailor Boy, and a number of them will be worked by means of the tunnel. Mr. James D. Springer, of Chicago, one of the owners of the property, has been at the mines for some weeks past. Up to date nearly \$75,000 have been spent in exploiting the property. The company is a private one, and is capitalized at \$5,000,000 with shares of the par value of \$10 each.

**OHIO.**

**Tuscarawas County.**

A tract of 2,000 acres of coal land south of and near New Philadelphia has recently been bought for \$100 per acre, by Mr. Wolf, who represents a Cleveland syndicate composed of parties largely interested in the Cleveland, Lorain & Wheeling Railroad. A branch is to be built from that road to the land purchased. It is stated that mining will be begun on the tract at an early date.

**OREGON.**

**Baker County.**

**Pyx Mine.**—At this mine Superintendent J. C. Chapman's force is making good headway in constructing the milling plant. The plant will be started up with five stamps, but five more will be added on or before July 1st. There are between 200 and 300 tons of ore on the dump, and its estimated value is placed at \$40 per ton. The Pyx is developed by two tunnels. The upper is in 450 ft., giving a depth of 50 ft. In the face of this tunnel is exposed a 5-ft. free gold vein. The lower tunnel is 200 ft. long and gives a depth of 90 ft.

**Lane County.**

**Annie Mining Company.**—This company's property has been developed by shafts and tunnels to a depth of 150 ft., with lateral drifts on the vein a distance of 1,000 ft. The Annie vein proper will average 12 ft. wide, all mineral and pay ore. But the rich ore in the vein is confined more or less to chimneys or shoots, varying in length from 50 to 200 ft. There are two other parallel veins as large as the Annie vein that have never been opened, on the Annie ground. But the same veins, on the southwest side of Grouse Mountain, in the direction of Fairview Mountain, where they have been opened, show rich ore.

**Bohemia District.**—Arrangements are being made to build a wagon road from this district to the town of Cottage Grove. It is expected that work will be finished by July.

**Bohemia Mining Company.**—This company, owning the Music mine, has two large veins on its property from which some good ore was taken last season. Like all the mines in this district the ore near the surface carries free gold, but at a greater depth the chief part of the value is found in the sulphurets.

**Sharp Creek Placers.**—Some excitement has been caused by the discovery of gold, and the creek has been located from Bohemia to Hawley's ranch, a distance of 14 miles. There has been some placer mining done on Martin creek, a tributary of Sharp creek, for many years, but it seems no one thought of prospecting Sharp's creek until recently. There is also some gold ledges on Martin Creek which are now being developed.

**Stephens Mine.**—From this mine, in the Bohemia district, some 250 tons of ore were milled last season, with good results, and work is to be pushed this season.

#### PENNSYLVANIA.

##### Anthracite Coal.

**Lykens Valley Railroad and Coal Company.**—At the annual meeting in Philadelphia, May 9th, this company elected officers as follows: President, William A. Nash; managers, Frederick A. Platt, William A. Nash, John W. Hoffman, Isaac H. Platt, Thomas T. Barr, James R. Cowing and Frederick J. Middlebrook; secretary and treasurer, Charles Emmet.

**Packer Colliery.**—The fire in the workings of the Packer Colliery No. 1, at Girardville, remains about the same. A successful attempt has been made to get a 4-in. stream of water on the burning coal and timber at the west end, and 2-in. and 3-in. streams at the east end. The danger of the fire reaching the workings of the Reading Company's Bear Ridge Colliery, has been averted. It will take two or three days to reach the place where the two Polish miners are supposed to have perished. The rescuers are still working in constant danger of black damp.

**Primrose Coal Company.**—The sheriff seized the property of this company, operated by C. B. Knevels & Co., of New York, May 3d, on a confessed judgment in favor of the Delano Land Company, on a coal lease mortgage for \$52,000. This colliery has been operated by this firm for many years and employed 500 men and boys.

**Ronaldson Tract.**—Preparations are being made for extensive operations on the Ronaldson coal tract in the North ward, at the northern end of Fishback, says the Pottsville "Chronicle." Negotiations have been going on for some time past between the heirs of the Ronaldson estate and some Scranton capitalists with a view to consummating a sale. The sale was effected at Philadelphia last week; the consideration was \$63,328. The purchasers of the tract are Messrs. Thomas H. Dale, Thomas H. Jones, D. M. Jones, D. M. Powell, Judge H. M. Edwards and Daniel Weller. The Ronaldson tract contains 127 acres, and is regarded as one of the best pieces of coal land in the country. It is said to be underlaid with all the principal coal measures.

#### TENNESSEE.

##### Maury County.

It is reported that a rich bed of phosphate has been found near Hampshire, on E. D. Hughes' farm.

#### UTAH.

##### Beaver County.

**Horn Silver Mining Company.**—Ore shipments have been resumed from this company's mine at Frisco. About 100 tons of ore are being shipped every other day. The ore is hoisted with the smaller plant, says the Salt Lake "Tribune," and these shipments will be continued until the new hoisting plant is erected, to take the place of the one recently destroyed by fire.

##### Juab County.

**Bullion-Beck and Champion Mining Company.**—This company is shipping about 25 tons of ore each day, and the ore is of good grade. The mine is looking well.

##### Salt Lake County.

The shipments of ore and bullion from Salt Lake City for the week ending April 28th were as follows: Bullion, 502,361 lbs.; copper matte, 72,495 lbs.; silver and lead ores, 1,820,630 lbs.; shipments for April were: Bullion, 2,231,881 lbs.; copper matte, 106,470 lbs.; silver and lead ores, 4,912,750 lbs. For the four months this year shipments were: Bullion, 10,572,482 lbs.; copper matte, 444,965 lbs.; silver and lead ores, 28,454,314 lbs.

The receipts of ore and bullion at Salt Lake City for the week ending May 2d were to the aggregate of \$131,115, of which \$89,215 was in bullion and \$41,900 was in ore. The receipts for the past four months were as follows:

	Bullion.	Ore.	Total.
January.....	\$431,822	\$229,650	\$661,472
February.....	394,250	163,255	557,505
March.....	319,148	155,220	474,368
April.....	331,798	121,508	453,306
Totals.....	\$1,386,998	\$669,633	\$2,056,631

#### Summit County.

**Ontario Mining Company.**—Work on the face of the Ontario drain tunnel has been resumed, says the Salt Lake "Herald." For the past 10 days the men have been engaged in retimbering the swelling ground in the main tunnel, and the work at the face was abandoned temporarily, in the hope that the great stream of water which is pouring in would decrease, in a measure at least. There has been no perceptible change in its volume, however, and Superintendent Chambers and the other officers of the company have decided to push the work to an immediate completion, regardless of the difficulties. In resuming operations, cuts will be made on both sides of the tunnel, and the stream of water which has been flowing into the tunnel for the past two weeks will be conducted out through the cuts, thereby enabling the workmen to proceed with their work at the face.

#### VIRGINIA.

**Consolidated Mining Company.**—At the annual meeting in Roanoke, Va., May 3d, the following were elected: President, Logan M. Bullitt; vice-president, Frank A. Hill; secretary and treasurer, Charles S. Ilone; directors, L. M. Bullitt, F. A. Hill, W. B. Campbell, J. H. Dingee, J. I. Doran.

**Pocahontas Coal Company.**—The stockholders of this company met in Roanoke, Va., May 3d, and elected directors as follows: F. J. Kimball, Joseph H. Sands, Henry Fairfax, Joseph I. Doran, H. S. Trout, J. Allen Waits and Wm. C. Bullitt. The directors then met and elected the present officials of the company.

**Southwest Virginia Improvement Company.**—The following directors were elected by the stockholders in Roanoke, Va., May 3d: L. M. Bullitt, Frank A. Hill, W. B. Campbell, J. H. Dingee and Joseph I. Doran. The directors elected Logan M. Bullitt president, Frank A. Hill vice-president and Chas. S. Ilone secretary and treasurer.

(From an Occasional Correspondent.)

Considerable activity prevails among the mines located on the great "Virginia Gold Belt," particularly those in Stafford, Spottsylvania and Fauquier counties.

In Stafford, the old Rattlesnake mine is bonded to some Western capitalists who propose to develop it at once upon a large scale, and erect a stamp mill. The showing made from shallow workings on the vein is said to be of an encouraging character; the ore is free milling. This mine has a good record as a nugget producer from its gulch placers. Nuggets weighing from 5 to 125 dwts. have been found in numbers, while large quantities weighing from ½ to 5 dwts. have been secured. The Eagle mine adjoins the Rattlesnake on the east. Before the war it produced over \$200,000 in gold from a length on the vein of less than 600 ft. and a depth of 250 ft. Washings of the surface material are now being made which are said to show a value of \$2 to \$10 per cu. yd. The material (decomposed quartz and gravel), has been tested to the depth of 35 ft. and over a considerable area.

The Monroe mine adjoins the Eagle on the northwest. The work done on it shows the ore to be high grade. Negotiations are pending looking to its purchase by Washington parties. The owners of the famous Vaucluse mine, located in Spottsylvania County, are endeavoring to raise a cash capital of \$100,000 with which to reopen and develop their property, and erect a reduction plant.

It was the rich gold quartz specimens from this mine which took the first premium at the Centennial Exposition in Philadelphia. The Leopold mine in Fauquier County, recently purchased by New York parties, has a large quantity of high grade ore ready for the mill which they are about to erect; the machinery is now on the ground. It is believed, from many tests already made, that the ore will mill \$15 per ton. Assays show a value of from \$10 to \$40 per ton. Many other mines—new and old—on the "Belt" are being started up, and mills are being erected.

#### WASHINGTON.

##### Kittitas County.

**Northern Pacific Coal Company.**—All work at the extensive mines of this company at Roslyn was suspended indefinitely on May 3d, by order of General Manager Kangley. This is supposed to mean an absolute suspension of the mines until a settlement with the men is effected or new men brought in. The men declined to consider the proposition of a 20% reduction in wages, but offered to accept a 10% reduction. The negro miners now in the camp are standing by the white miners. The mine owners state that they will fill the positions held by the miners with other men, as the orders they have must be filled.

##### Stevens County.

**Sunset.**—At this claim, near Northport, a rich strike of galena is reported. The claim was located last season by W. R. Case and others, who deeded one half to Almstorm Brothers, of Northport, on condition of their doing a certain amount of development work.

#### WEST VIRGINIA.

##### Marion County.

**Hardly Able Oil Company.**—This company's No. 1 flood well near Mannington is flowing at the rate of 1,000 barrels daily.

**South Penn Oil Company.**—This company has just completed a well on the Conway property south of Mannington, which is producing 800 barrels daily.

#### Mineral County.

A dispatch from Elk Garden says that the coal miners in that region have all joined in the strike. No acts of violence have been done as yet.

#### WYOMING.

##### Laramie County.

**Wyoming Mining, Milling and Development Company.**—This company has been organized at Cheyenne to carry on mining operations in Wyoming. The incorporators are residents of Omaha, and the capital stock is fixed at \$2,000,000. The officers chosen for the first year are: H. E. Jennison, president; J. L. Mosher, vice-president and general manager; L. J. Stewart, secretary and treasurer. The principal place of business will be Omaha, Neb.

#### LATEST MINING NEWS.

**C. P. Huntington** has purchased a controlling interest in the Piedras Negras coal mines in Coahuila, Mexico. These mines have been in successful operation for some time, supplying coal to the Mexican railroads and coke to the smelters.

A dispatch from Charleston, W. Va., says that the coal operators of the New River and Kanawha districts met May 10th at Clifton Forge, Va., and agreed to start up their coal works Monday, May 14th, regardless of the strike or strikers. They further notified the miners to go to work or get out of the houses owned by the operators. By some it is believed that this will bring on trouble. The operators are determined and are prepared for what may result.

**American Society of Mechanical Engineers.**—The summer meeting will be held at Montreal, Can., June 5th to 8th, the opening session to be held on Tuesday evening, June 5th. The headquarters will be at the Windsor Hotel, and professional sessions will be held at the Engineering Building of McGill University. Excursions have been arranged down the Lachine Rapids to the Lachine Canal, to Ottawa, and to various points of engineering interest about Montreal.

The Ashland Iron Company, of Baltimore, Md., has applied in the Circuit Court for a dissolution of its affairs. An order has been signed by Judge Harlan requiring cause to be shown by June 11th why the application should not be granted. The bill states that at a meeting of the stockholders on April 12th, it was resolved, by a vote of 946 of the total of 1,200 shares, to dissolve the company and to urge the appointment of Wm. Filmore Hoffman, Jr., as receiver or trustee. The bill also states that the company has not been in actual business for several years, and that some of its officers have been liquidating its affairs. The assets of the company are stated to be \$2,931.64 cash, \$11,961 in mortgages; the quarry property of 35 acres at Texas, Baltimore county; 30 acres at Mt. Airy, Carroll county; 4 additional acres in Carroll county; 337 acres near Monkton, Baltimore county, and Boyer's ore bank, 31 acres, and Porter's ore bank, 40 acres, both in York county, Pa. The bill states that the capital stock of \$300,000, divided into 1,200 shares of the par value of \$250 each has been fully paid up. The liabilities are mainly a few outstanding notes.

(From our Special Correspondent.)

The firm of J. P. Bishop & Co. of Chicago, recently bought in Harrison and Jefferson counties, on the Pan Handle Railroad, in Ohio, 3,000 acres of bituminous coal lands, having paid about \$75 per acre for same. The Bishop company desired to purchase 7,500 acres, but the owners of all but 3,000 acres raised their price from \$75 to \$200. The property purchased lies from 50 to 60 miles from Pittsburg. It has two well-developed veins, the first being coal similar to No. 8 Pittsburg, sometimes called peacock. This vein is 5 to 6 ft. thick. The second vein is said to be 8 ft. in thickness and is worked at a depth of 400 ft. The Guyon Hollow Coal Company has been incorporated under the laws of the State of Illinois, with principal office at Chicago. Capital stock, \$300,000. The incorporators are Andrew W. Lundon, William R. Morse, Edw. R. Eldridge. The J. P. Bishop Company will this week transfer the property to the new company, and officers and directors will be elected. The new company will market its product at Chicago, and possibly Pittsburg.

#### CALIFORNIA.

##### Calaveras County.

(From our Special Correspondent.)

The Viertong group of four mines at Robinson's Ferry has been sold for \$100,000 to San Francisco parties, who took possession this week.

#### FOREIGN MINING NEWS.

##### BRITISH GUIANA.

The total exports of gold for the three months to March 31st were 24,409 oz., valued at \$416,752. For the week ending March 31st royalty was paid on 3,563 oz. Of this the largest amount, 1,119 oz., was returned by the Conowarook company, the second, 1,038 oz., by the Barima company.



**COAL TRADE REVIEW.**

NEW YORK, Friday Evening, May 9.  
Statement of shipments of anthracite coal (approximated) for week ending May 5th, 1894, compared with the corresponding period last year:

	1894.	1893.	Difference.
	Tons.	Tons.	
Wyoming region.....	367,643	424,135	Dec. 56,492
Lehigh region.....	138,771	119,833	Inc. 18,938
Schuykill region.....	204,188	190,806	" 13,382
Totals.....	710,602	734,774	Dec. 24,172
Total for year to date, 10,702,675		13,934,914	Dec. 3,232,239

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending May 5th and year from January 1st:

	1894.		1893.
	Week.	Year.	Year.
Shipped East and North:			
Phila. & Erie R. R.....	672	23,479	42,146
Cumberland, Md.....	105,458	1,186,626	1,344,674
Barclay, Pa.....	525	8,734	21,638
Broad Top, Pa.....	2,685	121,510	274,306
Clearfield, Pa.....	5,105	1,119,576	1,507,253
Allegheny, Pa.....	2,207	472,069	473,650
Beech Creek, Pa.....	140,872	819,086	642,427
Pocahontas Flat Top.....	759,075	851,026	1,094,557
Kanawha, W. Va.....	147,826	811,659	1,098,596
Totals.....	264,425	5,443,765	6,412,187

\* Week ending April 28th. † Estimated.

	1894.		1893.
	Week.	Year.	Year.
Shipped West:			
Pittsburg, Pa.....	13,417	461,925	458,821
Westmoreland, Pa.....	9,126	494,980	732,745
Monongahela, Pa.....	540	162,769	227,243
Totals.....	23,083	1,119,674	1,418,809
Grand totals.....	287,508	6,563,439	7,830,996

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending May 5th, 1894, and year from January 1st, in tons of 2,000 lbs.: Week, 21,532 tons; year, 1,090,669 tons; to corresponding date in 1893, 1,966,121 tons.

**Anthracite.**

The anthracite coal trade is quiet and featureless. There has been no improvement in the demand, and from present indications none is likely to take place for some little time to come. There was in the early part of the month some activity in the Lehigh coal, but a lull has come, and to-day Lehigh as well as free-burning is very quiet. Prices are not being cut to any noteworthy extent because, as a matter of fact, sales are few and far between. Just now it is doubtful whether the market is taking all the coal that is being mined. Operators report that their stocks are not accumulating, but on the other hand some of the heaviest middlemen state that they are getting more coal than they can easily dispose of. The restriction of output, which has been the steadfast policy of the operators during the present year, continues, and it is the only thing which can prevent the demoralization.

The bituminous coal strike has had no effect on the anthracite market so far, and it is doubtful whether it will.

**NOTES OF THE WEEK.**

The Reading coal tonnage for the week ending May 5th was 191,748 tons, a decrease of 24,397 tons; from December 1st to May 1st, 4,671,434 tons, a decrease of 847,397 tons.

The directors of the Lehigh Coal and Navigation Company this week declared a semi-annual dividend of 2½%, or \$1.25 a share. This is a reduction of ¼% from the dividend declared in November last, when 3% was paid to the shareholders, making 6% for the year 1893.

At a meeting of the new Board of Managers of the Delaware & Hudson Canal Company held on May 9th Robert M. Olyphant was elected president, James Roosevelt, first vice-president; H. G. Young, second vice-president and general manager; C. A. Walker, treasurer, and F. M. Olyphant, secretary. The \$5,000,000 of new stock is to be distributed to stockholders of record on the 31st inst., in the proportion of one share of the new to six shares of the old. The first payment is due July 10th. It will be 20%. The second payment will be 80%, due September 15th.

The members of the Coal Trade Club started last week on a trip to Newport News, Richmond, the New River coalfields, and will stop at Baltimore on their way back. Two private cars were secured and the number of participants in the trip was therefore limited.

Chas. A. Campbell, of Chas. A. Campbell & Co., a prominent coal firm here, has sailed for Europe and may not return until toward the end of the summer.

**Bituminous.**

There is no soft coal market to speak of this week as very few of the mines are still working, and practically all the coal from them is going to "contract customers" who are demanding double their usual supplies in the fear that the strike may be prolonged. A very few cargoes have been offered on the market, and they have brought high price. For one cargo, and of one of the poorer grades at that, we understand that \$4.25 alongside New York was paid. None of the companies which are working is asking more than the regular Seaboard Steamcoal Association rates, and the odd cargoes referred to above come into the market through

middlemen, who take them out of the quantities for which they themselves contracted, and are now selling to take advantage of the high prevailing prices.

Consumers are making every effort to get coal wherever and from whomsoever they can, but the supply coming forward is so small that they are beginning to become accustomed to the situation, knowing that they cannot get the desired amounts.

At this writing about one-half of the George's Creek and the entire Pocahontas are the only regions still producing, all the miners along the West Virginia Central having gone out during the week. The agitators are doing their best to induce all the George's Creek and Pocahontas miners to go out, but these men appear reluctant to join the strikers. Those in the George's Creek region may resume work upon sober second thought.

The Baltimore and Ohio has taken the extreme measure of putting an embargo on all the coal on its tracks between Baltimore and Cumberland, and will refuse to deliver any coal to consignees. The road will hold the coal for its own use, in case its supply should run so short as to threaten a stoppage of trains. We know of one case where a vessel was already half loaded at the shipping port, with loaded cars standing on the wharf ready to transfer the coal to the vessel, and were hauled back from the wharf. It is anticipated that this action will be revoked. The Pennsylvania has been doing likewise.

New England manufacturers apparently did not believe that the strike would prove serious; they seemed to think that the operators were talking in gloomy anticipation of the worst. These manufacturers are now beginning to realize the real seriousness of the situation.

The car supply to the active mines is all that can be desired, the railroads having a number of empties on account of the idle regions. The transportation from mines to destination is very slow, and it looks as if the railroads desired to keep the coal on their own lines as long as possible, to apply to their own use if necessary.

The supply of vessels is sufficient for the small demand, but that is about all. A better supply is expected for the coming week.

We quote current ocean freight rates as follows from Philadelphia: To Boston, Salem, Portland, 70c.; Providence, New Bedford, New Haven and Bridgeport, 65c.; Portsmouth and Bath, 65@70c.; Wareham, 80c.; Newburyport and Lynn, 80@85c.; Gardiner, 70@75c. and towages; Bangor, 70@75c.; Allyn's Point, 65c.; Saco, 85c. alongside and towages; Dover, \$1 alongside and towages. From Norfolk, Newport News, Baltimore and Georgetown, 5@10c. above these rates.

**Buffalo.**

May 10.

(From our Special Correspondent.)

Anthracite coal is in improved demand in consequence of the scarcity of bituminous. Prices are firm. Shipments by lake westward continue light.

Bituminous coal is wanted. Stocks are about exhausted. Fuel for steamers use is quoted at \$4 per net ton. Many vessels have left with enough coal to take them to Duluth, and from that point they will obtain enough for their return trip. The price at Duluth and Superior at last accounts was \$2.90 per ton with good supply from last year's receipts. The coal and coke strike has been felt in Buffalo by the laying off of resident train crews of coal carrying roads.

The shipments of coal by lake from Buffalo from May 1st to 5th, both days inclusive, were 25,650 net tons, distributed as follows: 11,050 to Chicago, 3,950 to Milwaukee, 4,100 to Superior, 1,500 to Gladstone, 175 to Bay City, 2,025 to Toledo, 1,700 to Racine and 1,150 to Ludington. The rates of freight were: 25c. to Chicago, Milwaukee and Toledo; 40c. to Ludington; 30c. to Racine; 15c. to West Superior. Duluth and Gladstone, and 25c. to Bay City. Rates to Lake Michigan ports advanced 10c. per ton on Monday last.

A well-informed coal merchant of Chicago wrote as follows to Secretary Thurston, of the Buffalo Merchants' Exchange, on Monday last: I am convinced that for once bituminous coal affairs will be arranged on a basis satisfactory to all parties, and one that will, perhaps, lead to results most gratifying to all connected with the business. It looks to me now that the actual strike will terminate next week, yet it always requires, as you know, a good deal of time to readjust affairs, hence I doubt very much whether the necessary amount of soft coal that is required for immediate use can be brought forward from the mines, and in consequence whether the danger does not present itself of a temporary blocking of railroads and commercial interests. Coal, which two weeks ago sold here f. o. b. at \$1.75, is now selling at \$3, and this is but the beginning. As regards our colossal buildings here I fully expect that before the week is out owners must resort to anthracite coal.

Heavy westerly gales have prevailed over the lake regions for three days; wind varying from 36 to 50 miles per hour. Navigation partially suspended in consequence.

Lake freights on coal from Oswego to Racine, 60c., and to Chicago, 55c. per ton.

The Lehigh Valley coal storage yards at Superior are in course of construction, with a capacity for 250,000 tons. The cost of the work will exceed a quarter of a million dollars.

It is understood that the contract for supplying the Board of Public Works of Buffalo with soft coal for the water-works has been awarded to the Bell,

Lewis & Yates Company at their bid of \$1.62½ per net ton run of mine.

**Chicago.**

May 9.

(From our Special Correspondent.)

The anthracite coal market of Chicago has shown an increased tonnage for the week. The supply on hand will take several weeks to exhaust. The poor business transacted during the winter has left large stocks on hand, and the strike has opened a sure way to decrease such. Prices are: Grate, \$5; egg, stove and chestnut, \$5.25.

Chicago has not yet reached the point of what could be called a soft coal famine. The supply in or near this city is not nearly exhausted, and it will take fully two weeks yet to accomplish that. Offers are being made from Northern and Eastern points to ship coal here. The prices asked are somewhat exorbitant, but as matters look dealers here will undoubtedly have to pay high prices if they wish to supply their customers, consequently there will be a large amount of coal shipped to Chicago from points where an over-supply prevails.

The railroads centering in Chicago have yet a sufficiency of coal to last them a month. One of the largest dealers here who makes railway coal supplying a specialty said that all of the roads are in a position to hold out for a month or more longer, on their present supply, but should matters come to the worse the railroads could find some way to replenish their stocks even though they had to resort to confiscation. A few of the railroads have already confiscated some coal, but the quantity is not large.

Prices of soft coal have advanced from 50c. to \$1.50 per ton.

**Coke.**—Connellsville coke is not to be had in this market. There is a small supply of the West Virginia article to be had, but the price of the same, \$5 per ton, has rather a tendency to make the consumer hesitate.

**China.**

(Special Report by Wheelock & Co., Shanghai, April 13.)

There is no improvement of any importance to report in the amount of cargo going forward for London. Shippers are anxiously awaiting some settled news of the London conference. For New York direct there has been no steamer in berth because no freight has been offering, and we surmise that the settlement of the United States tariff is the cause of this.

In Japan coal the improvement in our last report was of short duration. Though there has been no decline in prices the business done is hardly worth recording. A few transactions have taken place in Ohnoura and Kanada, but in very small lots. There still remains a demand for Moji coal and very good offers have been made, but owing to the great scarcity of tonnage, business is practically impossible.

Cardiff coal has sold for tils. 10.00 per ton, thus relieving us of all stocks except those held for consumers only.

In the Australian-Wollongong the market is stagnant. A speculation in some 700 tons which resulted in a forced sale depressed this market.

The following are the ruling prices in taels per ton, and the tone of the market: Cardiff, 11'00, steady; American anthracite, ex-ship, 11'50, firm; Sydney Wollongong, 8'50, steady; Japan, Takasima lump, 6'00, scarce; Takasima small, 4'00, none for sale; Miike lump, 5'75, firm; Miike small, 4'75, firm; Imabuke, 3'00, firm; Keelung lump, 3'50, no stock; Hayama, 4'25, firm; Namazuta lump, 4'75, firm; Wamazuta dust, 3'50, scarce.

There has not been a large business in kerosene oil during the past fortnight. The usual transactions have taken place at the tea shops, but nothing worthy of record. Devoe's is tils. 1.35½@1.36 per case, and Batoum, tils. 1.27½@1.30½ per case, the former price being a quotation for bulk oil per two tins. The only arrival has been the "Cardiganshire" with 36,000 cases. Stocks now are 598,704 cases American, and 340,052 cases Russian.

**Pittsburg.**

May 10.

(From our Special Correspondent.)

**Coal.**—We are at sea in regard to the coal trade; matters are so mixed up that no one can make up a satisfactory report, from the fact that there is little to make it on. The deadlock between the parties continues; coalowners show no anxiety on the subject, and are disposed to let matters run their course. Many of the mills are short of fuel, but manage to get along. The miners along the Monongahela on a strike are behaving well, and are interfering with no person, and are putting in their time fishing. They look with disfavor on the riots in the Connellsville district caused by the Hungarian strikers, and believe that a quiet and determined stand is productive of better results than all the rioting they could do. As a rule they refuse to talk except to say they will win the strike.

The Pittsburg Coal Exchange met Tuesday to consider the call for a joint meeting of the river and railroad coal operators of the Pittsburg district and the operators of the other bituminous fields of Pennsylvania to be held at the Courthouse on Friday. The Coal Exchange comprises the river shippers of the Pittsburg district, and there was some question as to whether they should participate in the caucus. The meeting was held in the Coal Exchange rooms yesterday afternoon, and after some discussion the movement was indorsed and the exchange will participate in the meeting. A plan of action was agreed upon, and will be followed out in the meeting. No information was obtainable as to the posi-

tion of the river operators, but it is generally understood that they will oppose any recognition of the national conference at Cleveland.

**Connellsville Coke.**—The conflicting reports from the coke regions make it very difficult to obtain any reliable information; one side reports coke being shipped, while another party contends that there is none being shipped. Rioting is still going on. The miners have put up notices that it will be certain death to any person who attempts to work in the Hill mine. On Wednesday they would have made their notice good had it not been for the arrival of a number of deputies with Winchester. There are hundreds of deputies armed to the teeth; a big riot seems inevitable in the near future. While the cokeowners are willing to pay advanced rates they refuse to acknowledge or treat with any union. The outlook is very dark.

## IRON MARKET REVIEW.

NEW YORK, Friday Evening, May 11, 1894.

### Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From	
	May 12, 1893.	May 11, 1894.	From Jan., '93.	From Jan., '94.	Tons.	Tons.
Anthracite.	69	33,450	34	17,430	631,817	301,549
Coke.	147	142,230	71	85,670	2,555,307	1,746,216
Charcoal.	37	8,580	19	4,235	176,505	75,463
Totals.	253	184,260	124	107,335	3,363,629	2,123,228

**Pig Iron.**—The pig iron market continues very quiet, and without any new features. Consumers in this vicinity have not yet been affected by the coal and coke strikes. While some of the Southern furnaces are not pressing their product for sale on this market, others are abundantly able to supply any demand which is likely to spring up in the near future. The Sloss Iron Company has blown out one furnace and banked another. The Tennessee company, however, has the same number of furnaces in blast that it had before the strike. The trouble with the miners is not as serious as was feared, and the prospects for an improvement in the situation so far as the South is concerned are growing brighter daily.

From other iron centers reports reach us that considerable uncertainty prevails owing to the scarcity of fuel. In Pittsburgh the price of Bessemer pig has already advanced. The production shows a decrease of about 20,000 tons per week as compared with last month at this time, and consumers, it is reported, are commencing to display some anxiety as to supplies. The falling off in production is chiefly from the coke furnaces, the anthracite and charcoal furnaces showing but little change.

In this market there has been no change in prices, foundry irons not having been affected yet. Quotations at tidewater are as follows: Northern brands, No. 1, \$12.50@13; No. 2, \$11.50@12.50; gray forge, \$11.50@12. Southern irons, No. 1, \$12@13; No. 2, \$11@11.50; No. 1 soft F., \$11@11.50; No. 2 soft F., \$10.50@11.25. Scotch irons are quoted: Coltness, \$21.50@22; Eglinton, \$19.50@20; Summerlee, \$20.50@21.50.

**Billets and Rods.**—The coke strike has tended to bring about firmer prices for billets. Business, however, has not improved appreciably. Quotations this week are: Domestic billets, \$18@18.50; wire rods, domestic, \$27@27.50; foreign rods, \$30@34.

**Manufactured Iron and Steel.**—This market is quiet. Sales have been few and small, and it will be some time before any active business will be done. Prices are unchanged, and we quote: Angles, 1'20@1'40; axles, scrap, 1'40@1'60c. delivered; steel, 1'40@1'55c.; bars, common, 1'15@1'30c.; refined, 1'25@1'40c. on dock; beams, up to 15 in., 1'35@1'50c.; channels, 1'35@1'50c. on dock; steelhoops, 1'45@1'75c., delivered; links and pins, 1'40@1'65c.; plates, flange, 1'60c.@1'80c.; fire-box, 1'80@2'10c.; marine, 2'45@2'70c.; sheared, 1'80c.; shell, 1'40@1'60c.; tank, 1'25@1'35c.; universal mill, 1'20@1'50c.; tees, 1'40@1'60c., all on dock.

**Merchant Steel.**—There is very little business reported in this market. The largest manufacturers of merchant steel state that they have about two months' supplies on hand, and they expect the coke strike to be over long before they run out of fuel. Quotations continue as follows: Tool steel, 5'75@6'25c.; tire steel, 1'60@1'75c.; toe calk, 1'70@1'90c.; Bessemer machinery, 1'25@1'50c.; open hearth machinery, 1'90@2c.; open hearth carriage spring, 1'90@2c.; crucible spring, 3'50@3'75c.

**Old Material.**—There is nothing of importance doing in this market. We note sales this week of 350 tons of old car wheels at \$9.75 delivered, and 800 tons of wrought scrap at \$11.50 at mill. We quote nominally as follows: Old steel rails, \$9@9.75; old iron tees, \$10.50@11.50 per ton New York; railroad scrap, \$11.50@12 per ton delivered at mill, and yard scrap at \$10; wrought turnings, delivered at mill, \$3.50@3.9; No. 1 wrought scrap at \$9.50@10.50 from yard, and machinery cast scrap \$9@10; old wrought tubes and pipe, \$6.50@7; old car wheel, \$9.50@10.50 New York; cast borings, \$6@6.50 delivered at mill.

**Rail Fastenings.**—The market for track material is exceedingly dull. Quotations are as follows: Fish and angle plates, 1'25@1'35c. at mill; spikes, 1'60@1'90c.; bolts and square nuts, 2@2'25c.; hexagonal nuts, 2'20@2'40c., delivered.

**Spiegeleisen and Ferromanganese.**—Nothing of interest can be reported of either spiegel or ferro. Little or no business is doing in this market. Quotations remain nominally: Spiegeleisen, 10@12, \$21@22; 20% \$25@26. Ferromanganese, \$51.50@53.

**Steel Rails.**—Nothing is doing in standard sections, which continue to be quoted at \$24 at mill or \$24.80 tidewater. Girder rails are fairly active at \$20@22.

### NOTES OF THE WEEK.

The Wage Committee of the Amalgamated Association of Iron and Steel Workers met in Pittsburg, Pa., on May 11th, to prepare the wage scale which will be presented to the Amalgamated Convention in Cleveland next Tuesday. It is not now expected that there will be any great change in the new scale from that now in operation.

### Boston. May 12.

(From our Special Correspondent.)

The pig iron business continues of the hand-to-mouth order, and we hear of no large orders having recently been placed. We quote for cash delivered in Boston: Alabama No. 1 Foundry, \$12.50@13; Alabama No. 2 Foundry and No. 1 Soft, \$11.50@12; Alabama No. 3 Foundry and No. 2 Soft, \$11.25@11.75; Alabama charcoal car wheel, \$18.75@19.25; Strong L. S. coke iron, No. 1 Foundry, \$14.25@14.75; Lake Superior charcoal car wheel, \$17.25@17.75; American Scotch (Northern No. 1), \$14.25@14.75.

### Buffalo. May 10.

(Special Report of Rogers, Brown & Co.)

A dead calm seems to have settled down on the business world. Individual protests against the fate of iron, as well as the irony of fate, have ceased. Whether this is due to nervous prostration or a realizing sense of the uselessness of it, it is impossible to say. The market is firm, from the very inability of either producer or consumer to even so much as think he can see into the future. We quote for cash f. o. b. cars Buffalo: No. 1 Foundry strong coke iron, Lake Superior ore, \$11.75; No. 2 Foundry strong coke iron, Lake Superior ore, \$11.25; Ohio strong softener No. 1, \$11.75; Ohio strong softener No. 2, \$11.25; Jackson County silvery No. 1, \$15.50@16.50; Lake Superior charcoal, \$14.75; Tennessee charcoal, \$15.50; Southern soft No. 1, \$11; Southern soft No. 2, \$10.50; Alabama car wheel, \$16@17.50; Hanging Rock charcoal, \$18.50.

### Chicago. May 9.

(From our Special Correspondent.)

The Chicago iron market for the week past has shown marked signs of improvement, consumers in all lines having bought with more frequency, and in many cases largely increased quantities. The increased tonnage may be accounted for from the fact that there is every sign of furnaces, rolling mills, etc., closing down from the lack of fuel. Dealers are generally of the impression that should not the coal and coke strike be settled within two weeks at the latest, furnaces, etc., will have to shut down, as none appears to have more than a fortnight's supply of fuel on hand, and they find it almost impossible to purchase more.

Prices in many instances have taken a jump, and the probabilities are that a month or so will see a firmer market here than there has been for many months past.

**Pig Iron.**—The tonnage of pig iron for the week has increased materially, orders for small quantities are very numerous, and a number of larger sales are noted, particularly two of 1,000 tons each Northern iron, and two other sales of equal size are expected to shortly materialize. Buyers are making inquiries with more frequency on round lots, which may result soon in numerous good sized orders. Stocks of coke are running low and two weeks may find numerous furnaces closed should not the coke strike cease. In the event of the furnaces closing down, dealers generally have stock enough on hand to last a month or more. Prices remain on the same basis as last report, which are, per gross ton f. o. b. Chicago: Southern coke foundry No. 1, \$11@11.25; No. 2, \$10.25@10.50; No. 3, \$9.75@10.00; Southern coke foundry soft, No. 1, \$10.25@10.50; No. 2, \$9.75@10.00; Southern car-wheel, \$17.50@18; Tennessee charcoal No. 1, \$15@15.50; Southern silveries No. 1, \$11.75@12; No. 2, \$11@11.50; Bessemer, \$12; Ohio Scotch softeners No. 1, \$12.75@13.50; Lake Superior charcoal, \$15@15.50; Lake Superior coke No. 1, \$11.50@11.75; No. 2, \$10.50@10.75; No. 3, \$10.00@10.25; Jackson County silveries, \$14.50@15.

**Structural Iron and Steel.**—Material for a number of small buildings still constitutes the main demand of this market in structural material. Quotations are, f. o. b. Chicago: Angles, 1'35@1'45c.; tees, 1'55@1'65c.; universal plates, 1'35@1'45c.; beams and channels, 1'35@1'45c.

**Plates.**—Sales have been a trifle more numerous, boiler plates having most attention. Inquiry has increased. Prices are, Chicago delivery: Flange steel, 1'65@1'75c.; best firebox steel, 3'75@4'00c.; tank steel, 1'35@1'45c.; iron and steel sheets, No. 10 to 14, 2'00@2'15c.

**Merchant Steel.**—Market has been fairly active during the week. Sales are a little more numerous, and, as a rule, for increased quantities. Quotations are, carload lots: Smooth finished machinery, 1'80@1'90c.; tire steel, 1'60@1'70c.; ordinary Bessemer bars, 1'40@1'50c.; toe calks, 2'05@2'15c.; special brand tool steel, 12@20c., crucible spring, 3'40@3'65c.; tool steel 6½c. and upward.

**Galvanized Sheet Iron.**—Numerous small sales have been made during the week, these being if anything more in the aggregate than last week. Dealers take a more hopeful view of the market, but they would like to see a few good sized orders materialize. Prices remain at 75, 10 and 5% off on mill shipments, and 75% discount on jobbing quantities.

**Black Sheet Iron.**—There is a much better feeling in sheet iron, which is accounted for from the fact that the buying season for it is close at hand. The market is firmer, prices f. o. b. Chicago being 2'35@2'40c.

**Bar Iron.**—There was a considerable expectation on the part of dealers that business would improve much with the past week, due to the rumor that the rolling mills would have to close shortly for want of fuel. This has amounted to nothing, as the week has shown but little increase in sales over last, while inquiries have been disappointing. Prices are f. o. b. Chicago bar iron, 1'15c.@1'25c. for soft steel bars.

**Billets.**—The steel company here continue to refuse orders at prevailing prices for delivery after July 1st. They expect the price will have advanced considerably by then. Present quotations are \$18@18.50.

**Steel Rails.**—Orders for steel rails are quite numerous, but all for small quantities, the railroads buying in such quantities as is necessary for them to make needed repairs. Quotations remain \$25@27.

**Nails.**—Wire nails are meeting with fair demand, and steel cut have improved. Prices are \$1@1'05.

**Old Rails and Wheels.**—Business in old rails and wheels has been limited to a few small sales of each at \$9.75@10, and car wheels \$10@10.50.

**Scrap.**—There is hardly any call for scrap, and business was never so poor. Prices are: Forge, \$3.50@3.9; Cast borings, \$3.50@4; wrought turnings, \$4.50@5; axle turnings, \$6@6.50; mixed steel, \$5@5.50; tires, \$12.50@13; iron axles, \$13@14.

### Philadelphia. May 10.

(From our Special Correspondent.)

**Pig Iron.**—Everything connected with the iron trade is more unsettled than ever. The suspension of production is a factor to be kept in sight, and as it may continue prices are pointing upward, yet there is no actual advance. Brokers and producers see nothing clearly. Buyers are nervous lest they may discover a rising market on empty yards and increasing orders. A very few days may turn the tide. Few options were withdrawn this week. Despite its improbability, the trade is discounting a termination of the coal strike before serious harm is done. No. 1 Foundry is quoted at \$12.50, No. 2, \$11@11.75, and forge at \$10.50. Some few brands are quoted higher. Bessemer is \$13.

**Steel Billets.**—The announcement of a restoration of rates, June 15, in the face of a general and prolonged coal strike, leaves the market about as it was. Very little business was done this week. Large orders need not be looked for in the face of so much uncertainty; buyers have enough stock in hand or under contract for early delivery to tide over, and therefore the current advanced quotations do not mean anything.

**Merchant Iron.**—Orders are increasing and for larger quantities among the smaller consumers. The big concerns are not heard from, and do not propose to buy largely even at 1'25 for refined. Still the trade of the smaller buyers amounts to a good deal, and in view of worse complications, users of bars are showing some anxiety to be fairly well supplied.

**Skelp.**—Our mills have been favored with additional orders, and, in some important cases, at a slight advance. There are too many options out for prices to improve for a very long time, unless customers should let the opportunity slip. Price, 1'20.

**Sheet Iron.**—The general improvement in this branch of trade in the West is being reflected here, but not to a great degree. Galvanized fares better than other kinds, and the prices given this week would indicate that manufacturers are plucking up courage.

**Merchant Steel.**—For the kinds used in ordinary shopwork there is a fair demand. Tool steel is rather dull. Work in the big machine shops is slack yet.

**Plate and Tank.**—Some new business was closed this week that has been hanging fire for a month. Large operations are being put in shape that will call for big summer deliveries, but the mills will not have a chance at them until the last moment. Tank steel, 1'25; plates, 1'30; shell, 1'40; flange, 1'60. As to prices, while there is no advance, there is less heard of shaded quotations.

**Structural Material.**—Our people say there will be nothing worth reporting until there is a general improvement. Eastern makers are gathering in small orders as usual. It is known that there are large railroad requirements to be covered some time or other this season, but nothing more definite can be had. Beams, 1'40.

**Steel Rails.**—Steel rails are quoted at \$24. Interest is centered in girder rails, for which there is quite a demand.

**Old Iron Rails.**—Very little business. Quoted at \$12.

Scrap.—Quotations are: Heavy steel, \$10.50 light, \$8.50; No. 1 scrap, \$10; cash, \$10.

Pittsburg. May 10.  
(From our Special Correspondent.)

**Raw Iron and Steel.**—Trade for leading descriptions for prompt delivery continues active. The largest demand was for steel billets and Bessemer; late deliveries not so much inquired for; the latter material is said to be scarce at many points, caused by the scarcity of fuel, owing to the strike in coal and coke region. Grey Forge and mill iron sales show a larger demand with no change in values, the amount in first hands and at furnaces being limited. The scarcity of fuel in the Shenango and Mahoning valleys, as well as other points, has necessitated the banking or blowing-out of some of the heaviest producers of Bessemer pig iron. Parties who are fortunate enough to have a supply of fuel on hand will be enabled to secure better prices for their iron than have prevailed for many months. The advance in steel billets was more marked than even Bessemer; the further advance in iron and steel will be governed by the length of the strike and the facilities of obtaining fuel. Natural gas is playing a very important part at the present time; the Philadelphia gas company has just made the announcement that it has a fund of half a million dollars to commence the manufacture of fuel gas, and that operations will soon be commenced.

Furnaces in the eastern part of the State have not as yet seriously felt the effect of the controversy, consuming as they do a mixed fuel, and in the event of a protracted struggle between the coke producers and their men they could run on anthracite alone, although by so doing the cost of manufacture would be increased.

Manufactured iron and steel continue to exhibit the same improved conditions as noted for some time past, and with large orders placed for Bessemer and soft steel billets, that will keep the mills busy, many of them to their full capacity, prices are steady advancing for prompt delivery.

**Steel Rails.**—The syndicate price is still paid, \$24 f.o.b. at works; there are several thousand tons sold, waiting shipment south by water.

The market is excited and bare of Bessemer pig and steel billets, with plenty of buyers. Sales are large at a material advance. Parties have visited various points and purchased all the Bessemer pig in sight, the Carnegies being large buyers of this grade. Prices the past two weeks have been: May 4th, Bessemer, \$10.85@11.60; May 10th, \$11.25@12.10, the latter for prompt delivery. May 4th, steel billets, \$16.50@17.75; May 10th, \$17.40@18.10, the latter for prompt delivery.

APRIL SALES.

The following are the weekly sales of Bessemer and soft steel billets. Notwithstanding the dull times and the shortness of fuel, sales were large with an advance in prices. Bessemer sales for the month were 135,725 tons; billet sales, same time, 82,700 tons; total for April, 218,425 tons.

Coke Smelted Lake and Native Ore.		600 Billets, prompt, at mill.	
Tons.	Cash.	500 Billets, spot, at mill.	17.85
10,000 Bessemer, prompt.	\$12.00	500 Billets, spot, at mill.	18.10
2,000 Bessemer, June, July.	11.65	<b>Skelp Iron.</b>	
1,500 Bessemer, Valley mill.	11.25	400 Nar. gr'vd. 1.37 1/4 m.	
1,500 Bessemer, spot.	11.75	300 Wide gr'vd. 1.25 1/4 m.	
1,500 Gray Forge.	9.50	200 Sheared. 1.25 1/4 m.	
1,000 Bessemer, May.	11.75	<b>Skelp Steel.</b>	
1,000 Mill iron.	9.50	1,000 Nar w gr'vd 1.07 1/4 m.	
1,000 Bessemer, prompt.	12.10	420 Wide gr'vd. 1.07 1/4 m.	
1,000 Mill iron.	9.50	370 Sheared. 1.12 1/4 m.	
700 Bessemer, prompt.	11.60	<b>Muck Bar.</b>	
700 Off Bessemer.	10.50	300 Neutral delivered.	20.00
500 Gray Forge.	9.50	<b>Blooms, Billets, Bar Ends.</b>	
500 Off Bessemer.	10.50	750 May.	10.50
200 No. 1 Foundry.	11.75	<b>Spelter.</b>	
150 No. 2 Foundry.	10.75	300 May, June.	3.37 1/2
100 Open mill.	9.85	200	3.40
100 No. 3 Foundry.	9.90	<b>Ferro-Manganese.</b>	

Charcoal.		275 80% delivered.	
100 Cold Blast.	24.00	53.40	
50 No. 1 Foundry.	17.00	<b>Steel Wire Rods.</b>	
50 No. 1 Foundry.	17.00	800 5 gauge American.	
50 No. 2 Foundry.	16.00	24.00	
25 Cold Blast.	25.00	<b>Old Rails.</b>	
<b>Blooms, Billets and Slabs.</b>		600 Steel rails.	
2,500 Billets, June, July, at mill.	17.50	300 Steel rails, mixed.	
2,000 Billets, June, July, Aug., at mill.	17.40	200 Steel rails.	
1,000 Billets, prompt, at mill.	18.00	100 Steel rails.	
1,000 Billets, prompt, at mill.	17.75	<b>Scrap Iron.</b>	
		200 Wrought iron, net.	
		300 Cast scrap, gross.	
		200 O. H. steel, gross.	
		100 Cast borings, gross.	

Cartagena, Spain.

(Special Report of Barrington & Holt.)

Quotations for iron ores at the close of April are as follows: Ordinary 50% Portman, 5s. 2d. @ 5s. 8d. per ton; special low phosphorus, 5s. 8d. @ 6s. 2d.; South Spanish Campanil, 6s. 9d.; No. 1 Manganiferous (20% manganese), 12s. 3d.; No. 2 manganiferous (15% manganese), 8s. 3d.; low grade manganiferous, 5s. 9d. @ 7s. 3d. Manganese ore, 35%, is quoted at 10d. per unit. Iron pyrites, 40% iron and 45% sulphur, at 11s. per ton. All these prices are f. o. b. at shipping port.

The improvement noted in our last continues, and quite a considerable amount of stocks has been shipped off during the past few weeks, notwithstanding that freights remain firm. There is

also a fair inquiry for forward delivery, and all local prices are higher than they were a couple of months ago. A large French firm who have worked mines at Portman for some years, have now discontinued and are shipping their stocks previous to removing their business to new mines down the coast.

METAL MARKET.

NEW YORK, Friday Evening, May 11, 1894.  
Prices of Silver per Ounce Troy.

May.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	May.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
4.88 1/2	29	63 1/2	.492	9	4.88 1/2	29	63 1/4	.489	
4.88 1/2	29 1/2	63 1/2	.493	10	4.88 1/2	29 1/2	63 1/4	.488	
4.88 1/2	29 1/2	64 1/4	.493	11	4.88 1/2	29 1/2	62 3/4	.485	

The demand for silver this week has not been so active. The volume of operations has contracted and the market closed with a slight decline. It is, however, expected that we will have a fair demand for the East at current rates.

The United States Assay Office at New York reports the total receipts of silver for the week to be \$143,000 oz.

Gold and Silver Exports and Imports at New York, Week Ending May 5th, 1894, and for Years from January 1st, 1894, 1893, 1892.

	Gold.		Silver.		Excess of Ex. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$5,520,326	\$594,414	\$559,990	\$8,367	E \$5,470,535
1894...	21,315,364	5,520,336	14,040,939	513,997	E 29,321,910
1893...	51,673,606	5,623,076	10,999,177	940,928	E 56,108,779
1892...	22,994,173	5,832,072	8,874,665	502,244	E 25,544,522

The gold exported for the week went partly to Paris and partly to London, the London shipments being chiefly on Berlin orders; the silver went to London. The gold imports were chiefly from Bremen, with some from Havre; the silver came from the West Indies.

During the five days ending May 11th the exports and imports of gold and silver were as follows: Exports, gold, \$3,454,460; silver, \$573,307. Imports, gold, \$1,203,553; silver, \$50,718. Of the gold exported, \$26,540 was in Spanish coin and \$305,920 in French coin, all of which went to the West Indies; all the rest was American coin and bullion, \$38,500 of which went to the West Indies, and \$3,073,500 to Germany. Of the silver exported, \$62,700 was Mexican coin and went to London. The remainder, \$1,140,853, was American coin and bullion, \$16,039 of which went to Mexico, \$64,768 to South America and \$1,060,046 to London.

NOTES OF THE WEEK.

The extensive strike of the Western coal miners has had an unfavorable effect this week, especially on the iron and allied trades. The outcome is still very uncertain, though there are strong influences in favor of an early settlement. Tariff discussions and continued delays are also an unfavorable element in the situation. Nevertheless business has continued to improve slightly, and the general expectation of better times is increasing.

The tariff discussion is referred to in another column. The bill has been advanced one step in the Senate, but how long the discussion will continue is still entirely uncertain.

The statement of the New York banks for the week ending May 5th shows increases of \$4,840,400 in deposits, \$4,259,800 in loans, and \$614,800 in specie; decreases of \$609,800 in reserve, \$14,500 in legal tenders and \$44,300 in circulation. The increase in deposits is smaller than for several weeks past, while that in loans is considerable, being much greater than in the preceding. The reserve shows a decrease for the first time in a number of weeks. The total reserve reported was \$227,481,700, being \$82,807,150 above the legal requirements.

The changes this week are due partly to a somewhat lighter movement of money from interior points, and partly to a withdrawal of money on foreign accounts. Not much of the gold exported last week came directly from the banks, most of the drafts being in legal tenders which were afterward changed for gold at the Subtreasury. The stock of specie now held by the banks, although apparently large, is only about \$30,000,000 greater than at the corresponding period last year, and is about \$200,000 less than in the corresponding week of 1892.

Gold shipments from San Francisco in April were \$786,530; for the four months to April 30th they were \$8,781,308, an increase of 44% over the corresponding period last year. Of the April shipments \$63,000 went to Central America, \$9,265 to China, and \$3,000 to Samoa; the balance to New York.

Silver shipments from the same port were \$961,759 in April and \$3,412,203 for the four months, an increase of 36% over last year. The April shipments included \$312,878 to China, \$599,864 to Japan, \$7,267 to Central America, and \$42,000 to New York.

The statement of the United States Treasury on Thursday, May 10th, showed total balances in excess

of outstanding certificates amounting to \$126,153,910, made up as follows: Gold \$94,233,081; silver, \$12,160,603; legal tenders, \$8,307,378; treasury notes, etc., \$11,452,848. Changes during the week were decreases of \$113,149 in the total balance and of \$5,259,999 in the gold balance. The latter was chiefly due to withdrawals of gold for export in exchange for legal tenders.

The question of the repeal of the tax on the circulation of State banks, which has received but little attention in Congress so far this session, owing to the time given up to the tariff bill and other more pressing matters, will be taken up shortly by the House Committee on Banking and Currency and an effort made to report a measure. It is not at all likely, however, that any action will be taken by the House at the present session.

A branch of the International Association of Bi-metallists is to be organized in Chicago, and the signatures of a number of prominent merchants have been obtained in favor of the movement. Mr. Franklin H. Head is acting as secretary of the new association.

A suit has been brought in the Supreme Court of New York against the Pennsylvania Railroad Company as common carriers by George H. De Witt to recover \$93,872 for quantities of lead pigs and ores alleged to have been received by the company for transportation to New York City, but which, through some error or mistake, were delivered to other persons than those interested. The complaint which was filed on May 7th alleges that on October 18th, 1888, N. Corwith & Co., wholesale dealers in pig lead and other metals, bought from several firms in the West large quantities of lead and received several bills of lading for the same. Upon these bills of lading Corwith & Co. secured loans of \$120,000, giving their firm notes and placing the bills of lading in the bankers' hands as collateral. These loans were made through Blake Brothers & Co., of New York. Blake Brothers assigned the notes and collateral to others and eventually \$50,000 of the paper came into the hands of George H. De Witt, by whom this suit is brought. At the maturity of these notes they were protested. It was then discovered that the lead had been delivered by the railroad company, but not to parties in interest, and that the bills of lading had not been demanded when the goods were delivered. Corwith & Co. submit affidavits that they have demanded either their consignments of lead or their equivalent in cash and that both have been denied them.

The Paris loan, which had indirectly some effect on our money market, was over-subscribed to an extraordinary extent, the applications made being for over six times the amount of the loan. The German 3% loan was also heavily over-subscribed, about three times the amount of the issue having been offered. A large part of these over-subscriptions is due to speculative bids, and to the fact that many investors make offers for more bonds than they expect to get; nevertheless the amounts are evidences of the quantity of idle money everywhere which is now seeking employment.

The Russian Government proposes to take advantage of this present state of the market, and to convert a large part of its 5 and 6% issues into a new 4% loan, which will be offered at 93.

The Bank of England on Thursday, May 10th, reported its gold holdings at £32,190,155, an increase of £3,183,955 as compared with the corresponding date in 1893. The Bank's reserve amounted to 64.74% of the liabilities, against 39.41% a year ago.

The Bank of France on Thursday, May 11th, reported its specie holdings, in sterling, at £70,780,920 gold and £50,907,228 silver; an increase of £2,589,695 gold and a decrease of £459,644 silver, as compared with the corresponding date in 1893. Changes during the week were decreases of £97,000 gold and £92,000 silver.

The specie holdings of various European banks at the close of April are reported as follows, in sterling:

	Gold.	Silver.	Total.
Imp. Bank of Germany	£10,397,000	£16,360,000	£26,757,000
Austro-Hungarian Bank	£10,397,000	£16,360,000	£26,757,000
Nat. Bank of Belgium	£3,397,000	£7,034,000	£10,431,000
Netherlands Bank	£7,714,000	£6,128,000	£13,842,000
Bank of Spain	£7,714,000	£6,128,000	£13,842,000

Without exception, the specie holdings show a large increase over last year, especially in gold.

During the recent session of the delegates of the Latin Monetary Union, an attempt was made, with the assistance of the banks and other institutions, to ascertain the amount of silver of different coinages in circulation in Paris. Out of 6,043,000 francs handled it was found that 58.92% of the coins only were French, 28.78% being Italian, 6.51% Belgian, 4.03% Swiss and 1.76% Greek, or a total of 41.08% other than French coins.

An increased demand for silver for India is reported, the market in that country having taken up all the large shipments made early in the year. This continued demand is one of the curious features of the Indian situation.

In a late report to the British Foreign Office, Mr. J. G. Kennedy makes some interesting comments

upon a subject which has puzzled many people, the failure of the measures which the Chilean Government are taking to provide for the return to a metallic currency to arrest the depreciation of the paper money. He writes: The problem of international exchange also has been complicated by the declaration of the government that a metallic currency would be resumed after a specified period, at the termination of which the government notes would be converted into gold dollars of the fixed value of 24d. At first sight it would seem that such an authoritative declaration ought to have raised the value of the paper money, or, at any rate, have assisted materially in maintaining its equilibrium. This, however, has not been the case, and mainly for two reasons. In the first place, the carrying out of the scheme for the return to a metallic currency involves, until it arrives at maturity, a continual accumulation of gold, and consequently a continual special demand for bills. If a calculation could be made of the gold required to pay the charges on the foreign debt, to remit the interest on the investments made by foreigners in Chile, to send the money for goods, the payment for which had been held over from the preceding year, to place in their owners' hands the proceeds of securities sold out hurriedly by nervous holders, and to find the stores gradually being accumulated by the Chilean treasury and the Chilean banks for the eventual conversion of their paper issues, and if this were added to the amount required to pay for the imports of 1893, however greatly these have diminished, and the whole sum were contrasted with the value of the exports during 1893, the serious diminution in the value of the paper dollar during that year would probably be very fully accounted for. In the second place, when considering the effect of the government conversion scheme upon exchange, it should be noted that little genuine confidence in its fulfillment has ever been felt. It is notorious that many people of influence in Chile benefit, at any rate temporarily, by the perpetual diminution of the gold value of the paper currency, while the banks also are not in favor of the conversion scheme.

French imports and exports of gold for the three months ending March 31st were as follows:

	1893.	1894.
Imports.....	\$7,330,065	\$7,344,198
Exports.....	5,577,110	2,909,370
Net imports.....	\$1,752,955	\$4,434,818

The increase in net imports this year was large.

**Domestic and Foreign Coins.**

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

	Bid.	Asked.
Mexican dollars.....	\$.51½	\$.52¼
Peruvian soles and Chilean pesos....	.51	.52¼
Victoria sovereigns.....	4.87	4.89
Twenty francs.....	3.90	3.93
Twenty marks.....	4.78	4.82
Spanish 25 pesetas.....	4.85	4.90

**Other Metals.**

**Copper.**—The larger consumption at home, reported a week ago, continues, and consequently deliveries have been very good. The first arrivals of Lake copper, shipped by lake and rail, were eagerly awaited, and the demand was so large that a great deal of copper had to be borrowed by some people from whomsoever had a little to spare, in order that certain consumers who, unfortunately, had not sufficient stocks, might be relieved. The demand for electrolytic copper also continues to be exceedingly satisfactory, and prices for it might have stiffened somewhat if it had not been for the fact that business from here with Europe was impossible, because of the flat conditions and very low prices ruling there. Even so, some of the larger producers showed an inclination to meet the market, especially when export orders were in sight, and although to a certain extent prices were lowered, but little business resulted. At home, the larger of the lake companies are holding firmly for 9½, but sales have been made, either by second-hand holders or the smaller producers, at a trifle less. The price of electrolytic is rather irregular and more or less nominal at 9@9½ for ingots, cakes and for wire bars. Casting copper is offered at 8½.

In Europe the G. M. B. market has hardened day by day, and prices, which were recently down to £39 5s., are now £40@£40 2s. 6d. for spot and 10s. more for futures. The same improvement cannot be reported in the market for refined copper, principally because American copper is being much pressed for sale by second hands, at prices with which the makers themselves will not compete. We have to quote English Tough, £41 15s.@£42; Best Selected, £42 15s.@£43; Strong Sheets, £51 15s.@£52; India Sheets, £48@£48 5s.; Yellow Metal, 4¼d. In spite of all, there appears to be a strong undercurrent and the moment European buyers commence to purchase fair quantities it would seem as if an advance in prices was likely to take place.

Copper imports into the United Kingdom for the four months to April 30th are reported by Messrs. James & Shakespeare's circular as follows, in long tons:

	1893.	1894.	Changes.
American.....	8,921	14,240	I. 5,319
Chilean.....	6,827	6,823	D. 4
Other.....	15,894	12,772	D. 3,122
Total.....	31,642	33,835	I. 2,193

The visible supply, April 30th, is estimated at 46,806 tons, an increase of 200 tons over March 31st. The exports of copper from the port of New York during the week ending May 11th, as reported by the New York Metal Exchange, were as follows:

Liverpool—Bovic.....	Pigs	75 tons
Havre—Chas. Martell.....	Pigs	90 "
St. Petersburg—Colorado.....	Plates	10 "
Swansea—Wells City.....	Pigs	117 "
	Bars	150 "
Havre—La Bourgogne.....	Plates	20 "
	Bars	10 "
	Ingots	20 "
Rotterdam—Werkendam.....	Plates	132 "
	Bars	60 "
Liverpool—Lucania.....	Pigs	25 "
Christiania—Hekla.....	Ingots	16 "
Hull—Colorado.....	Plates	10 "
Liverpool—Cufic.....	Pigs	111 "
Glasgow—Furnessia.....	Ingots	10 "
Liverpool—Runic.....	Pigs	200 "
	Ingots	37 "

Exports of copper from Baltimore for the week ending May 9th are reported by our special correspondent as follows:

May 4, Hamburg—Cassius.....	70 cakes, 11,314 lbs.
Rotterdam—Patapasco.....	734 bars, 112,115 "

Other metals exported during the week were: 16 barrels manganese ore, 21,589 lbs, to Antwerp; 739 bundles tin scrap, 120,785 lbs., to Rotterdam; 60 tons pig iron to Cienfuegos, Cuba.

**Tin.**—The demand for metal for consumption continues to be very good, indeed, and receipts are shipped out almost as fast as they come to hand. Stocks in bonded warehouses are very small, and those on which duty has been paid are, naturally, kept down to the very lowest limit, because of anticipated early action on the tariff. We quote 2¼ for spot, May and June.

Abroad prices advanced early in the week, receding later on, and at the close we have but little change to note as the quotations are £72 for spot and £72 15s. for three months prompt.

Messrs. De Monchy & Havelaar's circular gives the receipts of Banka and Billiton tin in Holland at 4,568 tons for the four months ending April 30th, against 3,356 tons for the corresponding period in 1893. Deliveries for the four months were 3,600 tons. Including stocks in warehouse and afloat the unsold stocks April 30th were estimated at 5,707 tons, against 2,753 tons in 1893.

**Lead.**—Producers of desilverized lead have met the market more freely, but as whatever was offered was readily taken, the market has been steady at 3¼@3¼25.

In London prices are unchanged at £9@£9 2s. 6d. for Spanish, with English quoted at 2s. 6d. more per ton.

**BY TELEGRAPH.**

**St. Louis Lead Market.**—The John Wahl Commission Company advise us as follows: Lead very quiet. Soft Missouri and chemical selling at 3¼7½c., and for argenteiferous 3¼20c. is asked, probably 500 tons being sold on this basis this week.

**Spanish Lead Market.**—Our special correspondents at Cartagena, Spain, write as follows: Silver has risen slightly during this month. Liquidations in this Sierra have been made at 46 reales per quintal of lead, and the silver has been paid at 14 reales per oz. Latest prices for Cartagena lead, London delivery, are: Soft lead, £9 4s. 7½d.; argenteiferous lead, £9 10s.; silver rated 31@31½ per oz.

**Spelter.**—The production is reported to be very light, and hardly 50% of what it was a year ago. The low prices are supposed to be the cause of the large reduction, but, besides, the consumption is still greatly restricted and being curtailed more and more, as the lack of coal is causing some of the galvanizers to close down. We have to give the market as nominally 3¼45@3¼50 New York.

The English market is steady at £15 12s. 6d. for good ordinaries and £15 15s. for specials.

**Aluminum.**—The Pittsburg Reduction Company furnishes the following quotations, showing a reduction in prices: No. 1 (guaranteed over 98% pure) in rolling ingots, 75c. per lb. in small lots; 75c. per lb. in 100-lb. lots; 70c. per lb. in ton lots. No. 1 aluminum in ingots for remelting: 65c. per lb. in small lots; 60c. per lb. in 100-lb. lots; 55c. per lb. in ton lots and over. No. 2 grade (guaranteed to be over 94% pure aluminum, with no injurious impurities, for alloying with iron and steel) cast in ingots for remelting: 60c. per lb. in small lots; 55c. per lb. in 100-lb. lots; 50c. per lb. for ton lots and over. Aluminum castings from 90c. per lb. upward, in accordance with the number of castings, their weight, etc. Sheets are quoted 80c.@\$4.40 per lb., according to thickness and size. Wire, \$1@£2.50 per lb., according to gauge.

Abroad, the Neubausen Company continues to quote 5 fr. per kilogram for ingots in large lots. No other recent quotations are made. The price given is at works in Switzerland.

**Magnesium.**—Only one company is at present manufacturing this metal in commercial quantities. That concern, the Aluminum and Magnesium Fabrik, Hemelingen, Germany, quotes prices as follows: Ingots and cubes, \$6.48 per kilogram; bars, \$6.24; powder, \$8.64, ribbon and wire, \$9.12 per kilo. These prices are at the works and for orders of over 10 kilos; for less than 10 kilos, 24c. per kilo, must be added for ingots and bars, and 48c. for powder or wire.

**Platinum.**—Prices are steady, with no recent changes to report. For chemical ware, Messrs. Eimer & Amend, New York, quote platinum crucibles and dishes, hammered ware,

French make, at 45c. per gram for smaller quantities, 43c. per gram for lots of not less than 100 grams, and 41c. for lots of not less than 250 grams. Wire and foil at 42c., 41c. and 40c. respectively for the quantities named. Current retail price for crucibles is 50c. per gram.

**Nickel.**—Quotations are steady at 42@50c. per lb. according to grade.

**Sodium.**—The demand is so small that local quotations are hard to find. In Germany and England the metal is quoted at 90c.@\$1 per lb. at factory.

**Bismuth.**—Quotations on the New York Metal Exchange are \$2 per lb. for lots of 500 lbs. or over; \$2.25@£2.50 per lb. for smaller lots.

**Antimony** is dull. Cookson's is quoted at 10@10½; L. X. at 9½; Hallett's at 8½@8¾; U. S. French Star, 10c.

**Phosphorus.**—The latest quotations given are 50@52½c. per lb., f. o. b. New York or Philadelphia.

**CHEMICALS AND MINERALS.**

NEW YORK, Friday Evening, May 10.

**Heavy Chemicals.**—The general condition of the heavy chemical market continues as outlined in our last week's review of the trade. The market is quiet. For caustic soda on the spot and for prompt delivery there has been a fair jobbing trade. Carbonated soda ash and alkali continue depressed, owing to unsatisfactory condition of the glass trade. Bleaching powder is quiet this week. We quote: Caustic soda, 60%, 2 82½@2 97½c.; 70%, 2 60@2 70c.; 74%, 2 62½@2 72½c.; 76%, 2 70@2 80c. Carbonated soda ash, 48%, 1 05@1 25c.; 58%, 1 05@1 15c. Alkali, 48%, 1 05@1 15c.; 58%, 1 10@1 10c.; according package. Sal soda, 80@90c. Bleaching powder, 2 05@2 50c.

**Acids.**—The acid market is quiet this week. Whatever business is doing is on old contracts. All acids are in light demand. There is no change in price and we quote: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, \$1.62½@£1 75; muriatic, 18", 80c.@£1; 20", 90c.@£1.10; 22", \$1@£1.25; nitric, 40", \$4; 42", \$4.50@£4.75; sulphuric, 75c.@£1. Mixed acids according to mixture, oxalic, \$6.75@£7.25. Blue vitriol is quoted at \$3.75; glycerine from nitro-glycerine, 11½@12½c., according to quality and quantity.

**Brimstone.**—There is nothing of interest to report of the brimstone market. It continues very dull. Quotations are as follows: Best unmixed seconds, on the spot, \$16.75@£17; shipments, \$16.50. Best thirds are \$1 less.

**Fertilizing Chemicals.**—The fertilizer market is quiet this week. There is still some demand for small spot lots, but it does not amount to much. Stocks of ammoniates are light both here and in the west, and consequently prices have not weakened. We quote this week sulphate of ammonia \$3.62½@£3.65 for gas liquor and \$3.30 for bone. Dried blood, \$2.30@£2.35 per unit for high grade and \$2.15@£2.20 for low grade. Azotine, \$2.25@£2.35. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15% av. P<sub>2</sub>O<sub>5</sub>, 60c. per unit at seller's works in bulk. Dissolved boneblack, 17% to 18% P<sub>2</sub>O<sub>5</sub>, 95c. per unit. Acidulated fish scrap, \$15@£16, and dried scrap nominally \$25 f. o. b. fish factory; wet scrap \$15 f. o. b. fish factory. Tankage, high grade, \$22.50 @£23; low grade, \$21@£21.50. Bone tankage, \$23@£24; bone meal, \$24@£25 50.

In lots of 50 tons on contracts we quote: Double manure salts, 48 53% (basis of 48%); New York and Boston, \$1.12; Philadelphia, \$1.14½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.17. High grade manure salts, 90-95% and 96-99% (basis 90%), respectively: New York and Boston, \$2.07@£2.11; Philadelphia, \$2.09@£2.13½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.12@£2.16.

**Phosphates.**—Charleston, S. C., quotations are: Acid phosphate 13% available, \$6.50@£7 cash in bulk. High grade phosphate rock is \$4.75@£5 f. o. b. vessel and cars at mines. Land phosphate rock \$4.75 f. o. b. cars or vessels at mines.

**Muriate of Potash.**—Arrivals this week aggregate 500 tons. In lots of 50 tons, quotations are as follows: 80 85% and minimum 95% basis 80%), respectively: New York and Boston, \$1.78 @£1.91; Philadelphia, \$1.80@£1.83½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.83½ @£1.86.

**Kainit.**—Prices for kainit (minimum 23%) in cargo lots for 1894 delivery are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, \$9@£9.25; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$9.75@£10. For sylvinit, 27-35% prices are as follows per cent. per gross ton, invoice weight: New York, Boston and Philadelphia, 37½c.; Charleston, Savannah, Wilmington, N. C., and New Orleans, 41c. Actual worth, 1c. more per cent.

**Nitrate of Soda.**—The market is quiet. We quote this week: On the spot, \$2.30@£2.35; near-by arrivals, \$2.25@£2.27½; summer shipments, \$1.95.

**Liverpool.**

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

Dullness is still the prevailing feature in the chemical trade, and the outlook is not encouraging. Soda ash is dull, and for Leblanc makes prices are nominal, the nearest spot range according to market being about as follows: Caustic ash, 48%, £3 15s.@£4 per ton; 57% and 58%, £4 10s.@£4 15s. per ton. Carbonate ash, 48%, £3 5s.@£3 15s. per ton; 58%, £3

15s. @ £4 per ton. Ammonia ash, 58%, in moderate demand at £3 10s. @ £3 15s. per ton for tierces and 5s. less for bags.

Soda crystals are slow of sale at £2 13s. 9d. @ £2 15s. per ton less 5%.

Caustic soda is weak owing to absence of orders. Quotations vary according to export market and are quite nominal, the spot range being about as follows: 60% £7 15s. @ £8 5s. per ton; 70% £8 15s. @ £9 5s. per ton; 74% £9 15s. @ £10 5s. per ton; 76% £10 15s. @ £11 5s. per ton. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching powder is in limited supply and is quoted at from £7 10s. to £8 5s. per ton net cash for hardwood packages, according to export market. There is a very fair business doing in this article.

Chlorate of Potash is quite neglected and still tending downward, being nominally quoted at 6% @ 7d. per lb. for prompt delivery.

Bicarb. Soda is firm at £6 15s. per ton, less 2 1/2% for one cwt. kegs, with usual allowances for larger packages.

Sulphate of Ammonia receives little attention from buyers and continues to decline, the nearest spot values to-day ranging from £13 5s. to £13 10s. per ton, less 2 1/2% for good gray 24 and 25% in double bags f. o. b. Liverpool, according to quality.

Nitrate of Soda is going back and is quoted to-day at £10 10s. per ton less 2 1/2% for double bags f. o. b. here. There is a fair trade reported at the decline.

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

**MINING STOCKS.**

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 454 and 456.]

NEW YORK, Friday Evening, May 11.

The "boomlet" in mining stocks to which we referred in our last issue has begun to show already those signs which point to its speedy demise. The San Francisco brokers have a habit of making high nominal opening prices with the laudable intention of inducing some of the guileless New Yorkers to purchase stocks in the belief that they will rule higher during the course of the day.

Some people here are occasionally deceived in this way, but such transactions generally have been so small as to be altogether unimportant. To-day's opening San Francisco prices will be found elsewhere in this page. They show a lower range of values and less firmness.

In our own mining stock market it has been the same old story—much speculative talk, great doubts as to the probable course of the market and very little actual business.

The Comstocks have been quieter than last week and prices show a declining tendency. Sales of Consolidated California & Virginia amounted to 410 shares at \$6.75 @ \$8.25; at the last call to-day \$5.25 was bid for this stock.

There was a solitary sale of 100 shares of Hale & Norcross at \$1.20, and another of Yellow Jacket at the same price. Of Sierra Nevada 300 shares changed hands at \$1.75 @ \$1.90. Comstock Tunnel shows the heaviest transactions this week, 3,766 shares having been sold at 8 @ 9c. Other sales were: 200 shares of Alta at 57c.; 200 shares of Best & Belcher at \$2.50 @ \$2.70; 200 shares of Mexican at \$2.15 @ \$3.35, and 200 shares of Union Consolidated at \$1.40 @ \$1.50.

The Bodies were very quiet. Of Standard Consolidated only 300 shares were sold at \$1.70. Bulwer Consolidated shows sales of 300 shares at 20 @ 25c.

The only Colorado stock traded in during the week was Little Chief, which declined from 14c. to 10c., with total sales of 800 shares.

We learn from the president of the Horn Silver Mining Company that the machinery for the new concentrating plant which is to be erected in place of the one recently destroyed by fire is now being received at San Francisco.

At the annual meeting of the Central Railroad of New Jersey to-day, the following directors were elected: Edward D. Adams, George F. Baker, Harris C. Fahnestock, James A. Garland, Henry Graves, Charles Lanier, Penry W. Maxwell, J. Rogers Maxwell and Samuel Sloan. The annual report has already been published.

**Boston.**

May 10.

There has been a slightly better tone to the Montana stocks the past week on account of the settlement of the railroad strike, and the resumption of operations at the mines.

Boston & Montana advanced from \$25 1/4 to \$26 1/4, with closing sales at the latter price.

Butte & Boston sold down to \$9 1/2, and recovered to \$9 3/4.

The Lake Superior stocks have all had a downward tendency, owing, in part, to the weakness of copper abroad, and the dullness of the market for the metal at home. Calumet & Hecla declined \$10, from \$290 to \$280, on small sales.

Tamarack holds fairly well at the decline of last week, with sales at \$162 to \$163 1/4, closing at the lowest figure.

Quincy fairly steady at \$90 for the stock and \$30 for the scrip, with moderate sales.

Osceola has been pressed for sale, and declined to \$21 1/4, the lowest price for the year. There was a slightly better feeling in the stock to-day, and on small sales it advanced to \$22 1/4. Franklin declined

to \$8 1/4, with a few small lots selling at \$9. Kearsarge sold at \$6, a decline from \$7 1/4, the last sale (April 11th). Atlantic sold at \$9, a decline of \$ 1/2 from last week. There was nothing done in Centennial or Wolverine this week; \$2 1/4 was best bid for the former, and \$1 1/4 for the latter.

Allouez sold at 11c. for a lot of 600 shares, and at 20c. on later sales.

The market closed without any special feature.

**San Francisco.**

May 4.

(From our Special Correspondent.)

The mining stock market has continued active throughout the current week, and the total volume of sales has been very large. During the month just ended the total sales were largely in advance of the previous month, as may be seen at a glance at the following comparative table:

	1893.	1894.
January.....	265,760	240,410
February.....	238,245	224,750
March.....	240,720	254,890
April.....	264,210	463,805

The "bulls" have held control of the market this week and the bearish element has been almost entirely eliminated. Consolidated California & Virginia sold to-day for \$7.87 1/2 and touched \$8 in the Pacific Board. While public interest is being fostered by reports sent down from Virginia City regarding the possibility and probability of an important ore development on the 1,600 level, it is not at all uncertain that top figures have now been reached and that the market will receive a decided setback next week. The official reports have stated that indications all pointed to a strike of far more than ordinary magnitude. On the other hand private letters have been received reporting that the original 6 ft. of ore that was cut narrowed down until now it has almost petered out. As the several statements raise a direct issue of fact it is impossible to say which is correct. Meantime the official weekly report is anxiously awaited.

The several sessions of the Board to-day were somewhat reminiscent of old times. While there was steady demand for the leader at prices ranging from \$7.25 to \$7.87 1/2, the other North End Comstocks sold readily at advanced prices. Ophir opened at \$4, and before the close sold at 90c. advance. Mexican at \$1.40, Sierra Nevada at \$1.50, and Union Consolidated at \$1.10, were very active, and even the hitherto despised Scorpion sold up to 10c. under sales of nearly 2,000 shares.

In the middle group of Comstocks the more important stocks have moved much more freely than last week, and this, too, at values better sustained. Best & Belcher sold to-day to \$2.40, an advance during the week of 30c.; Chollar to 80c., an advance of 20c.; Gould & Curry to \$1.15; Hale & Norcross to 80c.; Potosi to \$1.30, and Savage to 95c.

The movement at the North End has affected the Gold Hill stocks to such an extent that prices have ruled proportionately as high as among the more favored stocks. To-day, between bounds, 2,600 shares of Alta sold from 45c. to 50c.; 4,700 shares of Belcher sold from \$1.80 to \$1.95, and then shaded off to \$1.50, strengthening before the market closed to \$1.75. Bullion ruled at 53c.; Challenge at 80c.; Confidence at \$1.90; Crown Point at 95c.; Justice at 30c.; Kentuck at 16c.; Occidental at 18c.; Overman at 38c.; and Yellow Jacket at \$1.20. Large sales were made of all these shares. The market weakened slightly before the close, and most of the above quoted shares weakened from one to five points.

Of the outside stocks the Bodies only have received any attention. Bodie Consolidated sold at \$2.25 and Mono to 50c.

BY TELEGRAPH.

SAN FRANCISCO, May 11.—The opening quotations to-day are as follows: Best & Belcher, \$2.30; Bodie, \$3.70; Bulwer, 30c.; Chollar, 86c.; Consolidated California & Virginia, \$6.25; Eureka Consolidated, 75c.; Gould & Curry, \$1.25; Hale & Norcross, 86c.; Mexican, \$2.10; Mono, 70c.; Navajo, 10c.; Ophir, \$4.75; Savage, 95c.; Sierra Nevada, \$1.40; Union Consolidated, \$1.10; Yellow Jacket, \$1.00.

**London.**

May 3.

(From our Special Correspondent.)

The mining stock market has been comparatively quiet during the past week, though firmness has been the general characteristic. The cause of the quietness was the occurrence of the Jewish Pass-over and the usual holiday on the 1st of May; the close proximity of these two events being taken advantage of by stock exchange men to obtain a well-earned rest.

Among American stocks the feature of the week has been the attack on De Lamars. A large block of these shares was suddenly put on the market by an insider and the order for sale appeared to be rather pressing. This action was universally interpreted to mean that those in a position to know best had good reasons for believing that there was something wrong with the mine. The quotations of the stock went very low indeed, dropping from £1 to 14s. Buyers were found at this low price and all the block was absorbed pretty readily. Since then the price has recovered and now stands at 18s. The real explanation of this temporary collapse is that one of the insiders was short of ready cash (as he often is) and had to sell out a quantity of his De Lamar shares in a hurry as being the best way of raising money quickly.

Harqua Halas have been very dull and buyers do not make any offers; consequently the quotations are gradually falling. Montanas are falling away

again, and it seems as though the recent spurt had exhausted itself and that the old price of a year ago may be expected to be arrived at again.

Among low-priced shares Pinos Altos still exhibits strength, and the price is gradually advancing, standing now at 6s. buyers as compared with 1s. two months ago. Idaho Exploring, La Platas and Holcombs continue strong and in demand.

Colonel McLaughlin is more hopeful than ever of Golden Feather on account of the early spring and because there has been no destruction of the company's property by winter storms and the spring break-up. He reports everything ready for work.

**Pa. Ia.**

May 2.

(From our Special Correspondent.)

Perhaps the most active market during the past week has been in the metallurgical shares, which have been helped by rumors of heavy contracts for marine and naval work. Acieries de France have been firm at 800 fr.; Acieries de la Marine (Pétin Gaudet) at 929 25 fr.; while Forges et Acieries du Nord have risen to 1,030 fr., Ateliers et Chantiers de la Loire to 485 fr., and Société de Fives-Lille to 685 fr.

In the general mining market there has been little activity, but generally a fairly steady market. Malfidano (zinc) has lost a little, closing at 1,030 fr. Vielle-Montagne (zinc) was firmly held at 457 50 fr., closing, on the statement that, in spite of the low price of spelter, the company's net earnings for last year were 936,000 fr., and that a dividend of 25 fr. per share had been declared. Laurium (zinc and lead) is weak at 550 fr. in spite of favorable reports. Aguilas (lead) closed at 55 50 fr. The gross earnings in 1893 were 1,780,000 pesetas, an increase of 12 1/2% over 1892. After paying all charges only an insignificant sum remains; but the floating debt has been materially diminished. Societe de Nickel closed at 510 fr.; it is stated that the dividend will be maintained at 40 fr., but only 30 fr. will be paid now, the remaining 10 fr. being held in reserve for the present.

The coal stocks are quiet, with few transactions. Dombrowa (Russia) was weak at 595 @ 605 fr. Mokta-el-Hadid was weak on the report for 1893, showing that the net earnings were 1,696,935 fr., a loss of 32 1/2% as compared with 1892. Of these net earnings 312,285 fr. were appropriated for new work. The dividend declared has been the same as in 1892, being 40 fr. on full-paid stock, but the shares have fallen a little, to 785 fr. Kebao closed at 595 fr.

Huanchaca (silver) has advanced a little, to 118 75 fr. In the copper stocks, Rio Tinto has been steady at 381 fr.; Tharsis closed at 123 75 fr., and Jerez-Lanteira has fallen to 40 fr.

In the Transvaal gold stocks this market follows the London prices very closely. De Beers Consolidated (diamonds) has been quite active, closing at 430 fr., a shade above the London price; but De Beers is always a favorite on this market.

An echo of the great copper speculation was heard in a decision given by the civil court here this week in a joint suit brought by 12 persons who bought stock in the Comptoir d'Escomptes a little prior to the collapse of that institution. The suit was against MM. Thomas and Lavoysiere, who were directors, and was brought on the ground that the plaintiffs had bought their stock on the strength of false representations made by the defendants as to the solvency of the fiscal society which they represented. In this case the court gave judgment in favor of four of the plaintiffs, who proved that they had bought the stock for investment; but held, as to the other eight, that their transactions were purely speculative and on margin, and that they were entitled to no damages. AZORE.

**DIVIDENDS.**

Bald Butte Mining Company paid dividend No. 25 of ten per cent., \$25,000, May 3d, at the office of the company in Helena, Mont.

**MEETINGS.**

Chunchosmaye Gold Placer Company, at the office of the company in New York City, May 16th, at 12 o'clock noon.

Columbus & Hocking Coal and Iron Company, at the office of the company in Columbus, Ohio, May 16th, at 3 p. m.

East Sierra Mining Company, at the office of the company, No. 310 Pine street, San Francisco, Cal., May 14th, at 2 p. m.

Enterprise Mining Company. Adjourned meeting will be held at the office of the company in Jersey City, N. J., May 29th, at 3:30 p. m.

Franklin Mining Company, at the office of the company, in Boston, Mass., May 23th, at 10 a. m.

Puno Silver Mining Company, at the office of the company in New York City, May 16th, at 12 o'clock noon.

Scorpion Mining Company, at the office of the company in San Francisco, Cal., May 17th, at 12 o'clock noon.

Trio Mining Company, at the office of the company, No. 224 California street, San Francisco, Cal., May 22d, at 11 a. m.

Westinghouse Electric and Manufacturing Company, at the office of the company in Pittsburg, Pa., May 16th at 10 a. m.

NEW YORK MINING STOCK QUOTATIONS.

Table with columns for Dividend-Paying Mines and Non-Dividend-Paying Mines, listing company names and stock prices for various dates from May 5 to May 11, 1894.

\*Ex-dividend. †Dealt in at New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold 2,910. non-dividend shares sold, 4,566. Total shares sold, 6,876.

BOSTON MINING STOCK QUOTATIONS.

Table with columns for Boston Mining Stocks, listing company names and stock prices for various dates from May 4 to May 10, 1894.

Dividend shares sold, 3,400. Non-dividend shares sold, 1,988. Total shares sold, 5,388.

COAL AND COAL RAILROAD STOCKS.

Table with columns for Coal and Coal Railroad Stocks, listing company names and stock prices for various dates from May 5 to May 11, 1894.

CALIFORNIA. San Francisco.

Table with columns for California Stocks, listing company names and stock prices for various dates from May 4 to May 10, 1894.

PENNSYLVANIA. Philadelphia. May 10.

Table with columns for Pennsylvania Stocks, listing company names and stock prices for various dates from May 10, 1894.

COLORADO. Denver.

Table with columns for Colorado Stocks, listing company names and stock prices for various dates from May 7 to May 10, 1894.

FOREIGN. London Quotations.

Table with columns for Foreign Stocks, listing company names and stock prices for various dates from May 3, 1894.

INDUSTRIAL AND TRUST STOCKS.

Table with columns for Industrial and Trust Stocks, listing company names and stock prices for various dates from May 5 to May 11, 1894.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Par, Dividends, Date and amount of last, and Name and Location of Company, Capital Stock, Shares, Par, Assessments, Date and amt of last.

G., Gold, S., Silver, L., Lead, C., Copper, B., Borax. \* Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$12,500,000. § Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. ¶ Previous to this company's acquiring Northern Belle, that mine paid \$2,400,000 in dividends against \$425,000 in assessments.

Table with 2 columns: Item Name and Price. Includes Colorado Aspen items like Argentum-Juniatia, Aspen Contact, etc.

Colorado Springs. Prices and sales for the week ending May 4th, 1894:

Table with 4 columns: Item Name, High, Low, Sales. Lists various gold and silver items and their market performance.

Table with 2 columns: Item Name and Price. Includes Pennsylvania items like Bridgewater Gas, Chartiers Valley Gas, etc.

MISSOURI. St. Louis. May 10.

Table with 2 columns: Item Name and Price. Lists Missouri items like Adams, American & Nettie, etc.

MONTANA. Helena. (Specially Reported by S. K. Davis.)

Table with 2 columns: Item Name and Price. Lists Montana items like Bald Butte, Benton Group, etc.

MINNESOTA. Duluth. May 8.

Table with 2 columns: Item Name and Price. Lists Minnesota items like Biwabik M. Iron Co, Cinnabatt Iron Co, etc.

UNLISTED STOCKS.

Table with 2 columns: Item Name and Price. Lists unlisted stocks like Adams Iron Co, Ashland Iron Co, etc.

FOREIGN. Shanghai, China.

Table with 2 columns: Item Name and Price. Lists foreign items like Bald Butte, Benton Group, etc.

Paris, France. April 27.

Table with 2 columns: Item Name and Price. Lists Paris items like Aguas Tenidas, Anzin (coal), etc.

ASSESSMENTS.

Table with 4 columns: Company, No., Dnt. in office, Day of sale, Amt. per sh're. Lists various companies and their assessment details.

CURRENT PRICES.

Table with 2 columns: Item Name and Price. Lists various chemical and mineral products like Acid-Acetic, Alcohol, Alum, etc.

Table with 2 columns: Item Name and Price. Lists various chemical and mineral products like Cadmium Iodide, Chalk, China Clay, etc.

Table with 2 columns: Item Name and Price. Lists various chemical and mineral products like Mineral Wool, Naphthalen, Nitric Acid, etc.

Tin-Crystals, in kegs or bbls.

Table with 2 columns: Item Name and Price. Lists tin crystals and other items like Muriate, Oxymur, etc.

THE RARER METALS.

Table with 2 columns: Item Name and Price. Lists various rare metals like Arsenic, Barium, Bismuth, etc.





**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.**

**Positions Vacant.**

**1320 WANTED—AN EXPERT PLACER** miner to superintend the installation and operation of hydraulic plant in South America. Address **COMPETENT, ENGINEERING AND MINING JOURNAL.**

**1322 WANTED—AN ENGINEER WHO** is familiar with subsoil and spring drainage to report on draining a property near New York City. Address, giving experience and references, **SUBSOIL, ENGINEERING AND MINING JOURNAL.**

**1323 WANTED—A CHEMICAL OR MECHANICAL** engineer capable to erect a bone black and sulphate of ammonia works. Address **BONE BLACK, ENGINEERING AND MINING JOURNAL.**

**1324 WANTED—BRIDGE SALESMAN** for each State in the Union, competent to make sales of bridges and superintend erection when necessary. Address, stating age, experience, salary expected, etc., **SALESMAN, ENGINEERING AND MINING JOURNAL, lock box 1107, Chicago, Ill.**

**1325 WANTED—A THOROUGHLY COMPETENT** master mechanic to take charge of the machinery of a copper mining and smelting concern in the Northwest. Apply, stating age, experience and references. Address letters **MONT, ENGINEERING AND MINING JOURNAL.**

**1326 WANTED—FOREMAN MACHINIST**—one who would appreciate an opportunity for advancement; sobriety and ability must be unquestioned; prefer one who has some knowledge of draughting and has had experience in the manufacturing of water-tube boilers; state age, nationality, wages desired and references. Address **MACHINIST, ENGINEERING AND MINING JOURNAL.**

**1327 WANTED—A SALESMAN WELL** acquainted with the steel trade, particularly in the Eastern States. Address **STEEL TRADE, ENGINEERING AND MINING JOURNAL.**

**1328 WANTED—AN ANALYTICAL** chemist thoroughly versed in the analysis of gold, silver, copper and lead ores. Applicant must be able to purchase at least \$500 of the company's stock. A salary of \$100 monthly is guaranteed to the right man for the first few months, with great chances for increase. Address **COLORADO, ENGINEERING AND MINING JOURNAL.**

**1329 WANTED—AN ASSISTANT CHEMIST** and assayer in a shop refining precious metals. Address, stating age, experience, and wages expected, **ASSISTANT, ENGINEERING AND MINING JOURNAL.**

**Situations Wanted.**

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

**WANTED—SITUATION AS CHEMIST AND** metallurgist; have had several years' experience with all classes of furnace supplies and products; technical education. Good reasons given for leaving present situation. Address **A. M. H., ENGINEERING AND MINING JOURNAL.** No. 16,164, May 19.

**WANTED—SITUATION IN SMELTING OR** concentrating works; technical education; several years' experience in treating low grade ores. References given. Address **SMELTING AND CONCENTRATING, ENGINEERING AND MINING JOURNAL.** No. 16,166, June 9.

**A GENERAL MACHINIST WANTS A SITUATION** as Foreman. Address **STEAM, ENGINEERING AND MINING JOURNAL.** No. 16,497, June 30.

**CHEMIST—DEGREES PH. B. AND A. M.**—Desires situation in educational institution in or near New York. Address **VOORHEES, 33 W. Forty-second street.** No. 16,481, May 19.

**POSITION WANTED AS SUPERINTENDENT,** solicitor, mechanical engineer or designer by competent party, fully familiar with best shop practice, with estimating, calculating, designing and building medium and heavy machinery and structural iron work as mining, iron and steel plants and machinery, steam and hydraulic engineering. Address **VOLKMAR, 3400 Franklin Ave., St. Louis, Mo.** No. 16,476, May 19.

**POSITION WANTED BY FIRST-CLASS** structural draftsman, with five years' experience in all kind of bridge, trestle, roof and especially modern building construction, in calculating, figuring and making shop drawings; quick and reliable. Best of references. Address **FIREPROOF, ENGINEERING AND MINING JOURNAL.** No. 16,477, May 19.

**YOUNG MAN DESIRES POSITION AS** Analytical Chemist, specialty having been made of iron and steel, pig iron, gold and silver ores. Is graduate of Ann Harbor. Can produce unsurpassed references. **F. J. PECK, 475 Russell avenue, Cleveland, O.** May 26

**SITUATION WANTED BY A PRACTICAL** man who has been master mechanic, mining engineer and superintendent of large coal mines in the soft coal region of the East. Can give best of references. Address **B. E., ENGINEERING AND MINING JOURNAL.** No. 16,505, May 28.

**CHEMIST DESIROUS OF MAKING A** change wants position. Best references. Address **H. A. B., ENGINEERING AND MINING JOURNAL.** No. 16,504, June 2.

**A MECHANICAL DRAUGHTSMAN DESIRES** engagement. Address **STAFF, ENGINEERING AND MINING JOURNAL.** No. 16,503, June 9.

**POSITION WANTED BY FIRST-CLASS MACHINIST** as master mechanic, foreman or any position where ability and faithful services will be appreciated. Experience in marine and stationary engines and rolling mill machinery, good draughtsman. Vicinity of New York preferred. Address **HUSTLER, ENGINEERING AND MINING JOURNAL.** No. 16,502, June 9.

**A CERTIFICATED MINE MANAGER AND** Mining Engineer desires a position as mine superintendent or mining engineer. Twenty years' experience at extensive mines, including the opening up of new mines, erecting new plants, rope haulage and long wall work. First class references. Address **T., ENGINEERING AND MINING JOURNAL.** No. 16,483, May 26.

**POSITION WANTED AS ASSISTANT TO** mine manager or mining engineer, by a recent graduate of the Columbia College School of Mines. Address **METAL MINING, ENGINEERING AND MINING JOURNAL.** No. 16,500, 14.

**A MINING ENGINEER WILL SHORTLY BE** open to re-engagement as Manager or Superintendent of Mines and Mills. Has wide experience in gold, silver and copper. Highest references from present and past employers. Address **TRANSIT, ENGINEERING AND MINING JOURNAL.** No. 16,495, June 23.

**METALLURGIST, WITH EXTENSIVE EXPERIENCE,** and one of the best records as superintendent for several years of one of the largest smelting works of this country, wishes a change and position with a solid concern who appreciates good, practical and cheap running of their works. Address **EXPERIENCED METALLURGIST, ENGINEERING AND MINING JOURNAL.** No. 16,128, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

**CHEMIST OF NINE YEARS' EXPERIENCE** in metallurgical works is open to engagement. Best of references. **H. N. YATES, Lockport, N. Y.** No. 16,482, 17.

**Contracts Open.**

**PIPING, CASTINGS, VALVES, ETC.**—Proposals are wanted until June 21 for furnishing a quantity of water pipe, special castings, gate valves, fire hydrants, etc. Address **E. M. BIGELOW, Director of Department of Public Works, Pittsburgh, Pa.**

**ORDNANCE SUPPLIES.**—Benicia Arsenal, Benicia, Cal.—Sealed proposals, in triplicate, will be received until June 4th, 1894, for furnishing leather, coal, iron, hardware, lumber, forage, etc., during the fiscal year ending June 30th, 1895. Printed lists of supplies needed, with full instructions, stipulations, etc., can be had on application to Lieut.-Col. **L. S. BARBITT, Ordnance Department, U. S. Army, Commanding.**

**ROPE, IRON, LUMBER, TOOLS, ETC.**—Sealed proposals, in triplicate, will be received at this depot until May 21st, 1894, for furnishing rope, iron, leather, lumber, fuel, tools, etc., during the fiscal year ending June 30, 1895. Printed lists of supplies needed with full instructions, stipulations, etc., can be had on application to Major **JOHN A. KRESS, Ordnance Department U. S. Army, Commanding Jefferson Barracks, Mo.**

**BRIDGE.**—C. Bauermeister invites bids until June 2d for building a bridge across Fort Creek, New Ulm, Minn.

**BRICK, FIRECLAY, CEMENT, PIPE, ETC.**—Sealed proposals will be received until May 22d, 1894, for furnishing and delivering supplies, as follows: Brick, grate-bars, bolts, buckets, candles, cement, fireclay, dryer, brass and iron fittings, gaskets, glass, hatchets, hoes, hose, iron, lanterns, locks, lumber, moldings, nails, oils, brass, iron and terra cotta pipe, steam packings, assorted; coloring paints, paris plaster, rakes, wood-screws, shingles, horse and mule shoes, shovels, sole-taps and heel-taps, tacks, timber, lin, turpentine, varnish, white lead. Blank proposals, printed lists and full information as to conditions to be observed by bidders, and terms of contract and payment, will be furnished on application to **WM. THOMPSON, Treasurer, Hampton, Va.**

**STEEL AND IRON WORK.**—Treasury Department, Office Supervising Architect, Washington, D. C.—Sealed proposals will be received at this office until the 29th day of May, 1894, for all the labor and materials required to put in place complete the steel and cast iron columns, in 2d, 3d, 4th and 5th stories, steel and iron floor construction of 3d, 4th, 5th and 6th floors, etc., U. S. Post Office Building at Washington, D. C., in accordance with the drawings and specification, copies of which may be had at this office, or the office of the superintendent at Washington, D. C. Each bid must be accompanied by a certified check for a sum not less than 2 per cent. of the amount of the proposal. Proposals must be inclosed in envelopes, sealed and marked "Proposal for the Steel and Cast Iron Columns, Steel and Iron Floor Construction, Etc., for the U. S. Post Office Building at Washington, D. C.," and addressed to **JEREMIAH O'ROURKE, Supervising Architect.**

**NAVAL SUPPLIES.**—Sealed proposals, inclosed "Proposals for Supplies for the Navy Yard, Mare Island, Cal.," will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until May 22d, 1894, to furnish at the navy yard, Mare Island, Cal., a quantity of steel plates, steel angles, steel rivet rods, iron, paints, alcohol, varnishes, insect oil, turpentine, brushes, lumber, oars, tools, hardware, pipe staves, rubber, oakum, pipe and pipe fittings, wash-basins, bath tubs, bolts, nuts, rivets, and metals. The articles must conform to the Navy standard and pass the usual naval inspection. Blank proposals will be furnished upon application to the Navy Pay Office, San Francisco, Cal., the Navy Yard, Mare Island, Cal., or to the Bureau. The attention of manufacturers and dealers is invited. **EDWIN STKWART, Paymaster-General U. S. Navy.**

**WATER TOWER.**—PEORIA, ILL.—Sealed proposals, with full specifications, are hereby invited before May 22d, for a new steel water tower to replace on the present foundation, the West Bluff water tower recently collapsed, at Peoria, Ill. Dimensions: Height, 120 ft.; diameter, 25 ft. Communications should be inclosed, "Proposal for Water Tower," and addressed to the Receiver of the Peoria Water Company, Peoria, Ill., and accompanied by a certified check for \$500 to guarantee making of contract on terms proposed. The right is reserved to reject all bids. **CORNELIUS B. GOLD, Receiver.**

**WATER-WORKS.**—Sealed proposals will be received by the Trustees of Water Works of the city of Springfield, O., at their office in said city, until the 24th day of May, 1894, as follows: For furnishing approximately 12,500 lineal feet, 1,708 net tons, of 24-in. cast-iron pipe, and approximately three tons of ordinary special castings, together with the necessary flanged pipe and specials for pump connections. Also for trenching and laying said pipe and special castings. Also one pumping engine, capable of pumping ten (10) million gallons of water per twenty-four hours to an altitude of 250 ft. into a steam pipe 30 ft. in diameter; also foundations for said machinery. Also a boiler plant with easy capacity to furnish one and one-half times the power requisite for the propulsion of said machinery. Also for live steam Feed Water Purifier for entire boiler plant, with extra set of pans for same. Also foundations and settings for said boilers. Also for two or more 21-in. valves. Also for one iron or steel bridge, 100 ft. clear span, with 16 ft. roadway, capable of sustaining a moving load of 100 lbs. per square foot of floor area, with safety factor of five. Also two stone abutments under said bridge. Specifications, forms of proposal and forms of contract will be furnished from and after May 18th, 1894, from and after which date also the necessary general and detail drawings will be ready for the examination of bidders. Subject to the express right to reject any or all bids. **E. C. GWYN, President; C. NAG LE, CHAS. A. BAUER, Trustees, J. D. COOK, Toledo, O., Consulting Engineer.**

**BRIDGE.**—The county supervisors will let contract for Des Moines River bridge June 9th. **T. CUNNINGHAM, Auditor, Fort Dodge, Ia.**

Continued on page 19.

**CHLORINE LIQUID**

For Extraction of Gold.

FOR SALE BY

**WM. PICKHARDT & KUTTROFF,**  
98 LIBERTY STREET, NEW YORK.

The Most Successful Process for the Extraction of Gold.  
**IMPROVED BARREL CHLORINATION.**

The undersigned has completed drawings and plans of the latest improvements in Barrel Chlorination, and is open to engagement for the testing of ores, the erection and operation of plants of any capacity. The most successful works in this country were managed by the undersigned.

Correspondence solicited.

**JOHN E. ROTHWELL,**  
ENGINEERING AND MINING JOURNAL, New York.

LANDS AND MINES FOR SALE.

**Grand Opportunity for Investment**  
**FROM 4,000 TO 4,500 ACRES**

Coal, timber and farming lands, near railroad in Somerset County, Pennsylvania, accessible to Eastern markets, for sale on most reasonable terms, or might consider income property clear in part payment if location satisfactory. Owners have not time to give attention. Title perfect. Inquire of

**W. P. HUMES,**  
Bellfonte, Pa.

FINANCIAL.

**Golden Reef**  
**Mining and Milling Co.**

Capital Stock, 100,000 Shares.  
Par Value, \$10.  
Selling Price, \$2.50 per share

Gold and Copper Mines at Norris,  
Madison County, Montana.

TO INVESTORS.

The Golden Reef Mining and Milling Company, of Chicago, Illinois, offer to investors a limited number of shares of their Treasury Stock. This stock is guaranteed and is absolutely safe. The company's mines have been opened up. Many thousand tons of gold and copper ore of paying quality. All that is required to put the property in a dividend-paying condition is a milling plant. The mill is already built and ready for shipment. Make all checks, drafts, etc., payable to THOMAS F. THORNE, of the Commercial National Bank, Chicago, Trustee. For prospectus and full information address E. M. BREAKLE, Sec'y, Room 1595, No. 79 Dearborn St., Chicago.

**Notice of Assessment.**  
(Civil Code of California.)

Silver King Mining Company.—Location of principal place of business, San Francisco, California; location of works, Pioneer Mining District, Pinal County, Arizona. Notice is hereby given that at a meeting of the Board of Directors held on the 2d day of May, 1894, an assessment—No. 10 of Twenty Cents (20c.) per share was levied upon the Capital stock of the corporation, payable immediately in United States gold coin to the Secretary, at the office of the Company, No. 316 Pine street, Rooms 15 and 17, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 11th day of June, 1894, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 9th day of July, 1894, to pay the delinquent assessment, together with the costs of advertising and expenses of sale. By order of the Board of Directors, J. W. PEW, Secretary, Office, 310 Pine street, Rooms 15 and 17, San Francisco, California.

**WE BEG TO ANNOUNCE THAT OUR**

Mr. Ede, M. E., leaves here early in April to examine mineral properties, in NEW MEXICO, UTAH, Colorado, Oregon and South Dakota. He will undertake other work for private parties or companies. Twenty years' experience. Reference exchanged.

**EDE & BURWELL, Mining Engineers.**  
21 QUINCY STREET, CHICAGO.

**THE GOLD AND SILVER**  
**EXTRACTION COMPANY**

TRADE MARK.

OF AMERICA,  
LIMITED.



**MacARTHUR-FORREST**  
**Process.**

**CAPITAL,**  
**£110,000 Sterling.**

TO MINEOWNERS and others having Refractory Gold and Silver ores hitherto untreatable at a profit, the MacArthur-Forrest (Patent) Process of gold and silver extraction offers a solution of the difficulty.

Board in the United States: THOMAS W. GOAD, Mgr., HUGH BUTLER, Asst., JOHN F. BELL, P. GEORGE GOW. DENVER, COLO.

OFFICE:

McPhee Building, - Denver, Colo.

MACHINERY AND SUPPLIES FOR SALE.

**STEEL RAILS,**  
**NEW OR SECOND-HAND.**

We can furnish any weight of New Rails. We also have for immediate delivery 400 tons of Second-Hand 60 lb. Steel T Rails, 100 tons 35 lb. Girder and 300 tons 45 lb flat steel; all well fit to relay, and cheap.

**ROBINSON & ORR,**  
No. 419 Wood Street, Pittsburg, Pa.

**FOR SALE.**

**Smelting Plant at Trinidad, Colo.,**

all equipped, ready to start up. Situated just outside city limits Trinidad, on a 294-acre tract of land adjoining a river. Side tracks from two competing railway lines. Description of Smelter Buildings and their contents, also photos of works, may be found at the office of ENGINEERING AND MINING JOURNAL.

For terms apply to **MILWAUKEE AND TRINIDAD SMELTING AND REFINING COMPANY, Milwaukee, Wis.**

**THE FOLLOWING MACHINERY IS ALL**  
**NEW,** and was displayed at the World's

Columbian Exposition by the Chicago Iron Works. It is now offered for sale by order of the Superior Court. Full details and prices can be obtained on application to **ROCKWELL KING, Receiver, Estate Chicago Iron Works, Chicago, Ill.**

	Weight.
8" x 12" Hoisting Engine—two cylinders, single drum, 42" x 40" grooved for holding 500 ft. 3/8" rope in single coil	8,000 lbs.
10" x 7 Blake Crusher	7,800 lbs.
33" x 84" Galena Silver Furnace—Steel Jacket and Curb, Ball Joint Tuyeres, Corner Discharge Boxes, Spouts, Lead-well, Binder, Stack, etc.	20,000 lbs.
2 Collon Jigs, complete.	
1 Slide Motion Jig, 2 compartments.	
1 Brunton Sampler No. 2.	
Rotary Screens—One train of three. Each 36" diameter, 96" long, complete with perforated iron coverings and Steel housings.	7,500 lbs.
1 Bilharz Concentrator.	
2 Silver and Gold Mortars.	
2 Sieve Pots and 1 Scoop Car.	
2 Tulloch Feeder and 2 Bullion Molds.	
1 Sectional 4 x 6" Dodge Crusher	1,200 lbs.
2 " 10" x 24" Retort complete	2,500 lbs.
1 " 14" x 38" Corliss Engine	30,000 lbs.
1 " 44" x 14" Boilers	22,500 lbs.

**LOCOMOTIVE AND RAILS.**

**SADDLE TANK,** standard gauge Locomotive; weight, 10 tons; in use 12 months and in A1 condition, for sale, cheap, and on Easy Terms. Also Light and Heavy Section Relaying Rails.

**SOUTHERN IRON & EQUIPMENT CO.,**  
ATLANTA, GA.

MISCELLANEOUS WANTS.

**WANTED—PARTNER OR PARTNERS** to organize a stock company for manufacturing a patented automatic coal, clay and freight conveyor. In demand; \$3,000 stock already insured for \$1,500, or for the sale of the same. Illustrated catalogue on application. Address L. BOUDREAU, No. 170 E. Spruce Street, Manchester, N. H.

**BUSINESS OPENING.**

A Superintendent wanted for a long established company building Corliss engines and heavy machinery specialties. A man having \$10,000 to \$25,000 to invest in the business and to take charge of the manufacturing department; only men well up in best methods of low cost work in machine shop and foundry, and having record with successful companies, will be considered. Address "CORLISS," care of ENGINEERING AND MINING JOURNAL.

DIVIDENDS.

**HOMESTAKE MINING COMPANY.**

MILLS BUILDING,  
15 Broad Street,  
New York, May 16th, 1894.  
DIVIDEND 190.

The regular monthly dividend, fifteen (15) cents per share, has been declared for April, payable at the office of the company, San Francisco, or at the transfer agency in New York, on the 25th inst. Transfer books close on the 19th inst. LOUNSBERRY & CO., Transfer Agents.

Contracts Open.

Continued from page 18.

**BRIDGE.**—State of Georgia, County of Pulaski, Court of Ordinary, Hawkinsville, Ga.—Bids, plans and specifications are solicited for placing two (2) 60-ft. iron spans in place of the present wooden approaches to the drawbridge across the Ocmulgee River in said county. It will pass upon all bids, etc., that may be sent in before the 13th day of June, 1894, at my office in Hawkinsville, Ga. The right to reject any and all plans and bids is reserved. For further information apply to P. T. MCGIFF, Ordinary, Pulaski County.

**FUEL AND OIL.**—Depot Quartermaster's Office, Washington, D. C.—Sealed proposals, in triplicate, will be received here until June 2d, 1894, and then opened, for furnishing during fiscal year ending June 30th, 1895, such fuel and mineral lamp oil as may be required. Information required will be furnished on application to this office. Government reserves right to reject any or all proposals. Envelopes containing proposals should be marked "Proposals for Fuel or Mineral Oil," and addressed to Lieut.-Col. GEORGE H. WEEKS, Depot Quartermaster.

**WATER-WORKS.**—Sealed proposals will be received at the office of the Water-Works Trustees of the City of Steubenville, O., until May 24, 1894, for furnishing all material and performing all labor necessary for the construction of a new water-works plant for the above city. The work to be done embraces the following: Part 1.—Furnishing cast-iron pipe. Part 2.—Furnishing valves and fire hydrants. Part 3.—Hauling and laying pipes and valves. Part 4.—Constructing reservoir. Part 5.—Constructing pump well and tunnel. Part 6.—Constructing wet well and influent pipes. Part 7.—Furnishing two 3,000-gallon pumping engines. Part 8.—Furnishing boiler plant. Part 9.—Constructing boiler and engine house. Plan and specification may be seen and forms of proposals secured at the Council Chamber, Steubenville, or at the office of the Engineer, Westinghouse Building, Pittsburg, Pa. after May 10, 1894. Water-Works Trustees, WILKINS & DAVISON, Engineers.

**STEAM PLANT.**—Proposals are wanted for installing an 80 H. P. Compound engine, with boiler, pump, heater and extractor and all connections complete. Apply for particulars to W. A. GUTHRIE, Secretary of Electric Light Company, San Angelo, Tex.

**WATER-WORKS.**—Notice is hereby given that proposals will be received by the Board of Water Commissioners of the village of Dolgeville, N. Y. until the 25th day of May, 1894, for the construction of a gravity system of water-works. Proposals will be received for "The Works" complete, or for furnishing materials and performing work under the following sub-divisions: 1. Furnishing pipe and special castings. 2. Furnishing valves, valve-boxes and covers, and hydrants. 3. Trenching, pipelaying and backfilling. 4. The reservoir. Plans for the foregoing work may be seen and examined at the office of the Board of Water Commissioners in the village of Dolgeville, N. Y. Blank forms of proposal and contract, together with specifications, will be furnished upon application to W. H. Bacon, Secretary of the Board of Water Commissioners. ALFRED DOLGE, President of the Board of Water Commissioners.

**FUEL.**—Governor's Island, N. Y. H.—Sealed proposals, in triplicate, for furnishing such quantities of fuel as may be required in the Department of the East during the fiscal year commencing July 1, 1894, will be received here, and at offices of Quartermasters at Baltimore, Md.; Boston, Mass.; Buffalo, N. Y.; New Orleans, La.; Fort Niagara, N. Y.; Fort Ontario, N. Y.; Madison Barracks, N. Y.; Plattsburg Barracks, N. Y.; Fort Preble, Me.; Fort Adams, R. I.; Fort Trumbull, Conn.; Fort Monroe, Va.; Newport Barracks, Ky.; Fort Thomas, Ky.; Fort Oglethorpe, Ga.; St. Francis Barracks, Fla., and Mount Vernon Barracks, Ala., until June 6, 1894, and then opened. Information furnished on application to this office, or to Quartermasters at posts named above. Envelopes containing proposals will be indorsed "Proposals for Fuel." CHAS. H. TOMPKINS, Asst. Q. M. Gen.

**TREASURY DEPARTMENT,** Office Supervising Architect, Washington, D. C., May 10th, 1894.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 12th day of June, 1894, and opened immediately thereafter, for all the labor and materials required for the erection and completion of the U. S. Post Office Building at Alexandria, La., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Alexandria, La. 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 will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked, "Proposal for the Erection and Completion of the U. S. Post Office at Alexandria, La.," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

**IRON PIPE, HARDWARE, ELECTRICAL** Supplies, etc.—Sealed proposals will be received by the Board of Commissioners of the Colorado State Penitentiary, at Canyon City, Col., until June 4th, for the following: 24 bars half-round iron 3/4-7/8; 12 bars tire iron 3/4 x 2 1/4; 200 lbs. Norway iron 3/4-1 1/4 x 2; 50 lbs. 3/4 hoop iron for rails; 1 box tin 3 xxx; 2 pieces galvanized iron No. 22; 6 dozen files, assorted; 2 kegs horseshoes; 2 boxes toe corks; 25 lbs. washers, 3/4-5/8-7/8; 400 bolts 3/4 x 1 1/4-2; 10 dozen hammer handles; 10 dozen heavy pick handles; 1 dozen each ax and hoe handles; also a lot of electrical supplies, iron pipe, steam fittings. Lists to be had on application to the Warden. All bids and supplies should be addressed to "The Board of Commissioners Colorado State Penitentiary, Canyon City, Col.," indorsed "Proposals for Subsistence, Etc." CHARLES BOETTCHER, President.

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