

THE ENGINEERING AND MINING JOURNAL



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

VOL. LIV.

JULY 30.

No. 5.

RICHARD P. ROTHWELL C.E., M.E., Editor. ROSSITER W. RAYMOND, Ph.D., M.E. Special Contributor. SOPHIA BRAEUNLICH, Business Manager. THE SCIENTIFIC PUBLISHING CO., Publishers.

SUBSCRIPTION PRICE:

Weekly Edition (which includes the Export Edition), for the United States, Mexico and Canada, \$4 per annum; \$2.25 for six months; all other countries in the Postal Union, \$7.

Monthly Export Edition, all countries, \$2.50 gold value per annum.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO. All payments must be made in advance.

THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS: R. P. ROTHWELL, Pres. & Gen'l Mang. SOPHIA BRAEUNLICH, Sec'y & Treas. P.O. Box 1833. 27 Park Place, New York. Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition

CONTENTS.

Table listing articles and their page numbers, including Report on the Carrizo Mountains, The Gold Production of the Rand, South Africa, The Georgia-Alabama Investment Company, Mining in Manchuria, China, Our Tin Mines, Books Received, New Publications, Shall We Rename Aluminum?, The Crawford Crushing and Amalgamating Mill, The Hoffman Magnetic Separator, The Magnetic Dipping Needle, The Separation of Silver from Copper Matte by the Electrolytic Process, Electricity in Bituminous Coal Mining, Properties of Aluminum-Antimony Alloys, James Clayton, Tin Ore Concentrating Plant, Harney Peak, South Dakota, Official Reports; Alaska-Treadwell Gold Mining Company, De Lamar Mining Company, Limited, The 100-lb. Rail for the Pennsylvania Railroad, A New Pipe Fitting Tool, Production and Stocks of Pig Iron in the United States—First Half of 1892, Geology of the Natural Gas Fields About Pittsburg, Raleigh's Balanced Cam for Stamp Batteries, Patents Granted, Notes: Portland Cement Regulation in Russia, 101—Water Supply by Meter, 101—James' Process of Zinc Reduction, 105—A Water-Balanced Gravity Railroad, 105—Neuhausen Aluminum Company, 107—Decrease in the Exports of Great Britain, 107. Personals — Obituary — Societies — Industrial Notes — Machinery and Supplies Wanted.

* Illustrated.

Table listing market information for various locations including Alabama, Alaska, Arizona, California, Colorado, Florida, Idaho, Kansas, Maryland, Michigan, Missouri, Minnesota, Montana, Nevada, New Jersey, New Mexico, Pennsylvania, South Dakota, Tennessee, Utah, Washington, Wyoming, Foreign: Austria, Bolivia, British Col., Burmah, Canada, Great Britain, Mexico, Transvaal, MEETINGS, DIVIDENDS, ASSESSMENTS, MINING STOCK, MARKETS: New York, Boston, San Francisco, Pipe Line, Mining Stock Tables: New York, Boston, Coal Stocks, San Francisco, Baltimore, Deadwood, Helena, Pittsburg, St. Louis, Aspen, London, Paris, COAL: New York.

THE commission which was appointed to examine the mineral character of the Carrizo Mountains in the Navajo reservation in New Mexico has drawn up a report stating that no mineral deposits have been found, and that it believes that the mountains are barren of deposits. This is contrary to the long cherished belief of the New Mexican miner. He has always claimed that were the Indians, who have always preserved a dignified hostility toward the encroaching prospector, out of the way a rich and attractive region would be opened up.

THE gold production of the Rand, South Africa, has at last passed the century mark so long hoped for, the production of this wonderful district for June being 103,252 oz., and it is estimated that it will by no means stop here. The month of greatest output for every year since 1889 has been December, the figures being 40,404 oz. for December, 1889; 50,353 for December, 1890, and 80,321 for December, 1891. The monthly output for 1892 has been: January, 84,650; February, 86,649; March, 93,244; April, 95,562; May, 99,436, and June, 103,252, a total of 562,703 oz. The output for the corresponding six months of each year since 1888 has been: 1888, 89,320 oz.; 1889, 173,567 oz.; 1890, 224,589 oz.; 1891, 323,124 oz.

THE Georgia-Alabama Investment Company, one of those companies like the San Miguel Placers and the San Miguel Consolidated Gold Mining Company, of Colorado, and other equally disreputable affairs, to which General B. F. BUTLER and JAMES GILFILLAN, ex-Treasurer of the United States, have lent the use of their names as president and secretary respectively, has gone up, or down, with a crash, as might have been expected, and the stockholders who were led to invest are wondering why men who still pretend to be "honorable" are so frequently found connected with and active in floating swindles. The ENGINEERING AND MINING JOURNAL has on several occasions called attention to the shady character of several of General B. F. BUTLER'S mining enterprises. It will be wise for investors to carefully avoid enterprises in which he is active. The necessary and unavoidable risks in mining are sufficiently great without such an additional element of disaster.

THE introduction to Poor's Manual of the Railroads of the United States for 1892 has been issued, and its 30 pages contain a great deal of interesting and valuable statistical matter. The length of railroad track laid in this country up to Dec. 31, 1891, aggregated 170,601 miles. The net increase of mileage of all railroads in the fiscal year 1891 was 4,488 miles. Twenty-five years ago the railroad mileage of this country was 39,250. The increase has been greatest in the Western states, where the mileage has increased from 15,777 to 100,599 miles. There were 164,324 miles of railroad worked last year. The gross earnings of which were \$1,138,024,459, and the net earnings \$356,209,880. The share capital corresponding to the mileage completed at the end of 1891 equaled \$4,809,176,651, against \$4,640,239,578 in 1890, the increase equaling \$168,937,073, the rate of increase being 3.6%. The funded debt of all the lines at the close of the year aggregated \$5,235,295,074, a sum \$129,393,049 in excess of the total of 1890, (\$5,105,902,025), an increase of 2.5%. The other forms of indebtedness of the several companies at the close of the year equaled \$345,362,503, against \$376,494,297 for 1890, a decrease of \$31,131,794. The total share capital and indebtedness of all kinds of all the roads making returns equaled, at the close of the year, \$10,389,834,228, an increase in the year of \$267,198,328 over the total of 1890 (\$10,122,635,900). During 1891 the number of passengers carried was 556,015,802, and the tons of freight moved were 704,398,609.

MINING IN MANCHURIA, CHINA.

It is reported that the silver mines of Kirin, in the province of Manchuria, China, are to be worked by modern methods, the government having at last given its permission. These mines will be the first in the province to be worked by foreign methods, although according to both the Chinese and Manchu inhabitants, the mountain ranges are rich in precious metals. The retardation of the development of the mining industry has been due not alone to governmental opposition, superstition of the natives and ignorance of better methods, but in a great measure to the rapacity of the provincial governors, who desire to keep all mining enterprises under their own control, with the usual result of corruption and failure. Again, heretofore the Chinese of the Mandarinate who have studied modern methods have been unable to impart their learning to the workman or indeed to take part in metallurgical work without losing rank. It is interesting to note that the government, with its present liberalmindedness, has allowed an accomplished professor of chemistry in the Pekin University to proceed to the mines with the necessary apparatus and chemicals both to determine the value and to economically work the galena ores of Kirin.

The gold placers of Manchuria have been worked in a desultory way for many years, but as a whole the production has not been large, although across the border in Siberia the mines have been worked to a considerable profit with a large production. Some seven years ago a large body of adventurous Chinese miners were working the placers of Shol-to-ga, it is

said, with wonderful success, rumor, probably with its usual degree of accuracy, placing the production for ten months at \$15,000,000, when they were attacked and massacred by Manchurian troops, incited, it is claimed, by the domestic authorities. Mines at Shol-to-ga were worked after 1880 by General Li, with the assistance of American engineers, but only a failure was made.

It is certain when the liberal policy of the government now being developed has matured, that China will produce a large quantity of precious metals as well as lead, copper, quicksilver, iron and coal, but that it will probably never become an inviting field for foreign enterprise. Not only is the government opposed to other than Chinese working the numerous deposits, but as it is paternal in its character it recognizes, like the Saxon government, the necessity of providing labor for its overcrowded population, and from its utilitarian point of view the introduction of foreigners and foreign methods which would quickly exhaust the deposits is only to be lamented. It is certain, however, that in the coming Renaissance of China a vast industry will be developed which will not only supply China with many products for which she is at present dependent upon other nations, but even allow the export of some to countries less favored by nature.

OUR TIN MINES.

The tin mining industry of this country is not in a flourishing condition; in fact, it is very unsatisfactory.

The Harney Peak Mining, Milling and Manufacturing Company's mines in South Dakota have been opened to a considerable depth at a great number of places, and a very large amount of money has been expended in this development work, and more recently in building a fine mill (which is illustrated in this issue of the ENGINEERING AND MINING JOURNAL), yet we hear of paying results, and, according to our private information, the supply of ore does not justify the starting of the mill. Moreover, the local papers are outspoken in denouncing the expenditures for property, claiming, with much corroborative evidence, that there has been gross dishonesty in this department of the company's business.

The ENGINEERING AND MINING JOURNAL was fiercely denounced some years ago when it warned English investors against this enterprise which was then being floated in the London market at \$15,000,000. The outcome thus far, and the present prospects, have fully justified the advice we then gave. It seems pretty well established that at the present time no paying tin mines have been opened in South Dakota, though magnificent specimens and "promising" veins have been found in many places. Unfortunately the mines, like the companies, are better at "promising" than "performing."

In California the Temescal mines of the San Jacinto estate, also an English corporation, have greatly disappointed the investors and the experts who made such glowing reports on the property a few years ago. There the company injudiciously expended a very large amount of money in a worthless dam and in a mill, without ascertaining that the mine could supply it with paying ore—a blunder against which the ENGINEERING AND MINING JOURNAL warned the company at the very outset of its career. At present there are practically no reserves of paying ore in the mine. The output of tin which, up to a few months ago, had amounted to 120,000 lbs., will probably not exceed 300,000 lbs. this year. The ore in the reserves, it is said, runs only 3 to 3½ per cent. of black oxide, instead of the 12 to 20 per cent. so confidently set forth in the prospectus of the company two years ago.

It is yet perhaps too early to say that this property does not contain paying veins, but it is certain that there is nothing yet in sight which would pay, the quantity being wholly insufficient to supply an economical plant, and too poor to work on a small scale.

The company owns a large estate and has many chances yet for redeeming the past, but if our advices are to be relied on, a pretty thorough change in the administration will take place before dividends come in sight.

In Virginia, the Boston Tin Mining Company, operating the Cash Mine, in Rockbridge County, have built a large (\$75,000) plant and have developed the property to the depth of 60 ft., and a length of some 200 ft., exposing a vein about 7 ft. wide of ore that is said to average 3 per cent. of tin. Unfortunately, the title to this property is so defective that it is at present impossible to say when or how it can be perfected. The vein is here said by experts to be extremely "promising," and the reserves already large for the amount of work done. Until the title is made clear, it is, however, unlikely that this mine will become a producer of any importance.

From all of this it is evident that our tin mines have thus far been disappointing. We do not, however, abandon hope that this industry will some day become important. Except in South Dakota the amount of development work done has been too little to condemn the properties, and even there it is possible that permanent deposits of ore of paying quality may be proved, as we sincerely hope they will be. Had the work of development preceded the sale to the English company, and had the whole enterprise not been floated with so many and gross misstatements its

failure up to the present time to have become self-sustaining would not have attracted so much attention or criticism.

The manufacture of tin plates in this country has also been disappointing, though there is no reason whatever why this industry should not grow to very important proportions, even though the tin mines should defer for years the fulfillment of their promise.

BOOKS RECEIVED.

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

Bulletin of the Philosophical Society of Washington, Vol. XI. Including the Constitution, Rules and lists of Officers and Members. Published by the Society, Washington, D. C., 1892. Pages 618.

Commercial Information Concerning the American Republics and Colonies. Published by the Bureau of American Republics, Washington, D. C., 1892. Pages 286.

Descriptive Index of Current Engineering Literature, Vol. I, 1884-1891 (inclusive). Published by the Board of Managers of the Association of Engineering Societies, Chicago, Ill., 1892. Pages 475.

Geological Survey of Alabama. Bulletin No. 3. A Preliminary Report on a Part of the Lower Belt of Alabama, in the Counties of Chilton, Coosa and Tallapoosa. By Wm. B. Phillips, Ph. D. Published by the Geological Survey, Montgomery, Ala., 1892. Pages 97. Illustrated.

Geological Survey of Texas. Second Report of Progress. By E. T. Dumble, State Geologist, 1891. Published by the Geological Survey, Austin, Tex., 1892. Pages 91.

Geological Survey of Texas. Bulletin No. 2. A Preliminary Report on the Soils and Waters of the Upper Rio Grande and Pecos Valleys, in Texas. By H. H. Harrington. Published by the Geological Survey, Austin, Tex., 1892. Pages 26.

Geological Survey of Texas. Bulletin No. 3. Reconnaissance of the Guadalupe Mountains. By R. S. Tarr. Published by the Geological Survey, Austin, Tex., 1892. Pages 42.

Practical Carriage Building. Vol. II. Compiled by M. T. Richardson. Published by the M. T. Richardson Co., New York, 1892. Pages 280. Price \$1.00. Illustrated.

NEW PUBLICATIONS.

A SUMMARY DESCRIPTION OF THE GEOLOGY OF PENNSYLVANIA, IN THREE VOLUMES. With a new geological map of the State and a map and list of bituminous mines. By J. P. Leslie, State Geologist. Vol. 1. Describing the Laurentian, Huronian, Cambrian and Lower Silurian Formations. Published by the Board of Commissioners of the Geological Survey, Harrisburg, 1892. Pages 719. Illustrated.

This excellent work is a condensed account of all the work done by the geologists of the Survey for 50 years together, with the knowledge produced by many individual explorations. As Prof. Leslie says, his task was made difficult, not so much by the extent and diversity of the territory to be described as by reason of the great number of rock formations which appeared at the surface and the erratic courses which the outcrops pursue; by the local variations of character exhibited by them, by the complicated structure of the underground, by the multitude of mineral beds, having an economical value, by the extensive metamorphism of the older formations in the several eastern counties, and by the concealment of the considerable portion of the rock formations in the northern counties by the glacial drift. How thoroughly and capably Professor Leslie has performed this difficult task can be appreciated only by one who has studied his work thoroughly. It is by far the most handy work of reference of geology for any particular district that has yet been published. The volume, differing from many state reports, is handsomely printed in clear type with frequent illustrations, particularly contour maps and sections, as well as sketches of various fossils found in the different formations. The arrangement of the book is chronological from oldest to newest, but the representation of each formation is made as in a columnar section from the top to the bottom by which the metal conception of the strata is formed by the eye. When the succeeding volumes are published we shall give the work as a whole a thorough review.

BEITRAGE ZUR KENNTNISS DER GESETZE DER MINERALBILDUNG IN SCHMELZMASSEN UND IN DEN NEOVULKANISCHEN ERGUSSGESTEINEN, by J. H. L. Vogt. Vol. 1. Pages, 271. Christiania, 1892.

This work is, as its title indicates, a contribution to the laws governing the formation of minerals in melted masses and in the neo-volcanic rocks.

The part here given originally appeared as a separate print of the *Archiv for Matematik og Naturvidenskaf* of Christiania. The manuscript of the second part, which will treat of the relation between the chemical composition of the magmas and the resulting mineral, and upon the influence of pressure, time and temperature upon mineral formation in melted solution, is about half ready. Two plates illustrating forms of crystallization accompany the text.

EXPERIMENTS WITH ALTERNATE CURRENTS OF HIGH POTENTIAL AND HIGH FREQUENCY. By Nikola Tesla, New York. Pages 146. Illustrated. Published by W. J. Johnson Co., Limited. 1892. Price \$1.

This work is a lecture delivered before the Institution of Electrical Engineers in London, and contains many of the interesting experiments of Mr. Tesla in a novel field of electricity, which he has been the first to enter. Mr. Tesla's marvelous results are well known, but in this volume they are described in such a clear and thorough manner that the work is invaluable to the investigator in this field, to the student or to the scientific reader.

MICHIGAN ENGINEERS' ANNUAL. Containing the proceeding of the Michigan Engineering Society for 1892. Pages, 214. Illustrated. Lansing, Mich., Robert Smith & Co., 1892.

This volume is far more presentable than the majority of the transactions of the minor engineering societies. It contains a number of extremely valuable papers in different branches of the profession, particularly in mechanical and civil engineering, and includes a large number of digests of court decisions of interest to civil engineers in general.

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.

Shall We Rename Aluminum.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In the matter of suggestions for the re-naming of the metal aluminum, permit me to offer "Al-u-um," as a candidate for selection. Aluum is easily spoken and euphonious, and possesses the merit of being a self-explanatory contraction of the word which we wish to replace.

CONSERVATIVE.

[Aluum resembles alum too closely—it would lead to many mistakes.—EDITOR ENGINEERING AND MINING JOURNAL]

The Crawford Crushing and Amalgamating Mill.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Referring to the tabular statement of results obtained by the Crawford Crushing and Amalgamating Mill in your issue of the 23d inst., I must inform you that so far as it refers to its use at the Montana Companies' Limited Mines it is entirely without foundation. The Crawford Mill has never been employed here, nor have I ever seen the machine.

G. H. ROBINSON, General Manager.

MARYSVILLE, Mont., July 28, 1892.

[We have received the above telegraphic communication from Mr. Robinson, which explains itself. The figures quoted in this instance were taken from the Montana Mining Review, of Helena, Mont.—ED. E. and M. J.]

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The Crawford Crushing and Amalgamating Mill described in your issue of the 23d inst. is but a single example of a type of crusher for which, from time to time, extravagant claims have been made both for its completeness as a crusher and an amalgamator, yet none of these machines has proved successful in practice, however well experimental runs succeeded. So, therefore, until the claims for this mill are substantiated by the report of a competent and conservative engineer, I for one must doubt its efficiency.

For hard ores this principle of crushing is entirely wrong, as attrition will never economically take the place of impact. And while attrition has its adherents, who claim that it brightens and renders free the particles of gold, it is opposed by many, who claim that it "flours" the gold, so that there is a large loss in the slimes.

As an amalgamator this machine has proved a failure on the South African ores, and it must on all highly oxidized ferruginous ores, as the bath of mercury must be covered and "sickened" by the oxides of iron.

NEW YORK, July 26, 1892.

J. L.

The Hoffman Magnetic Separator.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: My attention has been called to a letter addressed to you by Mr. W. D. Hoffman, Superintendent of the Clover Hill Mine and Concentrating Works, and published in your issue of July 9th, 1892. In this letter Mr. Hoffman takes exception to my description of a magnetic separator patented by him and alluded to as a modification of the Ball and Norton machines.

When describing in the article "Magnetic Separation of Iron Ore," printed in your columns, the various separators in use, I confined myself to the explanation and illustration of the principle of action of the different machines, without going into details of the mechanical construction peculiar to each.

I beg to call Mr. Hoffman's attention to the fact that the same elements occur in the claims of the original Ball and Norton patents as appear in the Hoffman patent.

Messrs. C. M. Ball and S. Norton enumerate in patent No. 404,332, granted May 28th, 1889: An endless belt; a series of magnets of alternate polarity arranged inside this belt between the carrying drums.

In patent No. 430,058, granted June 10th, 1890: A non-magnetic revolving drum; a stationary magnet inside of the same drum, having a number of radial pores of alternate polarity; while

Mr. W. D. Hoffman enumerates in his patent No. 463,305, granted November 17th, 1881: an endless belt carrier; a magnet placed inside the belt, consisting of a connected series of alternate poles; a drum loosely mounted on a stationary hollow shaft; a magnet inside the drum, having alternate poles, radiating from a center toward the periphery.

Neither in my original article nor by the above analysis did I intend to assert or even intimate that Mr. Hoffman's machine was a servile imitation of the Ball and Norton original machine, or that there might not be differences in patentable principles and in practicable operation. The assertion simply went to the extent that the more prominent features of each were common to both machines, and that assertion, I think, is clearly borne out by the above analysis of the elements included in the patents.

At the time when my article in question was written, in April last, Mr. Hoffman had, to the best of my knowledge, no machine in practical operation, the Croton works having been closed a couple of months previous, and that Clover Hill plant not being placed in operation before June 14th last, or some time after the article had been placed in your hands.

NEW YORK, July 14th.

AXEL SAHLIN.

Granulation of Ores by Blake Crushers.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In the appreciative and correct mention of the "original Blake Crusher" by Mr. Axel Sahlin in his interesting paper presented at the recent meeting of the American Institute of Mining Engineers (ENGINEERING AND MINING JOURNAL July 2, 1892.) he says: "It is better practice, however, to pivot the sawing jaw below the crushing face than above it as in the Blake," and he gives good reasons for this provided the crusher has to deal with stuff already broken down to a small size, say "egg size," and is used for fine crushing only. But it may not be generally known, or remembered, that the original machine, as first constructed by my uncle, Eli Whitney Blake, had the movable jaw pivoted below

as Mr. Sahlin suggests, and several machines were so made. This construction gave the greatest amplitude of movement at the upper part of the crushing face and the least at the lowest part of that face. The inventor quickly saw that for rapid work the conditions should be reversed inasmuch as the rapid discharge of the broken stuff was essential to the regular dropping downward of the coarser rocks between the opposing faces of the jaws. Besides this reason it was plain that the crushing force was better applied by a slight motion at the top of the jaw where the resistance is greatest in crushing large masses. The "original Blake" was not designed for fine crushing, but for dealing primarily with large rocks to bring them down to a size suitable for making road material—"to pass a two-inch ring." It was my privilege to see the importance of this invention as an adjunct to stamps in mining and milling operations, and to erect in 1861 the first rock breaker at a gold mine in California,* and to introduce the machine, also, upon the Comstock lode mills† for crushing silver ores preparatory to stamping. For this purpose the breaker as it left the hands of the inventor has not been improved upon in principle, though there are improvements in details of construction. Although by setting up the jaws very close, and diminishing the motion at the bottom by pivoting the jaw below, or by using an eccentric of small throw, a large amount of fine material can be made by the crusher in its ordinary form, the solution of the problem of fine crushing upon the Blake principle of vibratory jaws has been achieved by my brother, Theodore A. Blake, in his invention of the multiple jaw crusher, which is now in successful use in many places, and is well known to our mining and metallurgical engineers.

WILLIAM P. BLAKE.

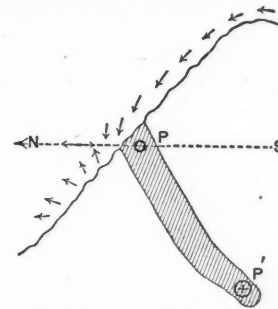
SHELLSBURG, Wis.

The Magnetic Dipping Needle.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your issue of May 28th Mr. D. T. Marshall points out the action of the dipping needle at Mount Olive, N. J., as a curious behavior of the needle. On the contrary it is not only quite regular, but the explanation is very simple as will be seen by inspecting the following diagram:

P and P' represent the magnetic poles of a polarized body of ore located in a hillside and cropping out on the northwesterly slope as at Mount Olive. At the top of the hill and at a distance from P the needle remains sensibly horizontal. If the needle is carried down the slopes along the points indicated by the arrows, its dip will be indicated roughly by the position of the arrows. The dip is the resultant at all times of the three forces acting on the needle, gravity, vertical component of the earth's magnetism and the vertical component of the forces exerted by P (assuming P' to be at a great distance). When the needle is above the horizontal plane N S, passing through P, the north seeking point will dip downward and the dip will increase from 0° to 90° as we pass down the hill to a point a few feet north of P where the direction of this resultant is always vertical. When the needle reaches the plane N S it suddenly changes from



vertical to horizontal. At this position it may point either north or south depending on which is the greater, the attraction of P or the horizontal component of the earth's magnetism. When the needle passes below the plane N S, it immediately resumes a vertical position, but now the north-seeking point is up instead of down, for the obvious reason that the vertical component of the force P is acting upward. In passing on down the hill away from P the needle gradually resumes its horizontal position. During this recession the upper end of the needle will veer away from P toward the north as shown in Fig. 1, if the horizontal component of the earth is greater than that of P, that is, if the needle points north when it is in the plane N S. If the horizontal component of P is greater than that of the earth, the needle will first veer toward P until a point is reached where these components are equal, when it suddenly reverses and veers to the north.

The persistent "negative dip" mentioned by Mr. Marshall is generally due to a magnetic pole in a higher plane than the needle.

ORANGE, N. J., June, 1892.

C. J. REED.

The Separation of Silver from Copper Matte by the Electrolytic Process.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Can you inform me how small an amount of silver can be separated from copper matte or black copper by the electrolytic method now in use, and what the minimum cost per ton would be in working a large plant where 10 tons daily of matte or black copper would be separated from silver and small amounts of gold?

L. B. DARLING.

PROVIDENCE, R. I., July 15, 1892.

[The cost of separating silver from black copper by the electrolytic process depends solely on the amount of copper produced and not on the amount of silver in the matte. With mattes containing a certain amount of copper per ton there must be more silver in the matte than will pay for refining of the copper before the refiner can give the owner of the matte anything for the silver ore and above the cost of refining. Thus are worth treating by this process. The cost of running such a plant as mentioned is about 1½ cents per pound of fine copper produced. The cost of treating a ton (2,000 lbs.) of matte containing 50% fine copper would be therefore \$12.50; so that with silver at 89 cents an ounce there would have to be

* At the Benton Mill, Mariposa Estate, Mariposa County, Cal.
† At Land's and Booth's Mills, Nevada.



more than 14.04 oz. per ton of silver contained in the matte before the value of the silver produced would be greater than the cost of production.

In running a plant for the profitable treatment of copper mattes some existing works charge about from 1¢. to 2¢. per pound, according to the quality of the copper produced. They allow only 92½% on the commercial value of the silver separated. With the tolls at 2¢. per pound the charge for treating a ton of 2,000 lbs. of matte would be \$25. The amount of silver contained in a matte assaying 50% in copper would therefore have to be greater than 30.4 oz. per ton of 2,000 lbs. before the cost of refining would be counterbalanced by the value of the silver produced. In fact, the minimum amount of silver in black copper which it will pay to extract is frequently set down as 50 oz.

Some years ago, before the Anaconda Mining Company smelted argenticiferous ores with their copper ores, it was allowed nothing for the silver in its matte although it ran from 12 to 20 oz. per ton with a small amount of gold. The company, desiring to realize upon the precious metals in its product, shipped the matte to electrolytic refiners in Germany who made allowances for all metals contained, but owing to the additional cost it was not so profitable as selling the matte directly in Liverpool, and this latter course was reverted to.

Officials of the Parrot Silver and Copper Mining Company have stated that the cost of refining electrolytically their copper bars from the bessemerizing process, running from 95 to 98% copper, is not over one cent per pound of refined copper. The cost on matte, speaking generally, may be taken at 1½ cents under favorable conditions.

The cost of a plant to produce 10 tons of copper daily would be about \$60,000. These figures are necessarily "approximate" and may be greatly modified by special conditions.—Ed. E. & M. J.]

ELECTRICITY IN BITUMINOUS COAL MINING.*

By Elmer A. Sperry.

Many machines have from time to time been invented with the object of replacing manual labor, and so increasing the output of coal mines,

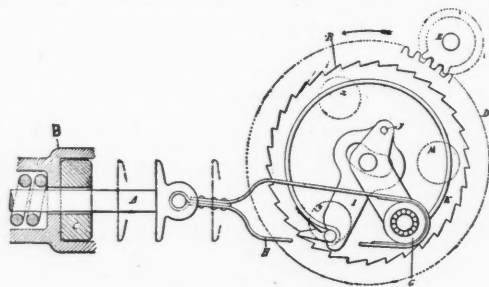


FIG. 1.

and many different mechanical motions have been adopted in their construction. On the face of the matter it would seem a simple thing to design such a machine, and so it is, if only coal is to be encountered. As, however, the cutter must be able to work its own way through other material besides the coal itself, impurities occurring in the coal seam and the fire clay above and below, the problem of designing a universal machine is somewhat complicated. The best machine so far invented is that in which a tool reciprocates along the line of its length, thus producing an intensified pick motion. One of this type of machine has been used for the undercutting system in bituminous mines in Illinois, Kentucky, Indiana and Ohio for some months now, and has given very great satisfaction.

Illustrations herewith give a general view and a detailed section showing the principle on which it works. An electric motor of 4 H. P. capacity carries a pinion *E* on its armature, and this drives the large spur wheel *D* continuously in the direction of the arrow. The heavy rod *B*, carrying the pick, is pulled back by the mechanism in the wheel *D*, hereafter described, and when released is forced outward by the pressure of the spring coiled round it into the face of the rock. The space of retraction is from 6½ to 7½ inches, and the oscillations take place at the rate of 160 to 225 per minute. The initial pressure exerted by the spring is 1,375 lbs., and the mean effective pressure when the pick strikes the rock is 1,000 lbs.

The current required in operating this machine is from 10 to 10.2 amperes at 220 volts. The weight of the rod and pick varies from 100 to 150 lbs. in the different sizes of the machine. The vibrations and shocks to which such a machine is exposed necessitates a specially strong and elastic design for the motor and apparatus generally. It is of course necessary also to keep the weight of the machine as low as possible in order to increase the ability of freely handling it; but if the weight is decreased below a certain limit the reactive forces play havoc with the operator. In order to make the machine as light as possible and also to overcome the backward recoil of the machine the author invented the retracting device shown in Fig. 2. This is done by making the rod and pick start back directly the blow has been struck, no matter at what point of the stroke.

The rod *A* is forced forward by the spring inside the part *B* of the frame. A cushion *C* relieves the shock when the projectile is not otherwise intercepted. The pinion *D* is provided with internal ratchet teeth *R*. A crank *G* is mounted entirely free from the wheel and co-operates with a long slotted pitman *H* connected with the rod and intended for retracting. A light steel crank arm is pivoted entirely free of the wheel *D*, and an auxiliary arm *I*, provided with a dog co-operating with the ratchet teeth *R*, is pivoted to the main crank arm at the point *J*, and connected with the crank arm through the circular steel spring *K*. When the crank *G* reaches the back dead center at the point *M*, a reversal of the strains and a free forward movement occurs in the direction of the rotation of the wheel under the impetus of the heavy compression of the driving spring *B*.

Suppose, now, that the forward stroke was intercepted at the point shown

in dotted lines, near the letter *A*; at this moment the crank *G* would be found in the position *x*, also shown in dotted lines, but its momentum and the slot in the pitman would instantly allow it to take up the position *y*, also shown in dotted lines, being at an equal angle on the opposite side of the center. Its further progress would be intercepted by the remote end of the pitman, and at this instant the dog would instantly fall in the next tooth in the revolving wheel *D*, immediately commencing its work of retraction without the necessity of the full stroke of the pitman being accomplished. The efficiency of this machine has been found to be about 70%.

The solenoid principle has also been tried for mining machinery. The machine weighs about the same as the spring actuated machine and absorbs somewhat more energy. The mean effective pressures are very low, and fall off rapidly if the machine does not make its full stroke.

The other classes of mining machines are the revolving cutter and the chain machine. In the former a revolving shaft, carrying cutters, is forced against the coal. The author thinks this type of machine can never succeed because the shaft has to be supported by journal bearings at two or more points, and here no knives can be located. As a consequence a solid pillar of coal is left in front of the bearings, which must be broken down by the forward pressure of the machine. Again, if the cutting bar encounters any foreign substance, the cutters are usually entirely stripped off. The machine must then be withdrawn, new cutters inserted and the broken ones dug out?

In the chain machines the cutters are inserted in a chain running over sprocket wheels mounted in a frame which is extended under the coal as the cut advances. As all the cutters pass in succession under the eye of the operator, any breakage can be easily detected. If a foreign substance is struck, one tooth follows another in the attack upon it and will generally cut through it. These machines can be worked in long wall mines where even the shortest reciprocating machines could not find room. One described by the author is about 5 ft. long, 20 in. wide and 18 in. high and weighs about a ton. It is made to travel along the face and carries at its side a cutter which undermines to a depth of 3 ft. Working in the fire clay underneath the seam, a single machine



FIG. 2.

has repeatedly undermined 1,500 ft. in nine hours. The machine runs on a rail which is laid along the face and taken up as the machine passes over it and pushed to the front over the top of the machine on rollers provided for the purpose. This type of machine has been in use for about two years in the coal districts of northern Illinois. It absorbs about 7 to 10 E. H. P., taking current from a flexible cable which allows a cut of 300 ft. before readjustment is necessary.

PROPERTIES OF ALUMINUM-ANTIMONY ALLOYS.

The researches of Dr. C. R. Alder Wright into the composition and properties of aluminum-antimony alloys are embodied in a communication read before the Society of Chemical Industry and published in the *Journal* of that society for June. The results of his researches do not disclose the existence of a commercially useful alloy of these two metals, and have greater scientific than practical interest. A remarkable point is that the alloy with the chemical composition Al Sb has a higher melting point than either aluminum or antimony alone, and that when aluminum is added to pure antimony the melting point goes up from that of antimony, (450° C.) to a certain temperature rather above that of silver (1,000° C.) and that as the percentage of aluminum is further increased and the percentage of antimony decreased, the temperature of the melting point of the alloy gradually falls, until, when the aluminum becomes free from antimony, the melting point of the alloy reaches that of aluminum (650° C.) A similar state of things has been shown by Prof. Roberts-Austen to exist, with the aluminum-gold alloys, only in this case the maximum melting point is reached when the alloy has a chemical composition represented by the formula Al₂Au.

In preparing these alloys the aluminum is melted in a crucible in a gas furnace with blast, and the antimony is dropped in in lumps. The antimony falls to the bottom of the crucible and soon melts. When the two layers of molten metal are stirred and mixed by a white hot fireclay rod, an alloy is formed which immediately solidifies. Only a part of the total volume of the two metals form this solidified alloy, and the remainder takes the form of an alloy of slightly different composition, but much lower melting point. As said before, when the solidified alloy has the composition Al Sb it also has the highest melting point. There is never any doubt that when liquid the metals are perfectly miscible.

When alloys of various compositions are cooled and solidified they present many interesting features. When the percentage of aluminum is small, the alloys differ little from antimony in appearance. When closely powdered and exposed to the air, they absorb oxygen and slowly disintegrated to a black powder in appearance, not unlike manganese dioxide. The alloys richest in aluminum are generally somewhat spongy and they also slowly absorb oxygen from the air and swell up and fall to powder. The more difficultly fusible alloys show the greatest tendency to absorb oxygen and disintegrate to black powder. When they are placed in water a slow evolution of hydrogen is noticeable, especially when the water is heated to boiling point. The gas thus evolved contains traces of silicuretted hydrogen, due to the presence of silicon in the aluminum, but no antimonuretted hydrogen can be detected in it.

*Abstract of a paper read before the American Institute of Electrical Engineers, Chicago meeting.



JAMES CLAYTON.

We present herewith a recent portrait of James Clayton, whose name is widely known throughout the engineering profession on account of his inventions to the perfection of which he has devoted almost a lifetime.

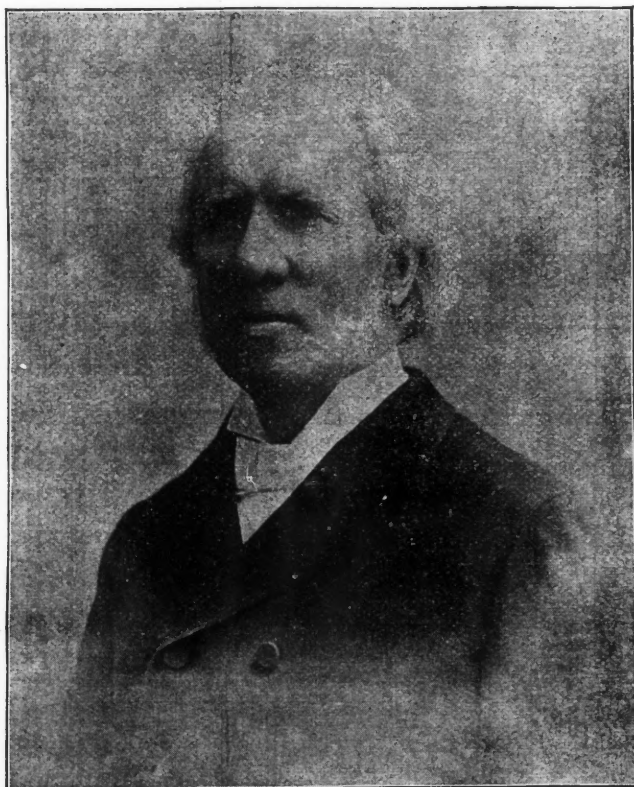
Mr. Clayton comes of an old English family and was born in Homer, England, in the year 182; coming to this country in 1849, he proceeded to California, via Panama, and located eventually at Grass Valley, Nevada County. There he acquired the Scadden Flat, or Clayton Diggings, as it was afterward known, which he operated for several years. Finally selling out, he came east and settled in Brooklyn, where he began the manufacture of the Clayton fly-wheel steam pump, of which he was the inventor and patentee. These pumps met with a wide sale until the advent of the direct acting pump, when Mr. Clayton turned his attention to the study of pneumatic machinery, realizing that this branch of mechanics had been too long neglected and that the air compressors then on the market were primitive.

The first Clayton air compressor, built in 1873, was used in building the tunnels in New York City for the sunken tracks of the Harlem Railroad, and achieved great success. Since that time Mr. Clayton has been carefully and steadily making improvements on his compressors, and continually raising the standard of efficiency, until to-day the machines bearing his name are in operation all over the civilized globe, and that name has become synonymous for excellence in pneumatic machinery.

Mr. Clayton, now in his seventieth year, is as hale and hearty as a man ten years his junior. He has recently departed for Europe to spend a

relation between the weight of salt taken and the palladium and chlorine obtained on reducing the compound in hydrogen. The mean of their results from the palladium is 105.46. They point out that the chlorine determinations afford far from accordant values, owing to irregularities arising in the course of the decomposition of the salt and to the difficulty of arresting the whole of the ammonium chloride. The atomic weights of all the platinum metals have now undergone revision, and it is interesting to note that the relations already pointed out by Seubert (*Leibig's Annalen*, cclxi., 279) are even more pronounced when the new value is introduced in place of that obtained by Berzelius (106.35). The figures are now as follows: Ruthenium, 101.4; osmium, 190.3; difference, 88.9. Rhodium, 102.7; iridium, 192.5; difference, 89.8. Palladium, 105.5; platinum, 194.3; difference, 88.8. Silver, 107.7; gold, 196.7; difference, 89.0.

Water Supply by Meter.—The advisability of adopting the supply of water by meter is an unsettled point with the American Waterworks Association. One certainty is, however, that if used the meters must be put in and repaired by the water-works authority, for the cost of putting in a meter, added to the cost of laying on a supply, is a considerable obstacle in getting people to take water, and it is hardly likely that a consumer will pay for repairing an inferential meter which always errs on the side of the consumer. In Worcester, Mass., the city used once to make the consumer pay for repairs, but now the authorities find it necessary to do it themselves. The average annual cost of a meter to the water-works company is so great as \$2.35, including first cost, repairs, maintenance and renewals. This high figure makes it doubtful, there



JAMES CLAYTON.

well earned vacation, visiting his brother, Mr. Thomas G. Clayton, Superintendent of the Midland Railway of England, and traveling on the Continent.

Portland Cement Regulations in Russia.—The Russian government has issued a new regulation relating to the composition of Portland cement used in public works in that country, says *Thonind. Zeit.* The cement shall be made either from a calcareous marl or a mixture containing clay and chalk, by burning until friable, and then grinding to a fine powder. The hydraulic modulus, or ratio of the sum of the parts by weight of CaO and (K₂O+Na₂O) to that of the parts by weight of SiO₂, Al₂O₃ and Fe₂O₃, ought not to fall below 1.7 nor to exceed 2.2. The percentage of sulphuric acid and magnesia should not be greater than 1.75 to 3 in cements ready for use. The specific gravity of the cement must be not less than 3.05. The cement should not set in less than one hour, nor take longer than eight hours. A sieve with 4,900 meshes per sq. cm. should not pass less than 50%, and one with 900 meshes per sq. cm. should pass all but 15%. The cement after seven days' setting should be able to show a limit of elasticity of 20 kilos. per sq. cm., and after 28 days 25 kilos. per sq. cm. A test piece, prepared with 3 parts sand 1 cement, should be able to stand, after seven days, 5 kilos., and after 28 days, 8 kilos. per sq. cm.

The Atomic Weight of Palladium.—Messrs. G. H. Bailey and T. Lamb have communicated the results of their investigations into the atomic weight of palladium to the London Chemical Society. After an examination of the values obtained from various salts, especially potassium palladous chloride (the salt used by Berzelius) and the palladammonium salts, they come to the conclusion that the most reliable substance for the estimation of the atomic weight is palladammonium chloride, Pd(NH₄Cl)₂. They prepared a series of fractions, and determined the

fore, whether the meter system will effect any eventual saving in the cost of the water supply. If it was every consumer who wasted water no doubt it would pay to install the meters, but as it is only about 5% of the consumers who are to blame, it is difficult to see where the saving would come in. As an example of the so-called economies of meter systems we may mention the case of the Spring Valley Water Company at San Francisco. This company owns some 10,000 meters, but in July 1890 only 490 of these were using more water than they were entitled to at the schedule rate. The houses are rated at a certain figure and the consumer is entitled to use water up to the amount represented by that figure, but if he uses more he is charged according to meter rate. The company in reality charged a uniform fine of \$2 for any excess over the schedule, just to give the consumers a hint that they must use less water; the result was that after six months only 67 of the 490 were still wasting water. They therefore saved the domestic waste in the case of 420 people at the cost of an annual expenditure of \$23,800. It is very doubtful whether the amount of waste saved is worth this expenditure; it would be much better to devote the money to the inspection of fittings and the adoption of appliances for the prevention of waste. If meters are adopted, it is necessary to have some minimum water rate. In one city, where there was no minimum rate, many of the consumers reduced their annual expenditure on water to less than the \$2, which their meters cost the company, so that in reality the city was getting less than nothing for its water. In Winnipeg, it has been found best to use meters only in case a large consumer is suspected of wasting water. Hotels and such places are there charged on a fairly high schedule rate, and if the proprietor complains of the excessive charge a meter is put in. Some such plan as this would be better than the universal use of a meter, for the present cost of a meter is out of all proportion to the average water rate,

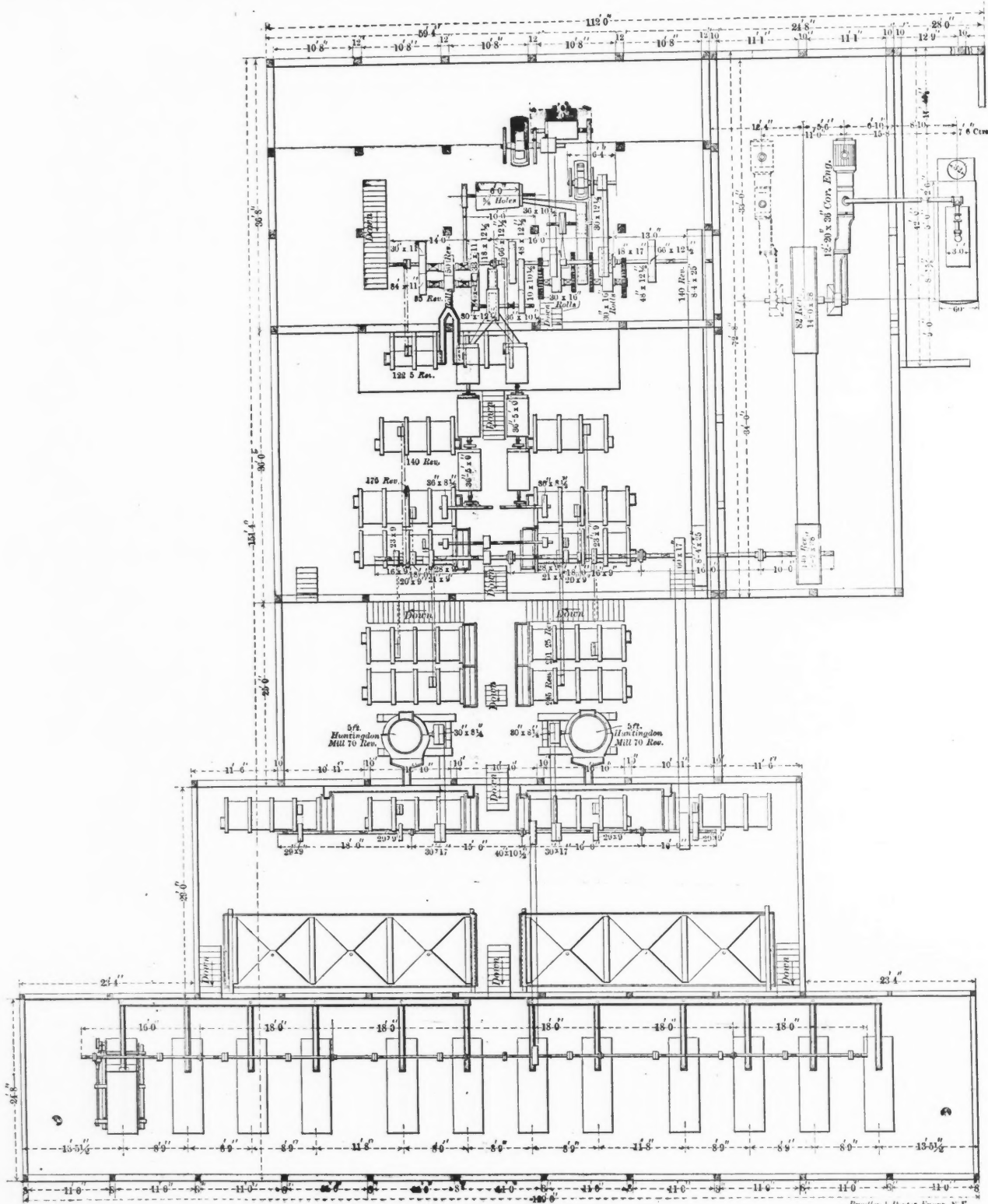
THE TIN ORE CONCENTRATING PLANT AT HARNEY PEAK, SOUTH DAKOTA.

The illustrations show the construction of the new concentrating plant of the Harney Peak Tin Mining Company, of South Dakota, recently built by Fraser & Chalmers, of Chicago, Ill., planned and constructed by Mr. Geo. Labram, of that firm, with the assistance of Mr. J. S. Childs, Superintendent of the Harney Peak Company. The machinery, which is estimated to be able to treat in the neighborhood of 250 tons daily, is driven

has passed the 1 1/2 in. screen and goes to the roughing rolls, where it is reduced to 3/8 in. ring size.

From these rolls the ore is elevated to a conical revolving screen with 1/2 in. perforations. The ore passing this screen is considered fit for concentration and goes to the second elevator, while the discharge from this screen flows to a set of 26 x 15 in. belt rolls with forged steel shells, known as the finishing rolls, which reduce it to about 5/8 in. ring.

The ore from the rolls joins that which has passed the 5/8 in. perforations



HARNEY PEAK TIN ORE CONCENTRATING MILL—GROUND PLAN.

en by a Corliss engine, 20 x 56 in. cylinders, developing with a boiler pressure of 100 lbs. and 82 revolutions, 127 I. H. P. or 113 Eff. H. P. The following is the process through which the ore goes:

The ore is shoveled or fed from the bin into a 15 x 9 in. Blake crusher, which reduces it to such a size that the largest piece will pass a 2 1/2 in. ring, while a large part (about one-half) will be very much finer.

The ore then falls into a revolving screen with 1 1/2 in. perforations. This screen separates it into two sizes, all below 1 1/2 in., following direct to two sets of geared rolls, 30 x 16 in., known as the roughing rolls, while the part discharged by the screen falls into a 10 x 7 in. Blake crusher, which reduces to 1 in. ring. After passing this crusher the ore joins that which

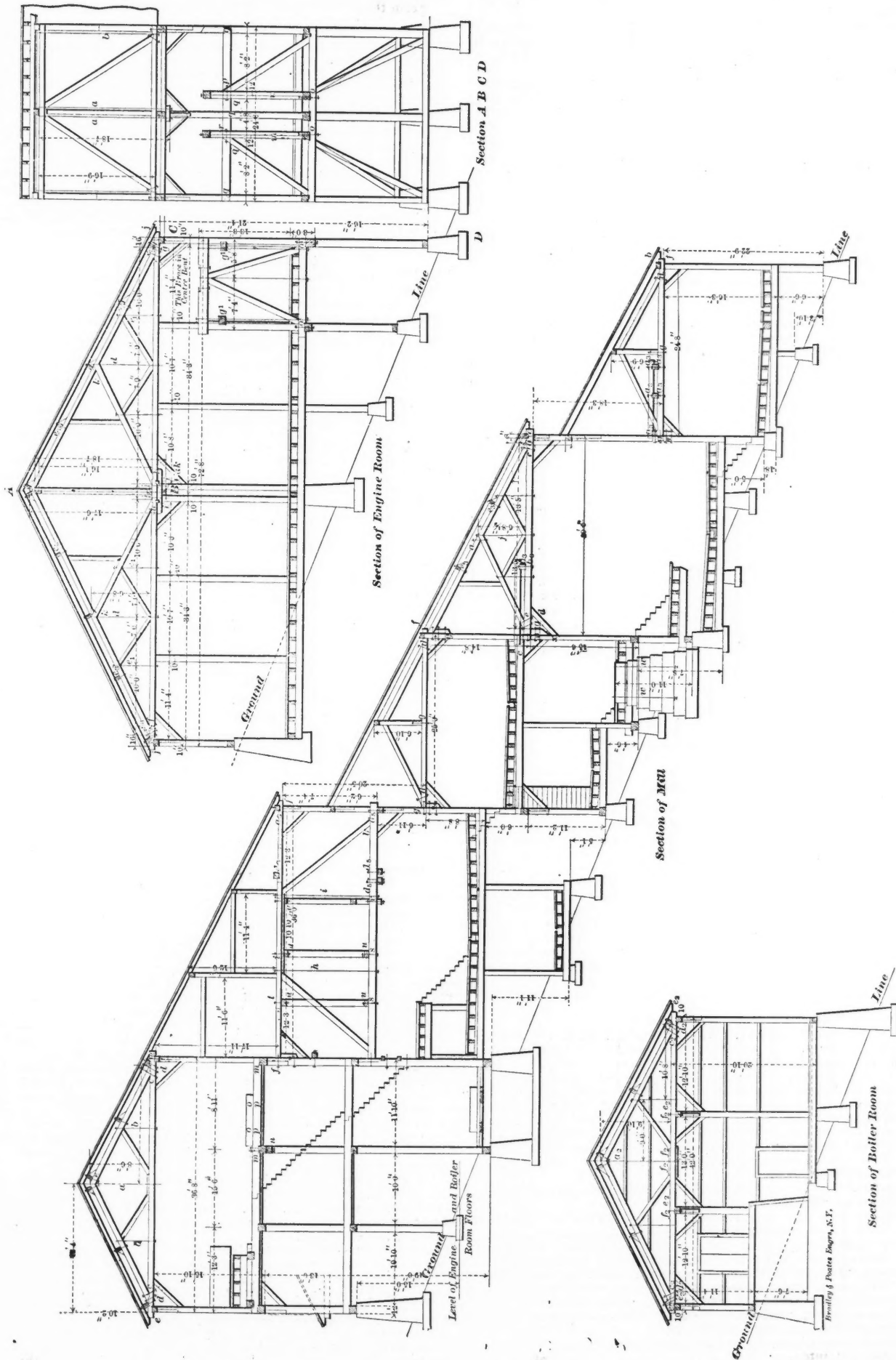
and goes to the second elevator, which discharges it into two sets of revolving screens of three each, which are covered as follows:

The first screen of each set with 3/8 in. perforated metal, the second of each set with 1/2 in. perforated metal, and the third screen with 3/4 in. perforated metal.

The elevator discharges all the ore into the first pair of screens, where it is separated into two size classes, all below 3/8 in. falling through the screen and flowing to the second set.

The ore above 3/8 in. discharged by the first screen goes to two improved side jigs, there being one to each screen. These jigs are of two compartments each, and are provided with screens of 1/2 in. mesh. When working

HOU



HARNEY PEAK TIN ORE CONCENTRATING MILL.

Boiler of Foster Works, N.Y.

the micaceous tin ore the product of the first compartment of these jigs will be a clean concentrate below the screen, with a larger grained product from the side discharge above the screen, which will probably contain a small percentage of gangue.

The second compartment of these jigs will produce an impure concentrate, both above and below the screen, which will go to the finishing roll for further reduction. The tail discharge of the jigs will be mica and quartz, too poor for further reduction.

The ore that has flowed into the second set of screens is again separated into two classes, all below $\frac{1}{4}$ in. going to the last set of screens, while that above $\frac{1}{4}$ in. is discharged into two three-compartment Hartz jigs provided with No. 4 screens.

These jigs make clean concentrates both above and below the screens, while the tailings flow to the regrinding machinery.

The ore in the last revolving screen is separated into two-size classes, all below $\frac{1}{4}$ in. going to two single compartment hydraulic separators.

The ore discharged by these screens flows to two four-compartment Hartz jigs, with No. 6 screens.

These jigs make clean concentrates both above and below the screens, while the tailings flow to regrinder. The ore below $\frac{1}{4}$ in. is divided into two classes by the hydraulic separator, the coarse part being discharged into a four-compartment Hartz jig with No. 8 screens, where a separation of all clean concentrate is made, the tailings flowing to regrinder. The overflow from the hydraulic separator flows to two more double separators, where two more size classes are made and treated on four-compartment Hartz jigs, the tailings from these jigs also flowing to the regrinder. The overflow from the last compartment of the hydraulic separator is delivered to a large settling tank which discharges a heavy slime ore at the bottom, while the overflow is clear water that can be returned for further use, if water should be scarce.

The bottom discharge from the first compartment of the settling tank goes to Frue vanners with corrugated belt, while the remaining compartments discharge to Frue vanners with plain belts.

All the tailings discharges from the jigs, as mentioned before, go to two 5 ft. Huntington mills, which discharge through two No. 20 or 24 screen. This product flows to two single compartment hydraulic separators, which discharge the coarse ore through the bottom to two 4-compartment Hartz jigs, with a No. 14 screen. These jigs make clean concentrates on the first three screens and a middling product on the last, which is worked on the first screens.

The overflow from the separators joins the discharge from the settling tanks and flows to the vanners. The concentrates made by all the jigs are discharged through the floor into a system of settling tanks arranged in such a manner that when one is full the flow can be diverted to a second tank while the first is allowed to settle. After settling, the water is drawn off, and the concentrate removed. All water from these tanks flows to a smaller tank, where it settles, further to prevent any possible loss of mineral caused by carelessness of the men in draining the large tanks.

By this method of treating the ore there is supposed to be the least possible loss by sliming the ore, as the object is to separate as much of the mineral as possible, in large crystals as soon as it is liberated from the gangue.

This is very important in treating the ores of the Harney Peak Co., as considerable of the cassiterite is in the form of massive crystals easily separated from the gangue.

This is very important in treating the ores of the Harney Peak Co., as considerable of the cassiterite is in the form of massive crystals easily separated from the gangue.

OFFICIAL REPORTS.

Alaska-Treadwell Gold Mining Company.

The second annual report of this company for the year ending May 31st 1892, states that a profit of \$361,980.16 was earned during the year. The expenses during the year were lower than any year before, as also was the yield per ton. In spite of this reduced yield, the profit earned for the year has been exceeded only once in the history of the mine. H. C. Perkins, the consulting engineer and late general manager of the company, says that there is 1,200,000 tons of ore in sight in the first and second levels. During the sinking of a drift below the first level 226 assays were made, giving an average of \$4.59 per ton, while the assays of ore in No. 2 level average \$4.21. This leads Mr. Perkins to believe that the ore in second level will prove to be as rich as that in the adjoining level. During the year \$707,017.37, an average of \$2.95 to the ton, was produced.

The following is a detailed statement of disbursements and receipts for year ended May 31st, 1892:

Disbursements.—Mining account—239,633 tons mined.
Labor, \$4150 per ton; \$99,450.37. Wages: Drillers, \$3.50 per day in summer, and \$4 in winter, with bonuses. Laborers, white men, \$3 per day; Indians, \$2 per day. Blacksmiths and mechanics, \$4 and \$5 per day. Supplies: Explosives, \$1338; drill fittings, \$0085; hardware and iron, \$0067; fuel for locomotive and smithy, \$0093; miscellaneous, \$0025; electric light account, \$0012; steam power account, \$0087; repair account, \$0215; hauling account, \$0011; lights, oils, and candles, \$0084; timber, etc., \$0028; cars and car wheels, \$0087; coal for dry room, \$0009; lumber, \$0024; Pelton wheel buckets, \$0005; total supplies, \$2170; less merchandise sales, \$0003; total mining supplies, \$2167 per ton, \$51,917; total mining cost, \$6317 per ton, \$151,367.37.

Milling Account.—19,633 tons crushed: * 5,045 tons concentrates saved.
Labor.—186 per ton; \$44,631.39.

Supplies.—Shoes and dies (8 cents per pound), \$0489 per ton; mortars and aprons, \$0026; rock breaker fittings, \$0098; miscellaneous, \$0028; shafting, \$0026; hardware and iron, \$0022; oil and lubricants, \$0014; fuel for heating, \$0031; electric light account, \$0034; repair account, \$0206; hauling account, \$0004; steam power account, \$0645; lumber, \$0007; quicksilver, \$0049; concentrator fittings, \$0118; screens, \$0033; boss heads, \$0026; transmission rope and belt, \$0039; total, \$1895; \$45,429.06; less receipts for custom work, \$0029; \$486.55; total milling supplies, \$1875; \$44,942.51; total milling cost, \$737; \$89,573.90.

Chlorination of concentrates, 6,176 $\frac{1}{2}$ tons concentrates treated.
Labor, \$4,799.3; \$29,643.11.

* The mill crushed 450 tons of ore for Mexican company during the year, making total crushing 240,083 tons.

† Steam power was used about one-fourth of the year, water power the remainder.

Supplies: Acid, \$7862; wood, \$1404; manganese, \$2136; salt, \$3963; coal, \$2778; total supplies, \$2814; \$17,382.73.

Total chlorination cost, \$7,6136 per ton concentrates (or \$1,1962 per ton of ore); \$47,025.84.

A proper proportion of assay office expenses which are charged to general expense account would bring the total costs of chlorinating ore to nearly \$8 per ton.

General expenses, \$1020 per ton of ore, or \$24,441.91.

San Francisco office expenses, \$0210 per ton of ore, or \$5,050.40.

Bullion charges, \$0449 per ton of ore, or \$10,880.23.

Total operating costs, \$13700 per ton ore, or \$328,339.65.

Total construction cost, \$1292 per ton of ore, or \$30,940.68.

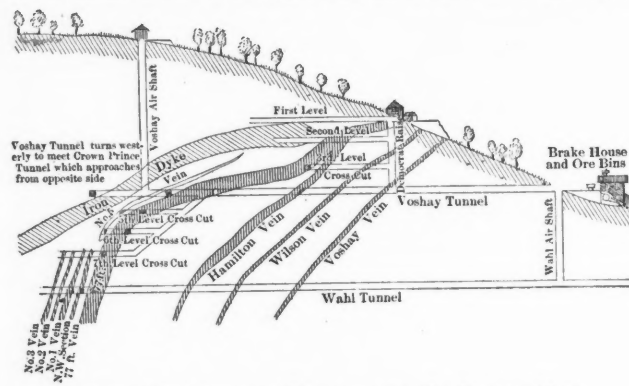
Total operating and construction costs \$14992 per ton ore, or \$359,280.33.

Receipts.—Bullion: Mill, 239,633 tons ore crushed, \$508,894.81; chlorination works, 6,176 $\frac{1}{2}$ tons treated, \$193,504.71; filterings sold, \$4,027.08; base bar sold, \$135.66; slag sold, \$455.11; total bullion realized, \$707,017.37; gain on merchandise, 12 months, \$11,365.97; interest received, \$2,877.15; total receipts, \$721,260.49; profit for year, \$361,801.16.

De Lamar Mining Company, Limited.

The following is the first annual report for this company for the year ending March 31st, 1892. During the twelve months 19,930 tons of ore, dry weight, were crushed, of an average assay value of \$36 71, of which 81.95% was saved, making a total bullion product of \$262,868 21 gold and \$301,755.51 silver; a total of \$564,623.72, giving an average value of \$29.12 per ton. Ore to the value of \$179,649 55 was shipped. The total revenue for the year, including the miscellaneous revenue amounting to \$11,161 85, was \$756,855.33. The mining cost was \$9.43 per dry ton; the milling, \$6.88 per dry ton; freight and bullion expenses, 69 cents per dry ton; freight charges on ore, 59 cents per dry ton; insurance, 6 cents per dry ton, and extraneous expenses to 32 cents per dry ton; a total expenditure of \$17.97 per dry ton; thus leaving a profit of \$407,785.20, an average of \$33.982.10 per month.

The Mill.—The mill was in service 345 days, crushing 19,390 tons of dry ore of an average assay value of \$17.18 gold and \$18.89 silver, a total of \$36 17. The percentage saved according to assay was 81.59; according to bullion returns, however, it was slightly higher, or 82.24; 13,143 oz. of fine gold were produced and 317,112 oz. of silver. The Board of Directors and the management of the mine have been looking into the problem of an increased extraction of the gold and silver, and have among other



SECTION SHOWING THE VEINS OF THE DE LAMAR MINE.

things been investigating the MacArthur-Forrest cyanide process which they state, so far as examined, has given favorable results, but that it is too early as yet to speak positively on the subject.

The accompanying section shows the veins so far discovered in the mine, viz., the Voschay vein, the Wilson vein, the Hamilton vein, the 77 ft. vein, and the No. 5 vein. It is believed that other veins will be encountered before the iron dike shown in the illustration is reached. The average width of these veins, as they appear on the cross section, can be calculated as follows: Near the upper part of the mine 42 ft., at the plane of the Voschay tunnel 47 ft., at the plane of the Wilson tunnel 56 ft. The length of the various ore bodies taken along the line of the Voschay tunnel and above it are as follows: Wilson vein, 265 ft.; Hamilton vein, 415 ft.; 77 ft. vein, 523 ft.; No. 5 vein, 485 ft. As the veins approach the surface the length of the ore bodies decreases. Between the Voschay and the Wilson tunnels the longitude of new developments is still progressing. Considerable prospecting work has been done during the year; 263 $\frac{1}{2}$ ft. of shafts were sunk; 3,420.39 ft. of levels and 310.78 ft. of surface and crosscuts were driven; 297.7 ft. of winzes were sunk; 1,055.80 ft. of raises were driven—a total of 6,378.17 ft.

The Voschay tunnel not only penetrated all the veins referred to above, but has cut several of the veins in the Summercamp group recently purchased by this company.

The Wilson Vein.—The ore body of this vein has been developed for a length of 265 ft. No work has been done on it below the Voschay tunnel, except to sink a winze 34 ft. deep. The ore is milling ore. The average width of the vein is 56 ft. The average value of the gold is \$2, and of the silver \$5, a total of \$27.

Hamilton Vein.—This vein has been one of the greatest producers of the mine. The length of the ore body as shown in the Voschay tunnel is 415 ft., its average width is 7 ft., its average value of gold is \$27, of silver \$7 a ton, total \$34 per ton. Below the Voschay tunnel a shaft has been sunk 50 ft. Near the head of this shaft, a distance of 26 ft. down the vein was wide and the ore of good grain. Below this point the ore was poorer, although the vein keeps its size. Then, however, the ore shoot may last, as the shaft was sunk on the westerly edge of it, and probably passed through it and into the impoverished vein matter below.

Seventy-seven Foot Vein.—At the level of the Voschay tunnel the ore body of this vein has been opened to the length of 520 ft., showing ore of mixed value throughout. In places it widens into large propor-

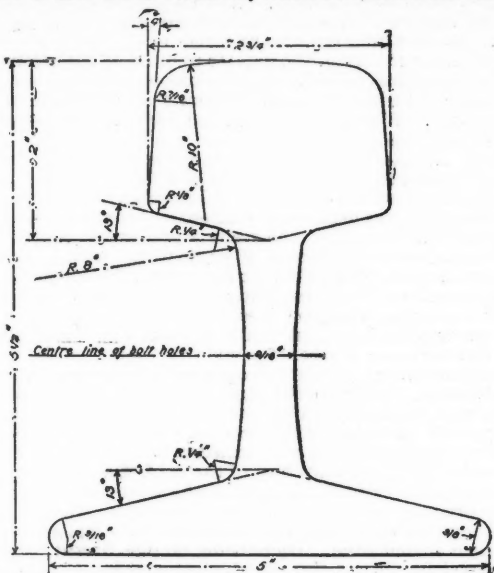
tions, and when this occurs it produces fissures and sections of second class ores interbanded. This is especially the case in the fourth and fifth levels. At the fourth level it measures 29 ft., of which 18 ft. can be estimated of an average value of \$32 per ton, chiefly silver, and at the sixth level it is exceptionally wide, being in one place 60 ft. It will average at this level 26 ft. wide, of an assay value of \$6.75 gold and \$27.75 silver, a total of \$34.50 a ton. At the eighth level it is 34 ft. wide, of which 5 ft. will assay \$5 gold and \$25 silver, a total of \$30 a ton, and 2 ft. will assay \$19.50 gold and \$24.50 silver, or \$44 per ton.

No. 5 Vein.—This vein, formerly known as the Hamilton Vein, was considered a section of the 77-ft. vein divided from the last vein by a horse of porphyry. Subsequent developments, however, proved it to be a separate and distinct vein, with its apex between the third and fourth level. On the fourth level the ore body is 484 ft. in length, on the fifth, 301 ft. in length. Below the fifth level a winze has been sunk with ore in the bottom. This is essentially a gold-bearing vein, assaying on the average \$35 in gold and \$5 in silver—\$40 per ton. Its average width is three feet.

During the year the 20-stamp mill was enlarged to 30 stamps, and in addition 12 large wooden panes and six settlers were added. The capacity of the mill was thus nearly doubled. During the year £70,000 were paid in dividends, being at the rate of 17½% on the capital of the company. Capt. Plummer, the General Manager of the mine, estimates that there is sufficient ore in sight to pay a total of 100% on the capital of the company.

THE 100-LBS. RAIL FOR THE PENNSYLVANIA RAILROAD.

As we stated last week in our iron market review the Pennsylvania Railroad has determined to try a 100-lb. rails on their main line, and have recently given out an experimental order of 2,000 tons. This week we give an illustration of the cross section of this rail. For the illustration we are indebted to our contemporary the *Railroad Gazette*. This rail is different in design from that adopted by the New York Central & Hudson River Railroad in their track within city limits here, and it also differs very



SECTION OF 100-LB. RAIL ON PENNSYLVANIA RAILROAD.

considerably from the standard rail section adopted by the American Society of Civil Engineers. It remains to be seen whether the design will be a satisfactory one. The following are the principal dimensions of the three 100-lb. rails referred to. It will be noticed that the new rail will have a much larger weight in the head than either of the other two:

	Penn. R. R. Ins.	N. Y. Cent. Ins.	Am. S. C. E. Ins.
Height.....	5½	6	5½
Width of base.....	5	5¼	5½
Width of head, top.....	2¾	3	2¾
Width of head, bottom.....	4	4	4
Slope of side of head.....	1/8 to 1/4	1/8 to 1/4	1/8 to 1/4
Depth of head.....	2½	3	2½
Depth of web.....	2½	3	2½
Depth of base.....	2½	3	2½
Thickness of web.....	1/2	1/2	1/2
Height to center of bolt hole.....	2½	2½	2½
Radius of top of head.....	10	14	12
" of top corners of head.....	1/8	1/8	1/8
" of bottom corners of head.....	1/8	1/8	1/8
" of top fillets.....	1/4	1/4	1/4
" of bottom fillets.....	1/4	1/4	1/4
" of corners of base.....	1/8	1/8	1/8
" of side of web.....	8	14	8
Fishing angles of head and base.....	13°	4 to 1	15°
Distribution of weight.....	Lbs.	Lbs.	Lbs.
Head.....	49	49	41
Neck.....	18.5	23.5	21
Base.....	32.5	33.7	37.5

James Process of Zinc Reduction.—The following method of reducing zinc from sulphide ores has been patented by Christopher James, of Swansea. A certain quantity of blende is roasted to complete oxidation and the resulting oxide then mixed with such a quantity of unroasted blende as will furnish sulphur enough to form sulphurous oxide with the oxygen of the roasted ore, $ZnS + 2ZnO = 3Zn + SO_2$. This mixture, treated in a reverberatory furnace with a neutral or slightly reducing flame, yields zinc and sulphurous oxide. The same reaction takes place when blende and zinc carbonate are treated, $ZnS + 2ZnCO_3 = 3Zn + 2CO_2 + SO_2$. These reactions take place only at high temperatures.

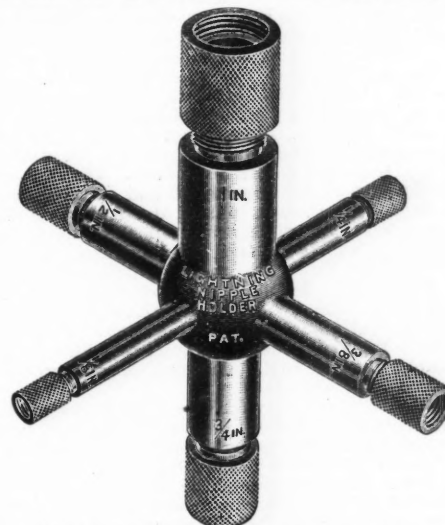
A NEW PIPE FITTING TOOL.

This device, adopted for use in pipe and steam fitting, is manufactured by the Wiley & Russell Manufacturing Company, of Greenfield, Mass. The operation of threading nipples is difficult, as the thread on either end is easily damaged by the tool or block used to hold the other end. The holder described is provided with six arms of different sized couplings. When a certain size of nipple is to be cut the arm diametrically opposite to the arm to be used is screwed in a vise. The nipple is now screwed in the coupling with the fingers. As soon as a sufficient number of threads have become engaged the coupling is screwed down until the end of the nipple meets the plug. The nipple is thus held firmly until the threaded end is completed. Its release is accomplished by screwing the coupling with the fingers, as no binding can possibly take place. The tool measures 9 in. from end to end of arm, and weighs 4½ lbs. J. H. Tucker, Jr., & Bro. are the New York agents.

PRODUCTION AND STOCKS OF PIG IRON IN THE UNITED STATES, FIRST HALF OF 1892

We gave last week the figures for the production of pig iron in the various States during the first half of 1892, and we now analyze the figures as regards the production of the various kinds of pig. Of the total production of 5,374,943 net tons, 313,505 net tons represented charcoal pig, 4,017,935 net tons bituminous coal and coke pig, and 1,043,503 net tons anthracite pig. These figures compare with 5,501,175 net tons total production, 356,109 net tons charcoal pig, 4,070,925 bituminous and coke pig, and 1,074,141 anthracite pig during the second half of 1891, and 3,772,280 net tons total, 290,091 net tons charcoal pig, 2,466,289 net tons bituminous and coke pig, and 1,105,900 net tons anthracite pig. In all three branches, the production during the first six months of 1892 is slightly less than that of the second six months of 1891, but very much greater than that of the first six months of 1891.

With very few exceptions this increase during the second half of 1891, and the light decrease during the first half of 1892, are evenly distributed throughout the various States. The main exceptions are Alabama and Ohio, whose increase in bituminous and coke pig has been more than



WILEY & RUSSELL PIPE FITTING TOOL.

sustained. The figures for Alabama for bituminous and coke pig were 339,109 net tons in the first half of 1891, 464,701 net tons in the second half of 1891, and 485,361 net tons during the first half of 1892. The figures for Ohio for bituminous and coke pig were 436,933 net tons in the first half of 1891, 700,114 net tons during the second half of 1891, and 753,971 net tons during the first half of 1892.

The unsold stocks of all kinds of pig iron have been gradually increasing. On June 30th, 1891, they amounted to 495,102 net tons; on December 31st, 1891, to 667,893 net tons; on March 31st, 1892, to 804,808 net tons, and on June 30th, 1892, 826,500 net tons.

While the production of pig iron generally has decreased, the production of Bessemer brands has increased from 1,502,452 net tons during the first six months of 1891, to 2,386,401 net tons during the second six months of 1891, and to 2,540,831 net tons during the first six months of 1892. The greatest increase is shown by Ohio, whose production during the first six months of 1891 was 195,143 net tons, during the second six months of 1891 was 318,912 net tons and during the first six months of 1892 was 399,787 net tons.

The quantity of spiegeleisen and ferromanganese made in the first half of 1891 was 49,887 net tons, in the second half, 93,211 tons; total, 143,098 tons. In the first half of 1892 the quantity of spiegeleisen and ferromanganese produced amounted to 97,859 tons.

A Water-Balanced Gravity Railroad.—A novel form of inclined railway has been built at Bridgenorth, England. It connects the upper and lower parts of the town, communication between which was formerly provided by means of steps cut in the solid rock. The length of the track is only 201 ft., but its vertical rise is 111 ft. There are two cars, on separate lines of rail, and they are connected by a steel cable passing round a wheel at the top. They are thus balanced, and a preponderating weight is given whichever one is at the top, by pumping a supply of water into a tank placed in the frame of the car. The steel rails are secured to ties which are bolted to the solid rock and also imbedded in concrete. The brakes are normally on the wheels, and motion is only possible while the brakeman turns his handle. The track is cut out of the solid rock, so that it shall not spoil the beauties of the landscape.

GEOLOGY OF THE NATURAL GAS FIELDS ABOUT PITTSBURG.

Written for the Engineering and Mining Journal by A. Cummins.

The Murrysville and Grapeville gas fields lie in an easterly direction from Pittsburg, Murrysville being 18 miles, and Grapeville 26 miles distant. The two fields extend in length northeasterly and southwesterly, and are upon parallel anticlinal lines or axes, Grapeville being upon the second and Murrysville upon the third axis west of Chestnut Ridge. The first, second and third axes are eight miles apart, and the first axis is a like distance from the axis of Chestnut Ridge, the most westerly mountain of the Alleghenies, and itself an anticlinal. The gas field at Murrysville is in form an oval, with a segment cut from the large end at the northeast. Its length is 11 miles, its width, through the centre is two and one-half miles, and its area is 25 square miles. The Grapeville field is in form an ellipse, of which the length is seven miles and the width one and three-quarter miles. Its area is 12 square miles. The anticlinal lines have much greater length than the gas fields. The second axis extends from a point north of the Conemaugh River to one near the Youghiogheny, where it joins the first axis. Its length is 20 miles. The first axis begins north of the Conemaugh, and extends almost to the West Virginia State line, its length being 60 miles. The third axis begins north of Mahoning Creek in Jefferson County, and extends beyond Ten Mile Creek in Greene County, its length exceeding 80 miles. This third axis has another gas field upon it, i. e., the Bellevernon, which is situated 25 miles southwestward from the Murrysville field. The second axis has but the one gas field, the Grapeville, upon it. The first axis has produced gas in a very small way at two points, one near Latrobe, opposite the north end of the Grapeville field, and the other near Uniontown, 30 miles to the southwest from Latrobe. Anticlinal or arches in the rocks do not usually continue at uniform heights over any considerable distances, but rise and fall alternately along the axes. The Grapeville gas field occupies the crown, or place of greatest height upon the second axis. From the centre of the field southwestward the arch falls or changes in elevation 200 ft. in four miles, and the decline northeastward is similar. The gas producing area near Latrobe also occupies one of the several crowns of the first axis.

But the gas field of Murrysville is not so situated. The point of greatest height upon the third axis is northeast of the Kiskiminetas River, five miles from the northerly end, and ten miles distant from the center of the gas area. The decline along the axis from the place of greatest height to the center of the gas field is 300 ft., and from the latter point along the axis to the southerly end of the field the fall is 220 ft. The gas rock is at an elevation of 340 ft. below sea level at the axis in the center of the Murrysville gas field, and at an elevation of 25 ft. above sea level, at the centers of the Grapeville and Latrobe fields. The rock rises almost to the surface in the gaps of the Conemaugh and Loyahanna, in Chestnut Ridge. The beds of the streams named are at the axis of the ridge, between 1,000 and 1,100 ft. above sea level. In the three troughs which intervene between Chestnut Ridge and the third axis, the gas rock lies upon a line drawn through the center of the gas fields, at an approximate elevation of 800 ft. below sea level. At the foot of the arch of the third axis, northwest of Murrysville, upon the line aforesaid, the gas rock lies at 600 ft. beneath sea level, and beyond this the strata are but little affected by the mountain folding. The arch at Grapeville is sharp at the center, and resembles a gable roof. The arch at Murrysville is broad, and gracefully curved, like a rainbow.

The general surface of the country for fifty miles westward from Chestnut Ridge is at an elevation of 1,200 ft. above the level of the sea. The hills are well rounded off, and the valleys numerous and for the most part deeply cut. The bed of an ordinary creek lies 900 ft. above the sea and 200 ft. below the hills. The elevation of the surface is but little affected by the folds in the strata, erosion having reduced the hills over the arches to very nearly the same height as the hills over the troughs. The country rocks, or surface strata, are carboniferous. A well drilled in the valley at Murrysville is in the coal measures for the first 400 ft. It next passes through the Pottsville conglomerate, 100 ft. or more thick, then through the Mauch Chunk shales, 150 ft., and through the mountain limestone 50 ft. thick. From the depth of 700 to 1,100 ft., such well is in the Vespertine rocks, of which the Pocono sandstone forms 250 to 300 ft., and from 1,100 ft. to the top of the gas sand, at 1,350 ft., is in the Catskill rocks of the Devonian series. In the oil and gas fields of southwestern Pennsylvania, the mountain limestone and the Pocono sandstone are known as the "Big Indian." Both rocks are very hard, and the limestone, being highly silicious, is not distinguished by the drillers from the sandstone. The Pocono sandstone is the oil rock of Mount Morris, Pa., and Mannington, W. Va. The gas rock at Murrysville and Grapeville is the second, or 50-ft., sand of the group of rocks which produce the greater part of the oil and gas of southwestern Pennsylvania. The rock has at Murrysville and Grapeville a thickness approximating 100 ft., of which 50 ft. is highly productive in gas. It is a lead colored rock, and the productive part is uniform in texture, but no coarser than many of the stones which may be seen lying about upon the surface in any country. Its interstitial space, as determined by Mr. E. F. Wood, chemist, from some fragments blown from the wells, is one-fifth. The storage space afforded by 50 ft. of the rock is therefore equal to a cavity 10 ft. in depth. The area of rock which is open in texture is larger than the gas areas, in fact, seems to extend in a continuous sheet over the three axes. The northern boundary coincides with the northeastern end of the Murrysville gas field, but its western and southern boundaries are beyond the limits of that field, as well as beyond the southern boundaries of the Grapeville field. The portion of this area of open rock which is not charged with gas is occupied by water. The dividing line between water and gas about the Murrysville field is, approximately, 550 ft. below the sea. At the center of the field the arch rises 200 ft. out of the water. The water line around the Grapeville field is, approximately, 250 ft. below the sea. The crown of the axis is therefore nearly 200 ft. out of the water. In the Latrobe field the water line is very nearly at sea level, and the gas space in the arch is very small. The sheet of open rock may extend as far east as the axis of Chestnut Ridge, and if so, the water which surrounds the gas fields, doubtless, entered the rock at that point.

Over the gas rock in the Murrysville and Grapeville fields are several dense slate rocks, which have been a principal factor in preventing the farther passage toward the surface of the gas stored in the sandstone. The one of these slates which lies immediately over the gas rock is 70 ft. thick. All rocks are more or less porous, and the gas has been for ages escaping through them from the depths below to the atmosphere. In the Murrysville field the average thickness of the covering over the gas rock is 1,500 ft. Under ordinary conditions such a depth of covering would afford a gas pressure of 350 lbs. But the effect of the existence of the thick slates over the gas rock was to check the upward flow of the gas, so that it accumulated to 650 lbs. pressure, or nearly double the quantity that would otherwise have been found in the rock. The covering in the Grapeville field is 200 ft. less than in the Murrysville, and the slates are not quite so good. The pressure found when the field was first opened in 1837 was 550 lbs.

Gas wells are provided with valves or gates which can be shut and the waste of gas avoided when the wells are not in use. When an oil or gas well is being drilled there is placed in it from 600 to 1,000 ft., as the case may require, of 6-in. pipe to "case off" the water of the rocks near the surface. The pipe rests upon a shoulder made in some dense rock below the water by drilling an 8-in. hole to that point, and a 6-in. hole the remainder of the way. The gate in question is put upon this 6-in. pipe at the well mouth. But prior to May, 1886, the wells at Murrysville were without such gates, owing to the belief that any attempt to restrain the flow of gas would result in the loss of life and limb. When finally, in the month aforesaid, extra precautions being taken, a gate was put on a well and closed, it was a surprise that the pressure stood at 540 lbs. only. The original Haymaker well was completed in the fall of 1878. The project of piping gas to Pittsburg was taken up in 1882. A small line was laid in the fall of that year, and the gas of the Haymaker and two new wells turned into it early in 1883. During the summer of 1883 two additional lines were laid and five or six additional wells were drilled. In 1884 and 1885 more pipe lines were laid and other wells were drilled, so that by the spring of 1886 there were 40 wells. When a well was completed its gas escaped until a pipe was laid to it, an interval often of weeks, sometimes of months. As very little gas was required in the city from Saturday noon until Monday morning, the greater number of the wells were taken off the lines during that period. A well escaping into the air discharges many times the gas which would flow from it if connected with a high pressure pipe line. When, during 1884 and 1885, the wells were turned loose on Saturdays and Sundays, the noise was terrific and the waste of gas prodigious. Fully 15% of the contents of the field escaped into the air before it was known that the wells could be safely controlled.

The freedom with which the gas flowed through the rock containing it, when the pressure was high, is an interesting feature of the Murrysville and Grapeville fields. After the wells were under control, if a well bursted its casing or met with any other accident which permitted the gas to escape unchecked into the air for a time, the waste told seriously upon the pressure of the surrounding wells. If only a part of the wells were required to supply the pipe lines, the gates of the others were closed until more gas was needed. But while thus standing unused and closed, such wells lost the same number of pounds of pressure as the wells in use. And this tendency of the pressure to equalize in the rock was not limited to short distances. Prior to the summer of 1888, the developments at Murrysville were wholly upon the southern half of the field, many of the wells being about the town of Murrysville, which is at the center of that area. But an exploring well was drilled in the summer of 1887, not far from the center of the northern half of the field, five miles from Murrysville and two miles from the nearest of the scattered wells north of the town. The pressure of this well, when completed, was 480 lbs., which was 160 lbs. higher than the average pressure of the wells upon the lower half of the field at that time. There being no pipe line at hand, the well remained closed for a year, during which time it lost 112 lbs. of its pressure. The average loss of the wells in use in the southern half the field, during the same year, was 130 lbs.

The number of wells in the Murrysville field is about 200; the number in the Grapeville field about 50. The pipe lines from Murrysville to Pittsburg and its vicinity are four 8-in. lines, two 10-in., two 12-in., one 30-in. and one 36-in. line. The pipes leading from the Grapeville field are one 8-in. line to Connellsville, one 10-in. line to Jeannette, one 12-in. to Johnstown, one 16-in. to McKeesport, one 16-in. to Bessemer, and one 20-in. line to the 36-in. pipe at Murrysville. The two 16-in. pipes are connected with Murrysville by branches. The 36-in. line from Murrysville to Pittsburg was laid after the pressure became much reduced in order to maintain the supply. The several smaller pipes which it replaced were relaid in new fields having high pressure.

In the working of gas fields the diminution in pressure, which occurs from month to month, indicates the proportion which the gas used bears to that which is still in store. Thus, if the original pressure of a field, or group of wells, is 500 lbs., and after six months use is found to be 125 lbs., three-fourths of the gas of the field, or group of wells, has been used and one-fourth is left. In a field of which the area is well defined, and the thickness and interstitial space of the gas rock known, the quantity of the gas in the field can be estimated by multiplying the cubic feet of the reservoir, or gas space in the rock, by the number of atmospheres contained in the pressure. Taking the number of square feet in the twenty-five miles of area at Murrysville and multiplying this by the ten feet depth of cavity, we have the size in cubic feet of the reservoir. The original pressure was at least 650 lbs., which divided by 15 give 43½ atmospheres. If the cubic feet of reservoir be multiplied by 43½, we have 302,016,000,000 cu. ft. as the original gas content of the Murrysville field. The area of Grapeville being twelve square miles, and its initial pressure 550 lbs., the original gas content was 122,642,280 cu. ft. The one atmosphere which does not register the gauge is discarded in these calculations.

Next in importance after Murrysville and Grapeville, is the Canonsburg gas field. It lies 20 miles southwest of Pittsburg, and properly includes the Hickory and Washington fields, which now unite with it and are upon the same elevation in the rocks. The whole embraces an area of 50 square miles. The boundary lines are somewhat irregular, but the general form is that of a square, the corners of which point north, south, east and west. The town of Canonsburg is at the eastern corner, the village of Hickory is on the northwest boundary, and Washington is a couple

of miles beyond the southeast boundary. The elevation of the surface of the country is the same as at Murrysville, but owing to the general south-westward fall of the strata the place of the group of oil and gas rock, independent of any folding, is much deeper in the ground than it is at Murrysville. The place of the top of the 50 ft. at the center of the Canonsburg gas field would be, if unaffected by local change, 1,000 ft. below the level of the sea. There has been, however, an uplift in the rocks, which, over about 10 square miles of the northeasterly half of the field, exceeds 250 ft. The fall in the rocks from this area of elevation does not at the northeast and northwest exceed 250 ft. But at the southeast and southwest it terminates in troughs which are nine miles distant from and more than 500 ft. lower than the elevation. The Washington oil field lies upon the southeastern slope, about midway between the edge of the gas area and the trough. The Taylorstown oil field is upon the southwestern slope and immediately adjoins the gas area.

The principal producing rocks of the oil and gas group are four, i. e., the Gantz, 5 to 10 ft. thick; the Fifty-foot, 25 to 75 ft. thick; the Gordon, 10 to 20 ft. thick; and the Fifth Sand, 15 to 30 ft. thick. The Fifty-foot is separated from the Gantz only by a few feet of slate. The Gordon is 300 ft. below the Gantz, and the Fifth Sand is 100 ft. beneath the Gordon. In the Canonsburg gas field these rocks are without any uniformity in openness. One well may produce gas in fair quantity from the Fifty-foot, and the adjoining well, half a mile away, produce entirely from the Gordon. A third well, a like distance from the second, may produce in moderate quantity from both rocks. A fourth well may be barren in all the sands. One rock may be superior to the others over a small area, but over the next area of corresponding size may be the least productive of any.

There is also great variety in the original pressures, the range being from 300 to 800 lbs. But few of the wells exceed 500 lbs. pressure and the average is not above 400 lbs. There is some communication between wells through the rock in parts of the field, and doubtless many of the latter wells have been drilled into open rock from which the gas has been partially exhausted by the earlier wells. The high pressured wells which are occasionally found are in open spots of rock which have no connection with other open areas already touched by the drill. Not more than 35 square miles of the area embraced within the boundaries of the field are productive in gas. The thickness of producing rock may be taken as averaging 10 ft., and the interstitial space of this as one-fifth. The average initial pressure being 400 lbs., the original contents of the field was 52,039,680,000 cu. ft. of gas.

The remaining gas fields about Pittsburg are twenty in number, but when considered singly, they are all insignificant as compared with either Murrysville, Grapeville or Canonsburg. Bellevorn is the best one of these smaller fields, its original contents being about 8,000,000,000 cu. ft. of gas. A fair estimate of the original contents of the twenty fields taken together is 50,000,000,000 cu. ft. Bellevorn and four other fields furnish one-half of this. Of the entire original quantity of gas in the twenty-three fields Murrysville and Grapeville together held 80%, Canonsburg, 10%, and the other twenty fields the remaining 10%. One half of the twenty fields are the discoveries of the last three years, and the quantity of gas contained in them is one half of the contents of the twenty. The next three years will doubtless bring to light a like number of fields with a like quantity of gas.

The anticlinals about Pittsburg were pretty well explored in the years 1885 to 1888, by those in search of gas. Since 1888 the discoveries of gas have been made principally upon areas that are not anticlinals or elevations of any sort in the rocks by persons exploring for oil. The obtaining of gas or oil from the ground is chiefly a question of finding open textured rock with a sufficient covering. Sometimes good rock is found with a proper covering, but no gas or oil. But these substances are never found in paying quantities, except in open rock. Such rock is a receptacle alike for gas, oil and water. If of small area it usually contains but one, if of large area it generally contains two, and occasionally contains all three of these substances. If the rock holds two or all three of the substances they will, if there is opportunity, take position according to their gravities. If a rock containing gas and water has a good thickness and lies horizontally the gas will be in the upper part of the rock, and if instead of thickness and horizontality the rock has inclination the gas will be at the highest level and the water at the lowest. Small areas of open rock are much more numerous than large ones, and the distribution of the areas of open rock, whether large or small, has no relation whatever to the anticlinals. In searching for gas as in searching for oil any fact which points to an improvement in the sands in a particular direction or locality is of much more importance than position with regard to the elevations and depressions of the country.

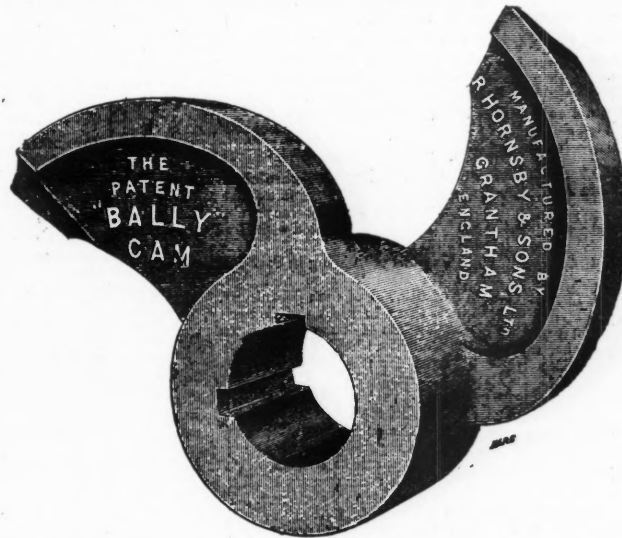
RALEIGH'S BALANCED CAM FOR STAMP BATTERIES.

In our last issue, page 81, we announced that Mr. Charles Raleigh, of Johannesburg, has invented a new form of cam for stamp batteries. We now illustrate it with some additional description, as the cam is not only novel, but, we believe a good thing.

In all the existing arrangements of cams there is a heavy side thrust on one cam shaft bearing, which causes excessive friction; the stamps fall to the one side of the dies, thus wearing them unevenly, and the ore silts to the one end of the mortar-box. When a right-handed cam in motion engages a tappit, the stamp is thrust to the left as far as the guide block will permit, the cam and cam shaft travel to the right until the right-hand collar grinds hard up against its adjoining bearing. As the motion continues and the cam lifts the stamp, the stem travels sideways up the guide block, and on falling, unless the guide blocks are quite new, drops to one side of the die, and gradually wears the die unevenly. The uneven die has then to be replaced, although only perhaps half or two-thirds worn, as it is past efficient duty, and it is also liable to break the stem. The result of the stamps continually revolving in the same direction is to silt the ore to one end of the mortar-box, and prevent the end stamp from doing its full duty. Thus it will be seen that a one-sided lift must necessarily cause a one-sided and unequal wear and strain over the whole of the battery, and result in an excessive expenditure on repairs and renewals of its wearing parts. The balanced cam was designed to mitigate the evil effects of a one-sided lift, and the improvement consists in making a cam that alternately lifts each stamp on its left and right

hand side, and revolves it in these alternate opposite directions; the result of this combination is that there is always a right and left hand cam engaged at the same time, their lateral thrust equalizing each other, and causing the cam shaft to run balanced between its bearings.

There is no danger to the amalgamator when hanging up stamps, as the fingers cannot slip off sideways, and the right hand cam of each stamp only revolves half the number of times the stamps are dropping; if the mill is



making 90 drops per minute, each right hand cam only makes 45 revolutions per minute.

The trifling additional cost of the cam will be saved in wear and tear. All parts will last longer, including the guide blocks.

The cams are ambidextrous, obviating the evils of one-sided thrusts; and the inventor claims the following material advantages: Greater speed, less friction, less power required, greater crushing efficiency, level bearing and wearing of the dies, and uniform wear of guide blocks.

These cams are being made by Fraser & Chalmers in this country, and by R. Hornsby & Sons and the Saudecroft Foundry in England. Already a considerable number of them have been supplied to mining centers in South Africa.

Neuhausen Aluminum Company.—The gross profits of this company during 1891 amounted to 300,952 francs. During the year the price of aluminum fell from 1,900 to 625 francs per 100 kilos, the fall being accompanied by a greatly increased production, as, while at the beginning of the year the sales were but 56,005 francs per month, near its close they amounted to 150,000 francs. The net profits were 166,577 francs. The company now has a plant capable of producing 20,000 kilos of pure aluminum per month.

Decrease in the Exports of Great Britain.—The continued decrease in the export trade of Great Britain is causing great disquietude among the manufacturers of that country. According to the Board of Trade returns, just published, it appears that the exports of iron and steel for the first six months of the year were 1,277,802 tons, valued at £10,743,339, as compared with 1,662,208 tons, valued at £14,954,277, during the first half of 1891. The decrease was, therefore, no less than 384,406 tons, or 23.13% in quantity, and £4,210,958, or 29% in value. Seeing that the exports of 1891 were much lower than those of the previous year, we may well ask, with the British manufacturers, Where is this going to end? The decreases during January-June, 1892, as compared with January-June, 1891, are as follows:

	Decrease.	
	Tons.	Per cent.
Rails, etc.....	181,131	50
Tin plates.....	99,429	32.5
Pig iron.....	29,518	8.4
Bars, angles, etc.....	20,045	18.4
Hoops, sheets, etc.....	19,826	26
Cast and wrought manufactures.....	17,270	9
Wire.....	6,395	20
Old material.....	9,804	18
Manufactures of iron or steel.....	2,429	27
Galvanized sheets.....	2,404	3

The export of machinery, hardware, cutlery, implements and tool showed a decrease of 1.87%, 12.15% and 2.6% in value, respectively, and the export of coals declined by 10% in quantity and 15% in value.

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, JULY 26TH, 1892.
- 479,444. Miner's Tool. Nathan W. Moodey, Fresno, Cal.
 - 479,451. Machine for making cement pipes. Emanuel Oehrie, Omaha, Neb., assignor to Jeff. W. Bedford, same place.
 - 479,453, 479,455, 479,456. Process of Separating Particles of Different Degrees of Specific Gravity. Orrin B. Peck, Chicago, Ill., Assignor to Melinda Peck, same place.
 - 479,468. Hydraulic Crane. Henry C. Shaw, Joliet, Ill.
 - 479,483. Hydraulic Dredge. Caleb H. Booth, Dubuque, Ia.
 - 479,496. Apparatus for Reducing Bituminous Rock. Archibald Ford, Golden Gate Cal.
 - 479,499. Channelling Tool for Rocks. George M. Githens, Brooklyn, N. Y.
 - 479,500. Blasting Stone. George M. Githens, Brooklyn, N. Y.
 - 479,456. Appliance for Loading Coke. Arthur H. Chambers and Thomas Smith, Chapeltown, England.
 - 479,641. Machine for Loading Coal. James Grierson, Toronto, Canada.
 - 479,744. Placer Machine. William M. Jewell, Pine, Assignor of one-half to Geor Robertson, Durango, Colo.

PERSONALS.

Prof. W. A. Smith, of the Columbia College School of Mines, is instructing the students of the summer school in practical mining at the Monominee Range, Mich.

Chas. M. Rolker, mining engineer, of this city, who accompanied Lord Randolph Churchill on his South African trip to report on the mineral resources of Mashonaland, has returned to this city.

Prof. S. B. Christy, of the University of California, has organized a summer school of practical mining for his students in the principal quartz mines of Nevada City and Grass Valley. The trip will also include a study of the leading hydraulic and drift mines of the county.

Mr. Antonio del Castillo, the eminent Mexican geologist, now chief of the Geological Commission of Mexico and Director of the National School of Engineers of Mexico, was elected at the June meeting of the American Institute of Mining Engineers an honorary member of that body.

The President has authorized the detail of Prof. George Davidson, Assistant Superintendent of the Coast and Geodetic Survey, as an assistant to Col. George H. Mendell, of the Engineer Corps of the army, for the preparation of a system of sewerage for the city of San Francisco, Cal.

OBITUARY.

J. J. Lingle, formerly a large coal operator and one of the builders of the Tyrone & Clearfield Railroad, died on the 20th inst. at Bellefonte, Pa., aged 87 years.

Louis J. Bester, of the firm of Bester & Brothers, iron merchants, of Ironton, O., died by his own hands at the Cincinnati College Hill Sanitarium on July 23d. His firm was one of the wealthiest in Ironton.

Thomas Nickerson, the projector of the Mexican Central Railroad, died at Newton Centre, Mass., Sunday, July 24th. He was born Sept. 19th, 1810. For 30 years he was in the shipping business. He took a prominent position in the affairs of Atchison, Topeka & Santa Fe Railroad when it was a struggling enterprise, and was largely instrumental in its construction. Later he took up the Mexican project of the Sonora & Mexican Central Railways. The latter enterprise he pushed forward rapidly.

Edward Jones, a prominent resident of Olyphant, Pa., died on the 24th inst., aged 78 years. He was the senior member of the large coal firm of Jones, Simpson & Co. He was a native of South Wales, but has been a resident of Lackawanna County, Pa., since 1837. He was for many years a superintendent for the Delaware & Hudson Company, afterward entering the coal mining business for himself. He was president of the Merchants' and Mechanics Bank, Scranton, Pa., and was prominently identified with many public interests in and about that city.

SOCITIES.

The regular July meeting of the Engineering Association of the South was held at the headquarters in Nashville on the evening of July 14th. Col. H. M. Robert, U. S. A., presided. W. W. Carson, of Knoxville, then read a paper on the Mississippi River problem. He suggested that every interest in the nation, and indeed in the civilized world, would profit by the solution of it. To establish his points he quoted from the utterances of Capt. Leach and Kingman and of others. He spoke briefly of the caving in of the banks of the Mississippi River by the action of the vast amount of silt borne by the stream while in flood, and of the heavy deposits which occur where the current is retarded. He spoke of the fact that the high water current often flows across the low water channel, and stated that in places where this occurs, the deposits of silt often entirely fill up the low water channels. The bed of the river is not fixed; cut-offs, measured by tens of miles, sometimes occur, and the river at places shifts itself sideways more than a thousand feet in a single year. Any effective solution of the navigation problem would incidentally furnish perfect protection from floods. Failures in levees were due to lack of size. Levees, built too small for lack of money, were not reinforced, since the next year's taxes had to be used in replacing levees caved into the river. To secure good navigation the river must be forced to flush itself by flowing always along the same channel. This could only be brought about by levees, and these must be placed right on the banks. Some people might ask about the waterway, but those who knew the river and had seen it carve new channels of its own volition could never doubt it would give itself all needed waterway by going down if kept from going sideways. Since the levees should be placed on the banks the caving should be prevented. Moreover, the holding of these banks would cut off the supply of detritus, and this, of itself, would almost arrest further shoaling. This, then, is the key to the problem. Only two ways of holding caving banks are so far known, that of carpeting the submerged slope with mats of brush, and that of building huge spur-dikes 500 or 1,000 ft. apart. Both processes are very costly, and so another method is much to be desired. He here proposed a

plan, devised by himself, which he thought would reduce the cost by 30%. In the discussion which followed the reading of the paper he even intimated that the saving in cost might sometimes be more than that. In building a spur-dike he proposed to use large wooden crates, trussed like a bridge, about 50 ft. long and 10 or 12 ft. wide and deep. After weighting each of these with about 30 yds. of earth he would sink them, during low water, with their lengths parallel to the current, thus building the spur-dike of the desired size and shape. He claimed that the current, in passing through these crates, would be so retarded by the chords and braces and by the chamber containing the earth used for sinking, that it would fill the crates with silt. He said that a block of silt measuring 50 ft. in the direction of the current could not be slid by any current of the Mississippi. Trusses of crates to be used in exposed positions might be made plate-girder-like, to prevent the washing away of deposited silt. He favored, however, another kind of protection. He would build a series of pavements, about 50 or 100 ft. apart, measured with the current, across the submerged slope of the bank. These pavements should be made of blocks of silt 50 or 70 ft. long placed parallel to the current, as in the other case. These blocks, likewise encased in trussed crates, should be about 5 ft. deep and 16 ft. wide. He exhibited blue prints showing how these crates could be framed and put together with wooden pins alone, and showing a spur-dike and a pavement made of the crated blocks of silt.

INDUSTRIAL NOTES.

The Senate has agreed on Mr. Blackburn's motion to take up the bill authorizing the New York & New Jersey Bridge Company to construct and operate a bridge between the two cities.

The Gracey-Woodward Iron Company, at Clarksville, Tenn., has started the fires in its new coke furnace to dry it out preparatory to blowing in. The furnace, which was only recently completed, is 70 x 17 ft., and has an estimated capacity of 40,000 tons.

The Bodwell Granite Company have resumed operations at one of its largest quarries, namely, that at Vinalhaven, Me., which has been closed since the strikes in granite industries in New England commenced. The force will be increased as fast as possible. Applications for work have been received from a large number of Swedes and Finns, who are familiar with the business.

The Ingersoll Sergeant Drill Company, now located in New York, it is said, will move their works to Easton, Pa., the Board of Trade of that place having signed an agreement with the company to that effect. The National Switch and Target Works now in South Easton will move to land adjoining the new site of the Ingersoll Sergeant Company. Both concerns will employ about 700 men.

The 300 employees of the St. Louis Smelting and Refining Company, at St. Louis, Mo., went out on strike on the 25th inst. The work in the smelter is of an unhealthy character, and the employees are subject to spells of sickness, caused by the noxious gases. Accidents also are frequent. The company for some time has paid the doctors' bills and helped the employees when sick or injured, but it appears that it has grown tired of this, and decided upon an accident insurance scheme, by which a small sum was to be deducted from the wages of each employee to pay for his insurance. This scheme provided for accidents only. The men objected to the plan and struck rather than agree to it. On the 26th inst. 60 of the strikers returned to work. The manager expects no further trouble, and thinks all the men will return in a few days.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or supplies of any kind will notify the Engineering and Mining Journal of what he needs, his "Want" will be published in this column, and his address will be furnished to any one desiring to supply him.

Any one wishing to communicate with the parties whose wants are given in this column can obtain their address at this office.

No charge will be made for these services.

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, thus enabling the purchaser to select the most suitable articles before ordering.

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.

Goods Wanted at Home.

2,744. Cloth and paper bags large enough and strong enough to hold 50 lbs. and 100 lbs. of dry metallic paint. Cloth bags must be closely woven. Alabama.

2,745. Dolomite. Ohio.

2,746. Artesian pumping outfit and electric motor to operate same. Texas.

2,747. Light iron tubular columns for support of light roof; patent iron curtains; light iron tables, marble-tops, for meat market; fruit vendors' market tables; iron water piping 2 in. in diameter; iron skylights with glass panes; different styles of crystal roofing. These goods are to go to Mexico.

2,748. Second-hand rails in good condition for relaying, 25 to 30 lbs., with or without spikes, but with splice joints. South Carolina.

2,749. A shingle mill. Maryland.

2,750. Second-hand iron or steel rail splices to lay a track 3½ miles long, suitable for running a 10-ton locomotive with a full load of lumber; rails should have a good wide face. Virginia.

2,751. A 20-ton ice plant. Maryland.

GENERAL MINING NEWS.

(From our Special Correspondent.)

On the 27th inst. Senator Jones (Nev.) of the Committee on Contingent Expenses, reported the following amendment to Senator Wolcott's resolution of July 9th to investigate and report on the operations, efficiency, utility and progress of the work of the United States Geological Survey, which was agreed to, striking out the whole resolution as offered by Senator Wolcott and inserting in lieu thereof: "Resolved, That a select committee of five senators be appointed by the President of the Senate, whose duty it shall be to investigate the operations of the United States Geological Survey, the efficiency and utility of such survey, together with the progress made and economy observed in its work. That said committee is authorized to sit during the sessions and approaching recess of the Senate, may employ a clerk and a stenographer, send for persons and papers, and administer oaths; the expenses of such investigation to be paid from the contingent fund of the Senate."

ALABAMA.

Cherokee County.

(From an Occasional Correspondent.)

At the State line brown hematite iron ore bank the Tecumseh Iron Company has just erected a new washer at a cost of \$20,000. The logs are of 6-in. angle steel ½-in. thick, riveted so as to give four faces for lugs instead of eight, as is the rule where wooden logs are used. The lugs, also steel, are bolted to the log in circular instead of spiral screw form, with a space of 10 ins. between each circle. Length of log 30 ft., and number of lugs or teeth on each log 144. This is the first ore washer erected in the South where angle steel is used for logs in place of wood. Its estimated capacity is 300 tons of ore every 12 hours. Water for supplying this washer is brought through an 8-in. pipe from a spring in the mountain near the head of Tanner Branch, a distance of nearly two miles. Heretofore ore from this branch has been hauled in wagons to the furnace of the company, 2½ miles distant, where it was calcined and sold to the Bass Furnace Company at Rock Run. It is considered superior to any other brown ore in this section for car-wheel pig iron, as it runs very low in phosphorus, averaging not over .02, while it gives an average of 50% metallic iron. At the old wooden log washer located at the furnace at which the Baker Hill ore is washed, at the rate of a carload of 40,000 lbs. capacity every half hour, the washer and track have been lately raised 4 ft. to afford greater facilities for disposing of the waste mud. During the July term of court for this county a suit between the Tecumseh Iron Company and National Bank of Augusta, Georgia, is to be tried, in which the title to Baker Hill bank, at present in possession of and operated by the Tecumseh Company, is involved.

Bass Furnace Company has recently shipped about 100 tons of bauxite from a bank on their property adjoining the Dike's brown ore bank, and in close proximity to the Gaines Hill and Wahoo bauxite banks, which have been operated since last summer by the Southern Bauxite Company. These banks of bauxite are, so far as at present developed, on the northwestern extremity of a deposit which can be traced in an easterly direction for about 15 miles into Georgia, where, near Cave Springs, active operations are being conducted by the Southern Bauxite Company.

Calhoun County.

The Woodstock Iron Company at Anniston is operating its new ore washer, the largest ever erected in this section, being really three double-logged washers under one roof, furnished with six wooden logs 32 ft. long each. The water supply is brought a distance of over 5,000 ft. by gravitation through 12-in. pipe, which also furnishes the water used at the coke furnaces located near this washer, owned by the same company.

Cleburne County.

The Augusta Mining Company, of Cedar Town, Ga., is building ore docks at its banks near Rowell's Station, on the East & West Railway, of Alabama, preparatory to opening and mining brown ore very extensively. A standard gauge switch 1¼ miles in length is being built from Rowell's for the use of this company, which will also build a tram track 1¼ miles in length from the mine to intersect this switch. Although no development work has ever been performed, yet the indications on surface and from the formation warrant the assumption of the existence of a large deposit of pyrites of iron in

this county. Several deposits of bauxite have also been encountered, but none have been developed. In fact, until about a year back no available market had been found for this mineral, and consequently there was no inducement to prospectors and owners of the banks to operate the same.

ALASKA.

(From our Special Correspondent.)

Alaska Treadwell Gold Mining Company, Douglas Island.—A quarterly dividend of 37½ cts. per share, aggregating \$75,000, has been declared and will be payable on the 28th inst.

ARIZONA.

Cochise County.

Tombstone Mining and Milling Company.—This company's properties are producing 700 tons of good shipping ore monthly, which is being sent to El Paso.

Pima County.

Late advices from Tucson report that at the Holland mine, Washington camp, 20 men are employed in the mine and concentrator. Shipments of concentrates are being made regularly three times a week, with results that are far more satisfactory than was anticipated. The shipments of ore from the camp will exceed 50 tons per week. J. F. Forman, who has just returned from a trip to Aravaca and Oro Blanco, says that the Yellow Jacket mill will start up soon on ore taken from the mine of Mr. Kirkpatrick. Prof. Bauman has 20 men at work on the Belmont mine, and large quantities of good ore are being taken out daily. The owners of the Pride of the West are still making regular shipments with good results. General activity is noticeable there, and the miners are hopeful for the camp.

CALIFORNIA.

(From our Special Correspondent.)

G. F. Becker, United States Geologist, in charge of the division of California for surveying the gold belt, has returned from the field, where he has four parties at work. The survey extends from latitude 37½ to 40, from a little south of the Yosemite Valley to the North Fork of the Feather River, a distance of 200 miles. In width it extends from the crest of the Sierras to the San Joaquin and Sacramento valleys, a distance of 60 miles. The forces have been in the field for four years, and it will probably be another four years before the work is completed. At present about three-fourths of the topographical work has been done and about one-half of the geological work. Henceforward Professor Alpheus Hyatt, of Washington, D. C., will be associated with Mr. Becker in his work.

Amador County.

Plymouth Consolidated Gold Mining Company.—The Amador "Ledger" of a late date says: "Operations at this property have come to a complete standstill. Nothing is doing about the mine, and even the taking out of water has been suspended. The mine is consequently filling up with water."

Mono County.

Advices have been received that the town of Bodie was practically destroyed by fire on the 26th inst.

Bulwer Mining Company, Bodie.—Following is the latest official weekly letter from the superintendent of this property: The ore stopes on the 100 and 200 levels have yielded a full supply of ore. We extracted 240 cars of ore and put it in the main ore chute. The ore stopes are looking well; average battery samples \$31.08; tailings \$10.05.

Napa County.

(From our Special Correspondent.)

Napa Consolidated Quicksilver Mining Company.—An extra dividend of 10 cts. per share, making 20 cts. per share in all, has been paid this month.

Nevada County.

Central North Star, Grass Valley.—A strike is reported at this mine, of which the Weissbein Brothers are the principal owners. At a depth of 230 ft. a ledge formation 3 ft. wide has been cut, of which there are 14 in. of solid ribbon quartz, the remainder broken up and mixed, but giving indication of uniting further on. The strike was made in a drift. The quartz shows free gold and carries a good quality of sulphurets, also galena and iron. The Central North Star adjoins the North Star mine on the east.

Lafayette, Osborn Hill.—A recent clean-up of six loads of ore from this mine yielded at the rate of \$151.50 per ton, exclusive of headings and sulphurets.

(From our Special Correspondent.)

Lafayette Mine, Osborn Hill.—The property has been yielding a more than ordinary amount of good ore during the past month. A clean-up of six carloads of ore averaged \$151.50 per ton, not including sulphurets.

Sauve Mine, Grass Valley.—This property adjoins the W. Y. O. D. mine, that has been showing up well during the past year. For some time negotiations have been carried on by which the mine would be exploited by Eastern capitalists. This week an agreement was entered into to that effect, and work on an extensive scale will be at once commenced.

Shasta County.

Colonel Lyons reports to the Redding "Free Press" that there is considerable activity in the

Old Diggings district. Something like \$25,000 have been paid on the \$40,000 due as the purchase price of the Mammoth mine, and it is proposed shortly to set men to work on a 1,900-ft. tunnel to properly open up the mine. Mr. Rippetto, of the Walker mine, is endeavoring to open up and uncover a large body of ore known to exist. The lower tunnel, which is in about 500 ft., is being lengthened, and in a distance of some 400 ft. farther is expected to connect with a winze from the upper tunnel, which will give them a depth of 700 ft. from the upper tunnel, thus making a great saving in time and labor, with plenty of ore backing. There are numerous good mines in this district, and at present a disposition among the owners to develop their properties. As far as the ores go they are rich, but by the present process not one-fifth of their value can be obtained.

Sierra County.

(From our Special Correspondent.)

Bald Mountain Extension Drift Mining Company, Downieville.—A regular monthly dividend (No. 20) has been declared. The clean-up for June amounted to \$13,000, making a total for the past six months or \$69,535.40. Many of the nuggets found ranged from 1 to 35 oz.

COLORADO.

Arapahoe County.

The ninth annual report of the Denver Chamber of Commerce contains the following relative to the smelting industry of that city: "Three of the largest and most complete smelting and refining plants in the world are established in Denver, and treat not only our own ores but also handle large consignments from other States and Territories. The aggregate amount of capital invested in these plants alone is not less than \$6,000,000." A tabulated statement showing concisely the proportion of the different values in the product of these three smelters for 1891 is published, showing a total of 4,252,030 lbs. copper, 39,478 tons lead, 15,618,618 oz. silver, 150,091 oz. gold, making a total of \$24,411,705.70.

Dolores County.

Enterprise Mining Company.—We extract the following from the Rico "News": "The usual production of five cars a day is being shipped from the Group tunnel. The Jumbo shaft is being steadily sunk. The company will not construct a tramway since the railroad company has decided to build the switch to the Group tunnel. Some exceedingly rich ore is being mined in the Jumbo vein."

Lake County.

Latonia Mining Company.—The Reliable, Gold Crown No. 2 and Gold Field properties, in the Allcote district, near this city, were sold a few days ago for a consideration of \$5,000 to satisfy a mortgage for that amount held by G. Strum, of Cincinnati. The mines were bought by the holder of the mortgage, who immediately organized a stock company with a capital stock of \$100,000, and will begin a system of development work within a few days.

White Cap.—Another strike has been made in the White Cap on Iron Hill. This was made in a 35-ft. upraise run from the lower level, and consists of a 12-ft. body of silver iron, which also carries 56% lead. A peculiar circumstance connected with this strike is that the ore was found in a cross-channel in the lime which runs directly at right angles with the other chutes of that locality. This discovery, owing to the heavy percentage of lead carried by the ore, is very important from the fact that it will greatly enhance the value of the silicious gold ore taken from the same chute, with which it is to be mixed.

Ouray County.

American Belle Mines, Limited.—During the month of June 3 cars of ore were shipped, with the expense on revenue account of \$7,300 and on capital account of \$1,500. The ore was valued at \$8,000. The mine is not looking so favorable as formerly.

New Guston Company, Limited.—On July 13th the directors decided to pay an interim dividend for the second quarter of the year of 1s. 6d. per share, payable on the 30th inst., thus making the returns to the shareholders at the rate of 45% per annum for the current one-half year. The total dividends declared from Nov. 15th, 1888, to date now amount to 44s. per ton. The ore shipped recently has not been of as good a grade as in former years, and this, coupled with the low price of silver, has prevented the directors from declaring a larger dividend. The June returns are as follows: Ore shipped, 1,030 tons; estimated value \$23,000. Mining expenses and railroad freight, \$15,250; estimated profit for the month, \$7,750.

Yankee Girl Silver Mine, Limited.—A report dated June 22d says that on the stope on the back of the level of the Orphan Boy vein there was 10 ft. of ore running from 30 oz. to 35 oz. of silver per ton and 5% copper. Captain Harvey, manager of the mine, expected to start the mill on June 25th.

Pitkin County.

Aspen Mining and Smelting Company.—According to the Aspen "Times," Manager Paul reports the present output of this company's property to be 140 tons daily. "We are making no effort to press the output," said he, "for several reasons. Of course, the depression in the silver market is one, while another is that we are awaiting the arrival of the

Durant tunnel, which is rapidly approaching. It will tap us at a level of about 1,000 ft., and I am not certain whether it is 110 or 210 ft. of upraising will be required to connect. We have effected arrangements with the tunnel owners whereby we can establish an outlet through it, and when the difference in cost is taken into consideration the object and wisdom of the present policy may be readily seen. We are now working 150 miners, and before the year is over 400 will be on the pay-roll." Manager Paul speaks in highest terms of the reserves in the property.

Emma, Aspen.—Mr. Jerome B. Wheeler has verified by the records the statement recently made in the Aspen "Times" that this mine's total net production had not reached \$1,000,000, which would give the Wood heirs only \$300,000 if they succeeded in perfecting and collecting the judgment against Mr. Wheeler and the Aspen Mining and Smelting Company. A rehearing will be asked for, when, if refused, the Supreme Court will be asked to grant a writ ordering the records up for inspection. Previous to the conveyance of the interest to the company the mine did not produce \$500,000. Wood was an alien and could not locate a mine, yet his interest, if any, was advertised out and then the heirs were paid for what equitable interest they might have had. Mr. Wheeler did everything possible to perfect the title. He won the case, says the "Times," on its merits in Judge Hallett's Court.

FLORIDA.

Marion County.

(From an Occasional Correspondent.)

Knott Brothers Phosphate Company.—This company started its machinery a few days ago, and its log washer is doing good work. It is preparing to make the first complete experiment in drying by burning that has yet been made with the Anthony phosphate. If the experiment is a success this method of drying will be followed by a number of our miners.

The Stranathan Phosphate Company.—This company has the most complete plant of any operating in the Anthony region. Its Jeffrey dryer (shown in Wyatt's "Phosphates of America," p. 79) gives entire satisfaction, and a steam crane recently erected for hoisting phosphate from the pits and removing overburden is proving a valuable addition to the plant. The Stranathan Company shipped 14 carloads of rock about 4 weeks ago, the first shipment made from the region since the Penninsular Company sold out nearly a year ago. It is now busy filling another 1,000-ton order.

IDAHO.

Alturas County.

Red Cloud.—This company is running a preliminary survey in contemplation of running a large drain tunnel from Wolfstone Gulch 3,147 ft., and getting a vertical depth of nearly 1,200 ft. The shipments continue regularly and the mine is looking well.

Owyhee County.

Black Jack.—The mill has made a clean-up on a 90-ton run of ore from the Phillips & Sullivan mine, and will soon start on Black Jack ore. A continuous body of ore has been opened in the south drift of the Black Jack, and it is thought the mill can be kept steadily at work.

Poorman Mines, Limited.—The ore now being milled from this mine comes from the ledge west of the Poorman vein, known as the Glenbrook. This ore carries more gold and less silver than the Poorman vein. The vein is large and easy to work.

Shoshone County.

Coeur d'Alenes.—According to the Butte "Daily Intermountain" work has been resumed at all the mines in the district. Wages have been fixed at \$3.50 per day for skilled miners and \$3 per day for shovelers, the men having the right to board and lodge where they please. The presence of the troops is a guarantee for the men working. One hundred and eleven men have been arrested at Wardner and 190 are confined at Wallace.

KANSAS.

Cherokee County.

During the week ending July 23d the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 2,126,940; rough ore, pounds sold, 2,088,210; zinc ore, pounds sold, 1,079,520; lead ore, pounds sold, 192,020. Sales aggregated a total value of \$16,483.

MARYLAND.

Frederick County.

Middletown.—About 1,500 acres of iron lands near this place have been leased by L. R. Warsche to Jacob H. Taylor, of Baltimore. Samples of ore run 67 to 68% metallic iron, low in silica and but a trace of phosphorus, it is claimed.

MICHIGAN.

Gold.

Fire Centre Gold Mining Company.—The company has decided to put a small Crawford mill at the Beaver shafts. The mill will be similar to the experimental one at the Ropes mine.

Ropes Gold Mining Company.—Drifting on the 14th and 15th levels is being done. In the former an 8-ft. vein of quartz that assays well is reported to have been found.

Copper.

Peninsular Copper Mining Company.—A dispatch from Houghton says that this company will close down in about one month. This closing will throw about 200 men out of employment.

Tamarack, Jr., Mining Company.—The Houghton "Gazette," which is said to be closely identified with the Clark-Bigelow Syndicate, which manages this property, says as follows about the mine: "Since our last visit considerable improvement has taken place. The third level south is drifting in better than the average ground, and the slope back of level is furnishing a good class of rock. The fourth level south is also opening up a good stoping lode, though not quite so wide as in the level above. A winze north sinking below third level shows a little copper. The fourth level north has passed through about 25 ft. of good stoping ground. At present the lode only carries a rich streak of copper rock. Upon the whole the mine looks better and shows a good deal more pay rock than we have ever seen in it before. At No. 2 there is no change to notice. The lode still carries a little copper, but not enough to make it valuable."

Iron—Marquette Range.

Champion Iron Mining Company.—This company suspended operations some time ago. In the annual report of the company, just at hand, the treasurer, Mr. W. E. Stone, says: The past year (April 30th, 1891, to April 30th, 1892) has been one of continued and increased depression in the iron market, extremely low prices and limited sales. As was the case the year before, the mine has again produced more ore than we have been able to dispose of, so that our accumulation of unsold ore of a year ago has been still further increased. As the balance sheet shows, not only are all our surplus funds now invested in our stocks of unsold ore, but we have been obliged to borrow money to keep the mine in operation. Under these circumstances, it is very evident that, unless we can very soon make large sales of ore, nothing remains to be done but to either close the mine entirely until there is a renewed demand for ore or to so contract our scale of operations as to very much reduce our product. The business of the past year shows a profit of \$68,616, and we have expended \$64,783 in completing the new plant of mining machinery. There is a remarkable improvement in the appearance and condition of the mine. The ore product was 199,703 tons; ore shipments were 132,083 tons, and the ore delivered on sales 129,427 tons. The balance sheet April 30th, 1892, shows: Land and property, \$500,000; iron ore, \$634,992; mine inventory, \$13,547; cash, \$9,036; stock of Champion Company, 50 shares, \$1,250; total, \$1,222,074. Capital stock, \$500,000; bills payable, \$126,000; accounts payable, \$41,575; guaranty fund, \$271,304; depreciations, \$149,935; profit and loss, \$133,258; total, \$1,222,074. The agent, Mr. A. Kidder, says the railroad from the Champion mine to Huron Bay on Lake Superior will be completed, with its ore docks, this summer, and a rate of 40 cts. per ton has been offered by its builders for freighting the Champion ore to water. With this reduced freight rate and the cost of ore brought down to, say, \$2 to \$2.10, all kinds, with the greater part No. 1 quality, the Champion can compete successfully with any of the mines in this or neighboring districts.

Lake Angeline.—The pump is removing about 4 in. of water from the lake every 24 hours, and in a few days will be doing better, as the area of water is fast growing less.

Lake Superior Iron Company.—The force is being added to, there being 1,051 men on the June pay-roll. According to "Iron Ore," Mr. Hall, agent of the company, says that there is no talk of a partial cutting off of production similar to that of other companies on the range. The company is selling no ore at present, the Carnegie Steel Company being the principal user.

Republic Iron Mining Company.—This company stopped work on Ely No. 9 on July 20th, and 75 men were laid off. It is reported that a larger reduction will shortly take place.

Iron—Menominee Range.

Nanaimo Iron Mining Company.—The mortgage sale of the goods, chattels and real estate belonging to this company, to satisfy 61 writs of fieri facias, issued out of the Circuit Court for the County of Iron, came off in Iron River on July 6th. Mr. Walz, of Escanaba, was the only bidder. The whole outfit was knocked down to him for \$5,000. It is reported that Walz was acting for John Semer, one of the members of the Nanaimo Iron Mining Company.

Penn Iron Mining Company.—The company has shipped during 1892 from its several mines 160,000 tons of ore. On Aug. 1st sinking will be resumed in shaft "C" at West Vulcan, and the shaft put down from the 12th to the 13th level. In this shaft, which is the new one sunk 1,000 ft. to replace the one destroyed by fire, the ore of the north vein has been drifted upon at the 11th level, 280 ft. The ore is of good quality, but the width does not average more than 5 ft. wide. From this level two raises are being made to the 10th level. At the 12th level the north vein has been drifted on 216 ft., and a cross-cut has been driven north from the west end 57 ft., about 40 ft. of this being ore, the phosphorus in which is too high to be satisfactory. At the Curry the 7th level cross-cut is in about 90 ft. and must be close to the ore. At the 6th level the ore has shown

up east of the shaft pillar. Perhaps the most important new work at the Curry is the beginning of a cross-cut north from the 4th level. This cross-cut will begin about 450 ft. west of the shaft (No. 1) and will be driven north to the north vein a distance of about 450 ft. It will strike a point about 100 ft. below the work on the north vein. Work on the foundations for the pumping and hoisting plants at East Vulcan is progressing rapidly.

MINNESOTA.

Iron—Mesaba Range.

Camden Iron Company.—This company has just closed a lease to the Oliver Steel and Iron Company, of Pittsburg, by which the latter will explore and operate its property. The minimum annual output is 25,000 tons. So far contracts have been made by Mesaba companies that require a minimum output of ore of 725,000 gross tons, beginning next January. The royalty is said to be 50 cts. on all Bessemer ore and 35 cts. on non-Bessemer.

MISSOURI.

Jasper County.

(From our Special Correspondent.)

Joplin, July 25.

Saturday evening closed a fairly active week in the mines of the lead and zinc belt. The extreme hot weather interfered with the working of some mines. There was no material change in the zinc ore market from the previous week. The top price was \$26.50 per ton and the average \$25. Lead ore declined 75c. and closed at \$23.25 per thousand. Following are the sales from the different camps: Joplin mines, 1,745,940 lbs. zinc ore and 214,370 lead, value \$26,841.10; Webb City mines, 470,870 lbs. zinc ore and 91,830 lead, value \$7,998; Cartersville mines, 2,221,460 lbs. zinc ore and 116,090 lead, value \$30,438.35; zincite mines, 228,020 lbs. zinc ore and 4,930 lead, value \$3,020; Carthage mines, 218,000 lbs. zinc ore and 7,000 lead, value \$2,986.75; Oronogo mines, 47,670 lbs. zinc ore and 28,030 lead, value \$1,169; Burch Center mines, 12,750 lbs. zinc ore, value, \$150; Wentworth mines, 40,000 lbs. zinc ore, value \$480; Galena, Kan., mines, 1,079,520 lbs. zinc ore and 192,020 lead, value \$16,483; district's total value, \$89,566.20. Col. H. H. Gregg, the World's Fair Commissioner from Missouri, is pushing development at his Scotia mines in the Gordon Hollow district, and last week sold 86,080 lbs. zinc ore and 1,960 lead. The colonel has commenced development on a new tract of land adjoining, and west of the Roaring Springs Land and Mining Company property not less than 20 shafts are now being sunk, several of which have opened large deposits of surface lead, and now there is a rush of prospectors to the land. The Rex M. & S. Company's 1,000 acres is still the great center of attraction of the Joplin district, and new strikes are reported almost every day. Mr. F. M. Sharp, operating a 40-acre lease on this land, started up his new concentrating plant on the 16th of this month, and everything is now working to perfection. This property will now prove to be a large and steady producer. Capt. Hemingway is pushing development as fast as possible on his Columbian property, and is sinking a large compartment working shaft and arranging to put up a large concentrating plant. The Jersey M. Company has been organized by E. O. Bartlet and Pichu Bros., of the Pichu Lead Company, and have taken a lease on 40 acres immediately south of the Columbian property, and have let a contract to have 1,000 ft. of prospect drilling done in order to test the formation and depth of the ore bodies. The Bell Boy Mining Company, recently organized by Col. Motter and Saml. I. Smith, of St. Joseph, took a lease of 15 acres partially developed, and now have a good steam plant of machinery and are producing good ore. The entire Rex M. & S. Company is under the direct management of Mr. E. D. Porter, who is giving the land and its development his undivided attention, and has reduced it down to a systematic plan of work, which accounts for the great activity on this land.

MONTANA.

Beaver Head County.

Polaris.—This mine will have a 1,700-ft. tunnel to tap the ore body 650 ft. below the surface, upon completion of which a 25-stamp mill will be erected for the treatment of the ore, according to the Northwest "Mining Review."

Deer Lodge County.

Bi-Metallic Extension.—The principal work now in progress at this mine, says the Helena "Journal," is in extending the drift on the first vein in the north cross-cut. The drift is now in 53 ft. The showing at this point is very good, the entire face being in vein matter, and we are informed the ore gives good average assays. There is about 2 ft. of ore which, although contaminated with considerable waste, shows every evidence of becoming more concentrated in pay rock as the work continues. In reference to the north vein, Mr. Comstock, the superintendent, says the work has not progressed as rapidly as expected, on account of the inconvenience of foul air and other set-backs. It is reported that Dr. J. M. Merrell, one of the largest stockholders of the Granite, has purchased a large block of Extension stock and that he has been made a director.

Jefferson County.

Boulder Smelter.—According to the Butte "Intermountain" this smelter was blown in on July 20th. A large quantity of ore is in stock.

Lewis and Clarke County.

Montana Company, Limited.—The total output for this mine for June was \$41,362; the working expenses of the month \$41,400. In addition to 7,250 tons of ore crushed in the mill during June, 1,750 tons of tailings were treated, yielding \$5,200 at a cost of \$2,700, which figures are included in the above reports.

Madison County.

Easton.—This mine is now developed by four tunnels. The lowest is 410 ft. in, 200 ft. being on the vein. No. 2 tunnel is in 200 ft., nearly all in ore. No. 3 tunnel is in 250 and No. 4 follows the vein for nearly 200 ft. An upraise is now being made to connect 1 and 2. The higher grade ore is shipped to Omaha. Experiments are now being made at Eiling's sampling mill as to the best method of treatment for the low grade ore on the dump.

Meagher County.

The Castle R. R. from Helena is now an assured fact, says the Helena "Daily Journal." The same paper devotes considerable space to the Castle district mines, and from it we quote the following: "The district is about 12 miles across whatever direction may be taken. Its height is between 8,000 and 9,000 ft. The center is granite in which feldspar predominates. The mountain seems to have once been a plain, and when the granite was upheaved it pushed its way through the strata, turning the strata on their edges, inclining a few degrees from the vertical. Nearest the granite is dolomite, and outside of this is a harder limestone, almost blue, and outside of this slate. There are porphyry dikes through the lime and granite, and probably in the slate, and in the 500-ft. level of the Cumberland connecting the old and new shafts, in the hard lime, the top of a porphyry dike was cut. Veins have been found over half the distance around the mountain, but none have been developed to any extent except those in the lime, which carry carbonate ores and galena. The veins in the granite, or with granite footwalls, so far as they have been explored, carry more silver, but are silicious and have much larger bodies of iron pyrites; some show well in copper. As the leads are wide and strong it is believed that depth would show them to be valuable. So far no shaft has been sunk 100 ft. on those leads. The veins bearing carbonate ores are large and generally well defined." Among the more important mines are the following:

Bondholder.—Working shaft 215 ft. deep, 300 ft. of levels, large amount of black manganese and carbonate ore. The district has already produced 15,000,000 lbs. of lead bullion.

California.—Developed by a two-compartment shaft 150 ft. deep, air shaft 60 ft. deep, 350 ft. of levels. Have shipped from the mine 100 tons of carbonate ore and 150 tons of iron manganese.

Cumberland.—Developed by Shaft No. 1, 700 ft. deep; shaft No. 2, 500 ft. deep; 3,500 ft. of levels. It has steam hoists and pumps with a sufficient capacity to develop the mine to a depth of 1,000 ft.; also a 100-ton water jacket smelter. When in full operation it produces 3,348,000 lbs. of lead bullion per month.

Cumberland Mining Company.—From 50 to 60 tons of ore is hoisted daily and dumped at the smelter. The company has now between 400 and 500 tons of ore on the dump.

Helena Lead and Silver.—Developed by two shafts 40 and 60 ft. deep, 150 ft. of tunnels. Iron, lead and silver, vein 4 to 10 ft. wide on line between the Cumberland and Yellowstone.

Iron Chief.—Working shaft 300 ft. deep, air shaft 150 ft. deep, 300 ft. of levels. One vein of iron and copper ore 50 ft. wide, also one vein of iron carbonate ore 30 ft. wide. Steam hoist and pump complete.

Judge.—Working shaft 250 ft. deep, 200 ft. of levels, can produce 20 tons of ore per day. A shipment of several hundred tons has been made from this mine.

Legal Tender.—Working shaft 200 ft. deep, 890 ft. of levels, 300 tons of ore on the dump. Can produce 25 tons of ore per day.

Roland.—Two shafts 30 and 40 ft. deep, 50 ft. of tunnels, iron carbonate carrying silver and lead.

Whippoorwill.—At this mine on Carpenter Creek the shaft is down about 150 ft., and the lead shows a great width of low grade ore. The parties at work on the mine are under a contract to spend \$40,000 in development work.

Yellowstone.—Developed by a two-compartment shaft 415 ft. deep, an air shaft 200 ft. deep, and has 1,600 ft. of levels. It has a steam hoist and pumps, etc. The mine has produced from the company smelter 500,000 lbs. of bullion, it has 1,500 tons of ore in the bins, and can produce 50 tons of ore per day.

Silver Bow County.

Alice Mining Company.—Two hundred and fifty men are employed at this mine. About 100 tons of ore is being taken out per day. The recent strike on the 1,300 level is being worked as extensively as possible and the ore continues to run from 50 to 100 oz. Work is to be commenced on the Boston mine, which belongs to the Alice Company. The shaft, which is now down 125 ft., will be sunk an additional 100 ft., and cross-cutting will then be commenced.

Boston & Montana Mining Company.—The com-

pany has resumed work at the Great Falls smelter, ore having arrived. Traffic between the cities had been suspended for a number of weeks on account of floods.

Butte & Boston Mining Company.—The adjourned meeting of this company was held in Boston July 18th. This meeting was adjourned from Butte, and was called originally to vote on a proposition to issue \$2,500,000 bonds, which required a two-thirds vote of 200,000 shares. The Montana administrator of the Davis estate refused to vote the 90,000 shares belonging to the estate in favor of the proposition, and, as it could not be adopted without that stock, adjournment was had. President Crosby presided at the meeting, and the Massachusetts administrators of the Davis estate were present. The only motion made was by Mr. Coram to adjourn the meeting without date, that is, dissolve, and it was carried. One hundred thousand shares of stock were at the meeting, but nobody was known to represent the Butte faction. It is an open question where the stockholders can hold legal meetings of this character. The Butte & Boston by-laws permit them to be held in this State. Whether the laws of Montana require that they be held in that State is a point which able legal talent is now seeking to discover. A legal meeting is essential to give validity to the proposed mortgage. It is the purpose of the management to hold such meeting, but whether it will do so may depend somewhat upon whether the Davis stock is brought to vote in favor of a mortgage. If it cannot be, it is likely that the floating debt-holders will declare their obligations due, and proceed to take the property and reorganize. These obligations amount to \$600,000 or \$700,000; to the smaller sum, they say, if the mortgage can be issued; otherwise to the larger sum. That is to say, the debt-holders sold some \$100,000 worth of their own stock and loaned the proceeds to the company. If the bonds are authorized this debt will be waived. If reorganization is necessary, the debt-holders say that they will make their claim the maximum limit, and will give the Davis party no chance to participate in the reorganization. In other words, the stock will be wiped out, all of the stock, and a discrimination made in favor of the holders of the 110,000 present shares and against the 90,000 Davis stock in giving a subscription privilege. The situation is quite badly complicated, and either a purchase of the Davis stock by the management of this company or litigation seems probable, unless the Davis stock consents to the proposed mortgage.

Societe Anonyme des Mines de Lexington.—Since the company began to use coal for fuel the chlorinations are brought up as high as 95%. Thirty stamps are dropping on custom ore, says the Butte "Inter-Mountain."

NEVADA.

Elko County.

Nevada Queen Mining Company.—Following is the latest official weekly letter: "Second level—Have started north from chute 5, showing a little ore in the face. North intermediate stopeway from chute 4 is in 90 ft., 1 ft. of ore exposed. Face of stopes on east vein are now opened from west intermediate a distance of 225 ft., with ore 1 to 6 ft. wide. Mill has started working on company ore. Crushed 36 tons; battery assay \$309 per ton. Shipped to concentrating plant 500 tons, of which 306 tons were concentrated; battery assay \$26.11 per ton.

Eureka County.
(From our Special Correspondent.)

The Eureka & Palisade R. R. Company transported during the month of June 2,125 tons of ore from the following districts: Eureka, Diamond mine, 660 tons; Eureka Con. Mine, 437 tons; Dunderberg mine, 106 tons; Jackson mine, 105 tons; Alexandria mine, 60 tons; Phoenix mine, 59 tons; Richmond mine, 44 tons; Silver West mine, 30 tons; Hamburg mine, 30 tons; Lord Byron mine, 13 tons; White Pine County, 567 tons, and Nye County, 14 tons.

Lincoln County.

Magnolia, Ferguson.—This claim has been purchased by Messrs. Jas. Hutchinson and John Sevencocks for \$52,500, payable as follows: \$5,000 on or before the first day of August; \$5,000 ninety days thereafter, and the remainder in six months. The purchasers take possession of the property on making the first payment, and may work it as they see fit, but no ore is to be removed from the premises until the whole price is paid. This is the most important transfer that has ever taken place in the district.

Storey County—Comstock Lode.

Overman Silver Mining Company.—The annual meeting of the stockholders of this company took place yesterday, at which several new and, indeed, startling innovations were introduced. Usually these meetings are of a dry-as-dust character, but yesterday there was an element of humor imparted to the proceedings that enlivened matters considerably. Of the 112,000 shares of stock 107,000 were represented, the following officers and directors being elected: W. G. Morrow, president; W. W. Stetson, vice-president; and M. Schmidt, J. H. Dobinson and W. English, directors. The last named gentleman was the nominee of the Brokers' Combine, and he was received into the fold, not only without opposition, but with effusion. The following financial statement of Secretary G. D. Edwards was scarcely calculated to comfort the stockholders, but a grain of comfort was obtained by the thought that the showing might have been worse: Receipts—Superintendent's cash

balance, July 9th, 1891, \$4.10; bullion, \$262,343.09; assessment, No. 62, \$56,187; assessment No. 63, \$56,185.50; assessment No. 64, \$33,711.30; cash overdraft, July 14th, 1892, \$4,563.10; total receipts, \$412,994.09. Disbursements—Cash overdraft, July 9th, 1891, \$30,848.90; labor, \$109,928.86; ore crushing, \$106,931.54; ore transportation, \$18,056.31; discount on bullion, \$52,906.77; lumber, \$10,957.44; wood, \$10,530; water and ice, \$5,179.45; royalty on ore, \$4,825.93; powder and fuse, \$5,090; candles and oil, \$2,755.87; Pumping Association, \$8,750; miscellaneous supplies, \$4,122.13; taxes, \$1,111.24; legal expenses, \$400; general expenses, \$6,967.97; Belcher Silver Mining Company (mining, 850-ft. level drift), \$26,022.85; foreman shaft, \$900; office expenses, \$6,354.90; stock account 3 shares, \$6.10; superintendent's cash balance July 14th, 1892, \$347.74.

Savage Mining Company.—At the annual meeting of this company, held in San Francisco, Cal., on the 21st inst., the principal officers were re-elected for another year. George R. Wells continues as president, E. B. Holmes as secretary and R. P. Keating as superintendent. The annual report of the superintendent is an exhaustive document. During the year there were extracted from the several levels 28,533 tons and 1,300 lbs. ore, of which 3,871 tons and 1,470 lbs. were worked at the Mexican mill and 24,615 tons at the Nevada mill, and 46 tons and 1,830 lbs. were worked by the Janin process. The gross yield of said ore amounted to \$397,284.93. The discount on the silver portion of the same was \$84,408.37, leaving a net coin yield of \$312,876.56. The average car sample assay of all the ore worked was \$23.17½ per ton. Average battery assay of all the ore milled was \$19.26 per ton. The percentage obtained of all the ore milled was \$19.26 per ton. The hoisting works, machinery and surface plant are all in good working condition. During the year a large amount of prospecting and repair work was done in the mine.

Savage Mining Company.—The latest official weekly letter says: The usual prospecting and repair work is being carried on throughout the mine. On the 1,100 level from the 7th floor west prospecting drift we have commenced opening an intermediate level and find the ore three sets in width and of fair quality; we have commenced putting in square sets in this ore body; on the sill floor of this level the ore maintains the same width and quality as at the 7th floor opening. In the joint upraise from the Suro tunnel level with the Gould & Curry Company we are timbering the last 42 ft. of this upraise where it connected with the joint winze from the north drift of our 1,500 level. We have resumed work in the joint north drift Suro tunnel; this drift is now advanced 479 ft.

Union Consolidated Mining Company.—At the annual meeting of the stockholders of this company, held last week in San Francisco, 85,159 shares were represented, and the following officers elected for the ensuing term: Robert Sherwood, president; Charles H. Fish, vice-president; and W. S. Lyle, Charles Hirschfeld and A. G. Gurnett, directors. D. B. Lyman was re-elected superintendent and A. W. Barrows re-elected secretary. His financial statement showed a credit of \$368.61.

(From our Special Correspondent.)

The following is the weekly tabulated statement of ore extracted from Comstock mines and milled, with the car and battery assays, bullion shipments, etc.:

Mine.	Tons hoisted	Car sample assay.	Tons milled.	Average bat. assay.	Bullion product for week.	Bullion shipped.
Belcher.....		\$	409	26.54		12,715.37
Crown Point.....			155	27.21		
Con. Cal. & Va.....	997	28.94	980	27.66		128,828.18
Occidental.....	189		180	21.40		
Overman.....	311	24.27	222	15.76		
Potosi.....	338	27.53	500	24.96		
Savage.....	228	25.30	525	20.75	7,536.25	9,596.08
Yellow Jacket.....	3					

¹ Total shipments for July account.
² Cars.
³ No report.

Savage Mining Company.—The annual meeting of stockholders was held yesterday (21st inst.), it passing more quietly than was anticipated. At the time of the Hale & Norcross expose Levy, who was the president of the Savage, R. K. P. Harmon, vice-president, and E. B. Holmes, a director, all retired from office, and the management passed into the hands of "Jim, the Reformer." Mr. Holmes, however, still retained his position as secretary. At yesterday's meeting 107,351 shares of stock were represented, of which 26,616 shares were held by the Brokers' Combine. The following officers were elected: G. R. Wells, president; C. H. Fish, vice-president (representing the Flood interest); T. Anderson, W. S. Woods (representing the Jones and Hayward interest), and W. E. Miles (representing the combination of brokers). E. B. Holmes, one of the defendants in the Hale & Norcross scandal, was re-elected secretary. His financial statement showed an overdraft of \$7,764.73. As will be noted, "honors are even" between the Flood and Jones crowd, and the representative of the outsiders holds the balance of power. Not, of course, that it is expected that any

very decided differences will exist between the opposing factions, for "Jim, the Reformer," has expressed his willingness to surrender anything or everything rather than deprive himself of M. A. Hayward's friendship. Notwithstanding, however, the Jones faction regarded the situation in Savage as a milling, or, in other words, a stealing proposition. "Jim, the Reformer," willing to reform for the nonce, wished to go more slowly. They couldn't agree, and as a result Messrs. Jones and Hayward had to go into the market and buy stock or they would have been left in the cold altogether. As it is, "honors are even." The reason for the exceptional interest being displayed will be understood when it is remembered that from the 700 to the 950 levels an immense body of ore exists of great value. From the 800 to the 950 it averages from 35 to 40 ft. in width and has shown an average assay of \$40 per ton. No wonder Senator Jones and Alvinza Hayward regard the Savage as a milling proposition. J. H. Tingman, representing the Mining Stock Association, offered the following resolution: "Whereas, It has been proved that the methods pursued by the mill companies of the Comstock lode are adverse to the interests of the ore-producing mines of that lode; and Whereas, the stockholders of the Savage Mining Company believe that these methods can be easily changed to the benefit and profit of this company, be it resolved, That the directors of the Savage Mining Company are hereby instructed by the stockholders of said company to take such steps as will remove the necessity of having its ore reduced at mills pursuing the nefarious and dishonest methods now in vogue on the Comstock. That it is the sense of the stockholders that this end can be best reached, first, by advertising for bids for reducing the ore of this company, and the value of such ore to be regulated by car sample assay; second, by either the purchase or leasing of a mill for the reduction of the ore of the company—whichever in their judgment they think best." This resolution was overruled, President Wells saying that he was opposed to it for the reason that another and better resolution was about to be offered. A call being made for the "ayes" and "noes," each director was placed on record as follows: No—Flood's puppets, Wells, 2,155; Fish, 76,565. Jones and Hayward's puppets, Anderson, 755; Woods, 1,255. Aye—Brokers' Combine, Miles, 26,616. No—Outside vote, Ladig, 5. The following resolution was then offered by C. Hirschfeld: "That the directors of this corporation are requested and directed to take into consideration the advisability of the purchase by this company, either by itself or in connection with other corporations, of a quartz mill, and to unite with the directors of any other company proposing such action in the consideration of such purchase and in negotiating therefor; but no such purchase shall be made or completed until the same shall have been ratified by a vote of a majority of the stockholders in interest at a meeting called by the directors for the purpose, and of which two weeks' notice, stating the object of the meeting, shall be given by advertisement in at least two newspapers published in the city and county of San Francisco. The directors may also, before calling such meeting, employ not more than two disinterested persons skilled in the building of and value of quartz mills to examine and report upon the condition and value of any mill which it is proposed to buy, and any such reports shall be submitted to the stockholders' meeting." After some discussion this resolution was unanimously adopted. During the past year there were extracted from the mine 28,533 tons of ore, the working of which was as follows:

	Tons ore.	Gross yield.	Discount.	Net yield.
Mexican mill.....	3,871	1770		
Nevada mill.....	24,615		\$84,408.37	\$312,876.56
Janin process.....	46	1830		

	Tons ore.	Av. car s'pl assay.	Average battery assay.	% of ore by battery assay saved.
Mexican mill.....	3,871	1770		
Nevada mill.....	24,615		\$23.17	\$10.26
Tannin process.....	46	1830		72.19

NEW JERSEY.

Morris County.

Glendon Iron Company.—The workmen in the mines owned and worked by this company, at Hibernia, have been notified that on Aug. 1st their services will no longer be required. On that date the pumps will be drawn and the mines will be abandoned. Several hundred miners will be thrown out of work. Two reasons are assigned for the closing of these mines. One, that the poor market price of iron does not leave a reasonable profit. There are 27,000 tons of iron ore on the company's docks, which will not be sold until the market price advances. Another reason is that the mine is becoming too deep for profitable working. Many of these mines are extremely deep, and the expense of keeping them free from water, raising the ore and of timbering is enormous.

NEW MEXICO.

Sierra County.

The new smelter at Hillsborough was started up on the 18th inst. on ore from the Opportunity mine, and there is now ore enough at the smelter to keep it running for three weeks. For the present only copper matte will be made, but other ores will be treated in the near future.

PENNSYLVANIA.

Coal.

Pennsylvania Coal Company.—This company's breaker at Pittston was destroyed by fire on the 22d inst. The loss is estimated at \$100,000. About 500 men and boys are thrown out of work.

Jeddo.—A nest of new boilers is being placed in position at this colliery by G. B. Markle & Co. They are the largest boilers in that region, being 50 ft. long and 3 ft. in diameter. The Jeddo collieries are working four days a week with 12 hours each day. There is some talk of starting No. 1, Oakdale, on 15 hours each day. All the collieries in the region have granted the miners nearly a 4% raise on their wages for this month. At Stockton and Drifton notices have been posted to that effect.

York Farm, Pottsville.—An explosion of gas occurred in this mine on the 23d inst., and of 16 miners and other workmen who were either burned by the fire or crushed in the debris 15 are dead. A blast had been fired in one of the levels of the colliery, and it is supposed a "feeder," in which a large body of gas accumulated, was broken into. The gas was ignited from a safety lamp. Immediately after the explosion many volunteer workers entered the mine, and all of the bodies have been recovered.

SOUTH DAKOTA.

Mining Laws.

Rapid City.—At a meeting of the miners of the Black Hills held in this city during the early part of July a committee was appointed to draft amendments to the State mining law to be recommended to the legislature for adoption. The committee has finished its labors and prepared a report giving nine articles of amendment. They deal with discovery, discovery shaft, unlawful entry, proportionate share, failure to drain, right of way, punishment for destroying notice and monument, value of labor, infringement of claim and expenditures on claims when such claims are covered by liens or mortgage.

Lawrence County.

Oro Fino Mining Company.—This property is entirely inundated with water, which has accumulated within the past few months, and all underground working is impracticable, says the Black Hills "Times." Several large pumps have been placed in position, which will be worked by steam, and it is hoped that two weeks will see the mine cleared so that operations can be resumed.

TENNESSEE.

Anderson County.

Tennessee Coal Mining Company, Briceville.—This company has begun a suit for damages against J. E. Goodwin, William Morrow and the Tennessee Coal, Iron and Railroad Company. The action grows out of the recent troubles at Briceville, the complaint being that Goodwin and his agents incited the miners by their words and actions to release the convicts and destroy the property of the complainants.

UTAH.

Juab County.

Keynote.—A suit was filed on July 20th by David Kay against Abraham Hanauer et al. at Salt Lake. The plaintiff alleges that he and two others are the owners as tenants in common of the Keynote location, in West Mountain Mining district, and that the defendants have by various tunnels extended from the Brooklyn mine adjoining, entered and extracted 15,000 tons of ore, to the value of \$376,000, and asks for a decree for that amount, and that an injunction be issued preventing them from taking any more of the ore.

Tintic Milling Company.—This company will shortly increase the capacity of its mill to 100 tons of ore per day. A new addition to the mill 48x62 ft. and 35 ft. high, in which will be placed two sets of 26-in. Krom rolls, will be made now, with room and arrangements for two sets more. The mill has at present tank capacity, etc., for 100 tons per day and power sufficient for 200 tons. The company will also add one new roaster at present, which will give a capacity of 100 tons a day. W. I. Salkeld, of the Pacific coast, has made the plans for these improvements. This mill has worked several thousand tons of the low grade ores of the Tintic district at a profit. The mill is running on Northern Spy ore at present and handling about 40 tons per day, of which the average is about \$20 per ton in silver and gold. This mill is a leaching mill and run on the Clark process.

Pi Ute County.

Deseret Mining Company.—This company has bought a mill, which it will put up in Bullion Canyon to work the ore of the Branch mine.

WASHINGTON.

Okanogan County.

Allison Group.—This group of claims was sold to the Lombards of Boston, but on account of disagree-

ment on the time of payment the deal was annulled. It is now said to be sold for \$103,000 to Spokane parties, and that Mr. Sam Silvermann engineered the sale. The property is located on Palmer Mountain.

Ivanhoe.—Work is progressing favorably at this mine. The Leach ranch on Palmer Lake has been secured for the mill, and it is but a short distance from the mine and in the neighborhood of wood and water in abundance.

Loomiston.—The mills of this district are running to their full capacity, says the Spokane "Review." The Rainbow mill is up and the machinery is all on the ground. On the Contention an incline shaft has been sunk 25 ft. on the ledge, which is uncovered for 40 ft. There are 40 tons of ore on the dump that will mill \$100 in free gold, and as much more in sight. The Ivanhoe is putting in a mill and building a road three miles to haul ore to the mill which will be located in Palmer's cove. The mill at Wanacut is now running full time on ore taken from the Spokane mine. There is a report that a strike has been made on Gold Hill east of Loomiston. A strike has also been made on the Similkameen about six miles west, so it is said.

True Fissure is being worked by C. A. Pratt and J. H. Orban. It is located near Loomiston, and has a 3-ft. ledge of gold-bearing quartz.

Washington Reduction Company, Ruby.—The machinery for the tramway has arrived, and in a month's time the mill will be ready for operation.

Stevens County.

Bonanza.—Here some 15 men are employed, and the ore is taken to the concentrator at the Young America mine. The shaft is down some 60 ft. A strike of gray carbonates and galena has just been made that is believed will assay high. It is the intention of those in charge to continue sinking on the main shaft, also to drift on the ledge. The concentrates run 20 oz. in silver and 60% lead.

Young America.—The daily capacity is from 50 to 60 tons, and are now employing two shifts of men. The concentrator on this property is handling all the ore that comes from the Young America and from its neighbor, the Bonanza. Five tons of concentrates are turned out daily, running 75 oz. in silver and 50% lead.

Whitman County.

North American Gem Opal Mining Company.—The opals are found in a basaltic rock and clay formation. The rock is soft and porous, the cavities being filled with a mixture of silica and iron oxide. The opals are usually found in this clay, but sometimes occur in the hard rock, and are mined as follows: The earth, which varies from 4 to 10 ft. depth to the rock, is first plowed and scraped off with teams, and when the rock is reached a blast of powder is put in to shake and loosen it up. It is then quarried out with picks and crowbars, and then the search begins for opals, picking them out of the holes and cavities in the rock. The company is now working nine men, and expects to increase the force later on.

WYOMING.

Sweetwater County.

Rock Springs Coal Company.—This company has in progress some extensive improvements in its No. 2 mine. A new slope is being built and a hoisting engine to work it; a new triple and chute, elevators and rotary screens for rescreening fine coal, and a new pair of 56-ton scales are also being put up. The work will be completed by the 15th of August and will give the mine a capacity of 50 cars of lump coal a day, which will make it unnecessary to work either the incline or the Blair mines the coming winter.

FOREIGN MINING NEWS.

AUSTRALIA.

The quantity of gold raised in Victoria in 1891 was 576,399 oz. 14 dwt. 11 gr., or a decrease of 12,161 oz. 1 dwt. 4 gr. on the previous year. The alluvial claims yielded 188,547 oz. 19 dwt. 17 gr.

The advent of the principals connected with the Lubrig Company at Sydney has stirred that energetic firm, Parke & Lacy Company, into action, says the Australian "Mining Standard." They are the patentees for the Frue vanner, a machine which is a household word among miners in consequence of the splendid work it performs. They have, therefore, in view of the coming opposition, issued a challenge of \$500 to any firm who hold the patent rights of any concentrator to openly compete with them with the view to demonstrating which is the best machine.

Mr. T. U. Scrutton, who has been for some time past engaged in prosecuting a search for petroleum on the Coorong, South Australia, has brought to Adelaide a sample procured from coorongite found in that locality. The sample was retorted from coorongite taken from the abandoned bore which was put down by a company some years ago. Mr. Robert Harrison, formerly in the employ of the Chemical Oil Works at Aberdeen, in Scotland, states that the samples resemble the oils found in Wyoming, U. S. A., and that on testing the samples he found them to contain burning and lubricating oil.

BOLIVIA.

Compania Colquechaca Anullayas de Bolivia, Limited.—This company, working in the District of Colquechaca, Bolivia, one of the richest silver producing districts in the State, has a capital of \$12,600,000 Bolivian dollars. It is a consolidation of a number of mines. It is estimated that three of the mines alone have, with interrupted work, produced 40,000,000 Bolivian dollars' worth in the last ten years and the other mines are still in virgin ground.

BRITISH COLUMBIA.

The discoveries which have lately been made in the valley of the North Thompson demonstrate what has been long believed, that the valley of this river and its tributaries are a most promising mineral region, and one which to the present time remains almost entirely unexplored. Gold has been found in the quartz at Jamieson Creek, which is about 17 miles from Kamloops, and it also exists on the east bank of the North Thompson near Lewis Creek. Quartz rich in silver has been discovered near the junction of the Clearwater River with the North Thompson, about 75 miles from Kamloops. Mineral is known to exist in large quantities at Mahood Lake, whose outlet is into the Clearwater. At Tum Tum Lake, southeasterly from the upper valley of the North Thompson, very rich argentiferous ore was found many years ago. The sources of this lake reach easterly up to the Summit of the Gold Range, on the opposite or eastern side of which is Smith Creek, where gold is now successfully mined. Tum Tum Lake finds an outlet southerly into Adam's Lake, a beautiful sheet of water, on the shores of which fine samples of galena or silver-lead ore have been found. This lake is 50 to 60 miles long and 3 to 5 miles wide, lying east of North Thompson River Valley and parallel to its course, some 20 miles distant. It is accessible by trail which follows the course of Lewis Creek, and diverges from the wagon road about 35 miles out from Kamloops. There are no mining locations yet made in this extensive region, which is nearly 200 miles long and about 100 miles broad, reaching to the borders of Cariboo on the north-northwest and to Big Bend on the east, except a few which have been recently taken up. The way to reach this extensive region is by way of the North Thompson from Kamloops, 250 miles east of Vancouver on the C. P. R., and here can be obtained at reasonable prices the needful outfit of provisions and miner's supplies. A good wagon road has been constructed 35 miles out from Kamloops, and trails are used from that point. The weather is favorable in this district, there being very little rain to interfere with prospecting. The climate is healthy, and the season is nearly two months longer than it is further east in the Selkirks and Rocky Mountains. About 50 miles from Kamloops on the river coal of good quality has been found within a short distance of the silver mines. The North Thompson is navigable for 120 miles for large steamers. Within a few miles of Kamloops there is a supply of magnetic iron ore. A number of residents of Kamloops and adjacent districts in the Province of British Columbia have lately formed themselves into an association to be called the "Kamloops District Mining Bureau." The object of the bureau will be to assist prospectors and capitalists, furnishing them with the fullest information concerning the discoveries and workings of the various mineral leads and coal beds of these districts, for which purpose it will have maps of the same made with the various locations and roads leading thereto represented, and to disseminate such information throughout the mining centers of the continent. It is proposed merely to state plainly to any intending investors or prospectors the actual facts. If carried out on the proposed basis the Kamloops Mining Bureau will undoubtedly be a success and a benefit to the country, helping as it undoubtedly will to develop the marvelous mineral resources of that section of British Columbia.

BRITISH GUIANA.

The shipment of gold by the Royal Mail steamship "Dee" on the 15th June was the largest on record. It amounted to 7,896 oz., with a value of \$138,125. The shipments for the year up to date amount to 49,429 oz., with a value of \$882,912, or 19,000 oz. more than during the corresponding period in 1891.

BURMAH.

Burmah Ruby Mines, Limited.—The report of the directors of the Burmah Ruby Mines, Limited, submitted at the fourth ordinary general meeting on the 22d June, states that the operations of the company have been conducted in Burmah by their chief engineer with the greatest energy and skill, and show a great improvement in economy of working over the year ending with February, 1891; but Major Kunhardt, owing to the many unforeseen difficulties, has much under-estimated the time necessary for the development of the undertaking. The directors have continued to press upon the government the impossibility of paying the present heavy rent of four lacs of rupees per annum, and the viceroy has, pending the determination of this question, sanctioned the suspension till Aug. 31st next of the two lacs of rupees due in February. The low rate of exchange has considerably decreased the sterling amount payable, but the directors have considered it necessary to distinctly notify to the government that, unless the rent be greatly reduced, they cannot recommend the shareholders of the company to continue operations.

CANADA.

New Brunswick.

Elm Tree Mining Company.—This silver mine, at Petit Rocher, at the head of the Province, has been opened again, and a large force of men are at work. An expert is at the mine to examine into the quality of the ore taken out. The owners of the mine have much faith in the value of their property. It is about three or four years since work on the mine was stopped.

Ontario.

Ogerna Mining Company.—Work has been resumed at the old shaft, and it is now down 55 ft. A drift is being run at a 50-ft. level. The vein at this point is about 8 ft. wide and where the second shaft was sunk it is 15 ft. in width. This vein is mineralized throughout, and has a streak 12 in. wide, running through the center of the vein, of galena. At Marmora Crawford mills will be used to treat the ore.

Silver Mountain Mining and Milling Company.—This company has purchased the property direct from the English owners. The estate consists of 1,000 acres of comparatively virgin mineral lands. A 10-stamp mill is being erected. A sample of this rock, 10 tons, taken at random and shipped to Baldhachs' smelting works, Newark, N. J., gives a return of 72 oz. to the ton. The silver mill of 10 stamps referred to will be run by electricity generated at the power house near the base of Silver Mountain, where arrangements are in progress for the erection of a large size Pelton water wheel, the water power being supplied by 15-in. pipes from the Lakes Daunais and Lizard at an elevation of 125 to 150 ft. above, and a distance of 2,640 ft. from the mill.

GREAT BRITAIN.

Pollok's Chlorination Process.—The directors of the Pollok Patents Company, says "Industries," have issued a circular to the shareholders intimating that the expectations regarding the working of the process in Chili and in South Africa have not been realized, that the Johannesburg Works have been closed, and that the directors have decided to call a special meeting of the shareholders to discuss the advisability of winding up the company. The shares, on which 20s., the full amount, has been paid, have been sold at 6d. per share. In the early months of 1892 the shares were quoted at 42s. 6d., 5s. only having been paid at that date. The company was formed three years ago with an authorized capital of £150,000. Only £100,000 of this was, however, issued. The Pollok company succeeded in 1890 in forming a subsidiary company in Australia, from which £125,000 in cash and shares was received. The cash was divided among the shareholders of the parent company in a payment of 2s. 6d. per share, and one share in the Australian company was allotted for each share in the parent company.

The Welsh Tin Plate Industry.—This industry has no sooner shown some signs of recovering from the McKinley onslaught than it is beginning to become conscious of another possible trouble ahead, this time from a more insidious foe, the Russian competitor. For years the Russians have been trying, but without success, to manufacture tin plates, and they have been forced, against their will, to he large customers in South Wales. The present has been thought an opportune moment to dispatch to England a large number of spies, who, in the guise of scientific visitors to that country, are making desperate efforts to explore the tin plate manufactories of South Wales, and learn the secret processes thereof. The Welsh manufacturers have been warned in time, however, to be able to keep a watch on their scientific visitors.

MEXICO.

The Mexican Department of Finance has issued a body of rules governing the collection of the new tax on mines. The tax is defined as applying both to existing mining properties and such as may hereafter be acquired according to the terms of the new law. Metallurgical works and water rights for motive power or for any other use whether in the mines or reduction works, are exempted. All mine owners, including the holders of zone concessions, are bound to submit to the Department of Finance, before Oct. 31st next, a statement of the number of pertenencias, expressed in their old dimensions and in hectares, included in their properties, so that, in the case of ordinary mine owners, the amount of their title deed and annual taxes may be assessed, and, in the case of zone concessionaires, a document securing to them immunity from taxation may be issued. The latter are also required, while their concessions remain in force, to apply, at the beginning of every fiscal year, to the Department of Finance for a reissue of said document. They must, furthermore, notify the same department when they incorporate in their properties claims other than those granted them by their concessions, in order that the exemption from taxation may be extended to such additional claims. The title deed tax is to be payable in stamps for documents and the annual tax in Internal Revenue stamps. The obligation to pay one-third of the annual tax in the first month of the tri-annual period is condoned with respect to the first payment of the current fiscal year. Mine owners, instead of being obliged to pay the tax in the present month of July, are free to do so in August, September or October next, or they may, if they so

choose, pay two-thirds of their annual dues together before Nov. 30th next.

TRANSSVAAL.

The production of gold in the Transvaal during the month of May nearly reached the century mark, so long expected, being 99,436 oz. 3 pwts. The gold was valued at £355,380. 162,259 tons of ore were milled with 1,990 stamps, at an average time of 27:44 days, crushing on an average 2:88 tons per stamp. The average yield per ton was £1 15s. 11d. There was, of course, some disappointment that the higher figure hoped for was not reached, but we think that the result, as announced, is sufficiently satisfactory, inasmuch as it shows an improvement over the same period in 1891 of no less than 44,766 oz. The first five months of 1892 have realized 459,451 oz., as against 267,353 oz. for the same period in 1891. These figures, in themselves, show the immense advancement of the mining industry of these fields, and the total output to date (embracing a period of exactly five years), viz., 2,284,342 oz., of the value of £8,290,739. The Robinson Company occupies the premier position, with the magnificent output of 16,014 oz. Of this amount 9,005 oz. was won from the plates of the 40-stamp mill, and the chlorination and cyanide works realized nearly 4,000 oz., besides over 3,000 oz. obtained from concentrates purchased by the company. The Langlaagte Estate and Crown Reef run closely for second place, the yield of the former being 6,961 oz., and of the latter 6,132 oz. As many as 30 companies exceeded an output of 1,000 oz. each, the aggregate output of that number reaching over 80,000 oz. The total tonnage milled by 1,990 heads of stamps was 162,259, and the average tonnage crushed per stamp per day was 2:88. The yield of gold was 99,436 oz. 3 dwts. The tonnage crushed for May shows an increase of 9,062 tons over April, but the duty per stamp per day shows a decrease, being 2:88 as against 3:22 for April. This, however, is partly accounted for by the days' working in May being 27:44, as against 25:22 for the previous month. In the yield per ton there is a slight increase on the record for April.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, July 29th.

Heavy Chemicals.—The dullness in this market continues unrelieved. We do not hear of much business doing for prompt delivery, and inquiries for fall business are not numerous enough to promote feelings of confidence as to the future. Carbonated soda ash is scarce and goods on the spot command full prices. The same may be said of alkali. Caustic soda is quiet. Some sales are reported in bleaching powder for future delivery. Our quotations this week are as follows: Caustic soda, 79%, 2:95@3:10c.; 74%, 2:97½@3:12½c.; 76%, 3:12½@3:25c.; 77%, 3:12½@3:25c. Carbonated soda ash, 48%, 1:55@1:60c.; 58%, 1:47½@1:52½c. Alkali, 48%, 1:55@1:60c.; 58%, 1:47½@1:52½c. Sal soda, English, 1:05@1:10c.; American, 1@1:12½c. Bleaching powder, 2:15@2:20c. on the spot, according to quantity.

Acids.—The good consumptive demand which has been experienced in this market for some time past continues unabated. All the manufacturers report a good business in the various acids, and judging from the numerous inquiries received for the fall trade it appears probable that the busy season will prolong itself beyond the first expectations. Prices are unchanged, and we quote: Acid per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, \$1.60@2, according to quality; muriatic, 18", 80c.@\$1; 20", 90c.@\$1.10; 22", \$1@1.25; nitric, 40", \$4; 42", \$4.50@4.75; sulphuric, 85c.@\$1.10; mixed acids, according to mixture; oxalic, \$7.25@7.75. Blue vitriol is quoted all the way from \$3.25@3.50; alum, lump or ground, \$1.55@1.80. Glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—Brimstone is slightly lower this week. Best unmixed seconds on the spot are quoted at \$24.50; best mixed thirds, \$23.75. Goods to arrive are as follows: Best unmixed seconds, \$23.75; thirds, \$23.

Fertilizers.—The market for fertilizing chemicals is dull and quiet, and a few spot sales are reported. Some inquiries for fall business have been received, but they have not resulted in actual sales. Prices remain as they have ruled for the past fortnight. We quote: Sulphate of ammonia, \$2.85 for bone goods and \$2.90@2.95 for gas liquor. Dried blood, \$1.95@2 per unit for high grade and \$1.85@1.90 for low grade; acidulated fish scrap, \$13.50 f. o. b. factory; dried scrap, \$23.50. Azotine, \$1.85@1.90. Tankage, \$17.50@21, according to grade. Bone meal, \$22.50@23.50.

Double Manure Salts.—Quotations are as follows for lots of from 10 to 50 tons ex-vessel New York: 48-53%, \$1.13½@1.23½; 90-95%, \$2.13@2.23½.

Kainit.—The market for kainit is very quiet. Prices remain \$8.75 for invoice weight and \$9 for actual weight, New York and Philadelphia.

Muriate of Potash.—Arrivals during the past week aggregate 500 tons. New sales have been made amounting to 100 tons to arrive. Prices remain unchanged as follows: Fifty-ton lots or over, New York and Boston, \$1.81½; Philadelphia and Baltimore, \$1.84; Southern ports, \$1.86½.

Phosphates.—Messrs. Couper, Millar & Co., of London, Eng., have issued the following report on

the fertilizer market of the United Kingdom: "The general trade of the country continues bad, and the elections, of course, have not tended to improve matters. The fertilizer market remains depressed; in fact, at this season of the year there is always little doing. We cannot but think, however, that prices have touched bottom all round, if only for the reason that in many cases raw materials cannot be produced at the prices ruling. Mineral phosphates: Canadian 80% we have to report a small sale of at 10¼d. per unit, net Continent. South Carolina: Without change, at 7d. to 7¼d. per unit. Ground Somme: Steady at 11¼d. for 75%, and 10¼d. for 70% c. i. f. London. Ground Belgian: Seems somewhat scarce, and held for 5d. per unit f. o. b. Antwerp. Osso: There is no inquiry for in U. K. Cambridge and Bedford coprolites are being raised to a very small extent."

Nitrate of Soda.—Nothing of interest can be reported in this market. Quotations are as follows: Spot, \$1.75; shipments to arrive, \$1.70.

Liverpool.

July 20.

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

Business is in rather a better shape now that the elections are over, although at the same time there is no activity to report.

Soda Ash.—There is nothing to be had for prompt delivery, and very little to the end of the year. Quotations are, therefore, nominal as follows: Caustic ash, 48%, £5 6s. 3d. per ton; 57-58%, £6 7s. 6d. per ton. Carb. ash, 48%, £5 9s. 9d. per ton; 58%, £6 12s. 9d. per ton. Ammonia ash, 58%, £6 7s. 6d. per ton, net cash.

Soda Crystals in moderate demand at £3 7s. 6d. to £3 10s. per ton less 5%, while possibly a shade under the lower figure might be accepted for a round lot.

Caustic Soda.—There is more moving and a fair number of sales reported, but the market is not active. Nearest spot values are as follows: 60%, £9 2s. 6d. per ton; 70%, £10 5s. per ton; 74%, £11 5s. per ton; 76%, £12 5s. to £12 10s. per ton, net cash. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching Powder firm at £7 15s. to £8 per ton, net cash for hardwood packages for all quarters except United States and Canada.

Chlorate of Potash is in better request, and for prompt delivery resales have been made at 6¼d. per lb. less 5%, while 6¼d. is asked by the Alkali Company for forward delivery; quotations vary from 6¼d. to 6½d., according to sellers' views.

Bicarb. Soda is selling to a fair extent at £6 15s. per ton less 2½% for one cwt. kegs, with usual allowances for larger packages.

Sulphate of Ammonia is scarce, but at the same time quotations show little change, and we quote £10 3s. 9d. to £10 5s. per ton for good grey 24%, and £10 7s. 6d. to £10 8s. 9d. per ton for 25%, both in double bags, less 2½% f. o. b. here, while for forward delivery a premium of 5s. per ton is asked.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo., Baltimore, Pittsburgh, Deadwood, Dak., St. Louis, Helena, Mont., London and Paris, see pages 118 and 120.]

NEW YORK, Friday Evening, July 20, 1892.

The oppressive weather of the past week is responsible to some extent for the insignificant volume of business transacted at the Mining Exchange. Whatever trading there has been, was devoid of features of interest.

The Comstocks have been in little request and they are weaker as to price. We note the following sales: 100 shares of Belcher at \$1.50; 600 shares of Consolidated California & Virginia at \$3.55@3.80; 150 shares of Hale & Norcross at \$1.20; 200 shares of Yellow Jacket at 70c.; 3,700 shares of Comstock Tunnel at 13c.; 500 shares of Julia at 10c. and 100 shares of Mexican at \$1.50.

Of the Tuscaroras there was a sale of 200 shares of Belle Isle at 10c.

California stocks were quiet. There was a sale of 300 shares of Bodie Consolidated at 35c. Of Standard Consolidated 300 shares changed hands at \$1.50 @ \$1.60. Transactions in Belmont aggregated 1,000 shares, at 38c. Brunswick Consolidated shows sales of 800 shares at 15@17c. A telegram, dated Grass Valley, July 25th, has been received from the superintendent as follows: "The mine is improving. The ledge in the upraise is 3 ft., good ore; the ore-body is increasing."

Of the Colorado stocks we note sales of 200 shares of Chrysolite at 15c.; 200 shares of Leadville Consolidated at 14c.; 700 shares of Little Chief at 26@27c. Freeland, which had not been dealt in for a long time shows sales this week of 2,200 shares at 4c. According to the official reports sales of Lacrosse this week amount to 300 shares at 3c.

Black Hills stocks were quiet. There was a sale of Caledonia of 100 at 85c. and another of Deadwood Terra at \$2.10. For some weeks past we have seen in the official lists of the Consolidated Stock and Petroleum Exchange sales of Sullivan Consolidated stock; the price during this time apparently having advanced until to-day a sale of 100 shares was reported at \$1.10. We stated in our issue of the 9th inst. we have been reliably informed that the Sullivan Consolidated Mining Company is "unquestionably a fraud."

There seems to be but little doubt that this stock has been and is manipulated at the Consolidated Exchange. It will be very easy for the officers of the Exchange to satisfy themselves that this company is entirely unworthy of a quotation; and after the notice we have given we trust official action will be taken to stop dealings in it. The Exchange has already done great injury to legitimate mining by fostering wildcats and frauds. Let it not add to this record.

There were sales of 400 shares of Alice at 65@95c. Horn Silver was very quiet this week. There was a solitary sale of 100 shares at \$3.55.

Of El Cristo 100 shares were sold at 37c. Kingstone and Pembroke, which had been dealt in for some time past, this week shows a sale of 500 shares at 25c.

Phoenix of Arizona continues active. During the week 1,670 shares were sold at 54@57c.

Boston. July 23.

(From our Special Correspondent.)

A much better feeling has prevailed during the past week for copper stocks, and prices have advanced more, perhaps, than the situation warrants. There is quite a large class of operators in the market who favor speculation in this class of stocks, and an advance in the market is almost sure to bring in a goodly number of buyers. The Montana group offer greater attractions than any other, and the volume of business is largely in this class. The financial clouds, which have had a depressing influence on these stocks of late, seem to be clearing, and the prospects more promising for a settlement of the difficulties. Boston & Montana started the week at \$36 3/4, and, stimulated by good reports and buying orders, advanced to \$38 3/4, after which it gradually settled to \$36 3/4, recovering in part to \$37 3/4. Over 5,000 shares were dealt in, and it closed fairly strong. Bntte & Boston, which started on the upward track last week, further advanced from \$8 1/2 to \$9, and held the advance. The Lake Superior stocks were all better, and although business in them is light, they show considerable firmness, and will doubtless improve with the balance of the market. Calumet & Hecla sold at \$275@276, and is in good demand by investors. The annual report just made public gives a good idea of the magnitude and value of the property, and warrants the price at which it is held in the market.

Oseola was one of the strongest stocks on the list, advancing from \$27 3/4 to \$31 1/2, on sales of less than 2,000 shares. This is a good property, and with a fair price for ingot copper will pay good returns to its stockholders. Tamarack advanced from \$155 to \$161 on small sales. It is always hard to fill an order on this stock without advancing its price.

Tamarack, Jr., has disappointed the expectations of its friends. The mine does not show, as yet, anything like what was expected, and this is reflected in the price of the stock, which declined from \$29, the highest point of the week, to \$26, and is weak at that. Kearsarge sold at \$11 1/4, an advance of 1/4, and was rather more active than it has been of late.

Centennial advanced to \$9 on fairly good buying. Franklin improved from \$11 1/4 to \$12 1/4. Atlantic sold up 1/4 to \$9 3/4. The minor stocks were neglected, there being no sales of Allouez reported, while 1,000 shares only of Santa Fe were dealt in at 12 1/2c.

3 p. m.—Since the noon hour the market has been dull and inclined to be heavy.

Boston & Montana declined 1/2 to \$36 3/4. Tamarack, Jr., to \$25, and Oseola was off to \$31. Bntte improved 1/4 to \$9 1/4 for an odd lot, and Kearsarge sold 1/2 higher at \$11 3/4.

San Francisco. July 23.

The bottom seems to have fallen out of the mining stock market. The volume of yesterday's trading amounted to only 1,700 shares, valued at \$1,200, and covering only 11 stocks. This is the smallest record for over six years, and as no immediate change is likely to take place brokers are becoming thoroughly disgusted, and, in several instances, are retiring from business. Sorrow expressed at such a state of affairs would be sympathy wasted, for the systematic scheme, initiated by the mill owners on the Comstock, for robbing the public has been carried on very largely through the instrumentality of the brokers, and if the wheel of time in its revolutions has brought disaster to Pine street it is in the eternal fitness of things, and in the end the public will benefit. As at present organized, the Stock Exchange is simply a body of men who, by a variety of means, some of which are in conflict with the law, are enabled to fleece the gambling public. Generally sneaking, this fact is recognized, and so the futile efforts of the Stock Exchange to recover its lost power have ended where they began. A reduction of fees for listing new stocks was not taken advantage of by one solitary company, and now members seem so afflicted that an effort is being made to abolish the \$5,000 life insurance carried upon the individual members.

Meantime favorable reports are current on the street and work being done in the mines. In Union Con. they have drifted into the west country and encountered a flow of water, an indication of better things ahead. In Hale & Norcross the present work on the 1,800 level is said to be full of encouragement, but no extraction has not been resumed.

The directors of the Savage mine have been so speedy in action upon the resolution adopted at the annual meeting that it savors largely of a job. The

proposition being made is to sell the Nevada mill (belonging to Senator Jones, R. Hayward, et. al.) to the Chollar, Potosi, Savage and Hale & Norcross companies. The whole matter would resolve itself into a mere distinction without any material difference. Of course, this proposition is being upheld by that portion of the city press that thrives on Comstock pap, but the sale has not been consummated yet and possibly never will be.

To-day the north end Comstocks, excepting Ophir, were dull even for these dull times. Consolidated California & Virginia sold for \$3.60; Andes for 35c.; Mexican for \$1.55; Ophir for \$2.55, and Sierra Nevada for \$1.05.

Of the middle group Chollar sold more freely than the balance at 60c. Gould & Curry at \$1; Hale & Norcross at \$1.20; Potosi at 45c.; and Savage at \$1.05, were not in demand.

The south end and Gold Hill stocks simply stagnated. A block of 650 Eschequer sold for 10c., but with that exception the sales were merely nominal. Alpha sold for 15c.; Alta for 30c.; Con. New York for 25c.; Crown Point for 75c.; Justice for 10c.; and Yellow Jacket for 65c.

In the Bodie group Bulwer Con. sold in small lots for 40c.; and Mono for 30c. In the Tuscaroras the only stock in demand has been Nevada Queen, which sold to-day for 45c., a 10c. advance on the ruling rate of a week ago.

SAN FRANCISCO, July 29.—(By telegraph.)—The opening quotations to-day are as follows: Best & Belcher, \$1.35; Bodie, 30c.; Belle Isle, 10c.; Bulwer, 40c.; Chollar, 50c.; Consolidated California & Virginia, \$3.35; Eureka Consolidated, \$2.25; Gould & Curry, 90c.; Hale & Norcross, \$1.10; Mexican, \$1.35; Mono, 30c.; North Belle Isle, 5c.; Ophir, \$2.25; Savage, 90c.; Sierra Nevada, 90c.; Union Consolidated, 75c.; Yellow Jacket, 50c.

MEETINGS.

Calumet & Hecla Mining Company, at the office of the company, No. 12 Ashburton Place, Boston, Mass., August 17th, at 10 a. m.

Paystone Mining and Milling Company, at the office of the company, room 429 Mining Exchange Building, Denver, Colo., August 9th, at 3 p. m.

DIVIDENDS.

Enterprise Mining Company, dividend No. 6 of 10 cents per share, \$50,000, payable August 5th at the office of the company, No. 33 Wall street, New York. Transfer books will close August 1st, and reopen August 6th.

Lexington Mining and Milling Company, dividend No. 8 of one cent per share, \$3,000, payable August 1st, at the office of the company, No. 1624 Curtis street, Denver, Colo.

Mollie Gibson Consolidated Mining and Milling Company, dividend No. 25, of fifteen cents per share, \$150,000, payable August 15th at the office of the company in Colorado Springs, Colo. Transfer books close August 8th and reopen August 16th.

New Guston Mining Company, dividend No. 14 of 37 1/2 cents per share, \$41,250, payable July 30th at the office of the company in London, England.

Quincy Mining Company, dividend No. 48, of \$3 per share, \$150,000, payable August 22d. Stockholders residing in Massachusetts will be paid at the office of W. H. Daniels, No. 35 Congress street, Boston, Mass. Transfer books close July 22d and reopen August 23d.

ASSESSMENTS.

COMPANY.	No.	When levied.	D't'ng't in office.	Day of sale.	Amt per share.
Alta, Nev.	42	June 18	July 26	Aug. 16	.15
Belle Isle, Nev.	14	.....	July 17	Aug. 12	.10
Blue Bird, S. Dak.	8	June 16	July 11	Aug. 12	.000 1/2
Bodie Con., Cal.	14	June 20	July 22	Aug. 22	.25
Comm'wealth, Nev.	8	June 16	July 21	Aug. 18	.10
Cons. N. York, Nev.	8	June 28	Aug. 2	Aug. 23	.10
Cons. St. Gotthard, Cal.	5	June 9	July 14	Aug. 4	.05
Gold Mountain, Cal	3	July 16	Aug. 20	Sept. 8	2.00
Gold'n Fleece Gravel, Cal.	17	July 16	Aug. 24	Sept. 20	8.00
Gould & Curry, Nev	11	June 7	July 12	Aug. 4	.25
Gray Eagle, Cal.	29	July 6	Aug. 9	Aug. 30	.06
Himalaya, Utah	69	June 13	July 13	Aug. 13	.000 1/2
Kentuck Con., Nev.	4	July 15	Aug. 18	Sept. 8	.10
Peerless, Ariz.	13	July 6	Aug. 11	Sept. 7	.05
Peer, Ariz.	13	July 19	Aug. 25	Sept. 22	.10
Rainbow, S. Dak.	6	July 19	Aug. 20	Sept. 9	.000 1/2
Scorpion, Nev.	4	July 11	Aug. 19	Sept. 12	.05
Silver King, Ariz.	8	July 19	Aug. 27	Sept. 27	.25
Sierra Nevada, Nev	102	June 11	July 13	Aug. 2	.25
Union Con., Nev.	46	July 18	Aug. 24	Sept. 13	.25

PIPE LINE CERTIFICATES.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.					
	Opening.	Highest.	Lowest.	Closing.	Sales.
July 23.....	52 1/4	52 3/4	52 1/4	52 1/4	10,000
25.....	52 1/4	52 3/4	52 1/4	52 1/4	5,000
26.....	52 1/4	52 3/4	52 1/4	52 1/4	5,000
27.....	52 1/4	52 3/4	52 1/4	52 1/4	8,000
28.....	52 1/4	52 3/4	52 1/4	52 1/4	8,000
29.....	51 1/4	51 3/4	51 1/4	51 1/4	11,000
Total sales in barrels.....					39,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 29th. Statement of shipments of anthracite coal (approximated) for week ending July 23rd, 1892, compared with the corresponding period last year.

Regions.	July 23, 1892.	July 25, 1891.	Difference.
	Tons.	Tons.		Tons.
Wyoming Region....	483,343	440,175	Inc. 43,168
Lehigh Region.....	121,247	123,152	Dec. 1,905
Schuylkill Region....	249,471	272,649	Dec. 23,178
Total.....	854,061	835,976	Inc. 18,085
Total for year to date	22,082,889	20,938,272	Inc. 1,144,617

PRODUCTION OF BITUMINOUS COAL for week ending July 23rd, and year from January 1st.

EASTERN AND NORTHERN SHIPMENTS.	1892.		1891.
	Week.	Year.	Year.
Phila. & Erie R. R.....	1,325	48,540	108,104
Cumberland, Md.....	72,232	2,025,077	2,347,268
Barclay, Pa.....	2,682	111,181	104,353
Broad Top, Pa.....	11,788	319,172	279,382
Clearfield, Pa.....	72,858	2,229,022	2,859,877
Allegheny, Pa.....	31,301	655,087	727,811
Beach Creek, Pa.....	42,520	1,369,717	1,316,777
Poconong Flat Top.....	45,704	1,294,058	1,384,157
Kanawha, W. Va.....	46,810	1,328,085	1,305,134
Total.....	327,280	9,450,539	10,432,843

WESTERN SHIPMENTS.	1892.		1891.
	Week.	Year.	Year.
Pittsburg, Pa.....	22,523	723,046	770,187
Westmoreland, Pa.....	31,628	917,134	1,212,658
Monongahela, Pa.....	13,248	330,082	333,183
Total.....	67,399	1,970,262	2,316,028

Grand total..... 394,679 11,420,801 12,748,871

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending July 23rd, 1892, and year from January 1st, in tons of 2,000 lbs.: Week, 94,122 tons; year, 2,985,900 tons; to corresponding date in 1891, 1,935,348 tons.

Anthracite.

At the meeting of the Eastern and Western sales agents held in the city yesterday it was decided very quickly that no further advance should be made for August. This was not unexpected by those who have been following the market for the last few days. It appears that hardly any coal has been sold at the July rates, and that stocking has been going on to such an extent that all the yards and available cars are full, and, therefore, it is quite useless to push things any further at present. The further raising of prices, however, is only a matter of time, for it is fully the intention on the part of the combine to secure several more advances before they are finished. It is conceded on all hands that July has been an exceedingly dull month, and that very little new business has been done. The rate of production does not seem to be really restricted, in spite of the definite monthly agreements. As regards what passed at the meeting of the combine on Thursday we are of the opinion that all the coal agents except the Reading were against the advance.

The Pennsylvania Railroad has advanced their freight rates for anthracite from the mines to South Amboy from \$1.44 to \$1.52 per ton. If this is proportional to the advance in selling prices, it shows that the selling price has not advanced so rapidly as is commonly supposed. That is, there has been a great deal of shipping of old coal at the previous month's prices. When the average prices for July are taken as the basis of a new rate, another 11 cents will be tacked on, and the rate will then be \$1.63.

The figures showing the results of the traffic of the Philadelphia & Reading Railroad and the business of the P. & R. Coal and Iron Company during June do not show so great an improvement as was expected by the recent advances in the price of anthracite. This, no doubt, made the Reading desirous that the prices should be raised again on August 1st, in order that the position of the companies or the Stock Exchange should be improved in spite of the smallness of the increase in net receipts during June.

The examinations of the coal combine by the various official committees, etc., have not progressed at all during the past week. In the litigation at Trenton, the arguments have been completed on both sides, but the judge has reserved his decision. This decision will not be given in a hurry, and some time will elapse before we hear anything more. The testimony and the arguments were to most minds strongly in the Reading's favor. Briefly, the position has been narrowed down to this: The Port Reading Railroad has no right to lease the Jersey Central because the stockholders of the Port Reading are not residents of New Jersey. High legal authorities state that this has nothing to do with the case, and that the lease cannot therefore be upset in this argument. As we have always contended, it is little use trying to govern trade prices by law. The way to cripple the combine is to stop using anthracite. There is only a very slight movement in this direction in the East, but out Chicago way there is evidence of an enterprising war against the use of anthracite. The Philadelphia Record states that the shareholders of the Jersey Central & Reading Railroads do not care whether the decision by the Trenton Court is against them or not; they only want to know what the Jersey courts decide the law to be, and then

they will make a lease or a traffic agreement to suit.

The Pennsylvania Railroad have ordered another coal storage plant for their South Amboy yard from the Dodge Coal Storage Company. The new plant will have a storage capacity of 90,000 tons, which will be distributed in six piles of 15,000 tons each. The capacity of the present plant is 100,000 tons, distributed in 10 piles of 10,000 tons each.

Bituminous.

The trade in bituminous coal is mostly on old contracts, and very little new business is reported. Though the market is quiet the state of trade is quite as satisfactory as is expected at this time of the year. The blockade on the Pennsylvania Railroad has been eased considerably by the building of a sorting track at Philadelphia. By this means the cars can be sorted readily and the delivery expedited. There is no trouble in shipments at Baltimore, Newport News and Norfolk; in fact, there is no scarcity of vessels except at Georgetown. Shippers do not care to go to Georgetown, as there is no special inducement there. At Philadelphia the vessels give preference to those that guarantee prompt shipments.

The Chesapeake & Ohio canal is making bids for business by offering considerable rebates, but operators do not look favorably on their proposals. For one thing there offices on this route are closed, and for another there is difficulty in getting vessels at Georgetown and Alexandria. If they did renew their offices and start patronizing the canal the rebate would soon be dispensed with, and freights on this route would be as expensive as by any other.

Local trade presents the same features as general trade. There is a good deal of delay in unloading here on account of the heat.

From all shipping ports the freight rates to Boston, Salem and Portland, and to Sound ports, are all the same, viz., 70c. This is accounted for by the fact that vessels prefer to go to the ice district in order to obtain a return cargo. The rates to Portsmouth, Bath and Gardner are, respectively, 75, 70-75 and 80c.

NOTES OF THE WEEK.

The Huntingdon & Broad Top Railroad Company, whose coal tonnage is being watched with a great deal of interest on account of the depression in the soft coal trade, shows an encouraging gain in its statement of shipments last week. The increase was 8,722 tons. The total shipments for the week were 44,415 tons, against 35,693 in the same week last year. Since January 1st, the total shipments have been 1,002,075 tons, as compared with 1,209,205 tons in the same period in 1891, a decrease of 207,129 tons. The officials of the company state that the local business of the road continues to show improvement.

The Philadelphia & Reading has directed that the Lehigh Valley coal, destined to points on the New York & Long Branch road, be turned over to the Jersey Central road for delivery, instead of to the Pennsylvania, as in the past. They have also ordered that all Reading coal going to Northern New York points be diverted from the Pennsylvania line to the Lehigh Valley road. The Reading road has just made a contract with the Staten Island Rapid Transit Company, which is likely to result in a material increase in its New York passenger traffic.

All the seagoing steam colliers and barges of the Reading railroad system have been consolidated, under the name of the Philadelphia & Reading Transportation Line, with headquarters at Port Richmond, and under the direction of the shipping and freight agent there. The fleet consists of 10 Reading colliers and 15 barges, varying in capacity from 1,000 to 1,700 tons; nine New Jersey Central barges, two of which are in use and seven in course of construction, and two of the largest class of seagoing tugs. These boats are used in carrying coal, chiefly anthracite, from Port Richmond, Port Reading, Port Johnson and Perth Amboy, and handle a large part of the hard coal consumed in New England.

The Philadelphia & Reading R. R. intends making a connection with the Boston & Maine road at Springfield, so as to be able to send all rail coal to New England points. The contract with the New England road permits this alliance.

Buffalo. July 28.

(From our Special Correspondent.)
The anthracite coal trade is very dull, prices unchanged. Bituminous coal with fair average trade for manufactories and vessels' use. Quotations nominally without change, but buyers and sellers come together very easily nowadays, as supply is more than adequate for demand. Vessel freighting light, but the quotations are unchanged to all Western lake ports, except an advance of 5c. to Duluth.

The shipments of coal by lake from this port from July 21st to 27th, both days inclusive, aggregate 68,875 net tons, distributed about as follows: 25,960 to Chicago; 22,275 to Milwaukee; 800 to Duluth; 6,200 to Toledo; 4,350 to Green Bay; 590 to Kincardine; 380 to Bay City; 1,150 to Gladstone; 3,050 to Ashland; 830 to Menominee; 2,100 to Manitowoc; 700 to Windsor, and 400 to Sheboygan.

The rates of freight were as follows: 60c. to Chicago, Milwaukee, Escanaba, Menominee and Green Bay; 50c. to Portage and Sheboygan; 55c. to Manitowoc; 30c. to Superior; 35c. to Duluth; 25c. to Toledo and Windsor; 40c. to Saginaw, Kincardine and Gladstone; 45c. to Marquette, and 35c. to Ashland and Bay City.

Canal movement of coal for the third week in

July: Receipts, 2,433 net tons; shipments, 934 net tons.

The firm of Joseph E. Gavin & Co. underbid all others before the Board of Public Works yesterday for the privilege of supplying the public schools with coal during the ensuing year. About 4,500 tons are included in the contracts. The bid was as follows: Grate, \$4.40; egg, \$4.69; stove, \$4.68; chestnut, \$4.73.

Chicago. July 28.

(From our Special Correspondent.)

The increased inquiry noted last week has resulted in the placing of a number of large orders, and car coal is now in good demand at most points east of the Mississippi River. The country trade to the West of the river are talking anthracite coal very sparingly. A member of a jobbing house just returned from a ten days' trip through this section of the country declares that he does not believe there is above 50,000 tons in stock in Omaha and the country towns west of that city. If that estimate is anywhere near the truth, the buying in that section of the country has indeed been extremely light; we have reason to think the figures are not out of the way, as a careful canvass of the trade here shows that Western sales have been of meagre proportions. That the country dealers are much put out and excited over the continued advances is only a very mild way of expressing it. A number of dealers from the territory within a radius of 150 miles northwest and south of Chicago, have been doing considerable shopping around among the individual operators, and combine's agents during the past week trying to obtain better terms than mere monthly shipments, lower prices, and concessions of various kinds, but meet with little, if any, success.

The inference to be drawn is that the combine does not intend to greatly increase supplies before the close of navigation. Hence it will have to depend on all rail coal to supply the deficiency as it may be needed by the conditions of supply and demand. The consolidated companies could not adopt a better plan to hold up prices, and that, of course, is what they are after. There is rather more than a fair demand for car coal in lots of from 5 to 10 or 15 cars, and in all cases where this class of business is done through jobbers, full circular prices are obtained. This, as explained in previous reports, is the usual rush toward the end of the month before the inevitable advance. The same holds good for the retail trade, which at present is quite active, all the available force of dealers being kept fully employed, and price holds firm at \$7.

Another instance of had faith on the part of some shipper is evidenced in the bids for 1,000 tons of anthracite coal for use in the greenhouses, electric light plant, etc., of the South Park Commissioners. The prices ranged from \$6.75 to \$6.35 delivered in such quantities as required at the different stations. Allowing only 35 cents per ton for the cartage, the successful bidder nets only \$6 a ton for the coal, the wholesale price of which is \$5.85. Further comment is unnecessary.

Bituminous coal during the dog-days is not in very active demand from the general consumer, but there is certainly a good movement of Indiana stock into the country, partly on account of the advance rate, \$1.35 at mine, which goes into effect August 1st, and partly from the steady increased demand for coal for threshing purposes. The present month has been a notable one in the way of contracts, the tonnage having been increased and very largely in excess of last year, in a great measure due to the natural growth of the city and the increased number of industrial plants which have located here and in the suburban towns. Prices continued to be shaded according to circumstances.

Coke for general foundry purposes is quiet, and though some slight improvement is noted, it is by no means pronounced. One large jobbing house has contracted for 100,000 tons of West Virginia coke for delivery through the year on very favorable terms. The coke is for consumption in Chicago and vicinity, and is claimed to be a superior article of foundry grade.

Quotations are: \$4.65 furnace; \$5.05 foundry crushed; \$5.40 Connellsville; West Virginia, \$3.90 furnace, \$4.10 foundry; New River foundry, \$4.75; Walston, \$4.65 furnace, \$5 foundry.

Circular prices are at the following rates: Lehigh lump, \$6.50; large egg, \$5.60; small egg, range and chestnut, \$5.85. Retail prices per ton are: Large egg, \$7; small egg, range and chestnut, \$7.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, \$3.15; Hocking Valley, \$3; Youghiogheny, \$3.25; Illinois block, \$1.00@\$.2; Brazil block, \$2.35.

Pittsburg. July 28.

(From our Special Correspondent.)

Coal.—The low stage of water in the Ohio has prevented the shipments of coal by that channel. Tow boats and barges are now laid up and will be repaired and made ready for the fall trade, which generally opens in October or November. The general aspect of the Pittsburg coal trade shows scarcely any change, the only noticeable difference being a stiffening of prices at Cincinnati and Louisville. Should the low stage continue for some time there is no reason why the coal business may not be satisfactory and prices advanced in the near future.

A deal involving an expenditure of a quarter of a million of dollars was closed here on Monday, 412 acres of coal land being bought at \$500 per acre. The property fronts on the Panhandle and the P. C. & Z. railroads. Work will be commenced at once and

5,000 men will be employed. The purchaser was G. M. Merritt, of the Pennsylvania Railroad.

Connellsville Coke.—Trade presented no new feature, so far as values or demand was concerned. All this is due to the continued unsettled condition of the iron trade and wage question, which, so far as can be learned, is no nearer a settlement than it was on the first of the month. Restriction is still the rule, not the exception. Blowing out ovens continues. W. J. Rainey has blown out 25 ovens at the Paull works; 24 plants of the Frick Coke Company are in active operation, averaging only 4½ days. Four plants, Oliphant, Kyle, Leisering No. 3 and Wynn made only two days; the three plants of the United Coal and Coke Company made only two days; the four plants of the Southwest Company all made five days, while the eight plants of the McClure Coke Company made five days. The shipments for the week amounted to 5,855 cars, aggregating 105,300 tons, an increase of 518 cars over the preceding week, distributed as follows: To Pittsburg, 1,950 cars; east of Pittsburg, 1,240 cars; west of Pittsburg, 2,665; total, 5,855 cars. Prices show no changes.

METAL MARKET.

NEW YORK, Friday Evening, July 22, 1892.

Prices of Silver Per Ounce Troy.

July.	Sterling Exchange.	London.	N. Y. Centa.	Value of sil. in \$.	July.	Sterling Exchange.	London.	N. Y. Centa.	Value of sil. in \$.
23	4'87½	39½	86½	'668	27	4'88	39¼	85¾	'662
25	4'87½	39½	86½	'666	28	4'88	39½	85¾	'660
26	4'88	39½	85¾	'658	29	4'88	39½	85¾	'658

There has been a gradual decline in silver the past week, owing to the pressure for sale on the London market of our output. Speculation is practically stagnant, and silver is seeking its commercial level, which now is about the lowest point touched in the history of the white metal.

The United States Assay Office at New York reports the total receipts of silver for this week to be 102,000 ounces.

Gold and Silver Exports and Imports of the United States.

Year.	Exports.		Imports.	
	First six months.	Second six months.	First six months.	Second six months.
1887	\$7,162,147	\$1,882,279	\$5,565,974	\$8,833,325
1888	16,393,955	13,132,492	5,040,392	5,919,731
1889	41,819,793	9,113,667	4,365,077	7,639,555
1890	8,160,824	15,902,250	5,303,757	14,946,303
1891	70,460,404	8,626,177	3,306,294	41,663,846
1892	41,569,150	.....	8,034,496	.....

Gold and Silver Exports and Imports at New York.

	Exports.		Imports.	
	Week ending July 23.	Since Jan. 1.	Week ending July 23.	From Jan. 1.
Gold.....	nil	\$45,954,573	\$44,583	\$6,563,450
Silver.....	\$44,000	12,185,140	77,467	1,025,372
Totals....	\$44,000	\$58,140,013	\$122,050	\$7,618,861

At this time in 1891 there had been exported \$74,735,204 in gold and \$8,081,218 in silver against imports of \$2,477,943 in gold and \$1,244,871 in silver. There has been no demand for gold for exportation at the Sub-Treasury this week, although there is some talk of gold being exported on Saturday on account of the inability of bankers to procure commercial bills to meet the demand for remittances. It is probable, however, that bills against future shipments of grain and cotton may come forward in sufficient quantities to obviate the necessity of gold shipments.

Silver Exports and Imports.

Year.	Exports.		Imports.	
	First six months.	Second six months.	First six months.	Second six months.
1887	\$12,239,994	\$15,405,084	\$7,527,451	\$9,244,963
1888	12,632,865	13,247,540	6,158,506	9,749,163
1889	19,441,708	21,252,522	8,928,752	10,290,510
1890	13,621,407	12,918,372	10,742,474	11,683,645
1891	9,672,606	18,020,273	6,343,235	11,849,515
1892	14,790,286	.....	8,105,571	.....

Domestic and Foreign Coin.

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

	Bid.	Asked.
Mexican dollars.....	\$.67½	\$.68
Peruvian soles and Chilean pesos.....	.62½	.63½
Victoria sovereigns.....	4.90	4.93
Twenty francs.....	3.90	3.93
Twenty marks.....	4.75	4.78
Spanish 25 pesetas.....	4.79	4.81

Copper.—The week has been a rather uneventful one, the market barely maintaining the firmer tone displayed last week, as the moment the speculative support of last week was withdrawn, manufacturers showed still less anxiety to make any purchases. This week the market opened with sellers of spot and future delivery lake at 11½, with buyers, but

for moderate quantities only, at not over 11.70. It is strange that as soon as the speculative element is removed, and notwithstanding the fact that the larger companies are not selling any copper, but holding for prices that are unobtainable, that the market loses all its vigor. We presume this is due to business not being very brisk with manufacturers, who would, no doubt, buy more freely if this was not the case, as the stocks in this country are well on toward 40,000 tons, some 31,000 being held in producers' hands, while the rest is about equally distributed between speculative holders and the fine copper contents of mattes. After all, the most desirable and only effective means of establishing a firmer feeling is the free buying of consumers. Casting copper is unchanged from last week, being freely offered at 10 1/2% delivered, netting refiners but 10%, possibly 9%. Arizona copper is unchanged at 9 1/2%.

The London market has followed much the same course as that here, and the speculative support of last week being withdrawn the market there promptly receded to its previous position, and having opened on Monday at £45 6s. 3d. and £45 16s. 3d. it closes at £44 16s. 3d. and £45 6s. 3d. for spot and futures respectively, manufactured sorts being quotable at: English tough, £46 5s. @ £46 15s.; best selected, £49 @ £49 10s.; strong sheets, £54 @ £54 5s.; India sheets, £52 @ £52 10s.; yellow metal, 5 1/2d.

Messrs. James Lewis & Son make the following report under date Liverpool, July 19th, 1892: The terms of this arrangement that chiefly affect European consumers are the restriction of the American export to Europe to 40,000 tons (exclusive of about 4,000 tons, chiefly in matte, lying in New York, which belonged to the French syndicate), from the 1st inst., and the reduction in the output of the European companies by about 5%, or 3,500 tons. As the exports from the United States for the year 1891 were returned by the Mining Statistical Department of the U. S. Geological Survey as 53,250 tons of 2,240 lbs. and by the ENGINEERING AND MINING JOURNAL of New York as 49,107 tons (though these figures do not agree with the statistics kept by us), the limitation would appear to show a reduction of about 7,000 tons in the average of these two computations, allowing for the export of the 4,000 tons of syndicate stock. This, added to the reduced production of the European companies, would make a total diminution in the supplies for Europe of 10,500 tons during the year ending June 30th, 1893. As during the year 1891 English and French stock decreased 8,863 tons, should the consumption for the next twelve months equal that of the year 1892, stocks promise to steadily diminish if the terms of the "combination" are loyally adhered to.

A meeting of representatives of both European and American producers is to be held in London about the 15th of each month to consider the situation, and regulate the carrying out of the restrictions placed upon them.

Advantage having been taken of the prolonged negotiations by the Anaconda company to produce and ship as much matte as possible, prior to 1st inst., stocks here (which include 5,676 tons of Anaconda matte representing 3,292 tons fine) have increased considerably the past month; but an official announcement was made on the 26th ult. that from the 1st inst. the production would be diminished one-half, and that in the future it would be shipped in the form of bars instead of matte.

From £44 16s. 3d. on the 1st inst. good merchantable copper fell to £44 12s. 6d. on the 4th, advanced to £45 on the 7th, fell again to £44 8s. 9d. on the 13th, and closed to day at £44 13s. 9d. per ton, after 500 tons offered by one seller had been absorbed at £44 12s. 6d. for 9th August, and the equivalent price for later prompts. As stocks have probably reached their maximum and are likely to decrease from this time, the temporary increase of 2,270 tons has had little effect.

A large quantity of syndicate and other lake copper was sold to-day in New York (the former being taken back by the Calumet & Hecla Company) at 11-50 cents per pound, or about £54 12s. 6d. per ton, with 2 1/2% per cent. discount. The stock of copper in the United States on the 1st inst. is declared at 31,800 tons, exclusive of the 4,000 tons of syndicate stock. On January 1st it was given as 33,920 tons.

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

To	Copper Matte.	Lbs.	
To Liverpool.—			
S. S. Adriatic.....	750 bags	85,261	\$43,000
S. S. Aurlandia.....	1,322 "	132,371	15,000
S. S. Kepler.....	1,964 "	190,437	95,000
S. S. Alaska.....	442 " bull.	45,968	15,000
S. S. Tauric.....	45 casks.	56,250	6,188
S. S. Kepler.....	62,324 ingots.	265,504	10,620
To Havre.—			
S. S. La Champagne.....	45 casks	56,250	7,000

tin also opened lower, in sympathy with unfavorable cables from abroad, and by Wednesday had touched 20.40 for spot July and August and 20.70 for September and December. Then came an improvement, the closing price being 20.85 for spot and August, 21.00 for September and 21.20 for the later months of the year. The advance was caused by a similar movement abroad, where it was not so pronounced as here, and although American prices are still below the parity of European, we are getting near a level. The London market shows a net gain of almost £1 for the week, closing at £95 15s. @ £17s. 6d. for both spot and futures, against the opening

figures of £94 15s. @ £17s. 6d. for futures and £94 17s. 6d. @ £95 for spot.

Lead remains very inactive, very little business having been done during the week, probably not more than a couple of hundred tons all told. The bullion quotation remains at 4c., but none of the refiners are selling or rather offering at below 4 1/2c., at which there are no buyers, though there are some at 4 05 @ .07 1/2 for immediate want, which would require several hundred tons. As consumers are not at all well supplied with metal, it is not improbable that we shall see more activity at an early date, though it will not be long lived, supplies being fully adequate. The foreign quotations are the same as last week.

Chicago Lead Market.—The Post, Boynton, Strong Company telegraphs us as follows: "The market has been quiet and dull, with scarcely any business to test values. Latterly 200 tons of desilverized sold at 4c., and at the close 4c. is bid with no takers."

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: "Lead unchanged; retail sales were made at 3 95c. Futures do not seem to be wanted until New York advances. We can scarcely hope for any better values here."

Spelter.—Consumption continuing very good, prices are consequently maintained at 4 80 for August and September and 4 75 for later months. The price abroad for specials is £21.15—and for ordinaries £21 12s. 6d.

Antimony and Nickel.—Remain unchanged.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 29, 1892.

The situation at Pittsburg and Homestead has been aggravated by the attempted assassination of Mr. Frick by an Anarchist. Fortunately Mr. Frick's wounds are not dangerous and the attitude of the Carnegie company has not been changed. Non-union men are entering the works. Operations are now being commenced. As regards the detection of people implicated with the outrage on Mr. Frick, it appears that the police are only on the track of Anarchists and that they do not suspect that any of the ejected workmen were connected with the conspiracy.

Pig Iron.—The following tables give the estimated output of the blast furnaces for the week ending Saturday, July 16th, 1892, and for the first 28 complete weeks of the year 1892 up to and including July 14th, together with the output for the week ending Saturday, July 15th, 1891, and for the first 28 complete weeks of the year 1891 up to and including July 13th, 1891:

ESTIMATED OUTPUT OF BLAST FURNACES FOR WEEKS ENDING JULY 16TH, 1892, AND JULY 15TH, 1891.

	Anthracite.		Coke.		Charcoal.		Total.	
	No. of furnaces in blast.	Output in gross tons.	No. of furnaces in blast.	Output in gross tons.	No. of furnaces in blast.	Output in gross tons.	No. of furnaces in blast.	Output in gross tons.
1892	74	32,000	140	127,000	42	10,700	256	169,700
1891..	92	36,900	152	121,600	51	10,700	295	169,200

ESTIMATED OUTPUT OF BLAST FURNACES IN 1892 AND 1891 FOR FIRST 28 WEEKS UP TO JULY 14TH AND JULY 13TH, RESPECTIVELY.

	Anth'cite.	Coke.	Charcoal.	Total.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
To July 14th, 1892.	1,031,600	3,807,900	300,100	5,139,600
To July 13th, 1891.	1,156,200	2,479,300	308,500	3,944,000

The state of the pig iron market does not show any new feature this week. During the last few weeks, since the Thomas Iron Company published the new scale of prices, there has been a rather firmer feeling in the market. For a time, several buyers, who had been holding aloof for lower prices, came forward and made long contracts, as they considered that the bottom prices had been reached. It now seems as if there were comparatively few buyers of this kind, and that they have all had their wants supplied by this time, for there is really very little forward buying. The majority of business is of a hand to mouth character, and buyers are disinclined to look more than a month ahead in their transactions. This caution is due to the feeling that prices may go lower. This feeling is by no means unreasonable, for though the production of pig iron is decreasing, the consumption is decreasing faster, as may be seen by the accumulation of stocks in makers' hands. The strikes on all sides are causing a great increase in consumption, and many works where there is no great pressure of orders are closing down. Altogether, the demand for pig iron is slackening off, and the consumption is decreasing. However those producers certainly cannot be well acquainted with the market who think that the settlement of prices that came after the action of the Thomas Iron Company a few weeks ago, coupled with the fact that the production is decreasing, is a warrant for them blowing in some more furnaces. Such a proceeding would

be suicidal. The market for Southern irons in this district is not good at present, except in grey forge, and in order to effect sales in this branch a good deal of shading has to be done on the nominal \$13 delivered. It has long been the opinion among pig iron manufacturers here that there can be no profit on Southern iron when it is sold at \$9 a ton at furnace, or \$13 a ton delivered, though the southern companies have persisted in the statement that they are actually making a profit. An agent for a large Birmingham company confessed to us this week that \$9 does not cover cost, and that they are conducting business at a loss. When the companies figure out their estimated balance sheets they ignore allowances for depreciation and incidental expenses; the furnaces are allowed to run without repairs, and a time will come when they will have to be renewed. The expenses then will have to come out of new capital instead of having been distributed through the years as an item of expenditure.

Steel Rails.—We have not heard of any transactions in steel rails during the past week, and there is no new feature of any kind to report. The price is still maintained at \$30 at mill and \$30.75 at tide-water.

Rail Fastenings.—There have been no rates in rail fastenings this week. Prices are as follows: Fish and angle plates 1 55 @ 1 65c. at mill; spikes 1 90 @ 2c.; bolts and square nuts 2 50 @ 2 70c.; hexagonal nuts 2 70 @ 2 80c. delivered.

Tubes and Pipes.—Nothing in the way of new orders are reported this week, and prices are merely nominal.

Merchant Iron and Steel.—The demand for the various classes of merchant iron and steel is regular but fairly dull and there is no variation in prices, which stand as follows: Mushet's special, 48c.; English tool steel, 15c. net; American tool steel, 6 1/4 @ 7 1/2c.; special grades, 13 @ 18c.; crucible machinery steel, 4 75c.; crucible spring, 3.75c.; openhearth machinery, 2 2c.; openhearth spring, 2 50c.; tire steel, 2 25c.; toecalks, 2 25 @ 2 50c.; first quality sheet, 10c.; second quality sheet, 8c.

Structural Material.—The market for all sorts of structural material is becoming very firm and prices are stiffening. On all hands inquiries are coming in and orders are placed in almost every case. The stoppage of mills, especially at Pittsburg and the West, is crowding work into the East. The house-smiths' strike is proceeding here, and it must, of course, have the effect of curtailing the local consumption; but manufacturers say that they do not feel any adverse effects, on account of the general demand being so well sustained. The prices of the various classes of material are given as follows, though in many cases it will be found by new or occasional buyers that rather stiffer prices will be exacted: Beams, 2 2 @ 2 3c.; angles, 2 15c.; sheared plates, 1 90 @ 2 10c.; tees, 2 40 @ 2 60c.; channels, 2 35 @ 2 50c. Universal plates, 2 @ 2 10c.; bridge plates, 2 @ 2 10c., all on dock.

Spiegeleisen & Ferromanganese.—We hear of no notable transaction in ferromanganese during the past week. The price is still quoted by dealers at \$60 @ \$61, though they have to come down to \$59 in order to effect a sale. The most important item relating to spiegeleisen is the sale of 5,000 tons to the Bethlehem Iron Company, but we have not yet been able to ascertain the price.

Buffalo, July 28.

(Special report by Rogers, Brown & Co.)
The dull market reported last week continues to be the principal feature of this territory. Orders are almost entirely confined to carload lots, with an occasional 200 or 300 tons. Foundries are slackening up as usual at this season, and are running on very light stocks. We quote for cash f. o. b. cars Buffalo: No. 1 X Foundry Strong Coke Iron Lake Superior ore, \$15.25; No. 2 X Foundry Strong Coke Iron Lake Superior ore, \$11.25; Ohio Strong Softener No. 1, \$15.50; Ohio Strong Softener No. 2, \$14.50; Jackson County Silvery No. 1, \$17.30; Jackson County Silvery No. 2, \$16.80; Lake Superior Charcoal, \$16.50; Tennessee Charcoal, \$17; Southern Soft No. 1, \$14.50; Alabama Car Wheel, \$19; Hanging Rock Charcoal, \$20.50.

Chicago, July 28.

(From our Special Correspondent.)
It is the general opinion of the trade here that the Homestead trouble has only fairly commenced and promises to be far reaching in its bad influences. Mischief is already brewing in New York relative to handling non-union made material, the switchmen have taken the same matter up in their National Convention at Pittsburg, the several building trades unions here will act as New York mechanics have done,—strike; until really there is apparently no end to the various ramifications the trouble may take. The market here has a subdued tone and in no one line is there any real activity. Increasing quietude characterizes the crude iron trade throughout this vicinity, most of the larger buyers have filled their wants for awhile and many of them for the entire season. There are, however, still a few good inquiries pending for Lake Superior charcoal. For finished material of all descriptions demand is of a light character, and no radical change is looked for until general resumption takes place. The Illinois Steel Company's Bay View rolling mill commenced operations July 5, and the group of mills in vicinity of St. Louis will probably start up next week with the exception of the steel works at

Belleville, which will await the outcome of events at Pittsburg.

Pig Iron.—Lake Superior charcoal iron has developed more strength during the week, and we hear of no contracts for ordinary amounts being placed at less than \$16.50. Many furnaces are oversold and a number of orders for amounts varying from 100 to 350 tons were booked at \$16.50 to \$17.25, the latter being for several hundred tons of high chilling grades. The present outlook for this branch is much more encouraging than during the past few weeks. Local coke iron is in very moderate demand in car lots for early shipment, with an occasional inquiry here and there for a round lot. Consumption continues at a fairly healthy pace, though architectural foundries are running light.

In Southern iron there is no improvement of any kind, demand or price. As regards the latter, the reverse. Most of the sales made are on offers—that is, instead of the seller naming his price, the buyer says I will give you so and so, with no disposition to pay more than he can help. Still, as against this, several good sized orders have been placed, 1,000 to 3,000 tons, chiefly from the implement trade; but the least said about prices the better:

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, \$16.55@17.00; Lake Superior coke, No. 1, \$14.50@15; No. 2, \$14@14.25; No. 3, \$13.75@14; Lake Superior Bessemer, \$16.50; Lake Superior Scotch, \$15.50@16; American Scotch, \$16.75@17.75; Southern coke, foundry No. 1, \$14.75; No. 2, \$13.50; No. 3, \$13.25; Southern coke, soft, No. 1, \$13.50; No. 2, \$13.00; Ohio silveries, No. 1, \$17; No. 2, \$16.50; Ohio strong softeners, No. 1, \$17; No. 2, \$16.50; Tennessee charcoal, No. 1, \$17; No. 2, \$16.50; Southern standard car wheel, \$20@21.

Steel Billets and Rods.—Buyers' views with regard to billets for future delivery are too low to result in much business. We quote \$24@24.25 and \$24.50 on rods, and demand fair.

Structural Iron and Steel.—Prices are moving steadily upward, and some sizes are hard to get at any price. Eastern mills ask and get 2-20c. at mill for beams. Demand fair for all kinds of structural. Regular quotations, car lots f. o. b. Chicago, are as follows: Angles, \$2@2.25; tees, \$2.30@2.40; universal plates, \$1.95@2; sheared plates, \$1.95@2; beams and channels, \$2.25@2.50.

Plates.—Orders are light, and demand from warehouses is only fair, but prices are much more steady than they have been. Steel sheets, 10 to 14, \$2.30@2.40; iron sheets, 10 to 14, \$2.20@2.30; tank iron or steel, \$2.10@2.15; shell iron or steel, \$2.75@3; firebox steel, \$4.25@5.50; flange steel, \$2.75@3.00; boiler rivets, \$4.00@4.15; boiler tubes, 2 1/2 in. and smaller, 60%; 7 in. and upward, 70%.

Merchant Steel.—Specifications on contracts already placed for immediate shipment are numerous, denoting unusual activity in the implement trade. Season's contracts for July have been the largest so far this year. We quote: Tool steel, \$6.50@6.75 and upward; tire steel, \$2.10@2.20; toe calk, \$2.40@2.50; Bessemer machinery, \$2.10@2.20; Bessemer bars, \$1.75@1.80; open hearth machinery, \$2.40@2.60; open hearth carriage spring, \$2.25@2.30; crucible spring, \$3.75@4.

Galvanized Sheet Iron.—Restricted shipments from mills continue greatly to retard business, which would otherwise be excellent. Discounts are steady at 70 on mill lots, and 67 1/2 off on Juniata, and 67 1/2 and 5% off on charcoal from warehouse.

Black Sheet Iron.—Inquiry and demand are improving as mills begin to start up and prices continue steady at 2-90@2-93c. basis of No. 27 Chicago, for delivery before July 1st. Steel sheets are 10c. higher. Dealers quote 3-10@3-20c. from stock same gauge.

Bar Iron.—Numerous small orders from carloads to 200 tons are in the market for prompt delivery and some difficulty is experienced in finding a mill to take care of them at a price which would be acceptable to buyers. We hear of no prices lower than 1-65c. rates, half extra f. o. b. Chicago. Warehouse business is filled at 1-90@2c., and demand good.

Nails.—Demand for steel cut and wire nails is good, and stocks in first hands light. Very few mills are running, and prices are distinctly hardening. Cut are \$1.65@30 cent. average Chicago, and \$1.75 from stock; wire are \$1.70 base in carloads and \$1.80 from stocks in small lots.

Steel Rails.—There is some little inquiry and a few orders were placed during the week, but the tonnage was not heavy. Price steady at \$31@32 mill, according to quantity. Quick shipment orders for angle bars, bolts, etc., are numerous at \$1.70 for iron or steel splice bars; spikes, \$2.05@2.15 per 100 lbs.; track bolts, hexagonal nuts, \$2.65; square, \$2.55.

Scrap.—A sale of 2,500 tons to a mill near here is reported at extraordinary low figures; other than this there is nothing doing. Prices entirely nominal. No. 1 railroad, \$15; No. 1 forge, \$14; No. 1 mill, \$9.50; fish plates, \$17; axles, \$19; horseshoes, \$15.50; pipes and flues, \$7; cast borings, \$6.50; wrought turnings, \$9; axle turnings, \$10.50; machinery castings, \$10; stove plates, \$8.50; mixed steel, \$10.60; coil steel, \$14; leaf steel, \$15; tires, \$14.50.

Old Material.—Holdings are said to be light, demand is ditto, at \$17.75@18 asked; doubtful if consumers would pay more than \$17.50. Old steel rails are dull, at \$11.50@13, as to length, etc. Old car wheels without movement, at \$14.50@14.75.

Louisville.

July 27.

(Special Report by Hall Brothers & Co.)

The market has ruled very quiet during the past week. A few round orders have been offered and for nearby delivery, and the eagerness of some sellers to get business was probably never more thoroughly illustrated. One deal of over 1,000 tons of No. 2 soft and mottled was taken at astonishingly low figures. Others who were willing to sell would not make any concessions whatever in prices. The bulk of trade has been in the line of coke irons; charcoal metals were in light demand.

Hot Blast Foundry Irons.—Southern coke No. 1, \$14@14.25; Southern coke No. 2, \$13@13.25; Southern coke No. 3, \$12.75@13; Southern charcoal No. 1, \$16@17; Southern charcoal No. 2, \$15.50@16; Missouri charcoal No. 1, \$17@17.50; Missouri charcoal No. 2, \$16.50@17.

Forge Irons.—Neutral coke, \$12.50@12.75; cold short, \$12.25@12.50; mottled, \$11.50@12.

Car Wheel and Malleable Irons.—Southern (standard brands), \$20@21; Southern (other brands), \$18.50@19.50; Lake Superior, \$19.50@20.50.

Philadelphia.

July 28.

(From our Special Correspondent.)

Pig Iron.—The crude iron market is in a very unsatisfactory state. More iron is being made than is being melted. The feeling is unsettled. There is no further change in quotations. Orders for 1,000 tons of forge iron are exceptional. Several buyers who have been using small lots of Southern forge propose to use it more largely, and offers have been made by them for large lots at \$13, which figures will probably be accepted as the iron is guaranteed to be first class. Virginia No. 1 has sold as low as \$14.25, and within a day or two numerous offers have been made to furnish good iron at that figure. These offers will probably be accepted. No. 1 Foundry has sold as low as \$14.50. It is said the iron is good. A few lots of hot blast charcoal were sold this week at \$20.

Steel Billets.—Prices have advanced and further advance is predicted. Inquiries are on hand for 8,000 to 10,000 tons, which may turn into orders within 24 hours. Prices will soon be marked at \$26, and nothing less, if that figure is not named already. A very strong feeling exists.

Muck Bars.—A good business has sprung up within three days. Sales of good bars were actually made to-day at \$25. This is a rather high price, and makers are holding off, refusing to accept some of the low offers made.

Merchant Iron.—Quite a good business has been done this week at as high as \$1.80. Country mills are still accepting \$1.70 for what they call refined bars. The improvement is due to the scarcity in the West. How long it will last depends altogether on how things go there.

Nails.—A very good demand for nails is reported by the retailers; wholesalers are doing very little, but as they have had several weeks of good business they can afford to rest.

Sheet Iron.—It is probable that all our sheet mills will run full time for the rest of the year. Concessions have been the rule for three or four months past, but all concessions have been withdrawn. People who want sheet iron, especially soft steel, have to pay pretty near card prices. Some urgent orders were received yesterday. Two big orders have been booked this morning. Things look very good for the sheet iron people, and they all talk that way.

Skelp.—Only one order for skelp has been placed since last week.

Wrought Iron Pipe.—The pipe iron makers are grumbling at everything, and are much discontented over the lagging of orders that they thought assured for the latter part of this month; they decline to express any opinions concerning the future.

Plate and Tank Iron.—Some of the larger orders that have been placed during the year have just been secured. The average advance is one-tenth; there is talk of an advance of another tenth, but it will not likely take place, at least until some 20,000 or 30,000 tons of iron and steel have been contracted for in Eastern mills; after that much business is secured, and there is an abundance of inquiry, then prices may probably be nominally advanced one-tenth.

Structural Material.—The mills here are very busy. Contracts, or what amounts to contracts, for 10,000 tons have been placed since the last report. Several railroad companies are about placing orders. One broker stated to-day that these orders in the aggregate would amount to 13,000 tons, but specifications have not been received for more than one-third that amount, hardly that, but at the same time it looks as though the makers of structural material were about to secure a large amount of business within the next 30 days. Quotations are 1-90 for angles and 2 cents for bridge plates. Orders have been placed for beams and channels at as high as 2-20. It is stated that quotations are now quoted on at an average of 2-30, which statement is given for what it is worth. We can say with certainty that structural quotations are on the advance.

Steel Rails.—There may be a good deal of business in this branch of trade, but the utmost effort consistent with 98° in the shade fails to catch it.

There are rumors that some large contracts will soon be placed, but the parties who ought to know have very little to say.

Old Rails.—Business is dead. Brokers have no stock on hand. If buyers want rails they are willing to undertake to furnish them at \$20.

Scrap.—The same is true of railroad scrap; if buyers want it, they will have to pay about \$17.50 for it.

Pittsburg.

July 28.

(From our Special Correspondent.)

Raw Iron and Steel.—While the demand for iron and steel at certain points shows an increase, it is evident that the total volume of business in the whole country is shrinking on account of the uncertainties attending the labor troubles in the West. A vast amount of business is said to have been transferred from one section to the other, giving an appearance of activity which is not confirmed by the action of buyers, who seem disposed to await a more settled condition of the market. The inquiry, under the circumstances, was fair, and prices of standard grades were maintained, although a good deal of Southern iron has been placed at various points under circumstances that indicate very close calculations.

Sellers of Northern iron are not disposed to make long engagements at present prices, having an abiding faith that bottom prices have been reached; buyers are looking about cautiously. As indicated in our last statistics of unsold pig iron show very little change in amount from the figures of April 1st. The heavy production during the first half of the present year, and the fact that stocks of pig iron are not much above a month's supply, shows that, notwithstanding the depressed condition of trade, consumption during the present year has been particularly heavy.

The sales of iron and steel reported in these columns since the first of the month seem to indicate that the large consumers have about made up their minds that prices are not expected to go any lower, and that it would be good policy to provide for late summer and fall requirements while the opportunity for selection is yet at the flush. There is time enough still to inquire around and make selections. Delays may prove expensive, nevertheless careful buyers who consider quality as well as price are making contracts.

Taking into consideration that the gross outputs are steadily diminishing, and as curtailment of production is the remedy against the evil that has been depressing prices, it is not improbable that values will appreciate in the autumn. No intelligent person will attempt to create the impression that prices may advance to any considerable extent during the balance of the current half year, but the experience of the last two years has been severe enough in its disciplining purposes and depressing influence to cause the iron men to realize that small favors are worth consideration.

The disagreement about the iron scale continues. As the meetings are held with closed doors no correct information is obtainable, only so far as can be ascertained, there seems to be little prospect of arriving at a satisfactory arrangement unless liberal concessions are made by both parties.

Values show scarcely any change, sales, generally, being confined to limited amounts for immediate use or prompt delivery. The following sales will show the condition of the market.

Coke Smelted Lake and Native Ores.

2,500 Tons Bessemer, Wheeling	13.85 cash.
1,500 Tons Grey Forge	12.75 cash.
1,000 Tons Bessemer	14.00 cash.
1,000 Tons Bessemer	14.00 cash.
1,000 Tons Grey Forge	12.75 cash.
600 Tons Bessemer, November	14.25 cash.
500 Tons Bessemer	14.00 cash.
500 Tons Grey Forge	12.75 cash.
500 Tons Grey Forge	12.75 cash.
300 Tons No. 3 Foundry	13.00 cash.
300 Tons Grey Forge	12.75 cash.
200 Tons No. 1 Foundry	14.75 cash.
150 Tons No. 2 Foundry	13.50 cash.
100 Tons No. 1 Silvery	16.50 cash.
100 Tons Open Mill	12.00 cash.
100 Tons Special Bessemer	15.00 cash.
100 Tons White Iron	12.25 cash.

Steel Slabs and Billets.

2,000 Tons Billets Sept., Oct., at Maker's Mill	24.00 cash.
1,000 Tons Slabs Aug., Sept., Oct., at Mill	24.00 cash.
1,000 Tons Steel Billets, July, August	24.00 cash.
900 Tons Billets Aug., Sept., at Mill	23.50 cash.
500 Tons Billets Aug., Sept., at Mill	23.50 cash.
500 Tons Billets July, Aug.	21.00 cash.

Charcoal.

100 Tons Extra Cold Blast	26.50 cash.
100 Tons No. 2 Foundry	19.50 cash.
75 Tons No. 1 Foundry	20.00 cash.
50 Tons Warm Blast	18.50 cash.

Ferro-Manganese.

200 Tons 80% Foreign, delivered Wheeling	59.75 cash.
--	-------------

Muck Bar.

500 Tons Neutral July	24.75 cash.
400 Tons Neutral prompt	24.75 cash.

Steel Skelp.

450 Tons Wide Grooved	145 4m.
-----------------------	---------

Steel Wire Rods.

385 Tons American Fives, July, at Mill	32.35 cash.
--	-------------

Spelter.

80 Tons Spelter	4.68 cash.
75 Tons Spelter	4.67 1/2 cash.

Old Iron and Steel Rails.

2,000 Tons Old Iron Rails Del. Youngstown, O.	19.50 cash.
1,000 Tons Old Steel Rails	15.25 cash.
500 Tons Old Steel Rails	15.50 cash.

Scrap Material.

400 Tons Scrap Steel, special, gross	18.25 cash.
300 Tons Cut Pipe and Tank Iron, net	13.50 cash.
200 Tons Open Hearth Steel, gross	15.00 cash.
200 Tons No. 1 R. R. W. Steel, net	14.25 cash.
200 Tons Cast Borings, gross	7.50 cash.

NEW YORK MINING STOCKS QUOTATIONS. DIVIDEND-PAYING MINES. NON-DIVIDEND-PAYING MINES.

Table with columns for Name and Location of Company, dates from July 23 to July 29, and Sales. It lists various mining companies like Adams, Alice, Amador, etc., and their stock prices.

*Ex-dividend. †Dealt at in New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 7,450. Non-dividend shares sold, 10,550. Total shares sold, 18,000.

BOSTON MINING STOCK QUOTATIONS.

Table with columns for Name of Company, dates from July 22 to July 28, and Sales. It lists mining companies like Atlantic, Bodie, Bonanza, etc., and their stock prices.

Dividend shares sold, 8,443. Non-dividend shares sold, 3,468. Total shares sold, 11,911.

COAL STOCKS.

Table with columns for Name of Company, dates from July 23 to July 29, and Sales. It lists coal companies like Cambria Iron, Cameron Coal, etc., and their stock prices.

Total shares sold, 132,842.

San Francisco Mining Stock Quotations.

Table with columns for Names of Stocks, dates from July 22 to July 28, and Closing Quotations. It lists mining stocks like Alpha, Alta, Belcher, etc., and their closing prices.

DIVIDEND-PAYING MINES.

NON-DIVIDEND PAYING MINES.

Main table with columns: NAME AND LOCATION OF COMPANY, CAPITAL STOCK, SHARES, ASSESSMENTS, DIVIDENDS, and NAME AND LOCATION OF COMPANY, CAPITAL STOCK, SHARES, ASSESSMENTS. Lists 154 dividend-paying mines and 154 non-dividend-paying mines.

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid \$1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid \$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 \$11,000,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August 1885, the Copper Queen had paid \$1,350,000 in dividends. †† This company paid \$190,000 before the reorganization in 1880. ‡‡ This company acquired the property of the Raymond & Ely Company, which had paid \$3,075,000 in dividends. **** Previous to this company's acquiring Northern Belle, that mine declared \$2,400,000 in dividends, against \$425,000 in assessments.

STOCK MARKET QUOTATIONS.

Aspen. July 23. The closing quotations were as follows: Agnes C., Argentinum Junlata, Aspen Deep Shaft, Aspen Contact, Best Friend, Bimetallic, Bushwacker, Carbonate Chief, Empire Champion, Justice, Little Annie, Mollie Gibson, Nolan Creek, Park, Mamie & Queen, Pontiac, Sheep Mountain S. & M. Co, Suugruler, St. Joe & Mineral Farm, Yellow Boy.

Baltimore, Md. July 27.

COMPANY. Bid. Asked. Atlantic Coal, Balt. & N. C., Big Vein Coal, Conrad Hill, Cons. Coal, Diamond Tunnel, George's Creek Coal, Lake Chrome, Maryland & Charlotte, North State, Silver Valley.

Pittsburg, Pa.

Prices biggest and lowest for the week ending July 23:

COMPANY. H. L. Allegheny Gas Co., Bridgewater Gas Co., Chartiers Val. Gas, Columbia Oil Co., Consolidated Gas Co., East End Gas Co., Fisher Oil Co., Forest Oil, Hazlewood Oil Co., Hidalgo Mining Co., La Noria Mining Co., Luster Mining Co., Mansfield C. & C. Co., Manufacturers Gas Co., Nat. Gas Co. of W. Va., N. Y. & Cleve. Gas Coal Co., Ohio Valley Gas Co., Pennsylvania Gas Co., People's Natural Gas Co., People's N. G. & P. Co., Philadelphia Co., Pine Run Gas Co., Pittsburg Gas Co., Red Cloud Mining Co., Silvertown Mining Co., South Side Gas Co., Sterling Silver Mining Co., Tuna Oil Co., Union Gas Co., Washington Oil Co., W. Moreland & Camb., Wheeling Gas Co., W. House E. Light, W. House Air Brake Co., W. House Brake Co., Ltd.

Deadwood. July 23.

Bullion, Caledonia, Calumet, Cambrian, Carthage, Cora, Deadwood Terra, De Smet, Double Standard, Elk Mountain, Emmett, Equitable, Florence, Golden Reward, General Merritt, Harmony, Hester A., Homestake, Hermit, Iron Hill, Isadorah, Maggie, Monitor, Rainbow, Retriever, Ross Hannibal, Ruby Bell, Ruby Wilkes, Seabury-Calkins, Silver Queen, Spanish R., Steam, Tornado.

St. Louis. July 27.

The closing quotations were as follows:

Adams, Colo., American & Nettie, Colo., Bi-Metallic, Mont., Central Silver, Elizabeth, Mont., Granite Mountain, Mont., Leo, Little Albert, Montrose Placer, Colo., Mickey Breen, Pat Murphy, Colo., Silver Age, Silver Bell, Small Hopes, Colo., Yuma, Ariz.

Helena, Mont.

(Special report by SAMUEL K. DAVIS.) Prices highest and lowest for week ending July 23:

Bald Butte (Mont.), Benton Group, Mont., Bi-Metallic, Mont., California (Castle), Mont., Champaign (Oro Fino), Mont., Combination (Phillipsburg), Mont., Copper Bell (Catact), Mont., Cornucopia, Mont., Cumberland (Castle), Mont., Elizabeth (Phillipsburg), Mont., Florence (Neilhart), Mont., Fourth of July, Wash., Georgary (Butte), Mont., Helena & Victor, Mont., In re sol, Mont., Iron Mountain (Missoula), Mont., Iron Pine Consolidated, Mont., J. ne Pine Consolidated, Mont., J. olar (Beaverhead Co.), Mont., J. oorman (Coeur d'Alene), Idaho, J. uen of the Hills (Neilhart), J. uthern Cross (Deer Lodge), Mont., A bitlack Union & MacIntyre, J. ellowstone (Castle), Mont.

Foreign Quotations.

London. July 16.

Alaska Treadwell, Amador, Cal., American Belle, Colo., Appalachian, N. C., Can. Phosphate, Can., Colorado, Colo., De Lamar, Idaho, Dickens Custer, Idaho, Eagle Hawk, East Arevale, Idaho, Eberhardt, Nev., Elkhorn, Mont., Elmore, Idaho, Emma, Utah, Esmeralda, Nev., Flagstaff, Utah, Garfield, Nev., Golden Feather, Cal., Golden Gate, Cal., Golden Leaf, Mont., Golden River, Cal., Idaho, Jay Hawk, Mont., Josephine, Cal., Kohinoor, Colo., La Luz, Mex., La Plata, Colo., La Valera, Mex., Maid of Erin, Colo., Mammoth Gold, Ariz., Mount McClellan, Montana, Mont., Mona Lake Gold, New California, Colo., New Consolidated, New Eberhardt, Nev., New Gold Hill, N. C., New Guston, Colo., New Hoover Hill, N. C., New Russell, N. C., New Viola, Idaho, Old Lout, Colo., Parker Gold, N. C., Pittsburg Cons., Nev., Poorman, Idaho, Plumas Eureka, Cal., Plumas Con., Nev., Ruby, Nev., Sam Christian, N. C., Sierra Buttes, Cal., Plumas Eur., Cal., Silver King, United Mexican, Mex., West Argentine, Colo., Yankee Girl, Colo.

Paris. July 16.

East Oregon, Ore., Forest Hill Divide, Cal., Golden River, Cal., Laurium, Greece, Lexington, Mont., Nickel, New Caledonia, Rio Tinto, Spain, Tbarsis, Spain, Vieille-Montagne, Belgium.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified. Acid-Acetic, No. 8, pure, 1,040, Hydrobromic, dilute, U. S. P., Hydrocyanic, U. S. P., Hydrofluoric, Alcohol-95%, Ammoniated, Alum-Lump, Alum-Chloride, Amalgamating solution, Sulphate, Ammonia-Sul., Carbonate, English and German, Muriate, white, in bbls., Aqua Ammonia, Antimony-Oxymur, Regulus, Argeis-Red, powdered, Arsenic-White, powdered, Red, Yellow, White at Plymouth, Asbestos-Canadian, Italian, Ashes-Pot, 1st sorts, Pearl, Asphaltum-Prime Cuban, Hard Cuban, Trinidad, refined, Egyptian, Californian, at mine, at San Francisco, Barium-Carbonate, pure, Carbonate, commercial, Chlorate, crystal, Chloride, commercial, Iodide, Iodate, Sulph., Am. prime white, Sulph., foreign, floated, Sulph., off color, Carb., lump, f. c. b. L'pool, No. 1 Casks, Runcorn, No. 2 bags, Runcorn, HauXite, Bichromate of Potash-Scotch, American, Bichromate of Soda, Borax-Refined, San Francisco, Concentrated, in car lots, Refined, Liverpool, Bromine, Cadmium Iodide, Chalk, Precipitated, China Clay-English, Domestic, Chrome Water, Chrome Yellow, Chrome Iron Ore, Francisco, Chromalum-Pure, Commercial, Cobalt-Oxide, Copper-Sulph. English Wks, Vitriol (blue), ordinary, extra, Nitrate, Copperas-Common, Best, 100 lbs., Liverpool, ton, in casks, Corundum-Powdered, Flour, Cryolite-Powdered, bbl. lots, Emery-Grain, Flour, Epsom Salt, Feldspar-Ground, Crude, Fluorspar-Powdered, No. 1, French Chalk, Fuller's Earth-Lump, Glauber's Salt, in bbls., Glass-Crown, pure, crystals, Gold-Chloride, pure, crystals, pure, 15 gr., c. v., doz., a. v., doz., Chloride and sodium, Oxide, Gypsum-Calcined, Land Plaster, Iodine-Resublimed, Iron-Nitrate, 40%, Kaolin-See China Clay, Kieserite, Lead-Red, White, American, in oil, White, English, Acetate, or sugar of, white, Granulated, Nitrate, Lime Acetate-Am. Brown, Litharge-Powdered, English flake, Magnesite-Crude, ton of 1,015 kilos, Calcined, ton of 2,240 lbs., Brick, ton of 2,240 lbs., Manganese-Ore, per unit, Oxide, ground, Mercuric Chloride-Corrosive, Sublimated, Powdered.

Marble Dust, Metallic Paint-Brown, Red, Mineral Wool-Ordinary slag, Ordinary rock, Groun, Mica-In sheets according to size, 1st quality, Naphtha-Black, Nitre Cake, Ochre-Rocbelle, Washed Nat Ox'rd, Lump, Washed Nat Ox'rd, Powder, Golden, Domestic, Oils, Mineral-Cylinder, light filtered, Dark filtered, Extra cold test, Dark steam refined, Phosphorus-Red, white, Plumbago-Ceylon, American, Potassium-Cyanide, Bromide, domestic, Chlorate, English, Chlorate, powdered, English, Carbonate, lb., by casks, Caustic, lb., pure slick, Nitrate, refined, Bichromate, Yellow Prussiate, Red Prussiate, Pumice Stone-Select lumps, Original cks., Powdered, pure, Pyrites-Non-cupreous, p. units, Quartz-Ground, Kotten Stone, Powdered, Lump, Original cks., Rubbing stone, Sal Ammoniac-lump, in bbls., Salt-Liverpool, ground, sack, Domestic, fine, Common, fine, Turk's Island, Salt Cake, Salt-peter-Crude, Soapstone, Sodium-Prussiate, Pbosphate, Stannate, Tungstate, Hyposulphite, in casks, Strontium-Nitrate, Sulphur-Roll, Flour, Sylvinit, 23 2/7%, S. O. P., per unit, Talc-Ground French, American No. 1, Terra Alba-French, English, American, No. 1, American, No. 2, Tin-Crystals, in kegs or bbls., feathered or flossed, Muriate, single, Double or strong, 54° B., Oxy. or nitro, Tin Plates, box, Swansea, best, barcoal, best coke, Vermilion-Imp, English, Am. quicksilver, bulk, Am. quicksilver, bags, Chinese, Trieste, American, Zinc White-Am., Dry, Antwerp, Red Seal, Paris, Red Seal, Muriate solution, Sulphate crystals, in bbls., THE RARER METALS, Aluminum, Arsenic, Barium, Bismuth, Cadmium, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Glucinum, Indium, Iridium, Lanthanum, Lithium, Magnesium, Manganese, Molybdenum, Niobium, Osmium, Palladium, Platinum, Potassium, Rhodium, Ruthenium, Rubidium, Selenium, Sodium, Strontium, Tantalum, Tellurium, Thallium, Titanium, Thorium, Tungsten, Uranium, Vanadium, Yttrium, Zirconium.