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The Montana copper companies continue actively at work in spite of the low price of the metal. All of them have suffered somewhat this spring from irregular transportation and delays in receiving fuel and other supplies, caused by railroad strikes and flood damages, but their output, though not reported in detail, is said to be fully up to that of last year, with prospect of an increase in the later months of the year. The new reduction works of the Boston & Montana are running steadily, and apparently with success. All of the companies are doing some new exploration and development work in their mines with a view to fully maintaining their large production.

The silver mines of the Cœur d'Alene district have continued to suffer from the low prices of lead and silver, and have also been unfortunate this year in other respects. The unusually heavy snows of the later winter months were unfavorable to their work, and now the great floods which have done so much damage throughout Montana, Idaho and Washington have affected them also. Not much damage has been done to any of the mines directly, but there have been heavy losses in the shape of stocks of timber and firewood carried away, supplies lost, interruption of communications and other indirect ways. Only the larger mines have kept at work, and in some of them expenses have been increased by an unusual flow of water, requiring extra pumping to keep them clear.

The number of miners employed does not now differ greatly from last fall, few changes having been made since then. There has been a considerable decrease in the number of men in the district, however. Not many have gone to other points, since the prospect of employment was not great; but others are trying their luck this spring at placer mining, and some have sought other work. The present situation cannot be called promising, but it is probable that there will be no more shut-downs at present, and that the mines now in operation will continue so for the summer, at any rate.

Late advices from Chile state that the work on the buildings for the mining exposition in September is well advanced and that the prospect is that all the arrangements will be completed in good time for the opening. Many exhibits are promised, and there is every reason to expect that the exhibition will be a successful one. Our manufacturers will do well to remember the opportunity given them to present their machinery to several communities which promise to be large buyers in the future. Chile and Bolivia are mining countries, but in both of them the introduction of improved machinery and appliances is still of comparatively recent date, and much of the work is still done in the old and primitive fashion. Their mineowners are on the lookout for better methods, however, and their trade promises to be large and important. Much the same thing can be said of Peru, whose people will doubtless be present at the exposition in considerable numbers. The western section of the Argentine Republic, bordering on the Andes, has possibilities as a mining country, the extent of which is hardly known as yet, but which will be developed before many years, as railroads and population are beginning to reach the region. All these markets are open to us if our people will make the proper exertions; and a full representation at this exposition is one of the best steps toward making ourselves known.

THE PIG IRON OUTPUT.

The effect of the coal miners' strike upon iron production shows very fully in the June statements of the blast furnaces. On May 1st there were 124 furnaces active with a total weekly capacity of 107,385 tons of pig iron. On June 1st the returns show that during the month more than one-third of these furnaces were compelled to stop from inability to procure fuel. The figures for the latter date are 91 furnaces in blast, with 63,970 tons weekly capacity. The greatest decrease is, of course, shown in the bituminous coal and coke furnaces, the number of which drops from 71 to 41 and their weekly output from 85,670 to 47,690 tons, a reduction of 44.3 per cent., but there is also a marked decrease in the anthracite furnaces, a number of which use a proportion of coke with their hard coal.

So great and sudden a drop in production, proceeding from such a cause and not from a cessation of demand, ought to have a marked effect on prices. It has caused some change, but not so great as might have been expected, probably because both buyers and sellers have believed that the small output would be temporary only, and that many furnaces would resume within a short time. They have been justified in this belief, although the strike has lasted longer than was generally expected, and is not yet by any means entirely settled. Even if work should be generally resumed at once, it would take a little time for the mines to resume full shipments and for supplies of fuel to reach the furnaces. It is altogether probable that the production for the present month will be even less than the figures given above indicate, and that the July returns will show only partial restoration.

With the decrease in output shown, it is quite natural that there should be a diminution in stocks, and the furnace reports show that the iron on hand June 1st was less by 30 per cent. than on May 1st, the figures being

635,000 and 880,000 tons, respectively. All our market reports show that this draft continues, and the stocks of iron are probably lower than at any time for years past. Moreover, the figures given above do not give the entire decrease, since they do not include the stocks of the large steel companies; and these have all been considerably lowered.

The present state of affairs has brought about some curious conditions. Among these have been some shipments of iron to Pittsburg from a Lake Superior charcoal furnace; and there have been other unusual sales and shipments of a similar kind.

The stoppage of work has not, it may be noted, had much apparent effect on the market for ores, for the reason given above, that no one has expected it to be more than temporary. The shipments of ore from Lake Superior so far this season have been larger than had been anticipated, and sales of such ores continue to be reported without interruption.

WORLD'S PRODUCTION OF GOLD AND SILVER.

On another page we make some extracts from the forthcoming report of the Director of the United States Mint, for advance copy of which we are indebted to the courtesy of Director R. F. Preston.

Mr. Preston is a very painstaking and conscientious statistician, as is evident from the great care he has taken in collecting and analyzing the statistics of the precious metals; and the frank honesty with which he corrects his own statistics when satisfied that he has secured greater accuracy, adds to the confidence we place in his returns.

The statistician who is unwilling to correct errors in the reports he has issued, lest the public should consider his work inaccurate, adopts the most certain method for destroying confidence in all he may do. No statistics are absolutely and mathematically accurate, and the industrious and honest statistician will always correct his figures to conform with fuller information.

Mr. Preston has made an important change in the report of the production of silver in the United States in 1892, which he now makes 63,500,000 oz. instead of 58,000,000 oz., as stated in the previous mint report. This increase of 5,500,000 oz. brings the mint estimate within 1,500,000 oz. of the figures (65,000,000 oz.) given in "The Mineral Industry," and thus confirms our figures to that extent.

Director Preston makes also some well founded corrections in the figures of production of China, Mexico, Germany, etc., and the care evidenced in his treatment of these reports adds to our confidence in his general results.

Mr. Preston calls attention to the World's large output of gold, and because this equals the aggregate production of gold and silver thirty years ago argues that this will provide enough for the world's coinage requirements and will thus settle the question of bimetallism.

We think this conclusion altogether unwarranted. The enormous expansion of business in the past 30 years created a need for more money, which absorbed the vast production of silver without inconvenience until Germany started the depreciation of the metal by curtailing its uses and overstocking the market. Since the partial demonetization of silver there has been an increasing demand for gold, which has appreciated its value,—that is, has depreciated the value of everything measured by it.

The need for bimetallism is not solely because the quantity of gold produced is not sufficient to prevent the great appreciation in its value and the consequent evil effects which accompany steadily decreasing prices of everything, but it is also due to the necessity to protect the value of the money of two-thirds of the human race. Changes in the value of the standard should be made very gradually so as not to disturb industries, and even if the amount of gold produced were sufficient for the coinage needs of the world, or if we could find out how to do without gold at all, we maintain that the change should be made very gradually and that while it is being made bimetallism is necessary.

Mr. Preston furnishes much matter in his report that will create discussion and promote knowledge, but we cannot agree with him that the question of bimetallism is being settled by our increase in gold production.

THE AMY AND SILVERSMITH DECISION AGAIN.

In the Albuquerque, N. M., *Daily Citizen* of May 19, appears a well-written article by Mr. A. W. Harris, entitled "Law of Apex," protesting against the above decision of the United States Supreme Court as both novel and unreasonable. The court having refused to reconsider its opinion, a further discussion of it is in some respects useless; but it seems to me worth while, nevertheless, to correct honest misconceptions concerning it, and particularly the error into which Mr. Harris, with others, has fallen, in asserting that the late decision "upsets all practice that has heretofore prevailed in mining jurisprudence."

Mr. Harris mistakenly assumes that this decision, in which the well-known *Elgin* case is incidentally cited, is based upon the ruling in that

case. For it is in fact, as I have taken occasion heretofore to show, a simple application of the principle laid down in the *Flagstaff* case, one of the first that ever came before the United States Supreme Court under the present law.

But he also misunderstands the *Elgin* case, in saying that "it was never intended" by that opinion "to do anything but limit the locator's rights on the strike; to compel him as a consequence to submit to a drawing in or modification of his surface area."

It is difficult to perceive how he arrives at this view of the decision to which he refers. For, in that case, the defeated party was not compelled to submit to any modification, and was not permitted to make any modification of its surface area, but was forbidden to "follow the lode existing therein in its downward course beyond the lines of the claim." The ground in controversy was on the dip of the vein, beyond the lines of the apex-locator; and the extralateral right on the dip—not an atom of length on the strike—was denied by the reason of the position of those lines.

But it is not in this respect that the *Elgin* decision resembles the *Amy and Silversmith*. For the latter does not deny the extralateral right. It simply (following the old and universally accepted *Flagstaff* decision) declares that the end-planes bounding that right must be those which the locator originally fixed by his location. The similarity between the two cases lies in the principle, common to both, that the locator must abide by the legal effect, whatever it may be, of the lines he has himself established, and that the Court cannot step in at any subsequent period and change those lines, to the injury of other claimants, because the locator has discovered that they do not secure to him all that he expected.

Mr. Harris forcibly states a hypothetical case, in which "the energetic prospector, after weary toil," discovers a lode, at the only point where it comes to the surface, and, being too poor to ascertain its true course, makes a location to the best of his ability. "Years roll on," and "it proves that he has located practically along the strike of the vein"; but at last, after he has extracted large bodies of ore beyond his side-lines, "work in another direction, pursued to within a few feet, or even a few inches, of the end of his line, suddenly discloses a deviation or curve in his apex," and he is "deprived of all his apex and lode-rights."

There is no similarity between this hypothetical case and the facts set forth by the *Amy and Silversmith* record, in which it appears that the lode crosses the location in a straight line, from side to side, and does not extend for a single foot either way from the discovery-shaft in the direction toward the nominal end-lines.

But it cannot be denied that cases involving hardship to the locator may arise under any construction of the law. It is a bad law; and it ought to be abolished. Yet, while it exists, the courts are bound to administer it; and of all the constructions which can be put upon it, that one which holds the locator to the consequences of his own acts is the fairest for all concerned.

For the theory, and the only justification, of the law is, that the United States grants certain exceptional privileges to lode-miners, for the purpose of encouraging that industry. This purpose would not be served by giving unlimited or undefined rights to the first locator in a given district, and making it impossible for the next comer to find out what his rights were going to be.

Let me match Mr. Harris's hypothetical case with another. A has discovered a lode at one point, and has staked and recorded a location, which he thinks will cover its strike for 1,500 ft. But he is too poor to trace it, or he does not know that it comes elsewhere to the surface, or the ground is covered with snow, so he does his annual "assessment-work" wherever it becomes handy, and rests on his acquired rights. B comes later, and, exploring outside of A's location, finds the apex of a lode crossing one of A's side-lines. As A has never traced it, and no one else can do so within A's ground, B cannot know that it is the lode shown in A's discovery shaft. At all events, he has found an apex in unoccupied public land; and he proceeds to trace it for 1,500 ft., and make a location on it, using A's side-line as one of his end-lines, and drawing the other end-line parallel thereto.

Now, must "years roll on" before B can discover whether his complete compliance with the law has given him any right to the vein he has located? And after years have rolled on, if A, tracing at last the course of his lode, should claim a right in B's ground, although his original boundary was a notice to B and all the world that he did not claim such a right, is it just that B shall be punished for A's blunder, or is it likely to encourage the mining industry to let B and C and D understand that their supposed rights are liable to readjustment at any time, to correspond with A's intentions, though these may have been contrary to his acts?

This question seems to be answered in the *Flagstaff* decision, which has stood for nearly twenty years as the acknowledged and controlling construction of the law. In that case, referring to a locator who might "make his location crosswise of a vein," the Court said, "If he does locate his claim in that way, his rights must be subordinated to the rights of those who have properly located on the lode."

R. W. RAYMOND.

NEW PUBLICATIONS.

TEMPERA E CEMENTAZIONE. Per l'Ingegnere Stanislao Fadda. Milan, Italy; Ulrico Hoepli. Pages 102; illustrated.

This is a convenient little manual, prepared for Italian metallurgists, on the hardening and heat treatment of steel. It gives the accepted practice in different countries, with many rules and directions, quoting the latest authorities and referring the reader to the sources where more extensive discussions of the subject may be found. It is one of a series of similar manuals issued by the same publisher; the general plan of the series seems to be a very good one.

BOOKS RECEIVED.

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

Electricity, One Hundred Years Ago and To-day. By Edwin J. Houston, Ph. D. New York; The W. J. Johnston Company, Ltd. Pages 199. Price \$1.

Practical Instructions in Quantitative Assaying with the Blowpipe. By E. L. Fletcher, U. S. A. New York; John Wiley & Sons. Pages 142. Illustrated. Price, \$1.25.

Annual Report of the Consolidated Stock and Petroleum Exchange of New York for the Fiscal Year Ending May 31st, 1894. New York; published by the Exchange. Pages 68.

The Metallurgy of Gold. By T. Kirke Rose, B. Sc. Edited by Prof. W. C. Roberts-Austen. London: Charles Griffin & Co., Ltd.; Philadelphia, J. B. Lippincott Co. Pages 449. Illustrated. Price \$6 50.

The Minerals of Southern Africa. By Cuninghame Wilson-Moore, F. G. S., and W. H. Carrington Wilmer. Johannesburg, South Africa; The Argus Printing and Publishing Company. Pages 119.

Annual Report of the Department of Mines and Agriculture of New South Wales for 1893. H. Wood, Under-Secretary for Mines and Agriculture. Sydney, New South Wales; Government Printer. Pages 144; with maps and diagrams.

Monographs of the Gold Belt. Condensed from contributions to the "Herald-Democrat," by mining engineers of national repute. Compiled by C. H. Morse. Leadville, Colo.; published for the Leadville Chamber of Commerce. Pamphlet, pages 24; with sectional and topographical maps.

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.

Tungsten Steel.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Referring again to the question of tungsten in steel, I fear my statement may be misleading when I called the works in which this material was made *les Forges d'Alsace*. I should have said what are now so called; but when I was at the works, which then and now belong to the de Dietrich company, the works were called *Forges du Bas Rhin*. It was these, together with the new works of de Dietrich built at Luneville, near Nancy, since Alsace became a German province, which now constitute the Forges d'Alsace. I was engaged at the Forges du Bas Rhin.

E. GAUJOT.

"The Mineral Industry," Vol. II., 1893.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: We are greatly pleased with the second volume of the "Mineral Industry." It is exceedingly interesting.

NEW YORK, June 2, 1894.

FUERST BROS. & CO.,
Dealers in Chemicals.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: We think "The Mineral Industry" does you great credit, and congratulate you upon it.

ITHACA, N. Y. June 2, 1894.

WILLIAMS BROS.
Manufacturers Agricultural Implements
and Machinery.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I am just in receipt of the second volume of the "Mineral Industry." There is little need of telling you how much I value it. I congratulate you on its completeness and reliability.

NEW BRUNSWICK, N. J., June 4, 1894.

FRANK L. NASON,
Mining Engineer.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Please accept my thanks for the "Mineral Industry" for 1893, which you have so kindly sent me. It is very refreshing to have a book of this kind that one can depend upon appearing regularly, especially when one takes into consideration the enormous amount of work that the publishing of such a volume entails.

NEW YORK, June 1, 1894.

H. J. DAVIS,
Davis Sulphur Ore Company.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I beg to acknowledge receipt of the second annual volume of the "Mineral Industry." It is difficult to express an opinion of a volume that stands in a class by itself. No work that I know of is anything like so timely and so thorough as this volume.

NEW YORK, June 2, 1894.

C. W. HUNT, President C. W. Hunt Company,
Manufacturers Coal Handling Machinery.

The Iron Ores of North Carolina.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In an article in your issue of the 25th ult., written by Dr. W. B. Phillips, relating to the iron ores of the State of North Carolina, there are statements I deem misleading, and I would like to call attention to them. Dr. Phillips takes as his text Mr. H. B. C. Nitze's report, and says: "It may be that there are ores in other parts of the State that will become available for the furnace, but just at present, and it seems to me for some time to come, the only ores that deserve a more careful consideration are found in the western part of the State. They are nearer the supply of fuel, are of purer quality, and the iron made from them would be nearer the only market it could reasonably hope to secure." Now, H. B. C. Nitze reports that there are four general trends of iron ore, clearly and satisfactorily defined, that pass diagonally across the State southeast of the Cranberry iron ores, and any of them contains more available iron ore than the Cranberry. The first trend, across the eastern end of the State, includes Gaston, Chatham, Orange and Granville counties. The ores are magnetic, specular and limonite. The quality is above the average of the Cranberry and has not one-third of the percentage of silica in the latter. The second trend is the titaniferous belt, which carries a high percentage of metallic iron with a minimum of impurities, but its high contents of titanium makes it unavailable in present blast furnace practice. The third trend is the magnetic ores fully exposed at Danbury, Pilot Mountain, Rockford and at many other points farther down the State. This ore averages higher in metallic iron, and lower in silica, phosphorus and sulphur than the Cranberry, and can be more cheaply mined. The measures vary in thickness from 4 to 30 ft., and increase in uniformity as greater depth is attained.

The fourth trend, and that which lies next to and immediately in front of the Cranberry, is composed largely of brown hematite ores, and passes down through the State, going out through Cherokee County. These iron ores trend parallel to each other, and are crossed three or more times each by railroads converging at Greensboro, N. C., where there is a blast furnace with a capacity of 125 tons.

The furnace company expects to put its ore at the furnace for 90 cents per ton. Two tons will produce one ton of iron. Dr. Phillips virtually acknowledges that it takes three tons or over of the run of the Cranberry ores to make a ton of iron. The higher silica and low iron in Cranberry ore necessitate a greater quantity of fuel than the ore to be used by the North Carolina Steel and Iron Company at Greensboro. While Cranberry is about 10 miles nearer the Flat Top coalfield than Greensboro, it has a single spur road from Johnson City, 34 miles, with heavy grades, that more than make up the difference of 10 miles.

J. D. KASE.
GREENSBORO, N. C., June 3, 1894.

The Spelling of the "Mesaba" Range.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Referring to your editorial of last week in the matter of the spelling of the "Mesaba." I have seen no less than 25 different spellings of the word, varying from that above to the most impossible and fantastic. The spelling as here is generally used locally, the Minnesota State geological reports use "Mesabi," though these reports (see 15th annual) give "Missabe," as the Indian name; the Merritts named their railroad Duluth, "Missabe" & Northern, and one of their mines "Missabe," because they believed that to be nearer the Ojibwa pronunciation. "Missaba," "Massaba" and "Messabe" are all among the possible methods. I think that perhaps the letters "Messabha" more correctly voice the Indian sound than any other combination. "Mesaba," however, seems to have more general acceptance than any other usage, and custom, after all, is the only method of determining the spelling of any such derivative.

DULUTH, June 4, 1894.

D. E. W.

In response to the article noted by our correspondent the Cleveland "Iron Trade Review" says: "The Geological Survey of Minnesota and the United States Geological Survey spell it 'Mesabi,' and that form was adopted by this paper last year. The earlier form, shown in Nicolette's map more than 30 years ago, was 'Missabay,' Whittlesey, reproducing a part of the map in 1866, spelled it 'Mesabi,' and this has been used in the reports of the State Geological Survey for 15 years. It was thought to represent more correctly the Chippewa word, the accent of which is on the second syllable, while the final vowel is slighted, being closely represented by short 'i.' 'Mesabi' has priority over all other current forms, including 'Mesaba,' 'Missabe,' 'Missaba,' 'Mesabe' and 'Missabi.'"

ARMOR PLATE TESTS.

Specially Reported for the Engineering and Mining Journal.

Another test of Bethlehem armor plate was made at Indian Head on June 12th. The plate was from the lot to be used on the turrets of the Massachusetts, and measured 12 ft. in height, 8 ft. 3 in. broad and 17 in. thick, the curve of the face being on a 17 ft. 5 in. radius. It stood on its side and was fastened to a 36 in. oak backing by 24 bolts 3-2 in. diam. The gun was the 12 in. service rifle used in the previous test, and stood 100 yards from the plate. The projectiles were 850 lb. Carpenter steel shells.

The first shot was with a charge of 253 lbs. powder, giving a velocity of 1,410 ft.-sec., and striking the plate 60 in. from the left and 40 in. from the bottom. The shell was destroyed, its point penetrating possibly eight inches into the plate, where it was welded fast. No cracks appeared in the plate.

The second shot was fired with a charge of 396 lbs. powder, and velocity of 1,858 ft.-sec., striking 40 in. from first shot, 41 in. from right end, and 38 in. from the top. The shell was completely destroyed, though it appeared to have penetrated to a greater depth than the former one. A thin crack resulted, extending through the plate from the shot hole to the edge.

The result of the test may be regarded as a complete success for the Bethlehem company, who will hasten the delivery of the armor for the Massachusetts.

THE WORLD'S PRODUCTION OF GOLD AND SILVER.*

The report prepared by Mr. R. E. Preston, director of the United States Mint, makes some important changes in the estimates and statistics given in previous reports. In Part II of this report, a detailed account of the output of gold and silver of the principal foreign precious metal-producing countries of the world, in 1892 and 1893, will be found. It has been necessary, for reasons stated, to modify materially the figures of the gold or silver output of certain countries in 1892, as estimated in the report on the production of gold and silver in that year. The principal changes in the estimate of the yield of the precious metals in foreign countries, in 1892, are these: In the estimate of the gold product of Africa, the output of the West Coast (\$1,011,924), calculated from the gold exports of that region to Great Britain, has been added to that of the South African Republic (\$23,220,108), giving a total African product of gold in 1892 of \$24,232,032, representing 36,461 kilos. fine, against 44,096 kilos. fine, of the value of \$29,305,755 in 1893; China, which was dropped by the former director of the mint (Mr. E. O. Leech) from the list of gold-producing countries in 1892, has been restored to it in the present report, its gold output in that year being estimated as equal to the sum of the exports of gold bullion from that empire to India and Great Britain, 12,678 kilos., of the value of \$8,426,089. Germany, which had also been dropped from the list of gold producing countries in 1892, is likewise restored to it, having had, according to official returns, a gold output from its own mines in that year of 3,142.2 kilos., of the value of \$2,087,642; the figures of the silver product of Germany in 1892 have, in accordance with official returns, been raised from 184,818 kilos, of the coining value of \$7,681,000, to 212,116 kilos., of the coining value of \$8,815,600. The estimate of the silver product of Mexico, in 1892, has been lowered from 1,419,634 kilos. fine, of the coining value of \$59,000,000, to 1,228,994 kilos., of the coining value of \$51,077,000, officially reported to the Bureau by the Mexican authorities. These are the principal modifications made in the present report of this Bureau's estimate of the world's production of gold and silver in 1892.

According to the corrected figures, the production of the precious metals in the world in 1892, was: Gold 220,133 kilos., of the value of \$146,297,600, and silver 4,745,679 kilos., of the commercial value of \$133,477,300 and the coining value of \$197,230,500; showing an increase over 1891 on gold output of 23,547 kilos., or 756,958 fine ounces, of the value of \$15,647,600, and an increase in the silver output of 487,838 kilos., or 15,681,100 fine ounces, of the commercial value of \$13,721,000 and the coining value of \$20,274,600.

The world's production of gold in 1893 was 234,006 kilos., or 7,523,362 oz. fine, of the value of \$155,522,000, against 220,133 kilos., or 7,077,146 oz. fine, of the value of \$146,297,600, in 1892; an increase in weight of 13,873 kilos., or 446,216 fine ounces, of the value of \$9,224,100, in 1893.

The world's output of silver in 1893 was approximately 5,002,294 kilos., or 160,794,100 fine oz., of the commercial value of \$125,419,400 and the coining value of \$207,895,400, as compared with a silver product in 1892 of 4,745,679 kilos., or 152,545,500 oz. fine, of the commercial value of \$133,477,300 and the coining value of \$197,230,500; an increase in 1893 of 256,615 kilos., or 8,248,600 oz. fine, of the commercial value of \$6,433,900 and the coining value of \$10,664,900.

Russia is the only gold-producing country of any importance from which no returns have been received for 1893.

The United States, in 1893, shared to the extent of 23.11% in the total gold production of the world. The world's output of gold in 1893 was the largest in history, amounting, as it did, to 234,006 kilos., of the value, in round numbers, of \$155,522,000. The highest previous yield of gold was in the period 1856-1860, when the production reached an average weight per annum, according to Dr. Soetbeer, of 201,750 kilos. fine, and an average yearly value of \$133,970,000. The output of gold, therefore, in 1893 was 16.08% greater than the annual average of the period of the greatest productiveness of the California and Australian gold mines.

A still more noticeable fact, and one which will be a matter of surprise to the world of finance, as attention is now for the first time called to it, is that the value of the gold product of the world in 1893 was only 8.77% less than the average aggregate value of the gold and silver product of the world in 1861-65. Dr. Soetbeer estimates the average total output of gold and silver in the world in 1861-65 at \$170,473,383. The value of the world's production of gold in 1893 alone was, in round numbers, as remarked above, \$155,522,000, or a difference of \$14,951,400. In other words, the value of the yield of the gold mines in 1893 was only \$14,951,400 less than the value of the average yield of both the gold and silver mines of the world in 1861-65.

The average value of both the gold and silver product of the world for the period of eight years, 1866-1873, which just preceded the beginning of the depreciation of silver, was \$190,831,000 a difference between the value of the average total of the gold and silver production of these years and that of the gold product of 1893, alone, of only \$35,309,000. If the production of gold in 1894 exceeds that of 1893 by 22.7%, it will reach in value the world's production of both metals (\$190,831,000) 20 years ago. This is a most momentous fact and one which must have much influence on the monetary policy of all civilized States in the future.

The great probability is that the value of the world's output of gold in 1894 will equal that of both metals in the years 1861-1865, and in 1895 or 1896 that of the years immediately preceding the beginning of the depreciation of silver; that is, the average of 1866-1875 inclusive. It may be predicted with certainty that it will be greater in 1897 than such average.

Of the \$14,951,400 of gold needed to bring the value of the yield of the gold mines of the world in 1894 up to that of the world's average output of both gold and silver in 1861-1865, it is even now demonstrable that South Africa alone will furnish at least \$8,574,085, leaving an excess of only \$7,361,915 to be supplied by other countries.

The results reached above will be made clearer from the following tabular view:

Average value of the world's output of gold, 1856-60.....	\$133,970,000
Average value of the world's output of gold and silver, 1861-65.....	170,473,383
Average value of the world's output of gold and silver, 1866-73.....	190,831,000

* From advance sheets of the Report of the Director of the United States Mint.

Value of the world's output of gold alone, 1893.....	155,522,000
Estimated minimum value of the world's output of gold alone, 1894.....	168,299,000
Estimated minimum value of the world's output of gold alone, 1895.....	183,842,000
Estimated value of the world's output of gold alone, 1896, nearly.....	200,000,000

But what was the amount of gold employed in the industrial arts in 1893? Perhaps as fair a way of calculating it as can be imagined would be to take the average of the estimates made of it, in recent years, by this Bureau, and by competent precious-metal statisticians. This Bureau has estimated it in the present report at 75,500 kilos.; Ottomar Haupt, in 1894, at 79,000 kilos.; Dr. Soetbeer placed it in 1891 at from 100,000 to 120,000 kilos. Professor Lexis believes it cannot exceed 100,000 kilos. Dr. Soetbeer's estimate may be taken at the mean of his maximum and minimum. The estimates of the amount of gold used in industry, therefore, give us an average estimate of 91,125 kilos., or in round numbers 90,000 kilos., representing \$59,814,000, or in round numbers \$60,000,000. The net imports of gold into India in 1893 amounted to 4,575.7 kilos., of the value of \$3,089,000. The product of the Russian mines was 87,327 kilos. of the value, in round numbers, of \$25,000,000. The sum of these items is \$88,000,000, which, deducted from the value of the world's output of gold in 1893—\$155,522,000—leaves an amount of gold available for the new coinage of civilized countries (Russia excepted) of \$67,522,000.

How does this value of the amount of gold available for coinage purposes, in 1893, compare with that of both gold and silver available for the same purpose in the years 1866-1873? It will be seen from careful calculation that there is at present little difference between them. The average total output of gold in the world in these years was 187,105 kilos. The net average amount of gold consumed in the arts in 1871-1873, according to Doctor Soetbeer, was 84,000 kilos. The average definitive export of gold to India, 1866-1873, was 30,478 kilos., or \$20,255,615. Thus the total gold devoted to other purposes than coinage in 1871-1873 was 114,478 kilos., leaving 72,627 kilos., of the value of \$48,267,904 gold, to be employed in the coinage of civilized countries. The average total output of silver in the world in the years 1866-1873 was 1,575,462 kilos. The net average amount of silver consumed in the arts, 1871-1873, was, according to Doctor Soetbeer, 471,000 kilos., or, in round numbers, 470,000 kilos.. The average net export of silver to India, 1866-1873, was 809,647 kilos., of the value of \$33,648,925. The total silver, therefore, employed otherwise than in the coinage of civilized states, was 1,279,647 kilos., leaving for the latter purpose an average of 295,815 kilos. of silver, of the value of \$12,294,071. Adding this amount to that of the gold available for new coinage in 1866-1873 gives an average total value of the two metals that might have gone to add to the monetary circulation of civilized countries in the years just previous to the depreciation of the white metal, of \$60,561,975, as compared with \$67,522,000, the value in 1893 of the gold alone, showing available for coinage purposes in the latter year an increase of \$7,000,000. The production of gold in the near future will increase this difference in favor of 1894 and the following years, thus giving a larger amount of gold for the coinage purposes of civilized nations (except Russia) to keep pace, to some extent at least, with the growth of population.

There is another point to which attention must be called here. It is this: gold at present exported to Russia is, to a very great extent, like the gold exported in years past to India. It is largely definitive exportation, and is hoarded, not so much by individuals as by the Imperial Government and the Bank of the State. Russia withdraws from circulation not only the product of its own gold mines, but the foreign coin and gold bars which it imports. The net import of gold bars and coin into Russia in 1891 and 1892 amounted to \$55,301,098 and \$89,301,098 in those years respectively. As the so-called balance of trade is favorable to Russia, and has been for a number of years, this excess of imports of gold bullion and foreign gold coin into Russia, like the gold output of its own mines, serves no monetary purpose, and to the extent of the excess of the imports of foreign gold, at least, impoverishes the gold monetary circulation of some other country.

THE IRON WORKS OF SAMACA, COLOMBIA.

Specially Written for the Engineering and Mining Journal by Col. Thomas B. Nichols.

More than 35 years ago Maximo Valero conceived the idea of making iron at Samaca, and under the direction of Martin Perry, a blast furnace, a reverberating furnace and a puddling furnace were built near what were believed to be rich deposits of iron and coal.

These men did not succeed, however, in producing iron in satisfactory or paying quantity or quality, and after spending almost \$50,000, they gave up, and the property and enterprise passing into other hands, a company was then formed for the purpose of carrying it on.

In June, 1878, a contract was made with two men, citizens of New Jersey, one of them a German engineer named Brown. By the terms of this contract Brown and York were to go to Samaca and there erect a rolling-mill with a capacity of 2,000 tons of finished iron a year, including rails of from 15 to 30 lbs. to the yard; flats, varying in width from 2 to 8 in., and from $\frac{1}{8}$ to 3 in. in thickness; angular and "T" bars; round, flat and square bars, iron for either rigid or suspension bridges, for roofs and buildings, channel iron, malleable iron beams, columns and armatures, plates and other iron necessary for railroads, and iron for agricultural implements.

In order to carry into effect this production, they were to purchase in the United States the machinery needed therefor, including one or more boilers capable of producing a total of 100 H. P.; one large and one small train of rolls, machines to cut, bore, and saw iron; a steam hammer and other less important machinery; a narrow gauge locomotive of 10 tons weight, capable of hauling 40 tons on a level or 21 tons on a 4% grade at a velocity of 10 miles an hour and to pass curves of 30 meters radius, or that could be mounted as a stationary engine if necessary; 4 cars of 5 tons capacity each, and also duplicate pieces of certain of the iron parts of the locomotive and cars. They were to erect two double reverberating furnaces and one heating furnace, and the necessary buildings to contain all this machinery. They were also to engage 11 North American workmen to operate it. These were to be ready to go to work the following October. Brown and York arrived in Samaca as per contract, but the machinery did not reach there so promptly. These men had understood that the blast furnace and accessories which were at Samaca would be capable of producing the crude iron that they would need to run the rolling mill,

and in the case the production thereof was not equal to the demand, the furnaces at Pacha and Subachoque could supply the deficiency. But on their arrival there, they found that this was a mistake and that owing to the poor construction of the furnace, an entirely new blast furnace plant must be constructed.

In November, 1878, the company sold to the State of Boyaca for the sum of \$11,000 the lands, mines, and all the accessories belonging to the "Ferreria," with the proviso that if a contract could be made with a foreign company to operate the mines, the price was to be raised to \$12,100. A stock company was now formed with a capital stock of \$200,000, divided into 200 shares, of which the State was to take 75 shares. The new company was called "Compania Constructora de Obras de Hierro de Samaca." (The Iron Manufacturing Company of Samaca.)

The State Government ceded to the company the use of land, mines and all appurtenances of the works for the term of ten years, and agreed to purchase 4,000 tons of manufactured iron, including rails, etc., at a price not to exceed \$89 a ton, and the company agreed to sell to the State at a discount of 10% from the price quoted to private individuals.

On finding a new blast furnace was needed, a new contract was made by which Brown & York were to build a blast furnace with a capacity of 10 tons daily; a hot-air furnace; 6 ovens for roasting ore, and a cupola 25 ft. high. They were to purchase two blowing engines of 40 H. P. for the blast furnace; an engine of 120 H. P. for the rolls and one of 40 H. P. for the roll-turning machines; machines to make wooden molds; a planer; a turning machine; a screw-cutting machine; a nail machine and a pair of shears, and they were also to secure workmen to run the furnace and operate this additional machinery. The State was to take 25 shares more of the stock, and the company was to borrow \$75,000 for eight years at 5%. In consideration of the concessions made, the price of rails, to the State, was to be reduced to \$55. a ton, and the State was to oversee, through an agent, the management of the funds, and direction of the works, and to have one-third of the profits of the concern.

In October, 1879, without having accomplished anything in the way of paying results, York and nine of the workmen abandoned the works and returned to the United States, and in 1880 a third contract was made with Brown, by the terms of which he was to transfer to the State government all of his stock and interest in the works, on condition that he was to be retained as director of the works, with a salary of \$8,000 a year and 20% of the profits, provided these profits amounted to over \$10,000 a year. This salary to date from October, 1878. He was to render to the State an account of the expenses of the concern from that date.

The State, having thus become sole owner of the enterprise, appointed an agent to look after the accounts and manage, with the director, the funds, etc., pertaining thereto, and to assist him in the completion and operation of the works.

At this time there were upward of 200 men employed at Samaca. Of these the Americans and the wages paid them were as follows: Director, \$3,000 a year; two masons \$7 a day each; one molder, \$5 a day; one blacksmith, \$4; one carpenter, \$4; and two machinists, \$3.50 and \$2.50 respectively. Of natives there were two overseers at \$2 a day each; two carpenters, \$2.20 each, and two \$1 each; twenty masons and hod-carriers at an average of \$1.20 a day each, and 167 peons at from 15 to 30 cents a day each.

In the summer of 1880 a new set of American workmen was taken to Samaca. These men on arriving there found that the work they had been engaged to do was not ready for them, and after remaining there a few months most of them returned to the United States, but they drew the wages per day they had contracted for, all the time they were in the country, and in addition their traveling expenses there and back.

The State government about this time found their means running short, and appealed to the general government to aid them in carrying on the enterprise. This aid was given them, and it was on the request for an additional appropriation in 1881 that I was ordered by the National government to make an inspection of the works and resources.

On going there the second time I found that Brown had erected for the rolling mill a splendid building of brick and stone, with an iron roof, and that he was having the walls and roof of this building painted. The other buildings were on the same scale of elegance in construction, but were very inadequate in size to what was required of them. The stock-house was of cut stone, brick and iron, and cost \$5,000, where \$500 would have built one better suited to the purpose. The blast furnace was lined with sandstone, although there was plenty of good fireclay in the vicinity. The stack was split from top to bottom, due to the poor cement that had been used in the foundation. Some of the imported machinery had not yet reached Samaca, but was at different places en route. The ore and coal mines promised well both as to quantity and quality. There was an abundance of good limestone near by. There were two ore mines, the poorer being nearest the works, and what ore had been used was taken from it in order to avoid going over the bad roads in the vicinity, which would have had to be done in order to get the better ore. There was a deposit of coal near the ore mines, but it was of a poor quality, and it was necessary to go three miles to get a good coal.

In order to reach Samaca, for either passengers or freight from New York, it was necessary to go by ocean steamer to Barranquilla, at the mouth of the Magdalena River, which is the only highway into the interior of Colombia. From there 660 miles up the river by means of light draft steamboats to Honda, or a few miles farther, to a place on the river, called Jiradot. From Honda 75 miles by mule, or horseback over the Andes Mountains to Bogota, or, by going to Jiradot, a part of the distance may be traveled on a railroad built within the last 10 years. From Bogota to Samaca there is about 40 miles of cart-road, and the remaining 160 miles must be travelled on a mule or horse. The lack of transportation facilities is one of the greatest difficulties to be met with in such an enterprise as the iron works of Samaca. In transporting heavy machinery in that country it is taken apart as much as possible and the parts are carried in carts where there are cart-roads, or, failing these, it is transported on the backs of men or mules. Thus it can be easily seen why importing machinery into that country is so expensive. Labor is cheap and correspondingly poor.

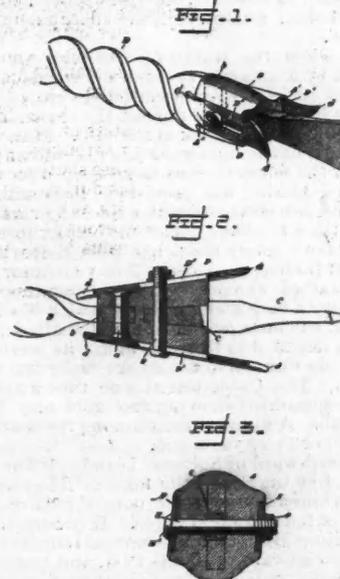
It is more than 12 years since I made my report on the works, and at that time they had cost \$405,519.95, and this did not include almost \$9,000 that had been expended on the workmen I have mentioned. The works were not nearly complete or ready to operate at that time, and I have

been informed the Government has never made any use of the buildings and they are being allowed to go to ruin. The country is sadly in need of better means of transportation, particularly railroads.

I give the relative cost at the manufactories and at Samaca of some of the machinery purchased and taken there: A narrow gauge locomotive cost in Pittsburg, Pa., \$3,575, and mounted in Samaca \$14,479.23. The iron parts for four cars cost at the manufactory \$494.48; cost, delivered near Samaca, \$1,610. The parts of a 175 H. P. turbine wheel at manufactory, \$708; carried to the end of the cart road, 160 miles from Samaca, \$3,760. Eight hundred feet of wire rope, 1 in. in diameter, original cost \$96; delivered in Samaca, cost \$320. A report made in 1880 gave the cost of extracting 500 tons of ore as being \$1,000. Production of 200 tons of coke \$500, and the purchase price of 250 tons of limestone was \$625.

BITTENBENDER'S IMPROVED COAL DRILL.

The accompanying illustration shows a new form of coal drill recently patented by Mr. George H. Bittenbender. It is an improvement in bits or independently-constructed cutting points for use with coal drills or other similar boring implements, the object being to provide adjustable and reversible cutting devices so arranged in a carrying head that when they are applied to their work, the gage of incision may be graduated to produce borings of different sizes as may be desired. The invention consists essentially in an independently-constructed cutter-head provided with adjustable and reversible cutters. In the drawings Fig. 1 is a perspective view of improved coal drill bit. Fig. 2 is a horizontal section of the same, and Fig. 3 is a transverse section. B designates a drill of any ordinary kind, having the usual spiral groove which provides an outlet way for the refuse material which is cut and broken up by the advancing or working end of the drill. A is a cutter-head adapted to be rigidly fixed to the working end of the drill, in lieu of the common integral screw point with which the end of the old-fashioned drill has been commonly provided. The cutter head A carries peculiarly-constructed cutting blades or points adapted to enter into and cut the coal or other substance that is being drilled. This cutter-head A may be of any desired size and shape. It is provided at one end



BITTENBENDER'S IMPROVED COAL DRILL.

with a recess, preferably rectangularly-shaped, although it may be of any desired shape which is adapted to receive a correspondingly shaped projection b, on the end of the drill stem b. A rivet a passes through the end of the cutter-head A and the projection b, and thereby the cutter-head is rigidly and immovably secured upon the drill stem. The cutter-head A is provided at its forward end with a centrally-located forwardly extending cutter or leading bit C, having a shank c, which enters an opening in the cutter-head, as is shown in Fig. 2, and is firmly secured in said opening by means of the transverse bolt E, which is also employed for the purpose of keeping the lateral cutters in position. The leader bit C is used for the purpose of making the first impression upon the material which is being bored and it cuts out the central portion of the boring, while the other cutters with which the cutter-head is provided, follow after it and cut the sides or wall of the hole. This central bit C can be removed whenever desired for the purpose of sharpening or for permitting the substitution of a new one.

The cutter head A has a wedge shape or tapering construction, its outer end being of greater diameter than its inner end. The cutter head, therefore, is provided on two opposite sides with inclined or tapering surfaces, and these inclined sides are provided with longitudinal recesses A' A'. These recesses are not parallel to each other, but are inclined, sloping rearwardly inward, so that they are closer to each other at the inner end of the cutter head A than at its outer end. The recesses are not of a dovetailed character, but their edges are rectangular. It is to be observed that these recesses A' A' have not only a longitudinal inclination, but also a transverse inclination, as is clearly shown in Fig. 3, the same being an inclination to a transverse axis of the cutter head. The transverse inclinations of the recesses A' A' are preferably of about the same degree, which may vary in different cases. The cutters D D are simply thin, flat metallic plates, provided with cutting points d; they are so made as to be reversible, and are provided with slots D' through which the bolt E passes. This bolt will hold the cutters D D in position, while the slots will permit their adjustment. The arrangement seems to be one which will be useful in many cases.

THE GOLD MINING INDUSTRY IN CANADA IN 1893.

Specially written for the Engineering and Mining Journal by Archibald Blue, Inspector of Mines, Province of Quebec.

Some activity in gold mining began to be evinced at several points in Ontario in 1892, but it was mostly of an exploratory character. In 1893 operations took on a more permanent form, shafts were sunk to greater depths, several mills were built for treating the ores, and some bullion was produced.

Sultana mine, on the island of that name in Lake of the Woods, has been worked steadily throughout the year. There are three veins on this property, having a northeast and southwest course and converging apparently into one vein on the northern side of the location. The largest of these veins has a width of 23 ft., and the others a width varying from 5 to 7 ft. The vein matter consists of quartzite, iron pyrites and some galena, inclosed on the walls with a selvage of mica chlorite schist. The country rock is a silicious gneiss. Three shafts have been sunk on these veins, but the deepest is only 100 ft. Assays show the ore to carry from \$4 to \$30 of gold per ton, and a small percentage of silver. A mill has been erected on the lake shore close to the workings, with two batteries of five stamps each and a pair of Frue vanners. This mill was started early in the year, and ran somewhat irregularly for three months, producing several thousand dollars of bullion, but was shut down in the spring in order that a cyanide plant might be put in to treat the pulp. Operations were resumed at a later period, but meantime the work of sinking upon the veins was kept up and a considerable quantity of ore was raised. The owner of this mine, John F. Caldwell, of Winnipeg, has had many obstacles to overcome, not the least of which is the poor quality of portions of the machinery put into the mill and the lack of suitable hoisting plant; but the energy and intelligence with which he is directing his affairs will no doubt enable him to succeed in the end.

Freight charges on supplies and machinery are heavy to mines on Lake of the Woods; but a more serious matter is the customs duty, which compels the mill-owner either to take inferior plant made in his own country or to pay a heavy tax on better machinery imported from the United States or Great Britain. As a rule, the Canadian miner prefers American machinery, such as breakers, stamps, vanners, etc. As regards steam engines, boilers, hoists, pumps, etc., Canadian manufacturers are not surpassed anywhere.

In the winter season, when the waters of the lake are frozen over, Sultana mine is reached by a roadway through the woods and over arms of the lake, a distance of about five miles southeastward of Rat Portage, on the Canadian Pacific Railway. But during the season of navigation boats can run from the town to the dock at the mill. Along the northern half of Lake of the Woods, at the numerous islands and adjoining mainland on the east most of the mineral veins have been discovered, and although a good deal of prospecting has been done there during the past ten years, it is almost certain that diligent exploration will continue to be rewarded for some time to come. The mica-chlorite schist, which forms so large a part of the country rock, has been rent with many fissures, but the covering of timber is so dense that veins may be crossed a score of times by the trained explorer without being noticed, save at some favorable outcrop on a bare knoll or the face of a bluff, or where a fire may have burned off the moss and mould and matted undergrowth. Sultana Island has been denuded in this way along its western side, and the veins on the Ophir and Sultana locations are easily traced there over the naked ribs of gneiss. The Ophir was at one time a very promising property, and beautiful specimens showing free gold may be picked up on the oft-culled ore heap. A disagreement among the owners led to the shaft being filled up two or three years ago.

Big Stone Bay lies southward of Sultana Island. It has a breadth of about eight miles, and, like the rest of the lake, is filled with islands of every size and shape, from a mere reef or nose of rock rising above the water to areas of three or four hundred acres. Hay Island, lying on the west and south of Big Stone Bay, embraces several thousands of acres. A tract on the mainland eastward of Eagle Pass, and lying between Big Stone Bay and Moore Bay, contains a number of mining locations. The most northerly of these, which touches the waters of Big Stone Bay, is known as the Winnipeg Consolidated Mine, and was worked about ten years ago, a shaft having been sunk over 100 ft. on one of the veins. A five-stamp mill was also erected and a quantity of ore was crushed, but it does not appear that much gold was won. One of the principal shareholders is authority for the statement that the plant of the mill was not very suitable for its work, and that the men in charge did not know how to make the best use of it. This is very likely, for even at this day the bottom of the inlet is seen to be covered with globules of mercury which were washed over the plates of the mill.

Two and a half miles inland from the Winnipeg Consolidated property, and about the same distance from the head of Moore Bay lie a number of locations which were explored six or seven years ago by Mr. D. B. Burdette, of Minneapolis. The title, however, was in dispute between the local and Federal Governments—hinging as it did at first on the great boundaries dispute and afterwards as to rights under Indian treaties—but Ontario's claim being sustained by the judgment of the Judicial Committee of the Privy Council, Mr. Burdette obtained patents for about 400 acres in 1891. The Northern Gold Company was organized in the same year under the laws of the State of Michigan, with a capital of \$1,250,000, nearly all the shareholders being citizens of Minneapolis. A location of 40 acres was acquired from Mr. Burdette by this company, which is crossed by four or five parallel veins, and on two of these the work of sinking shafts was commenced. Operations dragged along during 1892, and toward the end of that year the company decided to erect a mill. They were persuaded to try a furnace made by Mr. Leede, a mining engineer, of Minneapolis. Two of these furnaces were made and set up in the mill, and it was claimed for them that they would roast at a rate of 500 lbs. per hour each, using crude petroleum for fuel. One of them was tested, and it was found that instead of 500 lbs. its capacity was not more than 60 lbs. per hour, and even then the roasting was not half completed. Mr. Leede was appealed to, but in vain, to go up and manage the furnaces himself, and so the one in blast was blown out. The Cornish rolls which had been put in as part of the plant to crush the roasted ore were then tried on the raw article, but after a run of a few weeks was stopped.

Finally the furnaces were pulled down, the Cornish rolls were taken out and a Gilpin county mill of 10 stamps was brought over from Colorado. It was close to the end of the year before the renovated mill was got into running order, so that the output of bullion is as yet very small. But the company has been steadily putting down a shaft on one of the veins, and recent reports say that rich pockets of ore are being struck.

The other locations taken up by Mr. Burdette have not yet been developed, but the appearance of the veins is hopeful. One of these has a width of over 30 ft., and has been traced for a length of more than a mile.

Adjoining the Northern Gold Company's location on the west is one taken up by Duluth capitalists, where a shaft has been sunk to 30 ft. Two Crawford mills were set up last year, and while assays showed samples of the ore to be rich in gold the mills do not appear to have succeeded in saving much. Some exploration work was carried on early last year at points eastward and northeastward of Rat Portage, but either because the prospects did not promise well or because the necessary capital could not be got, operations were discontinued. On one of these properties, the Et Divir mine, a shaft was sunk to 102 ft. and a Crawford mill was set up to treat the ore, but after a run of four weeks the building was destroyed by fire. The engine which drove the mill, together with the hoisting engine, was so badly damaged that the mine was closed down and work has not been resumed since. It is claimed, however, that the work of the Crawford mill was satisfactory in every respect, saving capacity. Instead of milling 8 tons per day, as claimed by the inventor, it was only capable of milling 5 tons.

Other gold locations have been explored about 100 miles east of Rat Portage, on Wabigoon Lake, as well as on the Manitou, a long river-like lake which stretches southward across the country from near Lake Wabigoon to Rainy Lake. Some ore was taken out last year at various points along both of these lakes, but they are no more than prospects yet.

On the islands of Rainy Lake, along the boundary between Ontario and the State of Minnesota, several promising discoveries were made last summer and autumn, and there has been a rush of explorers to that district. Some of the specimens found on locations taken up on both sides of the boundary are very rich in free gold.

Ophir is a favorite name with gold miners, and in addition to the one on Lake of the Woods already referred to there is another and more famous in East Algoma. It is in the township of Galbraith, on the upper waters of Thessalon River, 18 miles north of the old town of Bruce Mines—famous also forty years ago for its copper mines and works for concentrating and smelting copper ores. The patent for this Ophir mine was taken out four years ago, but the first owners were "real estate miners," and having convinced themselves that they possessed a mountain of gold, they put a fabulous price on it and invited the enterprising gold seekers of America, Europe and Australia to buy. A syndicate sent an expert to report upon the property, and it is understood that a large offer was made and declined. Later on it was disposed of for a much less sum to a number of Chicago and Duluth men, and in the fall of 1892 the work of exploring the location was begun under the direction of Col. W. R. Wallace, formerly of Wallace, Idaho. The region of country lying between Bruce Mines and the Ophir is a succession of fertile valleys and low mountain ranges—the latter being of Huronian age, consisting of limestone, cherts, gray and white quartzites, sand stones and conglomerates, with bands of greenstone, syenite and diorite. Settlement extends back 20 or 25 miles from Lake Huron, along the principal roads, and as the soil is very rich in the valleys the farmers are in a thriving state. They grow excellent crops of wheat, oats, peas, roots and clover, and the fine pastures and waters are especially favorable for the success of live stock. It was not easy to get a good road through the region and it was necessary to spend several thousand dollars in improving the condition of the old colonization road which extends out to and beyond the Ophir mine before an attempt could be made to get in the required machinery for a mine or mill. Fortunately, the position of the vein did not at first call for the help of much machinery, for in the spur of diorite (or syenite*) in which it is exposed adits could be driven or shafts sunk with comparative ease. The spur itself falls off abruptly at the west end, where 100 ft. of the fissure is exposed in the perpendicular. At the top it is only 18 in. in width, but increases gradually downward until at the base it is 3 ft. 6 in. This section of the fissure is filled with chertic slate, showing only one or two streaks of quartz. On the north side of the spur, however, there is an immense chimney or "blow out" of vein matter, which was at first supposed to be the true fissure. It has a width of 50 ft. at the foot of the spur, where it consists of three folds separated from each other by slate. The upper and middle of these folds or lenses when stripped were found to diminish in width eastward and to thin out altogether at the end of 350 ft. At 400 ft. a crosscutting over the crown of the spur exposed the real fissure, which at this point is over 7 ft. wide and filled with quartz, and an adit driven in on the chimney a length of 50 ft. shows the two to join and the vein increase in width to 18 ft. At the contact the quartz is very rich in free gold, and many beautiful specimens have been taken out. At the foot of the spur two shafts were sunk last winter, one on the lower fold of the chimney which dips southward 45°, and one on the true fissure, which also dips southward about 75°. The former of these shafts was put down 105 ft. and the latter 90 ft.; but when the snows melted both filled up with water. Colonel Wallace was satisfied that he had proven the junction of the chimney with the fissure at the depth that had been reached, and as he had neither pumps nor engine to control the water he devoted the summer to explore the chimney by driving adits along its course eastward. He also explored the vein by test pits westward, and proved its continuation to the contact of a band of gray quartzite with the diorite 1,200 ft. from the foot of the spur. The total length of the vein, as shown by openings upon it, is 400 ft., while in depth it has been explored to 200 ft. The vein matter is chiefly massive bluish and white quartz, with copper pyrites and free gold.

(To be Continued.)

* By the miners the country rock is called syenite, but Dr. Coleman, of the School of Practical Science, Toronto, pronounces it a diorite, the microscope showing it to be composed of oligoclase and hornblende, not orthoclase and hornblende. But the specimen examined by him was somewhat weathered, and he hesitates to pronounce a definite opinion.

ELECTRIC COAL CUTTER.

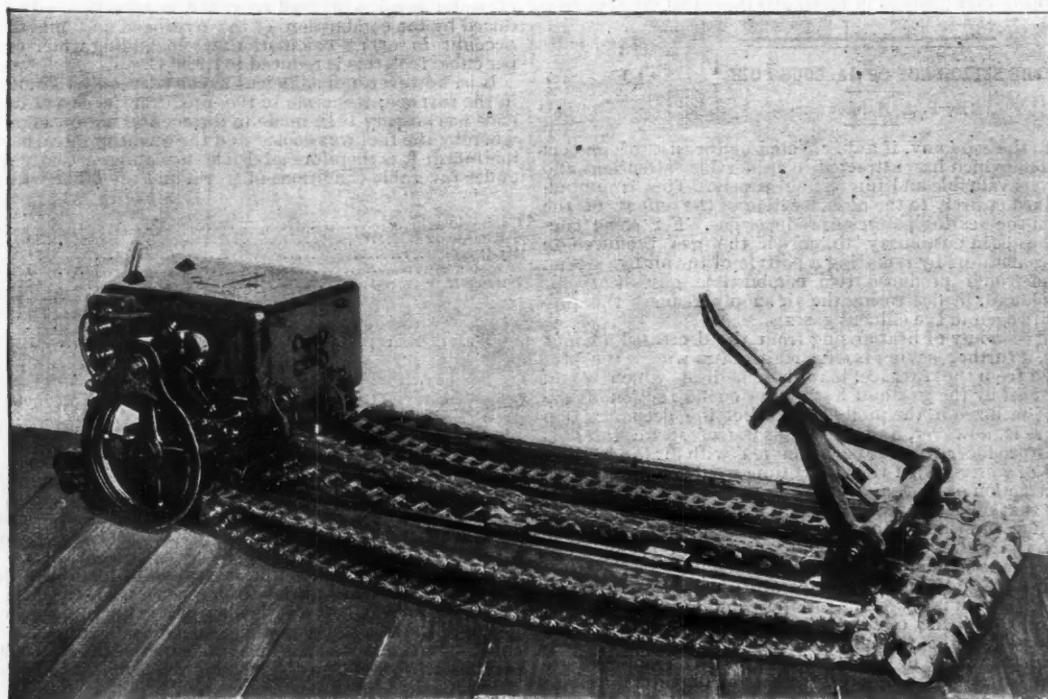
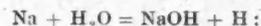
In the accompanying illustration is shown a new and improved coal cutting machine, of the rotating bar type, known as R. B. 40, which has recently been designed by the General Electric Company. It consists of a bed frame of two steel channel bars, firmly braced and mounted upon and engaging with this frame, a sliding frame similarly braced, at the rear of which is mounted an ironclad multipolar electric motor, communicating power to the feed and driving mechanism. The front end of this sliding frame carries the cutter bar, into which the cutters or bits of tool steel are held by set screws, covering its entire face. The bar is driven by an endless chain, and as it is revolved, is advanced by the feed mechanism into the coal or other material to be cut, to the desired depth, and the cuttings are brought out to the face of the coal by means of cleaner chains. The machine is operated by two men; one in charge and the other as a helper. A carriage is furnished which enables it to be handled with ease. The machine is taken into the mine on this carriage and run into the room to be under-cut. It is then placed on two skid boards in front of the coal at one side of the room or entry, and fastened firmly by means of the front and rear jacks which are braced against the face and roof of the coal. These prevent it from moving when in operation. The power is then turned on by the machine runner, and the machine proceeds to work.

The cutter bar, which is revolved by an endless chain, is fed forward to a depth of 5 or 6 ft., according to the size of the machine. The usual length of the cutter bar is 39 in., but 42 or 48-in. bars can be used where the cutting is not too hard. When the full depth is reached the feed is thrown off, and, by means of a reverse lever, the cutter bar is withdrawn to its starting point and automatically stopped. This completes the cut, and the machine is moved over the length of the cutter bar used and another cut made in the same manner. This is continued until the entire width

THE COMMERCIAL ELECTROLYSIS OF FUSED SALTS.*

By Claude Vautin.

In the absence of water the products of the electrolysis of fused salts differ widely from those found in the wet process. In the latter caustic soda and hydrogen appear at the cathode, while chlorine is given off at the anode, whereas in the former the products are the metal sodium and chlorine. When fused salt is electrolysed without special means of collecting the sodium great difficulties are encountered in obtaining a satisfactory yield, as the sodium, being lighter than the fused salt, comes to the surface, and has to be protected both from chlorine, from which it has just been separated, and also from the air. Moreover, sodium being a volatile metal tends to vaporize from the molten bath, and further loss is thus occasioned. These obstacles are met by the author in the following manner: A mass of fused lead is used as the cathode of the electrolytic cell, and the sodium separated at the surface of the lead—which, of course, remains at the bottom of the bath of fused salt—is absorbed by the lead as fast as it is produced, forming an actual alloy with the fused lead. Being held in this manner the sodium can neither rise through the fused salt to the surface of the bath, nor volatilize at the temperature necessary for the operation. Pure lead is characterized by extreme softness and malleability, but when an alloy of lead and sodium is examined it is found that these properties are exchanged for a brittleness so great that a large ingot can be broken up by light strokes with a hammer. Although the sodium is in such close union with the lead that its vaporization is prevented at the temperature of the bath, yet it preserves in great measure the properties that distinguish the unalloyed metal. Thus water is decomposed by the lead-sodium alloy, just as by sodium itself, according to the equation,



ELECTRIC COAL CUTTER.

of the room or entry is undercut, after which the machine is again loaded on the carriage and taken into another room.

The cuts are made in from four to six minutes in ordinary coal, but the amount of coal undercut or the lineal feet face for each machine depends upon the quality of the coal and the skill of the man handling it.

The construction of the machine is simple, and any person of ordinary intelligence can understand and handle it with a few days' instructions. All parts are made in duplicate, and are interchangeable.

The Largest Search-Light.—There is now in operation at the government proving grounds at Sandy Hook, at the entrance to the outer bay of New York, the largest search-light in the world. The estimated force of the light is 194,000,000 C. P. It is claimed that its rays can be seen at a distance of nearly 100 miles, and that vessels can be detected at 20 miles. The light was made by Schuckert & Co., of Nuremberg, Germany, and was exhibited at Chicago last summer.

The Hudson River Bridge at New York.—The bill authorizing the construction of a bridge over the Hudson River at New York has finally passed both Houses of Congress and has been approved by the President. The bill provides that the company's plans must be submitted to and approved by a Board of Engineers, whose decision is subject to the final approval of the Secretary of War. The president has appointed as members of this board Prof. W. H. Burr and Theodore Cooper, of New York; George S. Morison, of Chicago; G. Bouscaren, of Cincinnati, and Maj. C. W. Raymond, United States Engineers. Major Raymond is thoroughly familiar with the harbor of New York and the Hudson River, their channels and navigation; the other members of the board are all bridge engineers of high standing.

sodium—pure or alloyed—and water, yielding caustic soda and hydrogen. The lead of the lead-sodium alloy takes no part in the reaction, but is separated as pure metallic lead in a spongy condition.

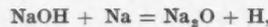
With regard to the apparatus employed in carrying out this process, it appears that a suitable form consists of a steel pot with a basic lining, save at the extreme bottom, which is covered and protected by a pool of lead. On the lead rests a layer of fused salt, kept from contact with the steel pot by the lining, so that the pot as a whole can be made the cathode without risk of starting electrolytic decomposition at any point save the surface of the pool of lead. A set of plates of retort carbon, constituting the anode, dips into the upper part of the bath of fused salt, and the chlorine evolved at the surface of the carbon is led away through a pipe in the cover of the pot. An alternate form presenting certain advantages, and allowing of the process being run continuously, is of similar design, but the lead is in liquid connection with a vessel at the side of that in which the decomposition is proceeding, and is there brought in contact with steam and the sodium it contains thus converted into caustic soda. Fresh quantities of sodium are liberated at the surface of the lead in the electrolytic vessel and diffuse to the lead in the decomposing vessel, where the decomposition of the lead sodium alloy again takes place. The operation thus proceeds uninterruptedly. On a large scale it is proposed to allow the lead to collect in a decomposing vessel electrically isolated from the series of pots in which the electrolysis takes place, the lead when freed from sodium being returned and used repeatedly. Although both sodium and lead-sodium alloy, when rich in sodium, decompose water violently, and would be difficult to deal with on a large scale, yet the action of water on an alloy containing 8 to 10% of sodium is not unmanageable, and the decomposition can be effected without risk.

The author thinks that the new process has the advantage that no

* Abstract of an article read before the London section of the Society of Chemical Industry. See "Engineering and Mining Journal," April 14th, 1894.

diaphragm is needed to separate the products evolved at the two electrodes, the internal resistance of the cell is low, and a high current density—e. g., 100 amperes per square foot or more—can be employed. The electrolysis proceeds at a low voltage, actual experiment giving two volts as the limit. In most wet processes some form of diaphragm is essential, and a voltage of four to five volts is needed, while difficulties arise when the current density is high—this last circumstance causing the cost of plant for a given output to be comparatively great. On the other hand, the Vautin process needs fused salt, whereas brine pumped direct from a salt bed suffices for a wet electrolytic process. The cost of keeping the bath fused must also be taken into consideration, and the wear and tear of the pots when exposed to the action of fused salts is likely to be an important factor in the whole cost of the process. The anodes are stated to last well, but the experience of those who have used carbon anodes in fused salt is rather in the opposite sense. Such questions will doubtless be settled by the results obtained with a plant which is now being made to work the process on a fairly large scale.

The main uses of the products of electrolysis of fused salt are the production of caustic soda and bleaching powder, but there are minor outlets that may prove of importance. Sodium itself is a commercial article which has a certain market, and would find fresh applications if its price were largely reduced. The fact that lead is fixed at all ordinary temperatures, while sodium is fairly volatile, allows of the separation of the lead-sodium alloy into its constituents by distillation. The sodium thus won can be sold as metal or otherwise employed. One application that has been suggested is the preparation of cyanides from ferrocyanides, the former being much the dearer material and having a large field of usefulness in gold extraction. Another consists in the realization of the equation



and the conversion of the resulting sodium monoxide into sodium peroxide, much used nowadays (instead of hydrogen peroxide) for bleaching and other purposes.

THE EFFICIENCY OF GASEOUS FUEL.*

By F. A. Matthewman.

The question as to the economy, if any, effected by the use of gaseous fuel has long been one which has attracted considerable attention and called forth numerous valuable and interesting papers. This communication will be confined entirely to the consideration of the effect of the vapor of water upon the heating power of producer gas. For some considerable period it has been customary to enrich the gas produced in Siemens and other generators by replacing a portion of the air by steam, the decomposition of which produces two combustible gases (carbonic oxide and hydrogen), and, by decreasing the air supply, reduces the proportion of diluent nitrogen in the effluent gases.

In addition to the economy of heat arising from the decreased amount of nitrogen present, a further saving is effected in cases where the producer is far removed from the furnace, inasmuch as heat which would otherwise be carried off by the gas, and lost by the cooling action of the tubes and culverts, is utilized in the producer to effect the decomposition of the steam. There is, however, a limit to this use of steam, for if it were blown into the producer without being mixed with air (as is done in the manufacture of water-gas), a very short time would suffice to cool the fuel by this abstraction of heat, and ere long the temperature would have fallen so low that no decomposition would be effected. The use of too large a proportion of steam with air acts in like manner, but in a less degree; part of the steam escapes decomposition and passes away with the gas. Further, the cooling of the producer consequent on the introduction of an excess of steam reduces the temperature below the strong red heat (or about 100° C.) which is necessary for the complete conversion of carbonic acid gas into carbonic oxide by contact with carbon. The amount of carbon wasted in the formation of carbonic acid gas is considerable, but the calorific value of the gas is not greatly impaired thereby, as the conditions which tend to increase the percentage of carbonic acid also produce a gas rich in hydrogen, and it is not until the effect of the water vapor is considered that the full extent of heat loss is realized.

During the conduction of the gas to the furnace through the usual cooling tubes and culverts a considerable proportion of the excess steam which has been supplied to a producer and escaped decomposition is condensed and deposited, but as in ordinary practice the temperature never falls below 100° C., much of the water passes with the gas to the furnace, detracting from the heating power by reason of the heat which it absorbs. The following results, showing the number of grams of water per cubic foot of gas, have been selected as representative of ordinary working, being taken from a considerable number of tests made at various works:

	Grams.
Aqueous vapor in culvert, at 150° C. mean temperature, taken throughout a day's work.....	2.90
Aqueous vapor in culvert, at 160° C., all fires recently cleaned.....	3.86
Producer burning dross, gas at 650° C., cleaned 22 hours, charged 2 hours.....	1.39
Producer burning dross, charged ¼ hour, cleaned 27½ hours, gas at 600° C.....	5.35
Same fire 4 hours after charging and 3 hours after cleaning, 600° C.....	2.01
Same fire charged ¼ hour, cleaned 17 hours, gas at 560° C.....	4.36
Producer with grate, steam blower, cleaned 2 hours, charged 4 hours, burning coal, gas at 580° C.....	2.36

The average excess steam passing through the fire in ordinary working may be taken as about 10 lbs. per 100 lbs. of fuel; thus, the weight of a cubic foot of gas at the temperature of the experiments being taken as 0.061 lb., then 321 lbs. of gas would occupy 5,262 cu. ft., and as each cubic foot of gas contains 3 gram of aqueous vapor, the gas from 100 lbs. of fuel will contain 15,786 grams (or 33 lbs.) of water vapor. But the amount derived from the fuel, as shown by experiment, is only 22 lbs., and of this some is deposited, so that over 10 lbs. of steam pass through the fire undecomposed during the combustion of 100 lbs. of fuel.

In calculating the effects of these amounts of water vapor two methods may be adopted—firstly, to ascertain the number of heat units carried by the water up the chimney; and, secondly, to calculate the effect of vari-

ous proportions of water vapor upon the theoretical flame temperature obtainable from the gas. The number of calories which the fuel is capable of developing is 613,400 per 100 parts, while those available in the 321 parts of gas produced only number 440,312, thus showing a loss in the producer of 173,088 heat units, or 28 per cent. of the value of the fuel. The number of heat units carried up the chimney by the water vapor may be readily found. Assuming the temperature of the escaping gases to be 530° C., and adding to the amount of aqueous vapor present in the gas that produced by the combustion of the hydrogen and marsh gas, it appears that 5 grams per cubic foot represent a loss by chimney (by aqueous vapor alone) of 44,320 calories—equal to 7.2 per cent. of the heating power of the fuel. Similar calculations, taking the amount of water in the culvert (2.9 grams), shows this quantity to cause a loss of 34,960 calories, or 5.7 per cent. of the heating power of the fuel.

In these calculations, and in those which follow, the specific heat of aqueous vapor has not been taken at the figures usually given, but has been corrected for the temperature according to the results of recent investigations on this subject by Mallard and Le Chatelier, the formula which these investigators deduced being further confirmed by a series of experiments conducted by the German Iron Smelters' Society and European Water Gas Company. By the use of the figures given by these experimenters the amount of heat imparted to the carbonic gas and water vapor is so much in excess of that which has hitherto been taken in similar calculations, that producer gas of average analysis gives a theoretical maximum temperature of only 1,400° C., in place of 2,000° C. as found by the old formula. As this is below the temperature of the Siemens furnace (which has been found by recent observations with the Cornu-Le Chatelier optical pyrometer to be from 1,500 to 1,600° C.), it is necessary to inquire into the effect of recuperation upon the intensity of the flame, the temperature of the gas and air as they enter the ports of the furnace being taken as 1,000° C. Under these conditions, the flame temperature of the particular gas under consideration is 2,145° C. if the effect of water vapor is omitted from the calculations. The water vapor produced by the combustion of the hydrogen and marsh gas is taken into account in every calculation, while, adding water equal to five grams per cubic foot, this is reduced to 1,930° C.

It is, however, not sufficient to consider only the effect of water vapor in the furnace; its action in the producer is also of importance. Reference has already been made to the cooling action of an excess of steam, whereby the fuel was cooled and the quantity of carbonic acid in the gas increased; it is therefore advisable to compare two gases—one produced under favorable conditions of work, and the other with excess of steam.

	A.	B.	
Carbonic acid.....	5	11	Composition by volume.
Carbonic oxide.....	30	16	
Hydrogen.....	11	19	
Marsh gas.....	5	5	
Nitrogen.....	49	49	
	100	100	
Water (grams per cubic foot).....	1	5	
Calculated temperatures.			
	A.	B.	
Without water { Gas and air cold, specific heat of products of combustion taken as at 1,400° C.....	1,575°	1,43°	}
{ Gas and air 1,000° C., specific heats as at 2,000° C.....	2,157°	2,050°	
With water. { Gas and air cold, specific heats as at 1,400° C.....	1,519°	1,177°	}
{ Gas and air 1,000° C., specific heats as at 2,000° C.....	2,087°	1,792°	

The foregoing table gives analyses of two such gases, and shows the theoretical temperature of each under various conditions. It will be seen that although the gas represented by analysis A contains 6% more combustible gas than that headed B, the calculated flame temperatures attainable when the gas and air are raised to 1,000° C. prior to combustion (that is, under the conditions of a regenerative-furnace) are respectively 2,157 and 2,050° C. There is thus no great difference in the heating power of the two samples when judged by the analysis of their gaseous constituents, and it is not until the effect of the aqueous vapor present in each is considered that the inferior quality of gas B is fully realized.

The average theoretical flame temperature of producer gas burnt in a Siemens furnace is about 2,000° C., yet the temperature observed is only 1,580° C. The reason for this is to be sought, as has been pointed out by Herr E. Blass, "not in the non-development of the calorific power of the fuel in practice, but in retarded combustion owing to the gradual mixture of the air and gas, so that the heat is distributed over a large area with corresponding diminution of maximum intensity." If, then, with an available temperature of 2,000° C. only 1,580° C. is obtained, it is quite possible that if gas of the composition B were used alone a steel melting temperature would only be attained with difficulty, if at all. The analysis would scarcely be termed an average one, and it is probable that even a producer burning dross during a spell of wet weather would not produce worse gas, although the amount of water vapor present might be higher. This being so, and the flame temperature of the gas as calculated from the gaseous constituents being so good, it seems quite reasonable to ascribe the difficulty experienced in keeping up the heat of Siemens furnaces during wet weather to the increased amount of water vapor, derived, not only from the wet fuel but from the increase in the quantity of undecomposed steam, consequent on the cooling of the fuel in the producer. This hypothesis is all the more likely, as the figures given above have purposely been selected from fair average working, without having had regard to maximum amounts produced under exceptional conditions, the object of this paper being rather to show that ordinary quantities of water may appreciably lower the heating power of a gas than to draw attention to exceptional amounts which may at times be present. The results indicate that the effect of water vapor is so marked that its presence should be considered and more importance attached to the results than has hitherto been the case, particularly in view of the fact that recent practice seems in favor of dispensing with cooling tubes and introducing the gas into the regenerators at a higher temperature by building the producers nearer the furnace. One result of this would be that more water would be carried into the furnace, and perhaps under some conditions its quantity might be so excessive that the gas would be incapable of producing the temperature required.

* Abstract of a paper read before the West of Scotland Iron and Steel Institute, Glasgow, March 16th, 1894.

THE AMERICAN MINING COMPANY.

Specially Written for the Engineering and Mining Journal by J. B. Holibaugh.

The accompanying illustration shows what may be termed one of the typical zinc and lead mines of the Joplin mining district. The American Mining Company holds under lease for a term of years 40 acres of land located on the Rex Mining and Smelting Company's land, locally known and called the "Thousand Acres," from the fact that the tract of land owned in fee simple by the Rex company contains just 1,000 acres. In the spring of 1891 it was a tract of undeveloped prairie land that had formerly been used for grazing and cutting a crop of mild hay. But after the land passed into the hands of the Rex company portions of it were prospected by the sinking of drill holes, which proved up large deposits of lead and zinc ore at depths of 35 to 100 ft. The company then had the land surveyed and subdivided into 40-acre tracts, and many of these were leased out to mining companies for a term of years at a royalty of 10% on the lead and zinc ore. The American Mining Company, under the management of Capt. H. M. Sharp, was among the first to select 40 acres, located in a beautiful natural basin near the center of the tract. This section was then prospected by sinking of a number of drill holes, which proved the structure of the formations and also cut seemingly large ore bodies. Then a large development shaft was sunk at the most desirable point to a depth of 136 ft. This shaft proved up very large deposits of zinc ore and some lead. Drifts were then started from this shaft, which proved the ore bodies to have a travel from the northwest to the southwest. After sufficient exploration work had been done to prove the continuity of the deposits, the company put up a large ore-dressing and concentrating plant, having previously erected a complete steam-hoisting and pumping plant, the two plants representing an expenditure of \$14,000. Being thus fully equipped with machinery, the property has made the following productions as shown by statements taken directly from the company books: Total sales of lead

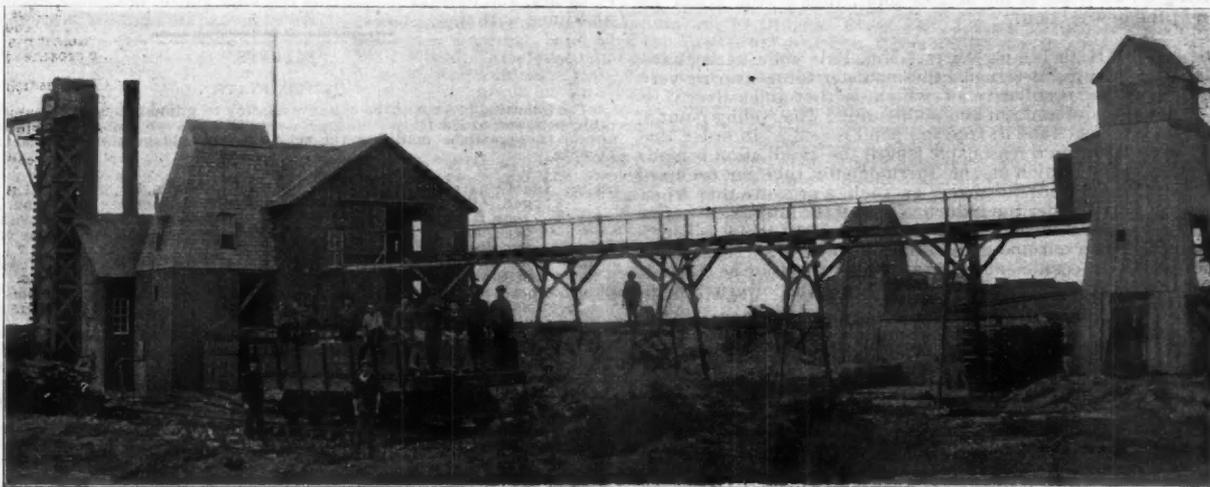
SPECIFICATIONS FOR STEEL FOR BRIDGEWORK.

Mr. George H. Thomson has recently issued a sheet of standard specifications for structural steel, which was prepared originally, we believe, for the New York Central & Hudson River Railroad Company, with which company Mr. Thomson was connected as engineer of bridges. These specifications are interesting as giving the latest approved practice of engineers, and we give below the important portion relating to the material and its preparation.

The specifications for raw materials used in the manufacture of steel for ingots provide that all raw material used in the manufacture of steel ingots shall be chemically within the Bessemer limit of the following proportions: Sulphur, 0.05%; phosphorus, 0.10%; copper, 0.40%. The usual provisions are added as to the rights of inspectors.

The specifications for the manufacture of ingots make the following requirements: 1. All ingots must be cast from steel melted in an acid-lined open-hearth furnace; 2. The ingots shall be subject to the acceptance or rejection of the inspector of ingots; 3. No single ingot or casting shall (in order to avoid extreme segregation) exceed 15,000 pounds in weight; 4. All ingots must be bottom cast; 5. No ingot shall be disturbed or removed from the position in which it is cast until it is sufficiently solidified to obviate "bleeding"; 6. All ingots shall be duly marked for identification, and a complete and correct report of each cast, giving the number, size and weight of each ingot, shall be furnished by the contractor to the inspector of ingots within five hours after the cast is made; and the contractor shall furnish said inspector such further data as he may require to assist him in keeping the record of the identity of the ingots; 7. The inspector of ingots shall have free access at all times to the works where the ingots are cast.

The specifications for rolled steel make the following requirements: 1. Steel shall be rolled only from identified and duly accepted ingots. 2. Finished rolled steel shall show under analysis not more than the follow-



THE AMERICAN MINING COMPANY'S LEAD MINE.

and zinc ore from July 17th, 1893, to January 27th, 1894, \$67,311; tailings sold to railroad company, \$535; royalty received from subleases, \$885; total amount received by company, \$68,721. The expenses were, for the period: Royalty paid Rex company, \$6,734; operating expenses, \$29,163; total, \$35,897, showing a net profit of \$32,824. The investment in plant and improvement has been \$14,000. The value of the reserves of ore in sight by survey is estimated at \$70,000.

A complete and accurate survey of the underground workings of this property has recently been made by the deputy county surveyor. The drifts, as shown by the plat, extend a distance of 500 ft. from Northeast to Southwest and the cross-cuts from the main drifts do not exceed 100 ft. in width; by reducing all of the underground workings now opened to square feet, it is found that less than one acre has been mined. As before stated, this is one of the typical lead and zinc mines of the district, and its success has been due to strict business methods applied to mining.

Colliery Work in South Africa.—The "Eastern Province Herald," Cape of Good Hope, says that Messrs. Lewis & Marks, who are engaged in coal operations there, are pushing developments. A new shaft is to be 14 ft. diameter, and will have to pass through 70 ft. of sand and water. For the purpose of getting through this obstacle the firm has, under the advice of Mr. F. W. North, imported series of cast iron tubings, by the aid of which the pit will be forced through the sand and inclosed in an entirely water-tight case for 80 ft., or thereabouts, from the surface. This will be the largest, if not the only, circular shaft that has been sunk near Johannesburg.

Petroleum for Firing Porcelain Kilns.—The great pottery and porcelain works at Limoges, France, have been considering the fuel question anxiously for some time, says "Le Genie Civil." Wood is very costly at Limoges, and coal of the quality needed is also expensive and difficult to get. Recently experiments have been made with petroleum with much success. The Wright spray burner was used, and both crude oil and residuum were tried. It was found that the requisite heat could be kept up and regulated without difficulty; that there was no injurious smoke, and, which is most important of all, the delicate colors of the porcelain were not in the least affected. The use of petroleum is to be extended as fast as the kilns can be fitted for it.

ing proportions: Phosphorus, 0.08%; sulphur, 0.04%; manganese, 0.45%; copper, 0.20%. 3. All finished rolled steel shall be straight, well finished in the rolling, full to dimensions and free from laminations, buckles, surface, edge or other defects. 4. All finished rolled steel shall possess certain definite physical properties which shall be determined by the inspector of rolled steel from such test pieces (to be prepared by the contractor) as said inspector shall determine, as follows: Ultimate tensile strength plates and shapes, between 55,000 and 65,000 lbs.; ultimate tensile strength rivet rod, between 50,000 and 54,000 lbs.; elastic limit plates and shapes, not less than 38,000 lbs.; the elongation in plates and shapes under 36 in. wide must be 26% in 8-in. length; the elongation in plates over 36 in. wide must be 24% in 8 in. length; reduction of area plates and shapes, 50%; reduction of rivet rod, 60%. 5. The fractures of test pieces shall be mainly fine grained. 6. Finished rivet rod when heated to a red heat and upset for 3 in. of metal, shall show (upon cutting out) a silky fracture. 7. Strips of finished material cut along the direction of rolling shall withstand cold bending double upon itself under the hammer without visible cracking. 8. Prepared specimens cut from finished material at random shall show no piping.

A "Corner" on Tin Cans.—Getting a "corner" on old tin cans and scrap iron will strike many as being an odd undertaking, yet this is what a Butte alderman has done, says the "Inter-Mountain" of that city. Within the past six months the business of saving the copper that flows in solution in the waste water from the mines, has grown to be quite an industry, and Mr. Ledford, who has a lease on the Anaconda mine water, is carrying on the business on a large scale. He requires a large quantity of tin cans and old iron. Heretofore these could be had for the hauling away, but they have been so much in demand that the owners have set a price on them, and men are regularly engaged in their collection. The alderman alluded to, it is said, now controls all the available old iron and tin cans in Silver Bow county, and has several carloads stored away which he will be willing to sell. It is understood he is desirous of getting into the copper business himself, and as he now thinks he holds the key to the situation, it is likely that somebody will be forced to come to his terms or take him in as a partner.

Competition of Smoke Consuming Apparatus.—A competition has been decided upon by the Paris Municipal Council, which has adopted the conclusions of a report on the subject by M. Thuillier, and has set aside a sum of 8,000f. (£320) for the purpose. An elaborate programme of conditions is to be drawn up; and the apparatus submitted for competition, which must be practical and not costly, will be subjected to exhaustive tests at the municipal waterworks by a commission composed of engineers attached to the Paris Municipality and members of the Hygienic Council, with power to add to their number a scientific man, a member of the Committee of Arts and Manufactures, an industrial or manufacturer, and a member of the Paris Municipal Council.

Traffic through the Suez Canal.—Three thousand three hundred and forty-one ships, of 7,659,000 tons, passed through the Suez Canal in 1893, yielding 68,000,000 in dues. According to the report of the company about to be issued, passengers numbered 186,495, and yielded 1,864,000f., while sundry accessories yielded 384,000f., making a total of 71,000,000; 3,082 of the ships, or 92½%, passed through by night. The average duration of transit was 20 hours 44 minutes, of actual motion 16 hours 53 minutes. There were nine petroleum vessels. As to the nationality of the vessels, the English were 2,405, German 272, French 190, Dutch 178, Austro-Hungarian 71, Italian 67, Norwegian 50, Ottoman 34, Spanish 29, Russian 24, Portuguese 10, Egyptian 5, American 3, Belgian 1, Brazilian 1, Japanese 1.

Repairing a Broken Pipe in a Mine.—An interesting expedient was adopted in replacing a broken length of pipe at the Claycross Colliery. The pipe in question was the discharge pipe from a set of pumps, and was carried vertically up the shaft, its length being about 420 ft. and its diameter 6½ in. The break took place in the lower portion of the pipe; and to make the repair it was necessary to raise the column slightly. To this end a couple of balks were put across the shaft at a height of 70 ft. above the pumps. These timbers formed a support for a sleeve which could be clamped to the pipe. By turning steam in the pipe the latter was warmed and expanded, and it was then clamped by the sleeve. The bolts being loosed at the broken length, the pipe as it cooled contracted upward, leaving a 1-in. space at the broken joint, thus giving room for the insertion of the new section.

A Thermometer for High Temperatures.—Mm. Baly and Charley have, according to "La Nature," designed a thermometer for measuring very high temperatures, the peculiarity of which is that quicksilver is replaced by a liquid alloy of sodium and potassium. The boiling point of this alloy is about 700° Cent., and its freezing point is -8°. In order that the tube may be kept within a reasonable length the graduation is made only from 200° up. The portion of the thermometer tube not occupied by the liquid, is filled with pure nitrogen or such a pressure that when the tube begins to soften under the influence of heat the internal pressure may be sufficient to keep it in shape. In taking temperatures it is necessary to heat only the reservoir and a small part of the tube, because there is a slight increase in the coefficient of expansion of the alloy as the heat increases, which will compensate for any error due to the lower temperature of the protected part of the tube.

The Spectra of Oxygen in High Temperatures.—At last week's meeting of the Paris Academy of Sciences, M. Janssen gave some interesting particulars of an apparatus, by means of which it was possible to raise gases to a very high temperature without sensibly heating the receptacles containing them. The experiments which he described were made with varied pressures of oxygen, and showed that from the ordinary temperature up to about 300°, the bands and rays of the absorption spectrum underwent no appreciable change. But a new fact was adduced, viz., the very remarkable increase of transparency of the gaseous column with the elevation of the temperature, a transparency which was revealed by a considerable increase of the vivacity and the extent of the spectrum, especially in the red, which led to a much clearer perception of the spectral rays. In order to raise the temperature higher, M. Janssen resolved to employ the platinum spiral tube rendered incandescent by passage of the electric current. In the experiments which he made with the 2 m. 40 tube, and with gaseous pressures up to 100 atmospheres, he found no sensible modifications in the constitution of the spectrum which could be observed. The temperatures reached were estimated at between 800° and 900°, according to the constitution of the spectrum given by the spiral. In order to attain higher temperatures it was necessary, in M. Janssen's opinion, to again increase the power of the electric generators, and that was what he proposed to do. These first experiments, however, were of great interest, for they showed that the coronal atmosphere cannot have a high temperature and not contain oxygen.

Railway Extension in Bengal.—Another step has been taken toward establishing through railway communication between Calcutta and the Burmese frontier. A special survey of the Madaripur extension of the Bengal Central railway and of the country and water-courses as far as Chandpur, on the Megna—the nearest point of the Assam-Bengal Railway is about to be undertaken under the orders of the Government of India. Singhia, a station on the Bengal Central Railway, at a point where the line defects in a south-easterly direction to the terminus at Khulua, is 83 miles distant from Calcutta. From Singhia the proposed extension strikes east, and the first important work will be a bridge over the Bhyrub River, the crossing being probably about half a mile above Upra. Two spans of 100 ft. in the center, and one of 80 ft. at each side will be sufficient. At Naral higher ground is reached and the river, which here is wide and deep, will have to be crossed by a bridge at a high level to enable large boats to pass during the flood season. Twenty-three miles from Singhia the river Modu-natti is the next difficult, and it is probable that a steam ferry will be established at Lohargara, the alternative being a floating or permanent bridge. Maxudpur, 17 miles further on, is a trade center, and from this point, by going south of the Kumar River, the construction of a large bridge is avoided. The line runs over high land to Madaripur, and from the Kumar River side it can be carried down to the banks of the Ureal Khan to meet the requirements of steamer services. The eastern portion of the line, beyond the Megna, runs from Chandpur for some 30 miles, to Laksam, on the Bengal-Assam line. The day is perhaps not

far distant when the globe-trotter, landing at Bombay, may take a direct ticket for Peking, via the Jubilee bridge, the Megna ferry, the Burmese Ruby mines, and the Great Wall of China.

Another Cyanide Process.—New South Wales Letters Patent No. 4,392, under date of May 5th, 1893, are to John Cunningham Montgomerie, of the Water of Ayr and Tam-o'-Shanter Hone Works, Dalmore Stair, Ayr, Scotland, for improvements in the extraction of gold and silver from ores or compounds containing the same, and in apparatus applicable for use in the treatment of such materials by means of solvents. The improved process consists in mixing the ore with a solution of cyanide of potassium or other cyanide solvent rendered alkaline by the addition of sodium oxide or an equivalent alkaline oxide, filtering or otherwise separating the liquid (containing the gold and silver in solution) from the ore, and treating the former by precipitation or other known mode for the recovery of the precious metals. The main features of the invention are as follows: (1) Applying the solvent solution, after separation from the first charge of ore, to a subsequent charge or successively to subsequent charges of fresh ore, the solution being fortified at each operation by the addition of a suitable quantity of the chemical agents employed, and ultimately treating the liquid (consisting of a more or less saturated solution of gold and silver) by any known means for the separation and recovery of the precious metals. (2) The addition of sodium oxide or other suitable alkaline oxide to the solvent either prior to or during its admixture with the ore, for the purpose of economizing the solvent and expediting its action. (3) Discharging the solvent remaining with the ore after filtration by adding water to the surface of the ore and thereby displacing the solvent containing the precious metals in solution. (4) The employment of dioxide of sodium (potash or equivalent) as an oxidizing and alkaline agent. (5) The employment of dioxide of sodium (potash or equivalent) in the presence of oxygen or atmospheric air under pressure. (6) In the apparatus, a barrel, filter, or leaching vessel, lined with tiles set in an acid or solvent resisting current. An upper vessel for the reception of the ore and solvent, a lower vessel in which the solution is received, a filter cloth held between the lower part of the vessel and a socket in the upper part of the vessel, wire gauze on which the filter cloth lies, and bars for supporting the wire gauze, the lower vessel being also lined with tiles.

PATENTS.

UNITED STATES.

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

TUESDAY, JUNE 5TH, 1894.

- 520,798. Ingot-Charging Apparatus. Thomas R. Morgan, Sr. and William H. Morgan, Alliance, O., Assignors of one-half to Thomas R. Morgan, Jr., and John R. Morgan same place. Combination of rotary post, movable cross-head, pivoted tongs, and means for raising and lowering the cross-head and operating the tongs.
- 520,835. Glass-Melting Furnace. Monroe Selberling, Kokomo, Ind. Combination of tank and pot furnace, with intervening passages and valves.
- 520,847. Gold-Amalgamating Machine. Phillip E. Gaffron, Denver, Colo. Combination with a flume of a rotary wheel provided with chambers carrying charges of quicksilver.
- 521,875. Pyrometer. Edward Brown, Philadelphia, Pa. Combination with the head mechanism of an outside expansion tube and sliding rods.
- 520,882. Water-Tube Boiler. John J. Hogan, Brooklyn, N. Y. Tube boiler with steam and distributing drums.
- 520,916. Excavating-Machine. Richard Dalton, Wilmette, Ill. Combination of scoops or shovels, with rotating arms fixed on a shaft.
- 520,923. Ingot-Mold. John Hingworth, Newark, N. J. Combination with the casing of V-shaped matrix portions.
- 520,935. Edging-Guide for Rolling Mills. Thomas Morrison, Duquesne, Pa. Combination of converging guides.
- 520,936. Steam Boiler. Thomas Murphy, Detroit, Mich. Sectional boiler, with inclosed water tubes.
- 520,945. Steam Boiler. Francis H. Treat, Chicago, Ill. Boiler of the tubular type, with a central water chamber.
- 520,958. Roll for Pulverizing Mills. Edwin C. Griffin, Newton, Mass. A grooved roller rotating in a closed chamber.
- 520,932. Steam Boiler. Robert Joy, Oswego, N. Y., Assignor to Thomson Kingsford, same place. A return-flue boiler with internal firebox and combustion chamber.
- 520,986. Self-Feeding Smokeless Furnace. George Gulickson, Chicago Ill. Combination of traveling grate, feed hopper and combustion chamber.
- 520,994. Apparatus for Concentrating Sulphuric Acid by Means of Heated Gases. Jacques L. Kessler, Clermont-Ferrand, France. A concentrating chamber with channels for admitting hot gases and bringing them into contact with the acid.
- 521,020. Explosive and Process of Making Same. Wilbraham Evelyn-Liardet, Elsternwick, Victoria. Composition of tar, picric acid, sawdust, the chloride and the perchlorate of an alkaline metal.
- 521,035. Hoisting and Conveying Apparatus. Thomas S. Miller, South Orange, N. J. A cable tramway with rope carrier and supports.
- 521,052. Coal chute. John Seully, South Ambry, N. J. Combination of hopper, sliding gate and screens.
- 521,054. Smoke Arrester. William P. Shank, Cairo, Ill. Combination of fan, collecting chamber and water tank through which the smoke is forced.
- 521,114. Ventilating Fan. Horace Hobbs, Milwaukee, Wis., Assignor, by mesne assignments, of one-half to Augustus W. Friese, same place. A fan of the screw type.
- 521,145. Amalgamator. Gideon Delage, Salida, Colo. Combination of a tank having an outer rim provided with a tangential inlet, an inner perforated rim, and a conical bottom.

GREAT BRITAIN.

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

WEEK ENDING MAY 19TH, 1894.

- 10,678 of 1893. Copper-Zinc-Aluminium Alloy. D. W. Sugg, London.
- 13,558 of 1893. Lead Pigments. H. R. Gregory, London.
- 4,228 of 1891. Ore Pulverizers. J. Toy, Helsinki.
- 5,803 of 1894. Producing Nitric Acid and Metallic Sodium and Potassium by the Electrolysis of Fused Nitrate. J. D. Darling and H. C. Forrest, Philadelphia, U. S. A.
- 6,111 of 1891. Miner's Safety Lamps. H. Wolff, Karlsruhe, Germany.
- WEEK ENDING MAY 26TH, 1894.
- 12,572 of 1893. Recovering Cyanides in a Dry State from Blast Furnace Gases. J. Addis, J. Cunningham and W. Macfarlane Glasgow.
- 12,587 of 1893. Improvements in the Diaphragms of Cells Used for the Electrolysis of Salt. J. C. Richardson, London.
- 5,530 of 1894. Soldering Aluminum by treating the parts with a mixture of Russian tallow and Provence oil as a binding material, and then soldering with plumber's soft solder in the ordinary way. E. Singer, F. Donat and F. Kretschmer, Chemnitz, Germany.
- 6,426 of 1894. Electrolytic tests and Bleich. Arrangements for the Economical Use of Steam and Heat. T. Craney, Bay City, Michigan, U. S. A.

PERSONALS.

Mr. M. L. Holland has been appointed superintendent of the Isele mine at Butte, Mont.

Mr. David H. Moffat, the well-known mining man of Denver, Colo., is at the Fifth Avenue Hotel, this city.

Dr. R. W. Raymond leaves New York this week on a professional visit to Arizona and Colorado. He will be absent for about one month.

Mr. Louis Janin, Jr., mining engineer, and formerly a member of the editorial staff of the "Engineering and Mining Journal," sails for England June 19th, on professional business.

Dr. M. A. Wadsworth, of the Michigan Mining School at Houghton, will hereafter act as one of the editors of the "American Geologist," of Minneapolis.

Mr. A. Thies, manager of the Haile Gold Mining Company, Larcaster County, South Carolina, will sail for Europe on June 30th. He will devote some time to visiting the smelting establishments of Germany.

Prof. Olin H. Landreth has resigned his position as dean of the engineering faculty of Vanderbilt University, Nashville, Tenn., and has accepted the chief professorship of engineering in Union College, Schenectady, N. Y.

Mr. Herschel Roberts has been appointed deputy State engineer of New York in place of Mr. Frank R. Becker, resigned. Mr. Roberts has been for some time engineer in charge of the Eastern division of the Erie Canal.

Mr. F. W. Bacorn, mining engineer, has started on a 60-day trip through Idaho, to investigate some gold discoveries in the portion of that State hitherto but partially explored, in the interests of the American Developing & Mining Company, of Butte.

OBITUARY.

Daniel E. Davenport died suddenly in this city on June 10th, aged 60 years. Before the civil war he built several railroads in Tennessee and Kentucky. Afterward he built railroads in Illinois, Brazil, Nova Scotia and southwest Africa.

Charles F. Browning, a prominent resident of Middletown, Conn., died in that city on June 10th, aged 71 years. He was formerly secretary and treasurer of the Stiles & Parker Manufacturing Company, and was a director of the Shaler & Hall Quarry Company, of Portland, Conn.

Joseph K. Bole, president of the American Steel Casting Company, died suddenly at Taurlow, Pa., on June 8th, aged 47 years. He went to Chester, Pa., a few weeks ago from Cleveland, O., to assume control of the company's affairs after the purchase of the Standard Steel Casting Works.

SOCIETIES AND TECHNICAL SCHOOLS.

Michigan Mining School.—The commencement exercises of this school at Houghton will be held August 21st and 22d. Twelve members of the graduating class have already submitted their theses, and several others will be included.

University of Minnesota.—At a recent meeting of the executive committee it was decided to authorize the sub-committee having in charge the erection of an ore-testing plant on the campus to make contracts for the necessary machinery. The sum of \$9,000 is in sight for the building, \$4,200 of which has been subscribed by business men of Minneapolis. The building is to be placed upon the river bank, so constructed that the refuse rock and debris will be carried into the river. Professors Hall and Appleby have the matter in charge, the latter being professor of mining engineering at the university.

School of Mines, University of Missouri.—The commencement exercises of this school at Rolla were held June 12th—14th. The programme for the week was as follows:

Tuesday, June 12th, 8 p. m., final celebration of Alpha Club.

Wednesday, June 13th, 2:30 p. m., annual field sports of Athletic Association; 8 p. m., final celebration of Philo Literary Society.

Thursday, June 14th, 10 a. m.: Delivery of certificates, diplomas and degrees; valedictory by W. S. Thomas, of the graduating class; annual address, by Prof. Wm. M. Bryant, of St. Louis; subject, "Wealth and Worth."

Engineers' Club of Cincinnati.—The regular monthly meeting was held on May 17th, with 26 members present. Four new members were elected. It was resolved to omit the meetings during July and August. Colonel Anderson gave an account of his visit to the Canal Investigating Committee at Columbus on March 29th, in the interest of the proposed ship canal from the Lakes to the Ohio River. Mr. S. Whitney read a paper on "Determining the Sizes of Railroad Culverts." He went into the subject very thoroughly, describing the proper method to be used, taking into account all the conditions involved, the amount and duration of rainfall, the area drained and the inclination of the watershed, and in this connection the velocity of flow.

American Society of Mechanical Engineers.—The morning of the third day of the Montreal meeting was occupied by a visit to McGill University; the buildings, laboratories, etc., being fully inspected. In the afternoon and evening sessions were held, at which a number of papers were read and discussed. After the first session a number of the members visited the power-house of the Montreal street railroad.

On Friday the final session for reading papers and discussions was held. The meeting closed by a business session, at which the routine business was concluded and the customary resolutions of thanks, etc., were passed.

On Saturday morning the members left for Ottawa. They were there entertained by Lord Aberdeen, shown through the Houses of Parliament, and finally taken to luncheon at Rideau Hall. They then returned to Montreal by a special train and about 30 of their number took the "Richelieu" steamer for Quebec. The rest of the party left for New York by a late train.

Engineers' Club of St. Louis.—At the regular meeting, June 6th, the resignation of Chas. W. Melcher as treasurer was accepted. Mr. Thomas B. McMath was elected by ballot to fill the vacancy. A paper by Mr. A. A. Stuart, entitled "Some Notes on the Brooklyn Elevated Railway," was then read by Mr. Julius Baier. The paper was accompanied by detailed drawings, showing the essential features of the structure and buildings, together with specifications for the work and a map showing the area served. In the discussion, which was participated in by Messrs. Schaub, Moore, Flad and Wheeler, the details of connection between posts and foundations were brought up, as well as the present condition of the ironwork of old structures and the amount of vibration. A paper by Mr. J. W. Woermann on "Concrete Construction on the Illinois & Mississippi River Canal" was then read by Mr. P. M. Bruner. This work, which is better known as the Hennepin Canal, connects the Illinois River near its great bend with the Mississippi near Rock Island. An elevation of over 200 ft. is crossed, necessitating numerous locks. It being impossible to get a good grade of limestone near at hand for the masonry, it was decided to use concrete exclusively for that portion of the work now in hand. It, therefore, represents one of the most extensive pieces of concrete construction in this country. The processes employed, the proportions of the ingredients, the amount of labor, rate of progress and total cost were fully stated. A brief discussion followed, in which Messrs. Moore, Schaub, Bryan and Baier participated.

American Society of Civil Engineers.—At the regular meeting in New York, June 6th, a paper was read by Mr. E. Lenthion on "A Concrete Sewer on Piles," which was briefly discussed by members present. The secretary announced the final arrangements for the Niagara meeting.

A large number of papers has been received for presentation at the annual meeting at Niagara Falls, which begins on June 20th. The list includes the following: "Wire Rope Tramways," by A. C. Savage; "Hoisting Apparatus of the Canal Headgates at Sewall's Falls, N. H.," by J. R. Freeman; "Marking of Street Lines," by C. M. Broomall; "Bradford's Ridge Tunnel," by C. W. Staniford; "Tequiquiac Tunnel, Valley of Mexico," by A. J. Campbell and E. W. Abbot; "Quality of Water Supply," by J. W. Hill; "Sand Rock Sewers in St. Paul," by George L. Wilson; "The Cippoletti Trapezoidal Weir," by A. D. Flynn and C. W. D. Dyer; "Submarine Removal of Rock, to a Depth of 35 ft. Below Mean Low Water," by J. A. Benschel; "Friction Rollers," by C. L. Crandall and A. Marston; "Railroad Signaling," by J. P. O'Donnell; "Improvement of Gray's Harbor," by B. W. DeCourcy; "Halsted Street Lift Bridge, Chicago," by J. A. L. Waddell; "Determining the Load Line on a Telephone Exchange," by A. V. Abbot; "On Testing of Building Stones," by E. Lywood Garrison; "The Sewerage System of Meriden, Conn.," by C. Ph. Bassett; "The Power Plant of the Cliff Paper Company, Niagara Falls," by W. C. Johnson; "Bridges, Buildings and Railways," by Benjamin Douglass; "Remuneration of Engineers," by T. C. Clarke; "Chautauqua Sewage Disposal," by W. B. Landreth; "Field Notes of Railroad Surveys," by Arthur Pew; "Railway Tracks and Maintenance," by Benjamin Reece; "Philadelphia Harbor Improvement," by L. M. Haupt; "Operation of Elevated Roads by Electricity," by W. A. Knight.

American Association for the Advancement of Science.—The 43d meeting will be held in Brooklyn, N. Y., beginning with the Council meeting on Wednesday, August 15th. The official time given for the Association meeting will be from August 15th to August 24th, inclusive. There will be meetings of several affiliated societies about the time of the association meeting which will be of special interest to many members of the association. The first general session will be held on Thursday morning as last year. This will give Friday, Monday, Tuesday and Wednesday as the four days entirely devoted to the reading of papers in the sections. Special invitations have been extended to distinguished foreign scientists. The hotel headquarters of the association will be the St. George Hotel, Clark street. The meetings will be held mainly in the buildings of the Polytechnic and Packer Institutes, where will be the offices and the rooms for the several sections. For information relating to membership and papers, members should address

F. W. Putnam, permanent secretary, Salem, Mass. For all matters relating to local arrangements, hotels, railway rates and certificates they should address Prof. George W. Plympton, local secretary, 502 Fulton street, Brooklyn, N. Y. Any member wishing to attend the meeting will receive necessary information by sending name and address to the local secretary as early as possible. Abstracts of papers, and nominations of members and fellows, should be mailed to the permanent secretary, Salem, Mass., until August 10th; after that date his address will be Brooklyn, N. Y. Members paying their assessments by mail before August 10th will receive their tickets for the Brooklyn meeting at once, and thus save much time in registering on arrival. The register will be opened on Monday, August 13th, in Room 2, first floor, Polytechnic Institute.

The allied societies which will meet at the same time include the Geological Society of America, the Society for Promotion of Agricultural Economy, the Association of Economic Entomologists, the Association of State Weather Service, the Society for Promoting Chemical Education, the American Microscopical Society, the American Chemical Society, the American Forestry Association, the Botanical Club and the Entomological Club.

Engineers' Club of Philadelphia.—At the regular meeting, June 2d, a communication was read from a special committee appointed by the American Institute of Electrical Engineers, conveying to the Club the thanks of the Institute for the great hospitality and kindness shown to it and its members during the sessions of its recent annual meeting, and expressing grateful remembrance of the courtesies extended during that period. The president announced that although the excursion planned for the afternoon of May 21st had been postponed on account of the inclemency of the weather, Mr. Schermerhorn hoped to arrange at a later date for the exhibition of the progress of the work being done for improving the channel of the Delaware River. Mr. Joseph T. Richards then read a paper on "Rebuilding the Pennsylvania Railroad After the June Floods, 1889," giving a graphic account of the work done at that time. The speaker illustrated his remarks by reference to a large map of the injured territory, general maps of the State, cross-sections of the bed of the Conemaugh River, etc., and at the close explained a large series of photographic views projected by the lantern. He also pointed out the fact that the flood in the valley had averaged 27 ft. in depth above mean low water, and as it was considerably deeper than this in other localities without doing serious damage, he believed that the principal cause of the immense loss in the Conemaugh was due to the fact that the bed of the stream fell at the rate of about 53 ft. per mile, and that when the South Fork Dam broke, the velocity of nearly 21,000,000 tons of water which it contained was simply irresistible. The paper was discussed by several members.

Mr. A. E. Lehman exhibited a lantern picture of a road carriage known as the "Quadricycle Peugeot," which he had examined at the maker's, in France. It consists of a four-wheeled carriage, using as a motive power a petroleum engine, the mechanism being arranged under the seats. These have been so successful in France that the company has now on hand sufficient orders to keep its plant running at full capacity for two years. The complete carriage weighs about 1,000 lbs., and costs \$1,600.

The club will make an excursion to Reading, June 30th, making visits to the Carpenter Steel Works, the Mt. Penn gravity road, the Neversink Mountain electric road and other points of interest.

INDUSTRIAL NOTES.

The Milholland Tube Company, Reading, Pa., is running its works full time on orders.

Every department except the sheet mill of the plant of Moorhead Brothers & Co., Pittsburg, is in operation.

The Crescent Steel Company, Pittsburg, has started up its new granulated steel plant, giving work to a number of men.

The Reading Iron Company, Reading, Pa., has resumed work in its sheet mill, having been closed down on account of the flood.

The Deane Steam Pump Company, Indianapolis, Ind., has the contract for a large pumping engine for the water works at Red Oak, Ia.

The works of the United States Wind Engine and Pump Company, Batavia, Ill., are crowded with orders, and are running day and night.

Four furnaces of the Bethlehem Iron Company's puddle mill at South Bethlehem, Pa., started to work on June 11th, with anthracite coal.

An addition, 30 by 100 ft., is being made to the finishing department of the Southern Manufacturing Company's plant at East Chattanooga, Tenn.

The Paige Tube Company, Warren, O., has resumed operations, which were suspended for a short time on account of difficulty in procuring coal.

The Pittsburg Wire Company, Braddock, Pa., has its wire mill in operation after a shutdown of two weeks. The rod mill is idle, owing to lack of fuel.

The Hall furnace at Sharon, Pa., has been leased

to W. C. Runyon, of Cleveland, O., and will be started up shortly. It has been idle since April last.

The open hearth department of the Spang Steel and Iron Company plant at Pittsburg, Pa., is to resume on June 15th after an idleness of over a year.

The Spang Steel and Iron Company, Etna, Pa., has its Clapp-Griffiths mill running in full, while the other departments are idle owing to lack of coal.

The Carman Thomson Machine Company, Lewistown, Me., is putting in a boiler and engine at the Lewistown Monumental Works, and doing a variety of other work.

The buildings of the Baker Forge Company, Elwood City, Ind., are under roof and nearing completion. The work of putting in machinery will soon be begun.

The Schultz Bridge and Iron Company, McKee's Rocks, Pa., has taken the contract to build two bridges over the Baltimore & Ohio Railroad tracks for the city of Pittsburg.

Mr. Reinhard Mannesmann, son of the late Reinhard Mannesmann, is negotiating for the establishment of works in Youngstown, O., to manufacture tubes under his father's patents.

The Tappan Steam Pump Company, of Chicago, Ill., is a newly organized concern with a capital stock of \$40,000. Robert Weir, Robert Craig, and Franklin P. Simons are the incorporators.

The Morse Iron Works Company has been organized in Brooklyn, N. Y., to do iron and steel construction work. The directors are Wallace Downey, Rudolph Liebnitz and Paul E. Morse, all of Brooklyn.

The Carondelet Foundry Company, St. Louis, Mo., is operating the plant to about half its capacity. A large Ridgway elevator, made by Ridgway & Son, of Coatsville, Pa., has been placed on the charging floor.

The Baltimore Iron and Tin Plate Company, Baltimore, has moved its plant from Canton to Locust Point, where a lease for three years has been secured on the plant of the Coates rolling mills, with the option of purchase.

The battleship "Indiana" and the cruiser "Minneapolis," which made such remarkable speed records recently, are equipped throughout with Blake pumps, manufactured by the Geo. F. Blake Manufacturing Company, New York.

Mackintosh, Hemphill & Co., Pittsburg, have just completed an engine with 42 in. by 60 in. cylinder to run the new blooming mill (built by the same firm) at the Duquesne Steel Works. The new mill will be running probably by the end of June.

The Chicago Hard Copper Company has been incorporated, with headquarters at Chicago, capital stock \$2,000,000, by John Moffitt, Chas. G. Tillman and Philip V. Field. The company claims an improved process for casting and working copper.

The machine shop of the Oakland Manufacturing Company, at Oakland, Me., is now run by compressed air, which is used instead of steam in the engine. The air compressor is run by water power. It is of a new pattern made in Waterville, Me., and invented by Ansel Swift, of that city.

H. B. Langdon & Co., of Minneapolis, Mo., have secured a contract in Arizona to construct an irrigation canal. The country to be irrigated is 400,000 acres, mostly in Maricopa County, and the water to be obtained from the Rio Verde. The canal will start above Phoenix, and will be 110 miles long and cost about \$2,000,000.

The Southern Immigration, Land and Title Company has been organized under the laws of Virginia with a capital stock of \$300,000 and privilege of increasing to \$2,000,000. The purpose of the company is to aid and encourage both industrial and commercial interests in the South. Mr. A. A. Arthur has been elected general manager.

The Wheeler Marine Shafting and Forging Company has been organized to make marine shafting, guns and other heavy forgings. It is proposed to build works in Jersey City, N. J. The incorporators are Robert F. Brooke, Brooklyn, N. Y.; Thomas D. Conyngham and Eldridge Wheeler, New York.

The J. W. Palmer Cement Company has been incorporated, with offices in New York, Chicago and New Orleans, to deal in American and foreign cements and in building materials; capital, \$10,000, and directors, John W. Palmer, of Bensonhurst, N. Y.; W. Floyd Dalton, John F. Shelly and Louis Inman, of New York City, and William Vail, of Brooklyn, N. Y.

It is not impossible that some contracts for the Chinese Navy may be given to the Cramp yards in Philadelphia. The Chinese Government has had a number of vessels built in England and France, and is now, it is said, desirous of trying some American builders. Two Chinese officers, Shon-Ting and Fung-Shuen, recently made a careful inspection of the Cramp company's plant.

The National Iron Works, Spokane, Washington, have just completed two new 24 in. shut-off valves, weighing, complete, 3,800 lbs. They are now in working order, completely satisfactory in every

detail. They are of cast iron, with brass facings and wedges. The largest single casting weighs 2,200 lbs. The work is smooth and well finished, and compares well with that from Eastern works.

W. C. Runyon, of Cleveland, has leased the Sharon furnace, better known as the "Hall," at Sharon, Pa., and will start it on Bessemer iron as soon as coke is available. The furnace was last operated by P. L. Kimberly & Co., but was blown out in April. Mr. S. Allen Richards will be in charge. Mr. Richards operated the Joliet furnaces of the Illinois Steel Company, for some time, and later was in charge of the Minnesota Blast Furnace Company's West Duluth furnace.

Corrigan, McKinney & Co., of Cleveland, have leased the Cleveland Iron Company the River Furnace, Cleveland, and the work of getting it in shape to blow in is now in progress. It is expected that the furnace will be making iron by August 1st. Pickands, Mather & Co. were the last lessees to operate the River furnace. It has been idle for upward of 18 months. Last year Forsythe, Hyde & Co. leased it and had almost completed the installation of new equipment when they assigned.

The Columbia Wire Company, of Chicago, Ill., has entered suit against the Pittsburg Wire Company, Pittsburg, Pa., for \$50,000 damages. An injunction is asked for to restrain the Pittsburg company from infringing on patents. The Columbia company claims to be the owner of nearly all the patents under which barbed wire can be made. In violation of protests it is alleged that the Pittsburg company has used machines which infringe on these patents. Three patents in question have been sustained by the Chicago Courts.

The Bass Furnace Company, Rock Run, Ala., is enlarging its charcoal furnace, rebuilding the stack, which is 45 ft. high and 9 ft. wide in the bosh. The height will not be increased, but the diameter of the shell of the stack will be increased to 16 ft., which will increase the diameter of the bosh 4 ft. Other improvements are in contemplation, and the superintendent has plans with regard to the treatment of bauxite ore, which he will submit to the president and directors of the company. It is on this company's property that the best average grade bauxite, and largest deposits of the ore, so far as development work has determined, occur.

Mr. W. B. Stewart is now a partner in the firm of E. P. Roberts & Co., Cleveland, O. Mr. Stewart has had 29 years' practical experience in steam engineering and general machinery and eight years in electric light and electric railroad work. The firm states that its consulting business is flourishing and that 10 engines and dynamos have lately been placed under its specifications and are awaiting its tests, besides several boilers, and also miscellaneous machinery. The firm is now making preliminary estimates for a 33-mile electric road and a number of wiring plans; also the mechanical and electrical design for a 15-ton elevator and for some special machinery.

The new steel freight steamer "Kearsarge" was launched at the yards of the Chicago Ship Building Company, at South Chicago, recently. The "Kearsarge" will be employed in the trade between Duluth and Buffalo, under the management of her owners, the Inter-Lake Steamship Company. The dimensions are: Length on keel, 328 ft.; beam, 45 ft.; and depth, 27 ft. The draught of water can be 20 ft. The engines are triple expansion, with cylinders 20, 30 and 52 in. in diameter by 40 in. stroke. There are two boilers, each 14 ft. long by 13 ft. in diameter. The wheel is 13 ft. diameter with 16 ft. pitch. All the machinery is furnished by the Cleveland Shipbuilding Company. The boat is built on the "channel" type of construction, and carries two pole spars. She will have a carrying capacity of about 3,000 tons on 18 ft. draught.

The Electro-Chemical Company has been organized in Portland, under the general laws of Maine, with a capital stock of \$800,000 and the following officers: George Linder, president; Wm. S. Spaulding, treasurer; Charles N. Waite, clerk and general manager. Directors: A. L. Hollingsworth, George Linder, George L. Meyer, Wm. S. Spaulding, James Parker. General office, Rumford Falls. The officers all reside near Boston except Mr. Waite, of Rumford Falls, Me. This company is organized in furtherance of the plans of the chemical association now doing business at Rumford Falls. The works are to be enlarged to about four times their present capacity. The contract for excavation, stone masonry and brickwork of the mills is let to J. A. Greenleaf, of Auburn, Me., and he has already commenced operations.

A press dispatch from Newcastle, Pa., says that the first consignment of Southern pig iron ever brought to that place arrived on June 9th for the Baldwin & Graham Stove Works. It was purchased in Alabama, owing to the coal strike which has paralyzed all the industrial establishments in the Shenango Valley. Blast furnaces in Sharpsville, Sharon and Newcastle, with the single exception of the Shenango Valley Company's furnace, are now coked down. There is not only a coal and coke famine here, but also a metal famine, something that was never known before. At the Atlantic furnace there are 12,000 tons of metal, but it is being held by a Pittsburg speculator for higher prices. The Shenango Valley Steel Mill has some large orders to fill, but is unable to obtain Bessemer pig.

The Newcastle tin plate mill is still running and has some large orders to fill.

Some time ago the Florida Short Line Railroad inaugurated a fast train in Jacksonville, Fla., called the "Hotel Special." Recently the train, consisting of six standard passenger coaches and a baggage car, carrying 248 passengers, left Jacksonville at 10:35 in the morning over the Florida Central & Peninsular road, arriving in Jersey City at 12:02 Friday noon, making the run of a little over one thousand miles in 24 hours and 27 minutes, or 1 hour and 27 minutes ahead of any previous record.

The train was transferred to the Richmond & Danville road at Columbia and reached Washington at 6:05 Friday morning, running time having been 18 hours and 40 minutes from Jacksonville to the latter point, a distance of 772 miles. At Washington the Pennsylvania Railroad took the train and carried it through to Jersey City, adding four cars at Philadelphia. The total actual running time of the train was 22 hours and 38 minutes, deducting only the time lost at regular stations for mails, exchange of engines and train crews; not including stops made for drawbridges, railroad crossings and taking water.

MACHINERY AND SUPPLIES WANTED.

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

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

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GENERAL MINING NEWS.

The report of the Scale Committee was adopted unanimously by the conference of the miners and operators at Columbus, O., on June 10th, and the conference adjourned sine die. The following is the full agreement resolution: Resolved, That we agree that the rates for mining 2,000 lbs. lump coal shall be as follows: Pittsburg, thin vein, 60c; thick vein, 56c; Hocking, 60c; Indiana, bituminous, 60c; Indiana, block, 70c; Streator, Ill., summer, 62½c; Streator, Ill., winter, 70c; Wilmington, summer, 77½c; Wilmington, winter, 85c; La Salle, Ill., and Spring Valley, summer, 72½c; La Salle and Spring Valley, winter, 80c. Other sections in northern Illinois field, prices relative to the above. Coal in Pittsburg district going east to tidewater shall pay the same mining prices as that paid by the Penn Gas and Westmoreland Coal Company. This scale of prices shall be in effect and bind both parties thereto, beginning June 18th, 1894, and continuing until the first day of May, 1895, subject to the following provisions: Provided that the above-named scale prices for the Pittsburg district shall be generally recognized and observed. It is further provided that operators and miners shall cooperate in their efforts to secure a general observance of the prices named for that district, and if, during the period covered by this agreement a general recognition of the prices named cannot be secured, either party to this agreement may call a meeting of the joint Board of Arbitration. If the board is unable to agree, the members thereof shall select a disinterested man, whose decision shall be final. Whenever miners desire, they shall be permitted to elect and place on the table as check weighmen men of their own choice. Wages shall be paid on the above scale semi-monthly. All balances due on pay day shall be paid in cash. An Interstate Board of Arbitration and Conciliation, consisting of four operators and four miners, shall consider and determine upon any inequality complained of as between the different fields named in the above schedule of prices. John McBride, Patrick McBryde, John A. Cairns, James Dunkerly, Cameron Miller, P. H. Penna and John Fahy signed for the miners, and for the operators: Ohio, J. S. Morton, H. L. Chapman; Pennsylvania, Francis L. Robbin, M. H. Taylor; Indiana, J. Smith Talley, Walter S. Bogle; northern Illinois, A. L. Sweet and E. T. Bent.

Snake River Mining Company.—This company has been incorporated for the purpose of engaging in the business of mining in the States of Oregon, Washington, Idaho, Montana and Wyoming, with its principal office at Portland, Ore. P. S. Malcolm, C. W. Johnson, R. W. Baxter, D. S. Tutbill and John B. Cleland are the incorporators. The capital stock is to be \$10,000 divided into \$100 shares. The immediate object is to engage in placer work on the Snake River.

ALABAMA.

Cherokee County.

(From our Special Correspondent.)

The occurrence of a seam of mineral which is attracting the attention of geologists and chemists as to its identity, was shown recently at Dikes in running a tunnel at the Washer bauxite bank. In appearance it resembles the bituminous shale found associated with the Coal City coal seam of the Coosa coalfield; its color when first mined is similar to a rusty black

hat; but exposure to the atmosphere changes it to a dingy gray, and causes it to slack; in a grate it burns equal to coal, in fact it makes a clearer, more pleasant flame and less dirt and cinder. The analysis made by Booth, Garrett & Blair, of Philadelphia, resulted in the following: Combustible matter, 91; ash (alumina 5, and silica 3), 8, as reported by Mr. Garvin, superintendent for Bass Furnace Company. The extent of the seam or body is not determined, but the workmen who drove the tunnel report its continuity as far as they drove. This combustible material occurs in association with the bauxite ore and iron clay of the district, but has never been encountered in any other workings in the vicinity.

Republic Mining and Manufacturing Company, Rock Run.—This company is mining and shipping bauxite from Dikes at the average rate of 25 tons daily. The company contemplates erecting a furnace to roast the ore previous to shipment in order to eliminate moisture, which adds to the weight to such a considerable extent as to affect profitable shipment, especially during a rainy season.

Southern Bauxite Company.—This company, of Piedmont, Ala., has resumed work on the mines owned by it at Dikes, and shipments to the Eastern markets during May reached 500 tons. Efforts to ship 50 tons daily are being made, but some inconvenience on account of inability to obtain teams to haul the ore to the railroad has been experienced. The distance for wagon haul is three miles, and at present 14 mule teams are employed which will enable the company in future to carry out its plans of shipping 50 tons daily.

Tecumseh Iron Company, Tecumseh.—This company is running both the Baker Hill and the State Line brown iron ore banks almost to the capacity of the washers, which at present is reduced below the normal condition, because of lack of water owing to a long spell of dry weather. These are the only iron ore banks in active operation in this county at present.

ARIZONA.

Maricopa County.

Vulture.—Press advices from Phoenix are to the effect that this mine in northern Maricopa County is about to be reopened and worked according to modern methods. The mine is owned by Senator Tabor, of Denver, who has gone to Phoenix to start work. The only difficulty lies in the reconstruction of a nine-mile pipe line from the Hessa Yampa, destroyed at the time of the great Walnut Grove dam disaster.

Final County.

Mammoth.—J. F. Clement has sued Charles L. Hall in the District Court at Phoenix for the possession of one-eighth of the Mammoth group of mines in the Superstition district, 40 miles east of Phoenix, and for \$25,000, estimated to be the share of net profits due on such one-eighth for the past years of operation. Clement was the mining expert on whose report Hall is said to have bought the group, and alleges in his complaint that his compensation was to have been one-eighth of all mining properties so purchased.

CALIFORNIA.

Mariposa County.

A company has been registered in London under the name of "The Sberlock Gold Mines, Limited," to acquire the Sberlock mines which comprise the W. Y. O. D., Omaha, North Star, and Wisconsin mines, situated in the Whitlock mining district, Mariposa County, California. The capital is £30,000 in £1 shares. The directors are Messrs. C. H. Tindal, W. B. Smith, W. Chatwin, F. Spencer, and D. L. Baumgarten.

Mono County.

Bodie Consolidated Mining Company.—The official letter for the week ending June 3d says: North drift from No. 1 west cross-cut, 30 level, was extended 10 ft. The face is broken up, but the bunches of ore through the porphyry are of good grade. Winze from above drift was extended 8 ft. The ore in the bottom is about 12 in. wide and of good grade. Commenced crushing ore in the Bodie mill on May Crushed 71 tons. Average battery assay, \$37.08; 30th tailings, \$9.38 per ton.

Nevada County.

North Star Mining Company.—A meeting of this company will be held in San Francisco on July 10th for the purpose of increasing the capital stock of the corporation from \$1,000,000 to \$2,000,000.

It is said that the company intend doing this in order to raise money wherewith to sink a new vertical shaft on Rocky Bar Hill through which all the claims recently purchased by Mr. Hague can be worked.

Sierra County.

Gray Eagle Mining Company.—The main tunnel of this company on the Forest Hill divide, at a distance of 4,000 ft. in, has struck pay gravel.

COLORADO.

Boulder County.

United States Coal Company.—The workings in the Caledonia mine, at Louisville, have been carried on at a depth of 120 ft. A drill hole was begun in the bottom of the shaft and drilling to a depth of 70 ft. below the old workings a vein of coal, 6 ft. in thickness, was found with a sand rock roof. The company will sink a shaft to the new vein. The Acme mine is in the same locality, and a bore will be

commenced in that mine in a few days to tap the new vein.

Dolores County.

The following list shows the ore and matte shipped from Rico for the last week of May: Rico-Aspen, ore, 18 cars; Black Hawk, ore, 18 cars; W. W. Parshall, matte, 3 cars; Enterprise, ore, 1 car; Union-Carbonate, ore, 4 cars; Iron Mine, ore, 1 car; Sheridan, ore, 1 car; Pay Roll, ore, 1 car; Montezuma, ore, 2 cars.

Enterprise Mining Company.—Work at the Enterprise is proceeding as usual, says the Rico "Sun." Nine cars (each car containing 1½ to 12 tons) were shipped to the local smelter and one to Denver. Some good ore has recently been found in the contact, and the development work is meeting with pleasing success.

Rico-Aspen Consolidated Mining Company.—The Rico-Aspen is now giving employment to 110 men and making the usual shipments of ore. The quantity and value of the ore are said to be improving.

El Paso County.

A late dispatch from Cripple Creek says that no trouble has occurred over the opening of mines this week. Most of the agitators have left the camp. The Victor mine resumed operations on June 13th, and now over 20 mines are lifting ore.

Gunnison County.

Shipments of coal and coke from Crested Butte for the week ending June 7th amounted to 2,419 tons of bituminous coal and 843 tons of coke.

The Carpenter group on Gold Hill is producing some rich ore at present, and will soon ship another car.

Iron Cap.—This mine, at Dubois, has a second car of ore ready for shipment, which it is thought will run over \$100 per ton. The ore is said to be increasing in richness with depth.

Lake County.

(From our Special Correspondent.)

Chemung, Leadville.—The shaft is down 200 ft. and on top of the gray quartz which will be sunk through to get at the known ore body. It will likely be caught at a depth of 300 to 350 ft.

Fanny Rawlings Mining Company, Leadville.—There is good ore in sight, but no shipments are being made. A new prospect drift has been started.

O'iga Lease, Leadville.—An upraise is being made in the gray lime to catch the ore chute, and an exploring drift is being run between the quartzite and gray lime.

Pilgrim Mining Company, Leadville.—It is announced that this company will resume work in the shaft before June 15th. The property is located on Printer Boy hill and the shaft is down 117 ft. It is the intention to sink 20 ft. farther to strike the parting quartzite. The management expects to encounter the Lillian ore chute.

Union Gulch Section.—Since the discovery of gold ore in the Hard Chance group there has been quite a rush of prospectors to that section. But little work has been done in that locality for the past few years, but the vein opened up in the Hard Chance has stimulated work there. The owners of the Hard Chance have not yet made any shipments. The outcrop has been uncovered for a distance of 20 ft.

Park County.

Sovereign Mining Company.—At Denver, on June 9th, Judge Graham appointed John Cummins as trustee and ordered that the sum of \$7,354,166.65 be paid by the Sovereign Mining Company to its bondholders within five days, or that the group of mines in Park County, owned by the company, be sold at public auction to satisfy the indebtedness. December 1st, 1884, the Sovereign Mining Company delivered to the American Loan and Trust Company 5,000 bonds of \$1,000 each, secured by mortgages on all the valuable mining properties in Park County. The bonds certified by the trust company are now outstanding and are in the hands of sundry persons throughout the country. On May 1st, 1891, the Supreme Court in New York City dissolved the trust company and forfeited its corporate rights and franchises. J. Edward Simmons was appointed receiver of the property. The indenture failed to provide a successor in trust and the District Court of this county was appealed to. Judge Graham's order directs the new trustee to sell the property at the court-house in Fair Play.

San Juan District.

Four years ago there was but one smelter in operation in the San Juan mining district. The ores to supply it and keep it running steadily came from Silverton, Red Mountain and Rico. The entire product smelted was less than 20,000 tons. To-day there are in operation the San Juan smelter and the Standard at Durango, and Grand View at Rico, the Loder at Ouray, the Cooke now in operation, and the Walsh ready to blow in at Silverton, and a small plant at Lake City, says the Durango "South-west."

San Miguel County.

Marquis & Riley Stamp Mill.—This mill, recently constructed in Telluride is now steadily running on ore from Mr. Riley's property on Elk Creek. It is said the ore averages \$20 per ton in gold.

San Miguel Consolidated Gold Mining Company.—The entire 120 stamps of this company's Bear Creek mill and the 40-stamp Gold King mill

were working last week for the purpose of making a power test, which proved satisfactory. The distance from the mouth of Bear Creek, where the connection was made with the electric power line of the San Miguel Consolidated to the Belmont mill, is over 19,000 ft. The distance from the mill to the generating station at Ames is nearly 14 miles. The motor for the Belmont mill is in place, the connection with the machinery made and the mill will be put in steady operation this week. Robert Neely has been appointed foreman of the mine. The force will be largely increased.

Seigniorage.—Some of the ore taken out recently from this property at Vance Junction runs well in gold. The character of the ore very much resembles the Yankee Girl. Assays of ore taken from leads lately located in the immediate vicinity of the Seigniorage ran as high as 12 oz. in gold, and considerable prospecting is going on in that district. It has been finally decided to erect the plant for the treatment of rebellious ores by the Beam process at San Miguel, one mile below Telluride. The works will have a capacity of 20 tons per day. The machinery is in transit; and work on the buildings required for the plant will be commenced very soon.

FLORIDA.

Marion County.

Compagnie des Phosphates de France.—The engineer's reports, as published in Paris, give the amount of phosphate rock shipped by this company from March 27th to May 19th at 5,718 tons, or at the rate of about 3,000 tons per month.

GEORGIA.

Polk County.

(From our Special Correspondent.)

The Augusta Mining and Investment Company, Cedar Town, and the North Georgia Mining Company, also of Cedar Town, are shipping brown ore to Rome, Ga., and Tennessee, but owing to the banking of the furnaces at South Pittsburg the output from the banks operated by these companies is below the average.

Fouche & Carey, of Rome, Ga., have leased the brown ore banks at Oredale, and are shipping lump ore to the Bass Furnace Company, at Rock Run, Ala. On account of low stage of water, the washer is not in operation, and about 300 tons of gravel ore has accumulated on the dumps. The owner of this property, Mr. Marsh, of Atlanta, Ga., is preparing to connect the washer plant with Milligan's Springs, about two miles distant, and bring the water by piping to the washers.

IDAHO.

Boise County.

Boulder.—Some very good ore has recently been taken out of this mine, on Elk Creek. There is some free gold, but most of the ore is sulphurets, which are run over the concentrator.

Owyhee County.

De Lamar Mining Company, Limited.—The detailed report of Capt. J. W. Plummer, mine manager, for the month of April, shows the usual amount of new prospecting work, making a total of 249 ft. of new drifts, upraises, etc. Work on the seventh level east, Iron Dyke, has been temporarily suspended and the fifth level resumed. The distance between the fifth and seventh levels is considered too great for economical exploration, and the sixth level east will be extended into the silver region, work being carried on in the two places simultaneously. The Sommercamp tunnel is being cleaned out; as soon as it is repaired exploration work will be resumed. The mill ran steadily during the month, and the table of work performed for April shows as follows: Wet tons crushed, 3,455; dry tons crushed, 3,080; assay value of the pulp in gold, \$23.18; in silver (at 60c.) \$6.20; assay value of the tailings, in gold, \$3.87; in silver, \$0.94; percentage saved, 83-63%. The pure gold produced was 2,567.575 oz.; the fine silver produced, 28,937 oz. The value of gold produced was \$51,352; value of silver, \$17,491. Value of ore shipped during the month, \$7,874; bullion differences amounted to \$1,877, and miscellaneous revenue to \$871, making a total of \$79,465. The expenses for the month were \$37,216, leaving the estimated profit for the month \$42,249. The Pelton water wheel commenced its duty April 5th. Its power was gradually increased as the snow disappeared from the banks of the ditch. Everything connected with the mine and mill is in good order and working smoothly.

Trade Dollar.—The water blast has just been introduced in the mine for ventilation, says the Silver City "Avalanche." Water is taken from a ditch and conducted through 2½-in. pipe through winzes to the No. 3 level, a perpendicular distance of something over 100 ft. From this point a horizontal pipe extends to the face of the drift. The water flowing through the vertical pipe creates a suction in the horizontal pipe. This blast can be extended through winze D to the adit tunnel, 405 ft. below, and as many connections put in as may be necessary to produce perfect ventilation throughout the mine. At present it is used only in No. 3, where it works well.

ILLINOIS.

Bureau County.

Spring Valley Coal Company.—At the annual meeting recently the old officers were re-elected as follows: President, M. H. Taylor; vice-president,

C. H. Strong; secretary, M. A. Luce; treasurer, F. J. Kennedy; general manager, S. M. Dalzell.

MAINE.

Knox County.

The lime business, which has been very quiet since last fall, has taken a new start, and a number of quarries around Rockland have been started up recently.

Piscataquis County.

Barnard Slate Quarry.—This quarry, which has been closed for several years, is being reopened. New buildings are being erected and machinery put in.

Waldo County.

State of Maine Lime Company.—This company was organized some time ago by New York parties for the purpose of manufacturing lime at Islesboro. Two fine kilns were erected on the east side of the island, about half way from Turtle Head to Ryder's Cove. Some lime has been made, but from numerous causes the company has not been successful. An excellent vein of rock has been discovered, and it appears to be in abundance. The company's entire interest in the plant will be sold at public auction June 18th.

MICHIGAN.

Copper.

Quincy Mining Company.—This company at the annual meeting in New York last week, re-elected all the old directors and officers.

MINNESOTA.

Duluth.

(From our Special Correspondent.)

Ore shipments for the season have been 451,390 tons, of which 320,000 tons have been from Two Harbors and 130,000 tons from Duluth. Because of the decision of sales-agents it is impossible to give shipments from individual mines except by estimates. Vessels began hauling out of the ore trade the first of the week because of the scarcity of coal, but will be at it again in a few days as steadily as ever. Ore freights are 80c. from the head of Lake Superior to Lake Erie ports.

Iron—Mesaba Range.

(From our Special Correspondent.)

Auburn.—Both this mine and the Norman under the ownership of the Minnesota Iron Company have begun loading cars in mining operations. Extensive shipping will be started soon. At the Norman stripping is not yet finished, some 50 men being employed. At the Canton mine of the same company, 1,526 tons were recently raised in one day, and the mine has shipped 44,000 tons to date.

Ohio Mining Company.—At the annual meeting in Duluth, a complete change was effected. George Green, proprietor Metropole Hotel, New York, was elected president; Geo. W. Lamb, vice-president, Thos. E. Sloan, treasurer, F. F. Vreeland, secretary, all of New York. These, with T. H. Pressnell, F. Harrett and W. C. Gilbert, of Minnesota, are the directors. The company will maintain branch offices in New York and in Virginia, Minn. So soon as a suit brought against the company by the fee-holders is settled the mining of ore will begin. J. H. Temple, Duluth, is made general manager.

Oliver Mining Company.—It is reported here, but is impossible of confirmation, that the Carnegie Steel Company has bought an interest in this property. If so, its shipments will be very large indeed. As a straw it may be said that mining operations at the rate of 5,000 tons daily will begin next week, or as soon as arrangement can be perfected. Some of the company's ore is being consigned to the Carnegie docks on Lake Erie.

Iron—Vermilion Range.

(From our Special Correspondent.)

Minnesota Iron Company.—This company held its annual meeting in Duluth June 11th, re-electing all officers and directors whose terms had expired. No other business was done. The Duluth & Iron Range Railway, a sub-corporation of the iron company, also re-elected all old officers. Its annual report showed gross earnings of \$1,202,864 and net after paying all interest on bond and income certificates \$168,659.

MISSOURI.

Jasper County.

(From our Special Correspondent.)

Joplin, June 11.

There was a marked activity in this lead and zinc mining district during the past week. Mine operators were surprised at the sudden demand for zinc ore, as the ore buyers were out for everything in sight and offered an advance of \$1 to \$1.50 per ton. It was evident that the buyers were not purchasing the ore on the present market quotations of spelter, which would not warrant the prices paid, which ranged from \$18 to \$19.50 per ton. The general belief among operators is that the smelters can see a general revival of the spelter market and that they are now putting in a surplus stock of ore. The sales of ore from the Joplin district were 1,476,600 lbs. of zinc ore and 377,230 lead, value \$19,402. Lead ore declined, the market closing at \$16.50 per thousand.

The Chatham Mining Company has recently experienced great trouble with the acid in the water eating out their iron pump column pipes, and they will commence this week putting in wooden column pipes. This will be the first wood column put in a

mine in this entire district. Arrangements have been completed for the rebuilding of General Noble's concentrating plant, recently destroyed by fire.

Webb City and Casterville.—The sales and shipments of zinc ore from this district were greater than any previous week this year. The following named companies all made heavy shipments: Center Creek, 727,670 lbs. zinc ore; Chatham Mining Company, 658,400 lbs. zinc ore; Eleventh Hour, 391,509 lbs. zinc ore; Mound City, 349,510 lbs. zinc ore; N. E. Perry, 239,210 lbs. zinc ore. The total shipments from the district were 3,102,520 lbs. of zinc ore and 304,000 lbs. of lead, value, \$31,663. The ore buyers who were in the market at this district were representing the smelters of Weir City. W. & J. Lunyon, S. H. Lunyon, of Pittsburg, Kan., Girard, Kan., Rich Hill and Glendale, Mo., and Collinsville, Ill.

Lawrence County.

(From our Special Correspondent.)

The Aurora district made a heavy sale and shipment of ore last week—over 1,050,000 lbs. of zinc ore and 200,000 lbs. of lead; value, \$9,889.

Newton County.

(From our Special Correspondent.)

The Spring City mining district is still making a large and steady production, and last week sold 193,890 lbs. of zinc ore and 8,990 lbs. of lead ore. At the Granby mines, Mr. John Kingston, superintendent of the mines and smelter at Granby, was in Joplin last week, and reports the district and mines in a prosperous condition.

MONTANA.

Beaver Head County.

Speaking of the Bannack district generally, says the Butte "Inter-Mountain," the New Departure mine has been constantly worked by Hon. L. A. Brown, and shows up better than ever. Kirkpatrick & Company have a concentrator in operation in this same district. A. Besette is making regular shipments of silver ore from the Ingersoll mine. James Dunphy, leasing the Golden Leaf, has a quantity of gold ore ready for shipment. A number of placer claims are being worked.

Odell.—At this mine, in the old Bannack district, 30 men are now employed. The mine is operated by a Colorado company. A 25 stamp mill is working the ore and 25 more stamps are soon to be added, it being claimed there is a five-years' reserve of ore in sight. The mine has a blanket vein 25 ft. in depth. It is the intention to put in a Pelton water-wheel to operate the mill. A tunnel is now being driven 250 ft. and in a short time the company expects to increase its force to about 75 men. The Odell produces gold, the ore being generally low grade, with occasional rich pockets.

Polaris.—At this mine, in the Bannack district, the face of the tunnel shows well, and it is believed that the vein has been nearly reached.

Deer Lodge County.

Calliope.—A small quantity of ore from this mine worked in an arrastra has given high results. The mine is on the Big Blackfoot, near Lincoln. It has a narrow vein of quartz in a porphyry formation carrying free gold. The vein is small and bunched, but rich.

Jefferson County.

Eva May.—This mine, says the Basin "Times," is 4 miles from Basin. The shaft house is a commodious one, and the largest in the Cataract mining district. The engine is also the largest, and was built with special reference to deep mining. There is machinery upon this property to do all the work, and a machine for framing the heavy timbers is one of the requisites around a hoisting works. The shaft is a two-compartment one, and is 350 ft. in depth. There are three levels, at the 100, 200 and 300, respectively. The 100 connects with a drain tunnel run in on the lead from the bed of the creek, entirely on ore, and this portion of the mine has been extensively developed, as there is a large quantity of ore at the mouth of the tunnel that came from these workings. On the 200 there is a small station which crosscuts the lead. On this level the face is in 30 ft. of first-class ore, and there is a winze 75 ft. deep 50 ft. from the station in ore. At the bottom of the winze drifts have been extended east and west in fine bodies of ore. On the 350 drifting continues east and west. On this level the lead is 90 ft. wide with 30 ft. of concentrating ore. On this level the lead is crosscut to the hanging wall. The character of the ore in this lead is the same as in all the Cataract country, carrying copper and silver with some gold, while there are some rich bunches. The shaft is very wet, owing to the seepage of surface water, but the pump has to be kept running only four hours in 24. This company is only working eight men at present, as the mine is sufficiently prospected to know that it warrants the building of a concentrator. Manager Simpson has been on an extended visit in the East, and it is expected that on his return work will begin on the plant. The work is directed by John Sheehan, who discovered the mine in 1889.

King Solomon.—E. Redding has bonded this mine to Helena parties for \$7,000 and 15% royalty of the value of the ores taken from the mine, and if the bond is taken up the royalty is to be applied on the purchase. About 1,800 lbs. of the ore were shipped to the East Helena smelter recently as a test lot.

Lily of the West.—This mine, near Basin, five miles up Cataract Creek, has a tunnel in 210 ft. on 2 ft. of pyritic iron ore, a sample of which has gone

high in gold. A sample has been taken out and will be shipped to the Colorado Smelter, in Butte. The property is owned by James Thompson.

Mary K.—The boiler for this mine, says the Basin "Times," has been received and is now on the ground, and the engine is expected daily. Work will be commenced on the fraction a short distance west of the Montana Central depot, and sinking will be continued to a considerable depth before cross-cutting or stopping will be attempted. This is one of the properties recently bonded by F. A. Heinz, and as it is his belief that the Hope vein runs north of the mountain and parallel with the Montana Central track, he will try to cut it.

Robert Emmet.—This mine is situated about 2½ miles up Basin Creek and is owned by Jerry Mahoney, James Pollard and Mike Early. The shaft is down 18 ft., and recently struck a 5-ft. body of ore carrying gold and silver.

Lewis & Clarke County.

Lode locations have been filed as follows: Oscar Johnson, Jasper Lode, Seven Mile District; W. O. Birkhead and James McDougall, Butterfly Lode, Stemple District.

Black Warrior.—This mine, in Poorman gulch, has a shaft now down about 60 ft., and the vein is showing improvement.

Governor.—This mine has a shaft down 93 ft. Crosscutting at that level shows a lead 20 ft. wide of fair grade milling ore. The mine is at the junction of Governor and Poorman gulches.

Great London.—This mine is owned by John Duff, W. Murray and H. Mericle. They have a shaft down 100 ft., and recently struck a considerable body of ore.

Piegan Mine.—Ore from this mine is now being treated in the Empire Mill at Marysville, with good results.

Poorman.—This mine, in Poorman Gulch, says the Marysville "Mountaineer," has a shaft down 125 ft., and another 175 ft., and a drift has been run to connect the two shafts, a body of high grade ore being encountered the entire distance. The property is owned by J. N. Villard, L. L. Lush, Jos. Gilbault, N. Des Rosier and James Shaffer. These parties are also the owners of the Summit, De Esto, Snow Trail, Rainbow, M. L. L. Blue Cloud and other claims, all adjoining. The rock assays well and there is a good water right and mill site.

Prize.—This mine, says the Marysville "Mountaineer," is owned by the Murray Bros., of Marysville. They are now running their new 10-stamp mill to its full capacity. In the mine 10 or 12 men are employed. The ore is hauled from the mine, which is distant from the mill about half a mile. The company now has on its payroll 26 men and the ore now being worked is of a high grade.

Silver Bow County.

In Butte, says the "Inter-Mountain," the copper concerns are working with their usual vigor. The Lexington mill will be at work again soon and the Colorado company will have two of its furnaces smelting ore. The Boston & Montana Company is shipping about 1,000 tons of ore daily to Great Falls. The Butte & Boston people are curtailing their output at present owing to the fall in copper prices. The Parrot, Heinz and Butte Reduction Works are working to their full capacity and everything in the district is moving along with its accustomed regularity, except the silver mines. Only a few of the richest of these can realize a margin at the present silver quotations.

American Developing and Mining Company.—At the annual meeting of the stockholders of this company held May 31st in Butte, the following trustees were elected: Bernard MacDonald, J. W. Astley, F. W. Bacorn, E. L. Whitmore, Henry Burrell, Chas. J. Barclay, Jas. H. Henley, Alex. Burrell. The trustees then elected the following officers: Bernard MacDonald, president and treasurer; J. W. Astley, vice president; H. Hamilton Walker, secretary.

Anaconda Mining Company.—This company, says the "Inter-Mountain," is raising more ore at present than its facilities for hauling away to the smelter demand, and these continue to be taxed to the utmost. The Mountain Consolidated force was laid off one day during the week, the orebins being filled to the brim. The High Ore mine, which has been working with curtailed force for some months, is now one of the leading producers. It is beating all former records of its own, the force of men employed having been largely increased. The ponderous hoisting plant, intended to be installed on the Never Sweat mine, has been removed to the High Ore No. 2, where it is being placed in position. A smaller hoist will be placed on the Never Sweat. Seven or eight streams of water continue to pour down the burned district of the Anaconda, east of the shaft.

Golden Era Mining Company.—This company, incorporated by C. C. Clark, Frank Farlin, Judge J. J. McHatton and others, owns two claims, the Golden Era and the Golden Shield. The latter was bonded for \$5,000. These claims are located in the Granite mining district, 13 miles southwest of Butte. As their name implies they carry gold. The Golden Era is developed by a 70-ft. shaft and a 200-ft. tunnel. A force of miners has been put to work connecting the shaft with the tunnel.

Isele Mine.—Work has been resumed at this mine, under charge of Mr. L. Holland as superintendent.

NEVADA.

Lincoln County.

Condor.—It is expected that all the ore at the Condor mill will be run through by this week, and a clean-up made in a few days more, says the Pioche "Lode." The run has been exclusively on ore from the Jim Crow mine in Ferguson district, and nearly 1,200 tons have been worked, giving good results.

Hiko Mining and Milling Company.—The Hiko mill was burned down last week, says the Pioche "Lode." The mill was the property of an Eastern company, and was insured for \$10,000. At the time it burned it was under lease to the Hiko company, and was working on ore from Ferguson district.

Storey County—Comstock Lode.

The following were the pay-rolls of Comstock mining companies for May: Hale & Norcross, \$2,184; Andes, \$1,000; Con. Cal. & Va., \$9,541; Ohio, \$3,317; Mexican, \$2,145; Best & Belcher, \$2,207; Gould & Curry, \$1,388; G. & C. and B. & B. shaft, \$124; Alta M. and M. Co., \$2,418; Occidental, \$1,045; Kentucky, \$920; Crown Point, \$3,368; Yellow Jacket, \$3,072; Belcher, \$3,418; Seg Belcher, \$669; Scorpion, \$900; Savage, \$3,600; Justice (estimated), \$1,100; Chollar, \$3,349; Potosi, \$3,607; Union Shaft, \$2,390; Ward shaft and Bullion, \$1,398; Sierra Nevada, \$1,300; Alpha and Xchequer, \$840; West Con. (estimated), \$1,800; Nevada Mill (estimated), \$2,500; Electric Light (estimated), \$500; Water Company (estimated), \$3,000; Quartz Mills (estimated), \$7,000; total, \$69,600. The pay-rolls are \$5,743.50 higher this month than last. It is a year or more since they were as high before.

Segregated Belcher & Mides Consolidated Mining Company.—The annual meeting was held in San Francisco, and 73,160 shares were represented. J. P. Marten and J. H. Dobinson were elected directors in the places of E. P. Bray and W. A. Jones, while W. E. Sharon was elected superintendent in the place of H. M. Gorham. The directors are: Thomas Anderson, president; Herman Zadig, vice-president; and J. P. Marten, J. H. Dobinson, and W. H. Hart, directors. E. B. Holmes was re-elected secretary, and his financial statement showed a credit of \$1,577.56.

The following are extracts from the latest weekly official letters of the superintendents of Comstock mining companies:

Alta.—We have finished the winze station and sinking has been commenced. The south drift from the north raise was advanced to a total length of 80 ft. There are 10 or 12 in. of fair-grade ore in the face. The average value according to car samples is \$33.62 per ton.

Consolidated California & Virginia Mining Company.—The Virginia "Chronicle" says that it will take several days before they can reach a point on the 1,700 level, which will be fully under where the good ore was found 22 ft. above. The work of reopening the lower part of the ground is being pushed with all vigor. In the meantime they are stopping out the ore which was found above. When there is a sufficient accumulation of this ore in the bins it will be shipped to the Morgan mill for reduction.

Crown Point.—The south drift on the 600 level from the top of the 700 level raise is in 206 ft. We have stopped this drift temporarily and started No. 2, west crosscut from it 75 ft. south of No. 1 crosscut. It is out 4 ft. the last 2 ft. in quartz assaying from \$3.50 to \$7 per ton, nearly all gold. The south drift on the 500 level from the shaft station is out 210 ft. The face is in a mixture of porphyry and low-grade quartz. We have completed the work of cleaning out and repairing the south lateral drift on the 800 level and have started a drift from the south end of it to the southwest, with the intention of connecting with the northeast drift now under way and run jointly from the Belcher mine by that company and the Crown Point company.

Justice Mining Company.—Last week this company milled at the Taylor mill 32 tons of ore, the average assay value of which was \$17 per ton, mostly gold.

Kentuck Consolidated.—The north drift from the east crosscut on the 1,035 level is in 60 ft., and continues in quartz with spots of pay ore. The south drift from Jacket incline, 1,200 level, is in 100 ft.; face in low grade gold ore.

Occidental Consolidated.—From the west ledge above the 400 level we continue to extract about 8 tons of ore per week of the average value of \$42 per ton as per car sample. Milled during the month of May, 132 tons of ore and slimes, and produced bullion valued by assay at \$2,428.34.

Savage.—On the 1,051 level east crosscut 1, started from the north drift at a point 45 ft. from the station, was advanced 20 ft.; total length, 90 ft.; the face is still in ledge formation. The upraise from the north drift has been carried up 50 ft.; from the top of this upraise they have started a west crosscut and advanced same 10 ft.; face in quartz giving some fair assays. On the 1,100 level west crosscut 2, started from the face of the north drift, was advanced to a total length of 52 ft.; face is in quartz and porphyry. We are still repairing the main south lateral drift on this level. During the week we have hoisted 54 cars of ore; car samples average \$24.06 per ton.

Segregated Belcher.—The east crosscut from the north lateral drift on the 1,150 level has been extended 11 ft. The face is in porphyry with some low grade quartz through it. We continue to stope

north from the south raise on this level on a streak of pay from 1 to 5 ft. in width of fair grade, from which a few tons per week are saved.

NEW MEXICO.

Bernalillo County.

Cochiti Mining District.—Mr. Warner A. Root says in the Denver "Republican" that the Cochiti district, which extends several miles in length by 3 to 4 in width, is about 40 miles in a westerly direction from Santa Fe, and reached by a good wagon road all the way from that city. The nearest railroad point, however, is Wallace, on the Santa Fe, from which point stage lines run daily a distance of about 24 miles. The principal mines so far developed, which is not saving much, are the Washington, Lone Star, Iron King and Crown Point. The general character of the country rock is birds-eye porphyry overlaid greatly with trachyte lava rock. The discovery point in most of the claims is where the outcroppings appear to be big blowouts or chimneys, and so far these are from 30 to 50 ft. in width. The vein rock is more or less heavily mineralized quartz, with black sulphurets of silver, carrying gold, and the richer the ore is in silver the more gold is found. So far as I visited there seems to be three distinct veins, varying in width, extending through the high ridges from Pino canon southward through Colla, Peralto, La Jara and onward even into Bear canon; and by development the ore is said to be nearer free milling from Colla canon to the south. While Eagle or Bland City is growing rapidly, probably Allerton will be the principal camp or town of the district, lying as it does near the mouth of Pino canon. From here wagon roads to Madia Dios and Cochiti canons on the north, Colla, Peralto and La Jara canons on the south, can be built. Forests of heavy pine and cedar timber abound on all sides. It is at Allerton, where the officers of the Cochiti Mining and Milling Company are erecting an amalgamating mill of 30 tons capacity. The process of treating the ore will be by cylinder roasters, running through crushers and Cornish rolls and over amalgamated plates. Mr. Bailey, the mill man, is of the opinion that this process will save 90% of the gold and silver in the ore. The product will then be shipped to the Denver Mint. The Iron King mine, situated near the Lone Star and Crown Point mines, about 8 miles away above Eagle or Bland City, and owned by this company, is considered the richest gold and silver bearing ledge in the district, and from the present outlook 50 to 60 tons can easily be shipped daily for years to come, although it may require some development to prove this. Should the mill prove a success in the treatment of the ores of the district others will be erected. It is expected sufficient water can be taken from springs in Pino canon, some three miles above Allerton, but should such not be the case, it will be brought across the divide between Cochiti and Pinona, probably a distance of 5 miles, and with a fall of 50 ft. in the last mile or so.

Socorro County.

Oro Fino.—At this property the deepest shaft is about 140 ft. All the workings are in ore, the incline having opened up an 18 ft. body of \$20 ore, says the Socorro "Advertiser." In the east shaft there is a vein of high grade ore.

NEW YORK.

Livingston County.

Genesee Valley Lime Company.—This company has been incorporated to manufacture lime and conduct lime kilns in Lima; capital, \$10,000; directors: Thomas Peart, Maynard H. Chase, James O. Howard, James Halahan, William H. Bailey, Thomas F. Stark and Charles H. Sheldon, of Rochester, and John M. Fitzgerald, of Charlotte.

Monroe County.

Genesee Valley Bluestone Company.—This company has been organized to work quarries at Genesee Falls. The capital stock is \$100,000, and the directors are: Fletcher Williams, MacDonough Craven, William N. Beach and William R. Page, of New York City, and John F. Cook, of Elizabeth, N. J.

NORTH CAROLINA.

Gaston County.

The preliminary reports collected for the State authorities gave the quantity of pyrites raised in this county in 1893 at 18,000 tons. A more correct approximate statement from later data puts the amount at 8,000 tons.

OREGON.

Baker County.

A placer mining deal that is quite important to the people of the Granite Creek section, says the Baker City "Democrat," is one just closed, and is the sale of a tract of 540 acres of ground at Crane Flat, about half way between the camp of Granite and the La Bellevue mine, and adjoining the placer mines of Klopp & Baisley. The sale was made by Messrs. J. W. Larkin and H. Robbins, and the purchaser is Mr. John Rigby, of Seattle, representing a syndicate of capitalists who propose to work the property on an extensive scale. It is the intention to put on the property machinery similar to that employed on the gravel bars of Snake River, near Pasco. It is estimated that the machinery will cost from \$25,000 to \$30,000.

Bonanza Mine.—The tunnel in this mine, which has been run in over 1,200 ft., has at last reached the

vein, which runs from 4 to 6 ft. wide, and cross-cutting has begun.

Phoenix Mining Company.—The mill at this mine has been started up on ore which has accumulated.

Red Roy.—This mine at Clear Creek, says the Baker City "Democrat," has begun to show results, having sent in \$2,500 in gold bullion for shipment. The mine is owned by Messrs. Tabor & Godfrey, and worked under a lease by Messrs. James Allen and Philip Hial. The reduction plant is a 10 ton Crawford mill.

PENNSYLVANIA.

Anthracite Coal.

The strike at Wentz & Co.'s collieries, at Hazleton, has been settled by the operators conceding to the demands of the employees. Both breakers have resumed work with the old hands and a full force.

SOUTH DAKOTA.

Custer County.

Pluma Mill.—The new cyanide mill at Pluma will be started up next week, says the Custer "Chronicle." A considerable amount of material is now on hand, produced by the Rice concentrator from the Homestake tailings, of which there are thousands of tons lying in the creek channel.

Lawrence County.

Homestake Mining Company.—This company has, it is reported, commenced the shipment of concentrates to the Deadwood & Delaware smelter, and from now on will ship 60 tons per day, 30 tons of the blanket concentrates and 30 of the other.

UTAH.

Juab County.

Champlain and Phoenix.—The lessees of these properties have put three 8-hour shifts at work sinking the shaft deeper in the latter property, through which the Champlain has been worked. It is the intention to sink another 100 ft. and then drift about the same distance, says the Tintic "Miner," and tap at another point the body of ore that is known to lie in the property. On the Opahonga, which adjoins the Champlain, some good ore was encountered in the incline at a depth of 60 ft.

Copperopolis.—At this mine the force has not been decreased because of the trouble with the Champlain. The company is taking some rich ore from the surface, and has also quite a force engaged in development work above the old workings. The ore is being shipped to the copper smelter at Salt Lake.

Eureka Hill Mill.—The work of placing the machinery in the Eureka Hill Mill is progressing rapidly, and it will be ready to run about July 1st. A re-ervoir with a capacity of 400,000 galls. is being constructed just south of the mill.

Mammoth Mill.—Work on the grade for the additional 20 stamps at the Mammoth Mill is being pushed rapidly. The company has settled the condemnation suits against Frank Azalia, et al., for right of way for the East Tintic Railway, and it is understood that a plant for operating will be put in this summer.

Utah Consolidated.—The tunnel is being driven from a point near the top of White Pine Canyon to tap the ore body in the Utah Consolidated. From the other side of the mountain a force is at work on the same tunnel, which has cut through some rich ore, an occasional carload of which is shipped to Salt Lake.

Yankee.—At this Eureka property a tunnel has been driven a distance of 190 ft. into the mountain. A 70 ft. vein of lime was encountered in the workings several weeks ago. It carries a streak of black quartz and assays well in gold, but the owners will fully develop the property before making any shipments.

Salt Lake County.

The receipts of ore and bullion in Salt Lake City for the week ending June 7th were to the aggregate of \$165,978, of which \$100,523 was in bullion and \$65,455 was in ore. The receipts of Pennsylvania bullion amounted to \$24,816; Hanauer bullion, \$9,625; base bullion, \$22,500; Ontario bullion, \$14,318; Daly bullion, \$9,260; gold bars, \$30,000.

Summit County.

Ontario Mining Company.—According to late reports from Park City, the force of workmen in the face of the Ontario drift tunnel is pushing the tunnel toward the mine at the rate of 9 ft. daily, and the indications are that this record can be broken in the near future, as the ground is constantly becoming firmer, says the Salt Lake "Herald." The flow of water is being well taken care of, and although it is not diminishing to any marked extent the workmen, it is said, are much less retarded in their labors than formerly.

WYOMING.

Albany County.

Badger.—The prospect shaft in this mine on Bald Mountain is down 20 ft.

Michigan Girl.—The shaft on this mine in Bald Mountain district, is down 10 ft., with good prospects.

Richmond.—At this mine, in the Bald Mountain district, work has been begun.

Fremont County.

Strawberry.—At this claim, in Dutch Tom Gulch, near Lander, the new shaft, it is reported, has struck a vein 4 ft. wide, carrying free gold.

FOREIGN MINING NEWS.

GREAT BRITAIN.

Scotland.

A cablegram from Edinburgh states that the Scotch Miners' Association was officially warned on June 11th that 70,000 miners would strike work on June 24th if the association carries out its intention of reducing wages by one shilling a day.

NEW SOUTH WALES.

The annual report of the department of mines and agriculture for the year 1893 has just been issued. The number of applications made to lease Crown lands for mining purposes during 1893 was 869, or 199 less than the number made during 1892. Of these 869 applications to lease made during last year, 693 were for auriferous land, comprising an area of 3,587a. 1r. 14p., and 266 were for mineral land, comprising an area of 13,908a. 2r. 36½p. The number of applications dealt with in 1893 was 825—a decrease of 584 as compared with 1892. Of the 825 applications dealt with, 547 were for gold-mining leases, embracing an area of 3,233a. 2r. 26½p., and 281 were for mineral leases, comprising 15,593a. 2r. 3p. The royalty received from alienated land during 1893 was £3,544 10s., and from Crown lands, £14,463, an increase of £1,204 on the royalty received in 1892 from alienated lands, and of £6,759 13s. on the royalty from Crown lands, as compared with the previous year. During the year, 1,004 applications for aid to prospectors were received, and aid was granted in 344 cases. The number of mining surveys made during last year was 600; of these 386 were gold leases, 87 mineral leases, 32 mining permits, and 95 mining tenements; 559 were made by salaried and the balance by non-salaried surveyors. The Chief Inspector of Mines reported that during the past year there had been 19 fatal and 24 non-fatal accidents in connection with the metallic mines of this colony, being an increase of one fatal and a decrease of four non-fatal accidents, as compared with 1892. During the year there was one fatal accident for every 1,037 miners employed as against one in every 963 miners employed during 1892. The number of persons employed in all classes of metallic mining was, at the end of the year, 19,709, as compared with 17,332 in 1892. The principal increase is in connection with alluvial gold mining, no doubt due to the large number of fossickers sent from Sydney to the various goldfields. The total value of mineral products at the end of 1893 exceeded the sum of £100,000,000 sterling, the exact figures being £104,280,711 4s. 7d. A large decrease was shown in the output of coal during the year, the quantity raised in the year 1893 being more than half a million tons less than in 1892, representing a loss of £290,664. The decrease in the output of shale, tin and copper is very considerable. This loss is, however, more than made up by the large increase in the value of the gold, silver, and lead produced, bringing up the total value of the minerals won during the year to £5,438,532 3s. 2d., which exceeds the output of 1892 by £132,716 15s. 6d., and the decennial average by £1,117,809. The output of gold from the opening of the goldfields to the end of 1893 amounts to 10,709,610 oz., valued at £39,853,941 10s. 10d. The quantity won last year was 179,288 oz., valued at £651,285 15s. 8d., being the largest output of any year since 1875. The number of collieries under inspection December 31st, 1893, was 97 coal and 4 shale, as compared with 101 coal and 5 shale on the same date of the previous year. The following statement shows that the output of the Northern collieries in 1893 was less in quantity by 408,251 tons, and in value by £222,476 10s. 2d., than the output for 1892. In the Western district the decrease in quantity was 45,985 tons, and in value by £14,172 19s. 3d.; and in the Southern district it was less in quantity by 48,403 tons, and in value by £54,016 15s. 5d., than the previous year. There was a decrease in the average price per ton in the total output, the largest decrease being in the Southern and Southwestern districts, which was 10-24d. per ton. There had been a very satisfactory increase in the quantity and value of silver and lead produced in the colony during the year, the amount of increase being £553,884.

PORTUGAL.

Mason & Barry Company.—The stockholders of this company at the annual meeting in London recently voted to reduce the capital stock from £1,050,000 to £840,000, by reducing the par value of the share from £5 to £4. The reports showed that the breakage of ore at the mine was purposely reduced during 1893 to 209,814 tons, of which 172,636 tons were added to the heaps at the cementation works; while the quantity of ore shipped during 1893 amounted to 172,376 tons, as against 131,756 tons shipped in 1892, or an increase of 41,620 tons; and the quantity of ore invoiced for its sulphur value amounted to 182,909 tons, as against 116,619 tons in 1892, or an increase of 66,290 tons. Much the greater portion of these sales were from the ore that had been treated at the cementation works for the extraction of copper. The make of copper precipitate during 1893 was almost equal to that of 1892, and notwithstanding two unfavorable winters as regards rainfall it is expected that the production of copper for the current year will be equal to that of last year. Out of 172,000 tons of ore shipped about 51,000 tons came straight from the mine, part of which contained 1%, besides which there was a quantity of yellow ore containing as high as 10%. The remainder of the ore was from the cementation

works and had already undergone extraction for copper, and out of 130,000 tons about 540 tons of pure copper were obtained.

QUEENSLAND.

The gold returns for the past quarter in Queensland show up very unfavorably by contrast with the previous quarter, and also with the corresponding period of last year. The total (approximately) for last quarter was 127,527 oz., a decrease compared with the December quarter of 23,091 oz., and as compared with the March quarter, 1893, of 18,428 oz. The principle figures for the past quarter were as follows: Charters Towers, 54,707 oz.; Croydon, 11,925 oz.; Gympie, 20,909 oz.; Rockhampton, 25,386 oz.; Etheridge, 3,433 oz.; Hodgkinson, 343 oz.; Ravenswood, 3,236 oz.; Eidsvold, 1,185 oz.; Palmer, 1,534 oz.; Clermont, 1,161 oz.; Cloncurry, 1,076 oz.; Paradise Fields, 720 oz.; Gladstone Fields, 1,397 oz.; Warwick Fields, 657 oz.; Bowen Fields, 40 oz.; Ceoktown Fields, 136 oz.; Mackay Fields, 80 oz.; Heberton Fields, 1,026 oz.; Geraldton (Towalla) 36 oz. The total tonnage of stuff crushed showed a falling-off from 117,514 tons in December quarter to 90,344 tons last quarter.

SOUTH AUSTRALIA.

Adelaide, April 16.

(From our Special Correspondent.)

Mining, chiefly for gold, continues to make satisfactory progress. The Mount Pleasant reefs are being gradually developed, and some parallel lodes are being opened which are said to give promise of proving equal in richness to the first discoveries which turned out so well. It is strange that years ago rich alluvial diggings were worked within 50 or 60 yards of the surface outcrop of these reefs without any one thinking the soft ironstone lode worth opening. Two other localities at a considerable distance from Mount Pleasant are in course of development, and are reported to present highly satisfactory prospects. They are in good mineral country, the more southerly being in a well known gold district which has been worked for many years, Waukarina. The other is about 30 miles from it, and is known also by the native name, of Nillinghoo. It is said to give better promise of turning out rich even than Lovely Gully, near Waukarina. Another deposit of the precious metal was inspected by me last week, at a spot near the Paratoo Railway station on the Broken Hill line, and it is one of the best looking I have yet seen. The locality is about 50 miles southwest from Waukarina, and the lode runs in the low range in a northeast direction. There is a large belt of auriferous country about here with numerous reefs having nearly the same strike, for a distance of 100 miles from west to east, and over 60 miles from south to north. The Moonta & Wallaroo copper mines are to the west of the capital on the western side of Yorke's Peninsula, and the Burra copper mine 100 miles north of Adelaide. The gold mine 5 miles west of Paratoo presents rather peculiar features. The lode crops out on the surface, and is traceable for about half a mile; the cap of it consists chiefly of a limestone crust varying from 1 in. to 12 in. in thickness, attached to which is manganic iron with a little quartz, quartzite and sandstone. In the manganic iron, which appears to be the chief component of the gangue, gold is to be seen pretty freely, without the aid of a glass. The walls of the lode consist of argillaceous slate and sandstone. The width of the lode varies from 2 to 4 ft. or more; in one place on the surface the outcrop (limestone) measured 25 ft., and beyond this point two lodes or leaders were converging to the main reef.

LATE NEWS.

It is reported that the two furnaces of Pioneer Mining and Manufacturing Company will be closed down within a week.

The Kansas & Texas Coal Co., of Huntington Ark., has closed its mines definitely. It is proposed to keep them idle until fall because of the trouble which has been experienced with the miners.

Mr. S. H. North, a well-known English statistician, whom our readers will recognize as an occasional contributor to the columns of the "Engineering and Mining Journal," has been appointed assistant editor of "Industries and Iron," of London.

Duluth despatches report that a large interest in the Oliver property, known as the Mesaba Mountain mine at Virginia, has changed hands. The purchaser in the Carnegie Steel Company, of Pittsburgh, which has for years controlled the Great Norrie mine, on the Gogebic range.

The total exports of mineral oils from the United States in May were 73,870,325 galls., a decrease of 3,953,633 galls., or 5.1%, from May 1893. For 11 months of the fiscal year from July 1st to May 31st the exports were 819,496,169 galls., an increase of 105,868,189 galls., or 14.4%, from the corresponding period of last year.

The Bunker Hill & Sullivan Mining Company, in the Coeur d'Alene district, Idaho, has been compelled to stop work for a week, not on account of damage to the mine, but because it has been impossible to ship ore and concentrates, owing to the stoppage of railroad traffic by the floods in the Coeur d'Alene, Columbia and other rivers.

United States District Judge D. M. Key has appointed ex-Postmaster Thomas L. James and Boyd Ewing, of Chattanooga, receivers of the East Tennessee Land Company, in place of A. A. Hopkins and W. H. Russell, removed at the request of certain stockholders. The company is largely interested in the manufacturing city of Harrison, Tenn.

The Etiwan Phosphate Company, of South Carolina, has been placed in the hands of a receiver. Action was taken by R. S. Malcomson, of New York. The bill states that the insolvency of the Etiwan company was brought about chiefly by the failure of the Walton & Whann Company, which owed the former \$180,000. Mr. C. O. White was appointed receiver on a bond of \$25,000.

Reports from Birmingham, Ala., state that the output of the coal mine is increasing. The Sloss Iron and Steel Company has begun ejecting striking miners from its houses at Coalburg, but so far no violence has occurred. At Mary Lee Mine coal is being mined and shipped in increasing quantities. Lockhart Mine on the Georgia Pacific has started. At Pratt Mines the output is averaging almost 600 tons a day, and more hands are being secured. All the other mines operating are rapidly adding to their force of miners.

Mr. Henry F. De Bardeleben, president of the newly formed Bessemer (Ala.) Improvement Company, has plans under way looking to the erection of large steel works at that place. Mr. De Bardeleben was largely instrumental in pushing forward the experiments made by the Tennessee Coal, Iron and Railway Company on the Talbot and other processes. It has not yet been definitely decided which process will be adopted. The preference appears to be for the Talbot desilicizing plan and open-hearth converters, though an effort will be made to produce low-silicon iron in the furnace and use direct in a basic open-hearth converter.

Cable dispatches report a disaster involving great loss of life at the coal mines of Karwin, in Austrian Silesia, on the night of June 14th. An explosion of fire damp took place in the Franziska shaft and resulted in the death of about 100 miners there. This explosion was almost immediately followed by a series of other explosions, the most disastrous being in the Johann pit, where 80 miners were killed. A rescue party of 10 men which descended into one of the pits the next morning also perished. The ventilator shafts of several of the pits were destroyed, and fire spread in all directions. Assistance has been sent to the scene of the disaster from all directions, but little can be done until the fire is stopped.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 16.

Statement of shipments of anthracite coal (approximated) for week ending June 9th, 1894, compared with the corresponding period last year:

	1894.	1893.	Difference.
	Tons.	Tons.	
Wyoming region	667,870	541,598	Inc. 126,272
Lehigh region	157,680	132,963	Inc. 4,717
Schuykill region	293,473	270,338	Inc. 23,080
Totals	1,119,023	944,904	Inc. 154,069

Total for year to date, 15,420,815 18,253,146 Dec. 2,832,331
PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending June 9th and year from January 1st:

	—1894.—		1893.
	Week.	Year.	Year.
Shipped East and North:			
Phila. & Erie R. R.	484	76,007	42,589
Cumberland, Md.	13,093	1,267,445	1,765,982
Barclay, Pa.	145	9,688	28,450
Broad Top, Pa. ....	.....	122,371	325,682
Clearfield, Pa.	36	1,122,472	1,924,211
Allegheny, Pa.	386	474,136	593,650
Beech Creek, Pa.	315	836,214	739,993
Pocahontas Flat Top.	77,534	1,357,925	1,318,276
Kanawha, W. Va.	27,450	1,025,505	1,417,899
Totals	119,443	6,261,761	8,156,732

* Week ending June 2d.

	—1894.—		1893.
	Week.	Year.	Year.
Shipped West:			
Pittsburg, Pa.	24,301	546,218	586,067
Westmoreland, Pa.	8,671	542,251	922,273
Monongahela, Pa.	221	164,111	315,354
Totals	33,193	1,252,580	1,823,694

Grand totals

	1894.	1893.
Shipped East and North:	152,636	7,514,341
Shipped West:	33,193	1,252,580
Totals	185,829	8,766,921

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending June 9th, 1894, and year from January 1st, in tons of 2,000 lbs.: Week, 23,231 tons; year, 1,117,708 tons; to corresponding date in 1893, 2,463,432 tons.

Anthracite.

The anthracite coal trade is in as good condition to-day as it can reasonably be expected to show.

The tonnage mined during the past fortnight has been large, and there are accumulations of stocks in producers' hands. The greater portion of the output is being distributed in the interior points, all-rail and lake trade being the heaviest just now. Some business is still doing with the East, but not much with this market. Naturally, the bulk of the trade consists of deliveries on orders given before June 1st to take advantage of the low prices which ruled during May.

The local market is exceedingly quiet. There is no change in the features which have characterized it

during the past few weeks. The demand is light, but for such orders as have been placed during the week full June prices have been asked. The orders, however, have been unimportant as to volume. It is some consolation that prices are stronger.

The Reading Railroad reports that its coal shipment (estimated) for last week, ending June 9th, was 245,000 tons, of which 40,000 tons were sent to Port Richmond and 35,000 tons were sent to New York waters.

NOTES OF THE WEEK.

George L. Crawford, the special master under the Philadelphia & Reading Railroad Company receivership, has completed his 38th report, recommending the dismissal of the petition of Isaac L. Rice, filed last December, against A. A. McLeod, the former president of the road, the receivers and others. The petition contained charges respecting the purchase and sale of stocks of the New York & New England and Boston & Maine railroad companies, respecting the lease of the Lehigh Valley to the Reading, the contemporaneous coal contracts of the Lehigh Valley, etc., and the delay of the receivers in filing their report. Among other things in reference to the Lehigh Valley lease, Mr. Crawford says: "That the sale of the coal of the Philadelphia & Reading Coal and Iron Company to the Lehigh Valley Coal Company, upon the abrogation of the lease, was a beneficial one to the defendants and receivers, in obtaining thereby the advantage of the organization of the Lehigh Valley Coal Company to sell that coal and the use of its yards therefor, the saving of a ruinous loss from removal of the coal, and in obtaining a responsible purchaser for the whole amount at a good price, to be paid within a fixed early time. That the debt of the Philadelphia & Reading Coal and Iron Company and the receivers for coal purchased from the Lehigh Valley Coal Company, before and after the receivership, and not paid for, was provided for out of the price, was an inevitable consequence of the whole situation, and that debt was secured by the defendants' collaterals deposited under the contracts."

Bituminous.

No trade review of bituminous coal can be written when there is no such thing as a market. Very little coal is coming here just now, probably not more than barely sufficient to supply the steamship trade. Such coal brings all the way from \$4 to \$8 alongside.

In the mean time other consumers than steamships are using the steam sizes anthracite more and more every day.

The strike situation, does not show the change from last week that many anticipated. The result of the Columbus conference has been simply to create dissensions among the strikers. The new scale will be found in full in our mining news columns. While there is but little doubt that the men will not gain the concessions for which they are still holding out, it is impossible to tell how soon the miners as a body will return to work. In some sections which were late in going out they are just now being paid for the few days in May that they were at work. This will enable some of them to hold out a little longer.

On the other hand men are returning to work in almost every section. There are mines which were idle last week and this week are working, with reduced forces, it is true, but working, and that can mean but one thing—the resumption of work by all.

Ocean freights are merely nominal, for nobody wants charters. From Philadelphia they are 60c. to Boston and Salem, 65c. to ice ports and 55c. to Sound ports.

NOTES OF THE WEEK.

The efforts to induce the railroads in western Pennsylvania to reduce rates on coke shipments have again failed. The Pennsylvania, Baltimore & Ohio, Erie, Lake Shore, and Pittsburg & Lake Erie, at a meeting, have decided to continue the present rates.

Acting Secretary of the Treasury Hamlin has sent a letter to collectors of customs in which he says, pending the decision of the question by the Supreme Court, no drawback can be allowed on bituminous coal used or to be used as fuel on board any vessels, but no objection is perceived to the acceptance by collectors of entries for such drawback, when tendered, provided that the parties making the entries shall file a stipulation to the effect that such entries and all proceedings thereunder shall be considered null and void, should said decision of the Circuit Court of Appeals be reversed by the Supreme Court.

At a meeting this week of the stockholders of the Bedford & Somerset Railroad Company, the Brook's Mills & Altoona Railroad Company, the Mann's Choice & Hyndman Railroad Company and the Bedford & Blain County Railroad Company, an agreement was effected for the consolidation of these roads under the name of the Pennsylvania Midland Railroad Company. The new road will extend from Altoona to Hyndman, where it will connect with the Baltimore & Ohio. There will also be a branch from Osterburg to the Somerset coalfields at Ashtola, and another to the ore mines at Cessna and Bedford. The line will, in a measure, become a competitor of the Huntingdon & Broad Top.

Buffalo. June 14.

(From our Special Correspondent.)

The anthracite coal trade remains in a satisfactory condition, as the demand from manufacturers is good and housekeepers are laying in their fall and winter supplies, concluding that quotations will not be lower this year, and are likely soon to be higher.

Little can be said new relative to the bituminous coal trade. Quotations are entirely nominal. The news regarding the strike received Tuesday has taken a weight off the popular mind, and of course dealers in bituminous, whether as miners or retailers, are easier now the lookout is clear.

Lake freights on coal are unchanged and steady, excepting that to Lake Superior ports 10c. per ton was asked and paid since Friday last.

The settlement of the strike of the coal miners and the tariff question will doubtless inaugurate a good summer and fall trade among manufacturers and give an impetus to our lake vessel interests by shipmen's to the West and Northwest to recuperate the exhausted stocks of fuel.

The work in the Hay Lake Channel in St. Mary's River will be turned over to the United States government on June 30th. It is 12 years since the commencement of the enterprise. Eleven miles of dangerous navigation are avoided by this improvement.

Coal by the lakes and Welland Canal from Oswego to Chicago is taken at 75c.; 50c. to Duluth, and 70c. to Milwaukee per net ton.

The stocks of soft coal at all lake ports is practically exhausted. Many vessels are out of commission in consequence, but there are still plenty of boats to do the business offered.

The shipment of coal from Buffalo by lake from June 3d to 10th, both days inclusive, aggregated 74,926 net tons, distributed as follows: 32,150 to Chicago; 8,300 to Milwaukee; 4,075 to Duluth; 13,984 to Superior; 1,100 to Gladstone; 2,340 to Racine; 700 to Detroit; 1,100 to Lake Linden; 625 to Cheboygan; 2,550 to Saginaw; 1,575 to Bay City; 650 to Michigan City; 5,100 to Green Bay, and 650 to Muskegon. The rate of freight was 45c. to Chicago, Racine and Cheboygan; 40c. to Green Bay and Milwaukee; 55c. to Michigan City; 15 and 25c. to Duluth, Superior and Gladstone; 35c. to Saginaw and Port Huron; 55c. to Muskegon; 20c. to Fort William, and 25c. to Toledo, Detroit and Bay City.

Chicago. June 13.

(From our Special Correspondent.)

Anthracite coal in Chicago is not in as large a demand as would be expected from the scarcity of soft coal, yet the business transacted for the week might be called an average in ordinary times. The amount of hard coal coming into this market is at present greatly below last year's, the receipts thus far showing a falling off of 50%. Circular prices are for grate \$5.25, and for egg, stove and chestnut \$5.50, but these are not held to. There is wholesale slashing going on, and coal can be bought for 25 cents less than circular rates.

Bituminous coal, after feeling a demand that it was impossible to supply, has suddenly taken a slump, and to-day the demand is from all appearances below the supply. This state of affairs has been brought about by the supposition that the coal strike is soon to end and then the price of coal will go back to usual rates. Soft coal has been coming into Chicago from Cincinnati, mainly Youghiogheny. Kentucky coal is coming here in considerable quantities and it is very well liked. A few of the mines in Illinois have opened up, but are being worked under police protection. Soft coal is selling from \$3.75 to \$4.25 per ton, according to character.

Coke.—The coke market here is yet in a condition where the demand far exceeds the supply. The iron furnaces are sadly in need of the article and production is limited to suit the coke pile. The cost of coke remains at \$5 per ton.

Pittsburg. June 14.

(From our Special Correspondent.)

Coal.—The miners' representatives and the coal men settled the strike at Columbus, so far as it was possible for them to do so, concessions being made by both parties. There are a set of miners who want the strike continued; they seem to prefer rioting and destroying property to going to work to earn an honest living. The public is tired of their outrageous conduct, and as their own officers say, public opinion is turning against them; the time has come to call a halt. Most of the coal plants will be started next week with or without their consent. All is now quiet along the Monongahela, but trouble is looked for when the river plants start. Another gatling gun has been secured, and will be placed where it will do the most good.

A new vein of coal, covering 240 acres, is being opened by Leonard Brothers at White Pine, below Roscoe. A tippie is in process of erection, and the plant will be ready to work within two weeks.

CConnellsville Coke.—The situation shows but little change. The coke men are gaining. The plants are being started with new and old men. The operators claim to have over 6,000 ovens burning. The Summit plant was started on Tuesday by 20 of the old men returning to work. The same day 60 colored men were sent to the plant. The increase in shipment last week was 2,250 cars, the gain being nearly 600 cars. This week the shipments will exceed 2,500 cars. The operators are rushing new men into the region very rapidly, nine carloads arriving in

the past two days. There is no use denying the fact that the coke region is rapidly filling up with new men and that the places of the old men will soon be filled. There are no fixed prices. The party that pays the most money is the one that obtains the coke. This was the only answer we could obtain from producers.

Shanghai, China. May 11.

(Special Report of Wheelock & Co.)

Receipts of Australian coal during the past fortnight have been two cargoes, 1,998 tons Wollongong, but there have been absolutely no sales, and the stock on hand, including new arrivals, does not diminish.

Arrivals of Japanese have not been heavy, 10,169 tons for the fortnight. Business has been very dull, and the only large sale reported is one cargo of Katsuno. One cargo of Kaiping, 800 tons, is on the market, just arrived.

The market is bare of American anthracite. Stocks of Cardiff are light; but sales are light also, including only a few small lots from dock.

Quotations are generally steady. We give American anthracite, 12 tael per ton; Cardiff steam, 11 tael; Australian, 8@8.50 tael; and for Japanese as follows: Takasima lump, 6 tael; Miike lump, 5.75 tael; small, 4.75 tael; Chikuzen, 4 tael; Ohnoura 4.25 tael; Namazuta lump, 4.75, fine 3.50 tael per ton.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 15, 1894.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From Jan., '93.	From Jan., '94.
	June 16, 1893.	June 15, 1894.		
Anthracite.	71	33,699	30	12,359
Coke.....	138	133,674	41	47,699
Charcoal...	34	8,394	20	3,930
Totals....	243	175,717	91	63,979
			4,307,843	2,573,163

Pig Iron.—A careful canvass of the pig iron market here fails to show that any improvement has taken place. The same features, perhaps slightly more accentuated, characterize it now that did a month ago.

Consumers are buying as little as they can, and prices are without change.

Our reports from other iron centers indicate that the condition of the iron trade is far from satisfactory to anybody. The coal and coke strike has caused a great decrease in pig-iron production and stocks are light, so that upon the resumption of work by the striking miners there is reason to believe that the present firmness in the prices of iron will continue. Quotations at tidewater are as follows: Northern brands, No. 1, \$12.50@13; No. 2, \$11.50@12.50; gray forge, \$10.50@11. Southern irons, No. 1, \$12@13; No. 2, \$11@11.50; No. 1 soft soft F., \$11@11.50; No. 2 soft F., \$10.50@12.25 Scotch irons are quoted: Coltness, \$21.50@22; Eglington, \$19.50@20; Summerlee, \$20.50@21.50.

Billets and Rods.—There is not much doing in this market, most of the deliveries being on orders contracted for previous to the strike. Prices for immediate delivery. Contracts for future delivery could be made at much lower prices. Quotations are nominally: Domestic billets, \$19@19.50; wire rods, domestic, \$27@27.50; foreign rods, \$33@34.

Manufactured Iron and Steel.—No sales of consequence are reported this week. The market is very quiet, but several fair sized orders will be placed shortly. We quote this week: Angles, 1.30@1.40c.; axles, scrap, 1.40@1.60c. delivered; steel, 1.40@1.55c.; bars, common, 1.15@1.30c. refined, 1.25@1.40c. on dock; beams, up to 15 in., 1.40@1.50c.; channels, 1.40@1.50c. on dock; steel hoops, 1.45@1.75c. delivered; links and pins, 1.40@1.65c.; plates, flange, 1.60c. @1.80c.; fire-box, 1.80@2.10c.; marine, 2.45@2.70c.; sheared, 1.80c.; shell, 1.40@1.60c.; tank, 1.30@1.40c.; universal mill, 1.25@1.50c.; tees, 1.50@1.60c., all on dock.

Merchant Steel.—Prices are without change and we quote: Tool steel, 5.75@6.25c.; tire steel, 1.60@1.75c.; toe calk, 1.70@1.90c.; Bessemer machinery, 1.25@1.50c.; open-hearth machinery, 1.90@2c.; open-hearth carriage spring, 1.90@2c.; crucible spring, 3.50@3.75c.

Old Material.—This market is very quiet. We quote nominally as follows: Old steel rails, \$9.50@9.75; old iron tees, \$10.50@11.50 per ton; New York railroad scrap, \$115.00@12 per ton delivered at mill, and yard scrap at \$10; wrought turnings, delivered at mill, \$8.50@9; No. 1 wrought scrap at \$9.50@10.50 from yard, and machinery cast scrap \$9@10; old wrought tubes and pipe, \$6.50@7; old car wheel, \$9.50@10.50 New York; cast borings, \$6@6.50 delivered at mill.

Rail Fastenings.—There is nothing doing in fastenings. Quotations are as follows: Fish and angle plates, 1.20@1.40c. at mill; spikes, 1.50@1.75c.; bolts and square nuts, 2@2.25c.; hexagonal nuts, 2.10@2.30c., delivered.

Spiegeleisen and Ferromanganese.—This market continues quiet. Quotations remain nominally: Spiegeleisen, 10@12%, \$21@22.20%, \$25@26. Ferromanganese, \$51.50@53.

Steel Rails.—There is no business of any consequence doing in standard sections. Prices are still

\$24 at mill, or \$24.80 tidewater for standard sections. Girder rails are quoted at \$21@24 at mill.

NOTES OF THE WEEK.

Another fruitless conference took place at Pittsburgh, Pa., on June 1st, between the wage committee of the Amalgamated Association and three manufacturers, Jones & Laughlins, A. E. W. Painter and James McCutcheon. There is a prospect that the inability of the workers to agree with these manufacturers may leave the Amalgamated Association without the control of a single mill in Pittsburgh. The conference is confined to the finishing scale. The manufacturers have demanded a horizontal cut which averages 5% all around, it is stated. James McCutcheon, chairman of the manufacturers' committee, said: "We are willing to concede that the scale shall be terminable in 60 to 90 days after either side gives notice that it is dissatisfied." On June 19th the iron workers confer with the Association of Iron and Steel Sheet Manufacturers. It is stated that the sheet manufacturers are also out for reduction. The condition of the Apollo Sheet Mill will have an important bearing on the sheet conference. The Apollo mill has been non-union since last year, and as the management is said to be making some pretty low prices in some of its departments it is probable that the members of the Manufacturers' Association will ask for similar reductions.

The plans of reorganization of the Pennsylvania Steel Company, which we published in our issue of last week, have been approved by the directors of the company and have been submitted to the stockholders. A strong reorganization committee has been named, consisting of Effingham H. Morris, chairman; George Philler, John B. Gest, N. Parker Shortridge, Howland Davis, and Alfred Earnshaw as secretary.

If the amicable plan fails of adoption by the stockholders the judicial plan will be carried out, and in all probability the plan will go into the hands of the bondholders and creditors; the stockholders will get little if anything, as the common stock is of little value. If it comes to a sale there will be no bidders excepting creditors. In either case, after reorganization, the capitalization of the company will, in round figures, be as follows: First mortgage upon Steelton plant, \$1,000,000; first mortgage upon Sparrow Point plant, \$2,000,000; general consolidated mortgage (of which \$3,000,000 will be reserved to take up these two issue of bonds at their maturity), \$7,000,000; preferred stock, \$1,500,000; common stock, \$5,000,000.

The company will remain in the hands of the Girard Trust Company, of Philadelphia, and Major Luther S. Bent; as receivers, until both creditors and stockholders are given full opportunity to choose which feature of this plan of reorganization shall be adopted, and the Reorganization Committee above referred to will then decide which shall be enforced.

Buffalo. June 14.

(Special Report of Rogers, Brown & Co.)

We are pleased to report a continuation of the active business both in sales and shipments throughout the Eastern field, which has now been in progress for nearly three weeks. So far as we are able to get at the cause, it seems to be in the nature of supplying prospective wants on present rates of freight, which are soon to expire. Stocks in the hands of buyers are extremely low and those in the hands of sellers have been more heavily depleted within the last two weeks than at any period within two years past. There seems to be, however, very little improvement reported in the business of those who are consumers. Prices are a trifle higher and firm as a rock. Lake Superior charcoal iron has participated in the activity, but at no improvement in prices. We quote on the cash basis, f. o. b. cars Buffalo: No. 1 foundry, strong coke iron, Lake Superior ore, \$11.50; No. 2 foundry, strong coke iron, Lake Superior ore, \$11; Ohio strong softener No. 1, \$11.50; Ohio strong soft No. 2, \$11; Jackson County silvery No. 1, \$15.50@16.50; Lake Superior charcoal, \$14.25; Tennessee charcoal, \$15.50; Southern soft No. 1, \$11.25; Southern soft No. 2, \$10.75; Hanging Rock charcoal, \$18.50.

Chicago. June 13.

(From our Special Correspondent.)

The situation in the Chicago iron and steel market shows a continued improved condition, though not to any great extent. Prices in all lines are firmer and concessions are not so numerous as heretofore. As a settlement of the coal and coke strikes approaches predictions are being made that with plenty of coal and coke, numerous enterprises that have been closed down throughout the country will again start up and consequently put a stimulus into business, such as has not been seen for a year or so past.

Pig Iron.—The market for pig iron remains very good, and a greater number of inquiries are coming in than have been observed for a long time. In northern iron the total tonnage of sales is about equal to previous week, in quantities from car loads up to 2,000 tons, the largest sale of the week. Southern iron has had quite a boom with the week and a business equal to any other four weeks appears to have been transacted. The prospective advance in southern freight rates has doubtless caused the increase sales, all of which are for immediate delivery, the furnaces not caring to book orders for future until the question of rates is settled. Southern silveries are out of the market, none of

the furnaces having any of these grades. Soft irons are also scarce, and sales are being limited to car loads. Stocks of southern foundry iron are becoming low and a firmness in price in everything in the southern iron line is a conspicuous feature of the market. Prices are, per gross ton f. o. b. Chicago: Lake Superior charcoal, \$15@15.50; Lake Superior coke No. 1, \$11.50@11.75; No. 2, \$10.50@10.75; No. 3, \$10.25@10.50; Jackson County silveries, \$14.50@15; Southern coke, foundry No. 1, \$10.75@11; No. 2, \$10.25@10.50; No. 3, \$9.75@10; Southern coke, soft, No. 1, \$10@10.25; No. 2, \$9.75@10; Southern car-wheel iron, \$17.50@18; Southern silveries No. 1, \$11.75@12; No. 2, \$11.25@11.50; Tennessee charcoal No. 1, \$14@14.50; Bessemer, \$11.50@11.75; Ohio strong softeners, \$12.75@13.25.

Structural Material.—Business has not gained any, though prices are a trifle firmer. Quotations are f. o. b. Chicago: Angles, 1'40@1'45c; tees, 1'65@1'70c; universal plates, 1'45@1'50c; beams and channels, 1'50@1'60c.

Plates.—Numerous sales of small lots are reported, with inquiries much increased. Prices are steadier. Flange steel is quoted at 1'70@1'80c.; best firebox steel, 3'75@4'25c.; tank steel, 1'40@1'50c.; boiler tubes, 75% discount.

Merchant Steel.—The conditions as reported last week hold good for the week just past, consumers continuing to buy, fearing an advance in prices through the lack of fuel. Sales, though not large singly, form in their bulk a very fair tonnage. Quotations are, carload lots: Smooth finished machinery, 1'80@1'90c.; tire steel, 1'70@1'80c.; Bessemer bars, 1'40@1'50c.; toe calks, 2'05@2'15c.; special brand tool steel, 12@20c., crucible spring, 3'40@3'65c.; tool steel 6% and upward.

Galvanized Sheet Iron.—Business remains good, with increased inquiry. Price on mill shipments is 75 and 10% off.

Black Sheet Iron.—There is a good deal of sheet iron now being purchased. The valley mills and others are selling at 2'40c. f. o. b. Chicago for No. 27.

Bar Iron.—Bar iron has had a fair tonnage of sales for the week. Prices which are now 1'10c. at mill will jump to 1'23c. f. o. b. Chicago after the 15th inst., when the new freight rates take effect.

Billets.—Through the influence of a bearish movement at Pittsburgh billets are now quoted in Chicago, \$18.50, which makes a drop of 5% in one week.

Steel Rails.—Orders for rails are quite numerous in small quantities, chiefly for standard sections. Prices remain at \$25@27.

Nails.—Wire nails show a good business, despite the fact that an advance in price has been made. Steel cut are in fair demand. Mill prices are \$1 for steel cut and \$1.15@1.20 for wire.

Old Rails and Wheels.—Railroads are asking \$10 for steel rails in good condition, though no sales are known to have been made at such prices. Old iron rails are quiet at \$19, and old wheels about \$10.

Scrap.—Business continues poor, with but slight signs of early improvement. Prices are: Forge, \$8.50@9; Cast borings, \$3.50@4; wrought turnings, \$1.50@1.75; axle turnings, \$6@6.50; mixed steel, \$5@5.50; tires, \$12.50@13; iron axles, \$14@14.50.

Philadelphia. June 15.

(From our Special Correspondent.)

Pig Iron.—The near approach of a tariff vote, and the possibility of dearer coal and coke and higher freights, all help to impart a little strength to the iron market. The careful canvass made shows how low mill and foundry stocks are. There is a growing belief in this market that both mill and foundry buyers will pile a little iron in their yards during July. Actual sales and deliveries have been unimportant. The pivot in the iron situation is the assurance of a demand of 120,000 tons of iron per week before 60 days. No. 1 is offered at \$12.50; No. 2, \$11.50; Forge, \$10.50; Bessemer, \$13.50.

Steel Billets.—There are no transactions on which to base a statement. Billets are being delivered on old contracts, and it would be an easy matter to secure contracts at \$18, but both buyers and manufacturers prefer to let matters drift until more settled conditions prevail. One active agent has knowledge of where 12,000 tons of billets can be sold when the right time comes. To-day's quotations, \$20@21.

Merchant Iron.—The bar mills that are at work have a ready market for everything at 1'20@1'30. Store stocks are by this time badly broken up. A good deal of business, mill men say, is held back, but the amount may not be as much as they imagine.

Nails.—Sharp competition continues in cut nails, and some orders have just been captured by western mills. The local demand is low. An improvement in July is looked for.

Sheet Iron.—The orders for small lots are increasing, and in consequence prompt deliveries bring at least two tenths more than in May. This advantage will cease with the end of the coal strike.

Skelp.—More orders are offering and mill owners in one or two instances are hesitating about promising early deliveries. Prices are hardening, but large purchasers say they will have no difficulty in getting all the stock they want at spring quotations. Grooved, 1'25, 1'30.

Plates.—The mills that are running have been helping out one or two that are not, so that busi-

ness is brisk with them. Small orders have been plenty. Manufacturers are looking for a sharp improvement in July, especially in railroad and in tank work. Tank steel orders for small lots were taken yesterday at a shading under 1'30.

Structural Material.—Mill representatives are buying themselves with fall possibilities in the way of orders. They speak of several good chances, but there is no certainty as yet that the contemplated work will be pushed. Quite an amount of bridge work is intended to be done, but railway managers feel like waiting until traffic gets back to its old volume.

Steel Rails.—Steel rails are wanted, and agents say the probabilities are that large orders will be placed in July.

Old Rails.—Old iron rails are offered at \$12. Very little demand.

Pittsburg. June 14.

(From our Special Correspondent.)

Bar Iron and Steel.—Trade during the early part of the week was fair. Prices for future delivery continue to be well maintained. So far we have learned of no sales extending beyond September. Gray forge was firmer, with an upward tendency. Stocks in first hands are reported light. Foundry firmer, with a large inquiry. Southern made pig iron is making its way north for a market. The Baldwin & Graham Stove Works, of New Castle, is in receipt of the first shipment from Alabama, to be followed by others. The coal and coke strike has paralyzed all the industrial establishments in the Shenango Valley. Blast furnaces in Sharpsville, Sharon and New Castle, with the exception of the Shenango Valley Steel Company's furnace, are now banked. There is not only a coke and coal famine, but also a metal famine, something that was never known before. A Pittsburg speculator has 12,000 tons of pig iron stored at the Atlantic furnace, waiting for a further advance. The fuel question is the dominating feature of the market, and until some settlement of the question is reached the restriction in the volume of business will continue. With the uncertainty in regard to the future, buyers show no disposition to buy for summer and fall delivery and even where their immediate requirements compel the purchase of material the orders are of small proportion. Higher prices continue to rule for prompt deliveries, but few of the mills are in a position to meet the demand for this class of work. The small supply of some grades of pig iron, the possibility of a more active market, with the resumption of work at the foundries and mills, and the restriction of competition from other producing sections upon the enforcement of higher freight rates, have combined to strengthen the position of the local producers of crude material. There is still plenty of iron for all the mills and foundries that can use it, notwithstanding that so many furnaces are idle or banked. Nevertheless, prices are firmer for the ordinary brands of foundry and mill irons.

Coke Smelted Lake and Native Ore.		Charcoal.	
Tons.	Cash.	100 Cold Blast	21.00
5,000 Bessemer, July	.....	100 Cold Blast	23.50
Aug., Sept.	\$12.00	50 No. 2 Foundry	16.50
4,000 Bessemer, July	.....	50 No. 1 Foundry	17.50
Aug.	12.30	25 No. 3 Foundry	16.25
3,000 Bessemer, 30 days after strike is settled	12.15	Skelp Iron.	
2,500 Bessemer, July	12.60	500 Wide gr'vd	1.30 4 m.
1,000 Bessemer, July	12.25	500 Wide gr'vd	1.31 4 m.
Aug.	12.25	500 Shear'd	1.42 4 m.
1,000 Bessemer, July	12.25	500 Nar. gr'vd	1.50 4 m.
Aug.	12.25	Muck Bar.	
1,000 Bessemer, July	12.50	500 Neutral, prompt	20.00
500 Bessemer, July	12.40	500 Neutral, prompt	20.00
1,200 Gray Forge	9.75	Skelp Skelp.	
1,200 Gray Forge	9.75	800 Wide gr'vd	1.20 4 m.
500 Gray Forge	9.90	500 Shear'd	1.30 4 m.
500 Gray Forge	9.90	280 Nar'w gr'vd	1.20 4 m.
500 Gray Forge	9.75	Ferromanganese.	
200 No. 2 Foundry	10.75	150 80 per cent. domestic	53.00
150 No. 1 Foundry	14.00	50 80 per cent. domestic	53.00
100 Open Mill	9.75	Steel Wire Rods.	
100 No. 1 Silvery	13.50	700 American at mill	25.75
50 No. 2 Silvery	12.50	Old Rails.	
50 Bessemer, spot	13.50	250 Iron rails	12.00
Sheet Bar.		150 Steel rails	9.75
300 at mill	22.00	100 Steel rails	9.50
Blooms, Billets and Slabs.		100 Steel rails	10.20
5,000 Billets, July, Aug.	18.15	Old Material.	
Sept., at mill	18.15	125 Cast scrap, gross	8.50
3,500 Billets, July, Aug.	8.35	100 No. 1 R. R. W. S.	10.15
at mill	8.35	net	10.15
2,000 Billets, July, Aug.	18.25	100 No. 1 R. R. W. S.	10.60
Sept., at mill	18.25	net	10.60
1,000 Billets, July, Aug.	17.75	100 No. 1 wrought	10.00
Sept., at mill	17.75	net	10.00
500 Billets, prompt, at mill	19.00		
500 Billets, prompt, at mill	19.00		

METAL MARKET.

NEW YORK, Friday Evening, June 15, 1894.
Prices of Silver per Ounce Troy.

June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	June.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
11	4.88 1/4	28 3/4	6 5/8	.185	13	4.88 1/4	28 3/4	6 2/8	.184
9	4.88 1/4	28 3/4	6 5/8	.185	14	4.88 1/4	28 3/4	6 2/8	.186
12	4.88 1/4	28 3/4	6 2/8	.186	15	4.88	28 3/4	6 3/8	.188

Business in silver the past week has been light. The smaller offerings have been occasioned in part

by the floods, strikes and decreased supply of ores suitable for smelting. On the other hand the inquiry has been narrow, and the Eastern banks have been united only in moderate amounts.

The United States Assay Office at New York reports the total receipts of silver for the week to be 127,000 oz.

Gold and Silver Exports and Imports at New York, Week Ending June 9th, 1894, and for Years from January 1st, 1894, 1893, 1892.

Week	Gold.		Silver.		Excess of Ex. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$7,400,623	\$101,129	\$485,787	\$2,288	E \$7,782,985
1894	52,581,972	9,273,217	17,290,161	693,739	E 59,910,047
1893	68,844,908	8,816,102	13,828,459	1,176,039	E 75,639,543
1892	27,134,192	6,137,836	10,516,112	648,485	E 30,893,983

Of the gold exported for the week \$1,000,000 went to Havana and nearly all the rest to Germany; the silver went to London. Of the gold imported \$77,200 came from London, the rest in small lots from various points; the silver came from South America.

During the five days ending June 14th the exports and imports of gold and silver at the port of New York were as follows: Exports, gold, \$2,280,000; silver, \$301,896. Imports, gold, \$13,849; silver, \$53,257. All the gold exported was in American coin, of which \$2,250,000 went to Germany and \$30,000 to South America. Of the silver exported, \$31,675 was Mexican coin, all of which went to South America, and the remaining \$270,221 was American coin and bullion, of which \$243,900 went to London and 26,621 to South America.

Gold and Silver Exports and Imports of the United States, at all Ports, for the Five Months to May 31st, 1894, 1893.

Year	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1894	\$17,639,955	\$1,551,425	\$20,332,271	\$3,115,261	E \$3,614,539
1893	71,006,712	10,749,361	15,535,277	7,996,441	E 67,806,267

The total United States exports and imports of gold and silver in May are reported by the Bureau of Statistics, Treasury Department, as follows:

	Gold.		Silver.	
	Exports.	Imports.	Exports.	Imports.
1893	\$16,914,317	\$27,406,891	\$3,015,490	\$3,769,579
1894	1,708,557	4,282,743	1,174,232	781,752

Excess, E. \$15,205,760 E. \$23,124,058 E. \$1,293,258 E. \$2,987,627

The exports and imports for the eleven months of the fiscal year from July 1st to May 31st, were as follows:

	Gold.		Silver.	
	Exports.	Imports.	Exports.	Imports.
1893	\$15,969,618	\$33,697,841	\$36,720,925	\$47,469,221
1894	20,164,699	71,545,771	21,677,142	12,517,699

Excess, E. \$5,804,919 I. \$17,847,930 E. 15,113,783 E. 31,551,722

Although the gold exports in May were large, the total for the eleven months is but little more than half of that shown last year.

NOTES OF THE WEEK.

Business generally may be said to show a slight improvement this week, and to be gradually recovering from the depression, or rather halt in improvement, which has marked it for several weeks past. The markets are beginning to show an increase in the demand for raw materials, as manufacturers are realizing that prices are now at their lowest possible point, and that any change will probably be in the direction of an increase. The temporary scarcity of raw iron, resulting from the coal strike, has shown many buyers the risk of depending too much on the continuance of an over-supply of material, and the advantage of looking ahead a little beyond the events of the present. There is also to be observed an increase in the number of plans brought forward for new construction, which indicates more confidence in the future. The re-establishment of credit after a panic is always a slow and tedious process, but it has now been well begun and will continue probably with occasional halts, but with no permanent setbacks. The present indications are that recovery will be assisted by good crops, and that natural conditions will help and not retard full recovery.

The tariff discussion in the Senate still continues to drag along, but with some hopeful features. There is evidently a growing disposition to hasten the work and force a vote upon the measure, which may result in early action. Predictions are always dangerous, but the indications are that many of the radical changes in the bill made in the Senate will be disapproved when the message goes back to the House. The result will be a contest between the two bodies which may last some time, but there is every prospect of a final passage of the bill at the present session, in the modified form which it will reach in the inevitable conference committee.

The strike of the bituminous coal miners, which is more fully referred to elsewhere, is evidently drawing to a close, although the compromise agreement presented by the conference is not fully accepted. The strike is practically broken, however, and will soon be over.

Last year, as in 1873, the numerous railroad failures and receiverships were a marked feature of the

panic, and indeed had a most important share in precipitating it and intensifying its force. Some progress is apparent now toward the settlement of the affairs of several of the more important companies, such as the Erie and the Atchison. The Northern Pacific, however, promises to drag along for some time yet under its receivership, while the unhappy Reading is still as far from a settlement as ever.

It is worth noting that, in spite of all the drawbacks, there has been recently a marked increase in the number of new railroad projects; and that some of the older companies are once more beginning to entertain plans for improvement.

Gold exports still continue, though on a somewhat reduced scale. The mid-week steamers from New York took out \$1,750,000, and there is about \$500,000 more reported taken for shipment on Saturday, making in all \$2,250,000 for the week, or \$2,500,000 less than last week. The reason for the decrease seems to be simply a slackening in the demand for money abroad and a slight fall in the rate of exchange which has for the moment nearly taken away the profit on gold shipments. In the present condition of affairs, and as long as the accumulation of money here continues, it is very difficult to predict the course of these gold exports; they may cease for a time, to be renewed at any moment from a slight change in rates. There has not been heavy selling of American securities from the other side recently, and the merchandise exports have been well maintained, so that there is no cause for a sustained outflow of gold beyond the securing of the small broker's or exchange profit to which we have before referred.

The statement of the New York banks for the week ending June 9th shows increases of \$410,100 in loans and \$1,456,000 in specie; decreases of \$1,256,200 in deposits, \$2,818,300 in legal tenders and \$30,100 in circulation. The statement shows few marked or unexpected changes.

The statement of the United States Treasury on Thursday, June 14th, showed balances in excess of outstanding certificates amounting to \$119,228,526, made up as follows: Gold, \$69,021,283; silver, \$13,298,751; legal tenders, \$21,054,288; treasury notes, etc., \$15,154,199. Changes during the week were decreases of \$94,163 in the total balance and of \$4,940,917 in gold, and an increase of \$2,196,789 in legal tenders. The Treasury has continued to lose gold, most of that lately exported having been drawn from it in exchange for legal tenders.

The treasury receipts are improving somewhat, and there has been less decrease in the current month, as compared with last year, than in any previous month this year. Very little gold has been paid in recently, however, most of the receipts being in treasury notes and silver certificates. The chief improvement recently has been in internal revenue receipts, those from customs showing little increase.

The amounts and descriptions of specie and bullion shipped from San Francisco for the five months ending May 31st compare as follows:

	1893.	1894.
Gold bars	\$6,531	
Silver bars	707,800	\$2,311,905
Mexican dollars	2,834,438	1,750,552
South American dollars		132,100
Gold coin	6,708,318	9,050,700
Silver coin	344,887	311,800
Gold dust	1,505	200
Total	\$10,661,679	\$13,557,257

Of this year's shipments \$2,392,536 were to China, \$1,784,864 to Japan, \$329,008 to Central America, \$128,950 to Honolulu, \$3,000 to Samoa, and the balance to New York.

Exports of merchandise in May, as reported by the Bureau of Statistics, Treasury Department, amounted to \$61,168,304 and imports to \$57,52,648, these figures comparing respectively with \$68,955,348 and \$75,955,234 in May, 1893. For the eleven months of the fiscal year from July 1st to May 31st the statement is as follows:

	1892-93.	1893-94.	Changes.
Exports	\$732,218,625	\$834,764,190	I. \$102,545,565
Imports	796,707,378	603,150,831	D. 193,556,547
Excess	I. \$14,977,753	E. \$231,613,359	

Adding to the balance given above the excess of exports of gold and silver, we find for the eleven months a total excess of exports this year amounting to \$248,317,151; against a similar excess last year of \$86,431,949. The period reported covers very nearly that of trade depression here and shows the marked effect on the course of imports and exports.

The Bank of England on Thursday, June 14th, reported its gold holdings at \$37,844,493, an increase of \$3,418,108, as compared with the corresponding date in 1893. The Bank continues to accumulate money, and its reserve by this week's statement is 70.6%, the highest proportion on record.

The Bank of France on Thursday, June 14th, reported its specie holdings (reduced to sterling) at \$71,501,181 gold and \$51,091,294 silver; an increase of \$4,830,332 gold and a decrease of \$26,175 silver as compared with the corresponding date last year. Changes during the week were an increase of \$116,000 gold and a decrease of \$61,800 silver.

Returns of other leading European banks for the closing week in May show specie holdings (reduced to sterling) as follows:

	Gold.	Silver.	Total.
Imp. Bank of Germany	.....	.....	\$46,628,000
Austro-Hungarian Bank	\$10,231,000	\$13,358,000	\$23,589,000
Netherlands Bank	4,507,000	7,037,000	11,544,000
Nat. Bank of Belgium	4,577,000	13,464,000	18,041,000
Bank of Spain	7,918,000	8,650,000	16,568,000

The report of the Bank of Russia has not been received.

Indian exchange again shows a small rise. In London on Tuesday there were 40 lakhs of rupees in India Council bills sold at 12 1/2 d. per rupee, an improvement over last week of the fraction, which was probably chiefly due to the small amount of bills offered.

The Deputy-Master of the British Mint has issued his 24th annual report, from which we take the following: Although falling short of the amount struck in 1892, the coinage of gold in 1893 was again very large, owing to the continued receipt of light coins exchanged under the provisions of the Coinage Act, 1891. The demands for silver coin show an appreciable increase, but there was a falling off in the amount of bronze coin applied for. The transactions of the mint in regard to the issue of imperial currency are summarized in the following table:

	1893.	1892.	Mean 10 Years.
Gold	\$9,266,251	\$13,907,810	\$14,645,824
Silver	1,008,971	819,982	1,039,109
Bronze	46,664	58,556	61,885
Total	\$10,321,886	\$14,816,328	\$25,746,509

The demands for colonial coins have been moderate in amount, and the department was able to meet all the applications for such coinage made to it during the year. No necessity arose, therefore, for intrusting any colonial coinages to "The Mint, Birmingham." The number of good pieces of all denominations struck during the year was 78,880,020, showing a considerable increase on 67,334,847, the number struck in 1892. The value, real or nominal, was, however, owing to the falling off in the amount of the gold coinage, only a little over two-thirds of that of the preceding year.

Since the re-coinage of the Victorian gold coins in 1892, light coins to the amount of £23,668,125 have been received, while the new coins issued have been £200,342 in £5 and £2 pieces, £13,339,100 in sovereigns and £9,025,849 in half sovereigns, a total of £22,613,291. It thus appears that the operations of the mint during the years 1892 and 1893 resulted in a net reduction of about £1,000,000 sterling in the gold currency but if the importations of new coin struck in Australia are taken into account, there was a net increase; of nearly £600,000 in the circulation.

Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars
Peruvian soles and Chilean pesos
Victoria sovereigns
Twenty francs
Twenty marks
Spanish 25 pectas

Other Metals.

Copper.—The market continues to be a monotonous one, as the sale recently reported does not seem to have had the favorable effect anticipated by some; in fact, it would seem as if, attracted by the novelty of buying at a price never before accepted and not thought of until very recently, the consumers had purchased more than the condition of business warranted, while those who did not secure any share of the metal sold have not come into the market, as it was expected they would. This cannot well be attributed to a distrust as to the cheapness of metal, but must be ascribed to lack of orders, business seemingly growing poorer from week to week. We understand the Calumet & Hecla Co. to be out of the market, and that the other producers are holding for about 9 1/2 c. Nevertheless, Lake can be secured from some sources at 9-10@9-12 1/2 c., but there are few buyers at above 9c. Arizona pig copper is still held at about 8 1/2 c., while electrolytic has to be quoted at 8 1/2 @ 8 3/4 c., and casting as 8 1/2 @ 8 3/4 c.

In London things are no better, as there the price of G. M. B's has been dropping all the week, and closes to-day at £38 5s. for spot and £33 10s. for three months, with refined material offered at exceedingly low prices, thereby greatly curtailing the demand for American copper.

Recent sales of furnace material in England, as reported by Messrs. Lewis & Son's circular, include 230 tons Mexican ore, 25% at 7s. 3d. per unit; 1,250 tons Copiaps ore, 15% at 7s. per unit; 50 tons Chile ore, 25% at 7s. 3d. per unit; 200 tons Portuguese sulphurets, 5% at 7s. per unit; 30 tons Cueva precipitate, 50% at 7s. 9d. per unit; 200 tons Spanish ore, 13% at 7s. per unit; 50 tons Portuguese precipitate, 80% at 7s. 10 1/2 d. per unit; 125 tons Mexican ore, 20% at 7s. per unit; 22 tons Spanish precipitate, 75% at 7s. 9d. per unit.

The exports of copper from the port of New York during the week ending June 15th (as reported by the New York Metal Exchange, were as follows:

	Pigs	11 tons
Liverpool—Teutonic
—Britannic
Swansea—Chicago City
.....
Havre—La Champagne

Hamburg-Grimm	Ingots	10	"
"	Plates	10	"
Rotterdam-Doubledam	Bars	111	"
"	Ingots	105	"
"	Plates	22	"
Liverpool-Cufo	Pigs	25	"
Havre-La Champagne	Pigs	22	"
"	Ingots	97	"
Rotterdam-Werkendam	Plates	114	"
"	Ingots	65	"
Naples-Neckar	Ingots	11	"
Swansea-Mohican	Pigs	100	ton
St. Petersburg-Galileo	Ingots	99	"
Hull	Plates	20	"
Hamburg-Taormina	Ingots	35	"
"	Bars	10	"

Exports of copper from Baltimore for the week ending June 12th are reported by our special correspondent as follows:

June 8, Rotterdam-Ohio	128 bars,	22,434 lbs.
"	1,505 ingots,	22,400 "
" 13, Liverpool-Queensmore	999 bars,	112,066 "

Other metals exported during the week were: 1,124 plates, 56,148 lbs., spelter, to London; 75 boxes, 45,000 lbs., sulphate of copper, and 583 bundles, 133,643 lbs., tin scrap, to Rotterdam.

The steamer "California" for Hamburg, June 1st, has amended her manifest (June 8th) by adding 1,434 pigs lead, 111,950 lbs. This lead was from Mexican ores, reduced at Kansas City.

Tin.—Following the lead of the foreign markets, the price in this has been more or less irregular, the general tendency being noticeably downwards, although at the close there is a trifle firmer feeling. We have to quote 1975 for spot and June, and 1980 for July delivery. Even the lower prices have not tempted consumers who, it was thought, would once more enter the market and buy quite freely, but, rather, have frightened them off.

In London values began to drop when it became known that the shipments from the East were very heavy, and continued to drop until this morning, when futures commanded a higher price than yesterday, to-day's figures being £71 5s. @£71 12s. 6s. for spot and three months prompt respectively.

The production of Billiton tin for the year ending April 30th last is estimated at 4,623 tons, of 2,240 lbs. This compares with 4,610 tons in 1892-93; 6,244 tons in 1891-92, and 5,676 tons in 1890-91. The average for 10 years past has been 4,967 tons.

The shipments of Straits tin in the month of May are reported as follows: To Great Britain, 1,140 tons (of 2,240 lbs.); to other European countries, 1,780 tons; to the United States, 830 tons; total, 3,750 tons.

The imports of tin at San Francisco were 65 tons in April and 185 tons for the four months ending April 30th.

The exports of tin from the Straits Settlements for May and the five months to May 31st are given by the New York Metal Exchange report as follows, in tons of 2,240 lbs.:

	May.	Five mos.
United States and United Kingdom	1,950	12,510
European countries	1,500	5,700
Total	3,450	18,210
Total, 1893	2,400	15,690

The increase in exports for the five months this year was entirely in those to European countries, which were only 1,700 tons in 1893. The exports to the United States and United Kingdom compare with 11,930 tons last year, showing a decrease of 2,480 tons.

The same authority gives the shipments of Australian tin in May at 350 tons. It also gives the total visible supply on June 1st as follows, in tons of 2,240 lbs.:

	In stock.	Afloat.	Total.
London	7,835	2,010	9,845
Holland, Billiton	3,000	700	3,700
Straits	835	1,500	2,335
United States	1,120	1,925	3,045
Total	12,848	6,135	18,983

The figures for the United States do not include Pacific Coast ports. The visible supplies increased 676 tons during May.

Lead.—A stop has at last been put to the downward tendency by the better demand and the light offerings, the latter being due to the fact that supplies of raw material are not plentiful, and certainly not enough, so it is thought, to supply the increased demand which is usual at about this season of the year. However, as the pending tariff bill seems likely soon to become operative, with lead dutiable at the rate of 1c. per lb., and importations, on the basis of to-day's values, possible at about 3'05 @3'10c., it does not seem reasonable to expect higher prices than are now ruling, and which are 3'30@3'35c. New York.

The English market has again gone off a little, as this week we have to quote Spanish at £9@£9 2s. 6d., and English at 2s. 6d. per ton more.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: During first three or four days since our last report the market was steady at 3'05@3'07½c. Within the last day or two the market showed some symptoms of strength, and to day lead cannot be had for less than 3'10c. Sales aggregate from 500 to 600 tons for the week.

Spelter, although nominally unchanged in price, is not nearly as strong as it was. The demand from galvanizers, many of whom are idle now, is small, and, as is well known, the brass trade is anything but brisk; but this is not all, as the smelters who for some months past have been producing very much less than was their custom, now talk of start-

ing up again and working full. The inevitable result of such resumption will be an accumulation of stock, as there will not be demand enough to take care of all; even with the output very much lessened, everything made has not been sold.

The foreign quotations are £15 10s. for good ordinaries and £15 12s. 6d. for specials.

Antimony has again to be quoted as unchanged, at 9¼c. for L. X.; 8¼ for Hallett's; 10c. for U. S. French Star.

Aluminum.—The Pittsburg Reduction Company furnishes the following recent quotations: No. 1 (guaranteed over 98% pure) in rolling ingots, 75c. per lb. in small lots; 73c. per lb. in 100-lb lots, 70c. per lb. in ton lots. No. 1 aluminum in ingots for remelting: 65c. per lb. in small lots; 60c. per lb. in 100-lb. lots; 55c. per lb. in ton lots and over. No. 2 grade (guaranteed to be over 94% pure aluminum, with no injurious impurities, for alloying with iron and steel) cast in ingots for remelting: 60c. per lb. in small lots; 55c. per lb. in 100-lb. lots; 50c. per lb. for ton lots and over. Aluminum castings, from 90c. per lb. upward, in accordance with the number of castings, their weights, etc. Sheets are quoted 80c.@\$4.40 per lb., according to thickness and size. Wire, \$1@2.50 per lb., according to gauge.

Abroad, the Neuhausen Company continues to quote 5 fr. per kilogram for ingots in large lots. The price given is at works in Switzerland. In Paris 99% pure metal is quoted at 6'75@7'50 fr. per kilo. for ingots; 8@8'50 fr. for sheets; 11@15 fr. for wire, and 19@20 fr. per kilo. for tubes.

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

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

Nickel.—Quotations in this market are steady at 45@50c. per lb., according to grade.

Phosphorus.—Quotations are 50@52½c. per lb., f. o. b., New York or Philadelphia.

Platinum.—Prices abroad are firm, with an upward tendency. For chemical ware, however, there is no change, as yet. Messrs. Eimer & Amend, New York, quote platinum crucibles and dishes, hammered ware, French make, at 45c. per gram for smaller quantities, 43c. per gram for lots of not less than 100 grams, and 41c. for lots of not less than 250 grams. Wire and foil at 42c., 41c. and 40c. respectively for the quantities named. Current retail price for crucibles is 50c. per gram.

Sodium.—There are no local quotations. In Germany and England the metal is quoted at 90c.@\$1 per lb. at factory.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, June 15.

Heavy Chemicals.—There is no improvement in this market; the demand continues quiet, and whatever business is doing is devoid of significant features. Carbonated soda ash and alkali are in light demand. In caustic soda some jobbing business has been done and prices are fairly firm. Bleaching powder has been very quiet. Prices generally are without change from last week. We quote: Caustic soda, 60%, 2'82½@2'97½c.; 70%, 2'60@2'70c.; 74%, 2'62½@2'72½c.; 76%, 2'70@2'80c. Carbonated soda ash, 48%, 1'05@1'25c.; 53%, 1'05@1'15c. Alkali, 48%, 1'05@1'15c.; 53%, 1@1'10c.; according package. Sal soda, '80@'90c. Bleaching powder, 2'05@2'50c.

Acids.—The acid market continues quiet and without any change from last week. The demand is chiefly of a jobbing nature, and prices are continuous as last reported. We quote: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, \$1.62½@1'75; muriatic, 18', 80c.@\$1; 20', 90c.@\$1.10; 22', \$1@1.25; nitric, 40', \$4; 42', \$4.50@4.75; sulphuric, 75c.@\$1; chamber acid, \$7.50@8 per ton. Mixed acids according to mixture, oxalic, \$6.40@7.25 per 100 lbs. Blue vitriol is quoted at \$3.75; glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—The brimstone market continues dull. Quotations are as follows: Best unmixed seconds, on the spot, \$16.25. August-September shipments, \$15.75. Best thirds are 75c.@\$1 less.

Fertilizing Chemicals.—Great dullness prevails in this market as is usual at this time of the year. There is no buying to speak of and no change in prices. We quote this week: Sulphate of ammonia gas liquor \$3.85, and \$3.25 for bone. Dried blood, \$2.05@2.10 per unit for high grade and \$2@2.05 for low grade. Azotine, \$2.15. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P₂O₅, 60c. per unit at seller's works in bulk. Dissolved boneblack, 17% to 18% P₂O₅, 95c. per unit. Acidulated fish scrap, \$15@16, and dried scrap nominally \$25 f. o. b. fish factory; wet scrap \$15 f. o. b. fish factory. Tankage, high grade, \$22.50@23; low grade, \$21@21.50. Bone tankage, \$23@24; bone meal, \$24@25.50.

In lots of 50 tons on contracts we quote: Double manure salts, 48.53% (basis of 48%); New York and Boston, \$1.12; Philadelphia, \$1.14½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.17. High grade manure salts, 90-95% and 98-99% (basis 90%), respectively: New York and Boston, \$2.07@2.11; Philadelphia, \$2.09½@2.13½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.12@2.16.

Phosphates.—Charleston, S. C., quotations are as follows: Acid phosphate, \$6.25@6.50 cash f. o. b. in bulk; phosphate rock, standard land, kiln dried, \$4.50@4.75 f. o. b. mines; ground rock, \$6 f. o. b.

Muriate of Potash.—In lots of 50 tons, quotations are as follows: 80-85% and minimum 95% (basis 80%), respectively: New York and Boston, \$1.78 @ \$1.91; Philadelphia, \$1.80½@1.53½; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.83½ @ \$1.86.

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

Nitrate of Soda.—We quote this week: Spot, \$2.25; summer shipments, \$1.95@2.

Messrs. Mortimer & Wisner, the well-known brokers of this city, send us the following interesting statistics issued under date of June 1st:

	1894.	1893.	1892.
	Bags.	Bags.	Bags.
Imported into A. ports from West Coast S. A., from Jan. 1, 1894, to date	219,296	310,468	322,520
Impt. from Jan. 1 into Atlantic ports from Europe	.....	16,712	.....
	219,296	327,178	322,520
Stock in store and afloat			
June 1, 1894, New York	30,343	65,753	81,443
Boston	.....	550	600
Philadelphia	.....	.....	.....
Baltimore	2,000	.....	4,000
To arrive, actually sailed	176,600	220,800	170,000
Vis. supply to Sept. 15, 1894	208,943	287,103	258,043
Stock on hand, Jan. 1, 1894	44,938	15,454	53,585
Deliveries past month	50,671	93,678	57,457
Deliveries, since Jan. 1st to date	231,891	276,329	290,082
Total yearly deliveries	.....	754,500	685,158
Prices current, June 1, '94	2'22½@2'75	1'5c.	1'62½c.

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

Liverpool. June 5. (Special Correspondence of Joseph P. Brunner & Co.)

There is nothing new to report in chemicals, and the stagnation continues. Soda ash is in a lifeless state, and for Leblanc makes prices are quite nominal at about as follows: Caustic ash, 48%, £3 15s.@£4 per ton; 57% and 58%, £4 10s.@£4 15s. per ton. Carbonate ash, 48%, £3 5s.@£3 15s. per ton; 53%, £3 15s.@£4 per ton, net cash. Ammonia ash, 58%, quiet at £3 10s.@£3 15s. per ton, net cash, for tierces, and 5s. less for bags.

Soda crystals flat at £2 12s. 6d.@£2 15s. per ton, less 5%. Caustic soda in light request, and quotations vary according to export market, the nominal spot range being about as follows: 60%, £7 10s.@£8 5s. per ton; 70%, £8 10s.@£9 5s. per ton; 74%, £9 10s.@£10 5s. per ton; 76%, £10 10s.@£11 5s. per ton, net cash. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching powder is in fair demand and quotations for hard wood packages range from £7 10s. to £8 5s. per ton, net cash, according to destination. Chlorate of potash is neglected and resale parcels offered at 6½@6¾d. per lb.

Bicarb. soda more inquired for and firm at £6 15s. per ton, less 2½% for one cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is very scarce and full prices have to be paid by buyers, the nearest values to-day for good gray 24 and 25% in double bags f. o. b. here, ranging from £14 7s. 6d.@£14 12s. 6d. per ton, less 2½%, according to quality.

Nitrate of soda is well maintained at £10 2s. 6d. per ton, less 2½% for double bags f. o. b. here.

Carb. Ammonia.—Lump, 3¼d. per lb.; powdered, 4d. per lb., less 2½%.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 574 and 576.]

NEW YORK, Friday Evening, June 15. Another dull week has passed in the mining stock market. Only 11 stocks were traded in, out of the 68 which are listed at the Exchange. The total sales for the week amounted to but 3,600 shares.

The Comstocks remain about the same as at the close of last week. Consolidated California & Virginia advanced to \$4.50, at which price 100 shares were sold. Ophir shows a single transaction of 100 shares at \$2.80. Sierra Nevada advanced from 84 to 95c., with sales of only 200 shares; Yellow Jacket shows sales of 500 shares at 65¢/75c. Other sales were: 200 shares of Best & Belcher at \$1.70@1.75; 100 shares of Mexican at \$1.20; 100 shares of Union Consolidated, at 65c.

The following Comstock mining companies report having had cash on hand on June 1st, with May expenses unpaid: Alta, \$2,364; Alpha Consolidated, \$10,432; Andes, \$19,997; Best & Belcher, \$6,398; Belcher, \$22,206; Caledonia (Gold Hill), \$6,709; Bullion, \$8,305; Consolidated California & Virginia, \$63,503; Crown Point, \$19,483; Chollar, \$14,829; Challenge Consolidated, \$2,135; Consolidated Imperial, \$2,613; Consolidated New York, \$1,470; Confidence, \$5,013; East Sierra Nevada, \$633; Exchequer, \$1,902; Gould & Curry, \$7,962; Haie & Norcross, \$10,573; Julia Consolidated, \$1,717; Justice, \$1,716; Kentuck, \$1,141; Lady Washington, \$220; Mexican, \$5,167; Occidental Consolidated, \$124; Overman, \$4,257; Ophir, \$1,144; Potosi, \$13,836; Savage, \$10,295; Scorpion, \$2,094; Sierra Nevada, \$12,656; Seg. Belcher, \$1,577; Union Con., \$5,479; Utah Con., \$1,816.

The following Tuscarora mining companies had an indebtedness June 1st: Belle Isle, \$1,920; Navajo, \$2,078; North Belle Isle, \$2,261; North Commonwealth, \$1,695; Commonwealth, \$25,000; Grand Prize, \$416.

No California stocks were traded in this week. The following Bodie mining companies report having had cash on hand on June 1st, with May expenses unpaid: Bodie Consolidated, \$14,000; Bulwer Consolidated, \$20; Mono, \$1,582; Syndicate, \$953; Standard Consolidated, \$34,065.

Of the Colorado stocks, Leadville Consolidated shows sales of 900 shares at 8¢/9c. There was a solitary sale of 100 shares of Little Chief at 15c. For the first time in several weeks, American Flag was traded in; 700 shares were sold at 3¢/4c. Of Lacrosse 600 shares changed hands at 4¢/5c.

A special meeting of the stockholders of the Comstock Tunnel Company was held in this city June 7th. The board of directors had already held a meeting on the preceding week, and, as it had been impracticable to carry out the proposed plan of leasing a portion of the property to an independent company, it resolved to submit the following proposition to the stockholders: In order to keep the tunnel open and in working condition and to pay other current expenses for a period of about two years, a sum of at least \$50,000 is required. The stock and bond holders are therefore invited to subscribe toward such a fund and for such subscription are to receive the company's notes, payable at the end of two years or sooner at the pleasure of the company, with interest at the rate of 6% per annum; the said notes to be issued at a discount of 25%. If by July 5th, 1894, an adequate amount is not subscribed, and the present conditions continue, the directors consider that proceedings looking to the placing of the property in the hands of a receiver are unavoidable.

Of the seven directors of the company, four, including Mr. Theodore Sutro, have each subscribed \$1,000, and the remaining will do so shortly. Several other stockholders, including a well-known banking house, have also subscribed.

NOTES OF THE WEEK.

The listing committee of the Denver, Colo., Mining Exchange has stricken off the list the following stocks which will not be called any more: Addie C., Adele, Anchoria L., Antlers P. R., Bob Lee, Cook's Peak, C. O. D., Columbine, Chat, Claudia J., Columbian, Deep Mining, Del Norte, Diamond B., Elkhead, Enola, Free Coin, Gettysburg, Gould, Grant, Granite Hill, Ingham, Ivanhoe, Jeff Davis, Magna Charter, Matao, Mollie Eppert, Mutual, Nancy Hanks, Orphan Bell, Ophir, Park Consolidated, Princess, Ramona, Rose Bud, Red Bird, Specimen, Standard, T. F. T., Union Pacific, Victor, Woman's Gold, Yellow Jacket. The reason for this action is that there are no transactions in these stocks.

The active stocks are: Alamo, Amity, Anaconda, Aola, Argentum J., Bandora, Bankers, Bangkok, Big Six, Blue Bell, Bushwhacker, Calumet, Cripple Creek Consolidated, Creede & Cripple Creek, Elkton, Emmons, Enterprise, Fannie Rawlings, Golden Dale, Golden Eagle, Golden T., Golden King, Gold Stone, Gold Standard, Gold Globe, Ironclad, Isabella, Jack Pot, Justice, Lemhi, Lottie Gibson, Mollie Gibson, Moore, Mt. Rosa, Pontiac, Pharmacist, Queen Bess, Summit, Sutton, Union Gold, Western M., Work, World.

Boston. June 14.

(From our Special Correspondent.)

There has been but very little doing in copper stocks this week, but prices have been fairly well maintained, owing to the small offerings of stock and the inclination of holders to retain their stocks for higher prices some time in the future. The short interest has been pretty well eliminated, and consequently the market is left to take care of itself. A few lots of Calumet & Hecla are taken by investors at \$270@272, the same as last week.

Tamarack advanced \$1 to \$160 for 6 shares, but later a lot of 60 shares was pressed on the market, causing a decline to \$157, with a later rally to \$158. Quincy declined from \$86½ to \$85 for 20 shares, and the scrip from \$29 to \$28½.

Osceola was fairly steady at \$19¼@19 in the early dealings, but declined to \$18½ later on, the lowest price for the year. Subsequently it rallied to \$19¼, with \$19 bid.

Atlantic sold at \$8 for 50 shares, the only transaction.

Wolverine sold at 1¼, a decline of ¼ from last sale.

The Montana stocks have been practically neglected this week, less than 1,000 shares changing hands.

Boston & Montana sold at 23¼ and advanced to 23½, a gain of ¼ over last week's closing.

Butte & Boston declined from 9 to 8½, rallied again to 9½, the closing price.

Franklin sold at \$8 for 8 shares only.

Centennial sold early in the week at 75c. Since the report that the mine was to be closed there has been no bid for the stock. It practically has no value.

Allouez sold to-day at 25c., assessment 20c. per share paid.

Napa Quicksilver sold at \$5. The market closed without any special feature.

San Francisco. June 8.

(From our Special Correspondent.)

A heavy break in the price of Comstock stocks took place in the early days of the week, and only yesterday and to-day have prices recovered to the normal figures. Just now the market is in a sensitive condition, and any developments—or reported developments—in the mines will have the effect of stimulating values. As it is, weak holders have been crowded out and large blocks of stock have passed into strong hands. It will take over a week to reach a point on the 1,700 level of the California & Virginia mine, under which the good ore was found above, and meantime interest in the stock may lag. Other stocks may be given a turn, however, especially as some interesting work is being carried on at several points on the lode.

Consolidated California & Virginia opened stronger to-day and sold for \$4.20, and after fluctuating slightly it closed at 5c. off the ruling rate. Ophir sold for \$2.70; Mexican for \$1.05; Sierra Nevada for 82c., and Union Consolidated for 63c.

The Middle Comstocks sold steadier and were in fair demand. Best & Belcher ruled at \$1.60; Chollar at 43c.; Gould & Curry at 98c.; Haie & Norcross at 78c.; Potosi at 68c., and Savage at 73c. Before the close these figures declined a few cents.

Of the Gold Hill stocks considerable demand has existed for the smaller priced stocks. Alta sold for 14c., Belcher for 95c., Bullion for 22c., Consolidated New York for 3c., Crown Point for 76c., Exchequer for 1c., Kentuck for 3c., Overman for 22c., and Yellow Jacket for 65c. These stocks remained firm until the close of the market.

Some little attention is now being paid to the Bodies in consequence of the exaggerated reports of the strike in Bodie Consolidated. That stock ruled to-day at \$1, Bulwer at 15c., and Mono at 27c. Save in the case of Bodie Consolidated the trading was very light.

Some little effort seems to be apparent to again force the Tuscarora stocks on the public, but so far trading in them has been absolutely nil.

BY TELEGRAPH.

SAN FRANCISCO, June 15.—The opening quotations to-day are as follows: Best & Belcher, \$1.45; Bodie, \$1; Belle Isle, 10c.; Bulwer, 8c.; Chollar, 37c.; Consolidated California & Virginia, \$4.55; Eureka Consolidated, 25c.; Gould & Curry, \$1.05; Haie & Norcross, 70c.; Mexican, \$1.05; Mono, 23c.; Navajo, 5c.; Ophir, \$2.70; Savage, 60c.; Sierra Nevada, 81c.; Union Consolidated, 58c.; Yellow Jacket, 56c.

London. June 7, 1894.

(From our Special Correspondent.)

The most noticeable feature in the American mining stock market during the past week has been the panic among holders of Harquahala shares. There is a good deal of anxiety with regard to this company's prospects, partly on account of the discouraging reports from the mine, and partly on account of the rumors of the probable action of the authorities of Arizona Territory against the alien ownership of the property. There is certainly a lawsuit going on between the vendors and introducers with regard to commissions, etc., and it is possible that this is the lawsuit which is frightening holders. This suit, of course, has no bearing on the shareholders in the present company. The price of the shares has fallen to 9s., as compared with 18s. a month ago.

De Lamars and Elkhorns are firmer and the temporary slump in the former has entirely died out. Montanas have improved a little on the publication of the report for 1893. New Gustens are being picked up in some quarters and the price continues to increase, standing now at 15s., as compared with 7s. two months ago.

Many public inquiries are being made as to the reason for the continued delay in getting to work at Holcent Valley. The new plant has been in place for a long time and every month we are told that regular returns may be expected any day. Perhaps some reader in California can give English shareholders some useful information about this concern.

Montana company's report for 1893 is considered as being hopeful by some people, seeing that the gross loss was only £757 in face of extra law expenses amounting to £2,832. These law suits seem to have no end, for that relating to the ownership of the "Compromise Ground" is no further advanced than a year ago, and until the company can start opera-

tions on this ground, the production is hindered as well as law expenses involved. The worst feature of the report is that the importance of the discovery of the New Castletown ore body announced last December is not confirmed, and the value of the ore is now put down at only \$20 per ton. This is far less than was announced at first, and the whole thing confirms my opinion expressed at the time that the new discovery was being made the most of by inside holders who wished to clear out at a profit. Before the discovery the shares stood at about 2s., at which price the speculators bought largely, and in a week the price was 9s., with plenty of buyers. The \$20 ore is not rich enough to enable an over capitalized company like the Montana to pay a dividend.

The Palmarejo difficulty continues unabated. The proposed amalgamation of the Palmarejo Company, and the Mexican Mineral Railway Company is being strenuously opposed by the directors, and shareholders of the latter company on the ground that the proposals are in favor of the shareholders in the former. It is probably the first time on record that anything has been alleged to be in favor of these unfortunate shareholders.

The Mono Lake Goldfields of California, Limited, is an example of an English company formed to acquire an American mining property, which, after it was formed and shares subscribed, glided mysteriously out of existence and never did anything for which it was formed. It was promoted by the well known Mr. Gordon Smith, and was registered on March 15th, 1888. Shortly afterward the stock of the company was sold in the open market by a jobber in the usual way, and quotations were published in the "Financial News" and other papers, from which it purported that as much as 10s. was being obtained for £1 shares. As a matter of fact, the property was never touched nor even bought, and as the title deeds were never examined nor the first instalment (£2,000) of the purchase price not paid by May 21st, 1889, the property passed back to the owners. The excuse given by the promoters and the company was that the title deeds were defective, so that an effective block is in the way of further transactions on the part of the owner until some contradiction is given to this report. The representative of the owner has lately arrived in London with a view of doing something with the property, but he finds that the company's statement about the faulty title deeds has been published in Skinner's "Mining Manual" and other works of reference, and he is naturally handicapped in his efforts. It should not be very difficult to disprove the company's allegations.

The affairs of the Palmarejo Mining Company do not arrive any nearer a solution, and every week I have to report some personal wrangling which apparently has the effect of postponing indefinitely the day when an exact and fair trial is made of the property. The meeting held a few days ago was entirely occupied by a heated discussion as to who should form the new board of directors. A great deal of talking was done and many side issues gone into, but practically the question was whether Mr. Applegarth should continue on the board. Mr. Applegarth has the advantage over his opponents that he is the only man in the place who knows anything about mining, and thus he is able to keep at bay his opponents who are lawyers, physicians retired generals, country gentlemen and such like. They are all straightforward, upright men with good intentions, but are completely in a fog when the technicalities of mining and metallurgy are spoken about. Besides the question of Mr. Applegarth's position on the board, a discussion took place as to whether the majority on the new board should be nominated by the Shareholders' Advisory Committee, or whether the old board should be allowed to have a majority. Eventually a kind of compromise was arrived at, by which the new board should consist of three of the Shareholders' Advisory Committee, Messrs. Southcott, Wealey and Peters; three of the old board, Messrs. Applegarth, Sykes and Duval; with Mr. Seward Brice as chairman, who is a large shareholder, but siding with neither the Advisory Committee nor the old board.

DIVIDENDS.

Dominion Coal Company, 4% semi-annual dividend on the preferred stock, payable July 2d, to stockholders of record on June 15th.

Homestake Mining Company, dividend No. 191, of 15 cents per share, \$18,750, payable June 25th, at the office of Messrs. Lounsbury & Co., Mills Building, No. 15 Broad street, New York City. Transfer books close June 20th and reopen June 25th.

The F. E. Belden Mica Mining Company, dividend of five cents per share, \$5,000, payable June 18th at the office of the company in Boston, Mass. Transfer books close June 16th and reopen June 19th.

MEETINGS.

Rockingham Gold Mining and Milling Company, at the office of the company, room 407 Mining Exchange Building, Denver, Colo., July 3d, at 2 p. m.

Webster Mining and Improvement Company, at the office of the company, in Webster, Jackson County, N. C., July 28th, at 12 o'clock noon.

Whale Mining and Milling Company, at the office of the company, room 523 Mining Exchange Building, Denver, Colo., July 3d, at 2 p. m.

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

Table with columns for Name and Location of Company, dates from June 9 to June 15, and Sales. Includes companies like Belcher, Nevada; Boston, Colorado; and various others.

* E-dividend. † Deals in at New York Stock Ex. Unlisted securities. ‡ Assessment paid. § Assessment unpaid. Dividend shares sold 1,960. Non-dividend shares sold 1,700. Total shares sold, 3,660.

BOSTON MINING STOCK QUOTATIONS.

Table with columns for Name of Company, dates from June 8 to June 14, and Sales. Includes companies like Atlantic, Michigan; Brecco, Colorado; and various others.

* Assessment paid. Dividend shares sold, 1,539. Non-dividend shares sold, 2,365. Total shares sold, 4,204.

COAL AND COAL RAILROAD STOCKS.

Table with columns for Name of Stock, dates from June 9 to June 15, and Sales. Includes companies like Am. Coal, Ohio; Bait, Ohio; and various others.

Total shares sold, 81,364.

PENNSYLVANIA.

Table with columns for Name of Company, Bid, and Asked prices. Includes companies like Cambria, Philadelphia; Central Coal & C., Philadelphia; and various others.

FOREIGN.

Table with columns for Name of Company, Buyer, and Seller prices. Includes companies like Alaska Treadwell, Alaska; and various others.

CALIFORNIA.

Table with columns for Name of Stock, Closing Quotations, and dates from June 8 to June 14. Includes companies like Alpha, California; Belcher, California; and various others.

COLORADO.

Table with columns for Name of Stock, High, Low, and Sales. Includes companies like Amity, Colorado; Argonaut, Colorado; and various others.

INDUSTRIAL AND TRUST STOCKS.

Table with columns for Name of Stock, dates from June 9 to June 15, and Sales. Includes companies like Adams Express, Am. Cotton Oil; and various others.

Total shares sold, 44,515.

MARYLAND.

Table with columns for Name of Company, Bid, and Asked prices. Includes companies like Atlantic Coal, Baltimore; and various others.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

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

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1894, the California had paid \$31,330,000 in dividends, and the Cons. Virginia \$12,300,000. § Previous to the consolidation of the Copper-Queen with the Atlanta, August, 1886, the Copper Queen had paid \$1,350,000 in dividends. ¶ Previous to this company's acquiring Northern Belle, that mine paid \$2,400,000 in dividends against \$425,000 in assessments.

Table with 2 columns: Item Name and Price. Includes Colorado Aspen, Argonaut-Juniata, Aspen Contact, etc.

Table with 3 columns: Item Name, High, Low, Sales. Includes Colorado Springs, Cripple Crk (gold), Alamo, Anaconda Gold, etc.

Table with 2 columns: Item Name and Price. Includes Pennsylvania, Pittsburgh, Allegheny County Light, Bridgewater Gas, etc.

Table with 2 columns: Item Name and Price. Includes CURRENT PRICES, These quotations are for wholesale lots in New York unless otherwise specified, Acid-Acetic, Commercial, etc.

Table with 2 columns: Item Name and Price. Includes N. Y. & Cleve. Gas Coal, Olive Valley Gas, People's Nat. Gas, etc.

Table with 2 columns: Item Name and Price. Includes MISSOURI, St. Louis, Closing quotations, Adams, American & Nettie, etc.

Table with 2 columns: Item Name and Price. Includes MONTANA, Helena, (Specially Reported by S. K. Davis), Stock quotations week ending June 7.

Table with 2 columns: Item Name and Price. Includes MINNESOTA, Duluth, LISTED STOCKS, Biwabik M. Iron Co., Cincinnati Iron Co., etc.

Table with 2 columns: Item Name and Price. Includes Lake Superior Iron Co., Lincoln Iron Co., Mesaba Moun. Iron Co., etc.

Table with 2 columns: Item Name and Price. Includes UNLISTED STOCKS, Adams Iron Co., Ashland Iron Co., Buckeye Iron Co., etc.

Table with 2 columns: Item Name and Price. Includes FOREIGN, Shanghai, China, May 11, 1894, (Special Report by J. H. Bisset & Co.), Sheridan Con. Colo., etc.

Table with 2 columns: Item Name and Price. Includes Paris, France, June 4, Acieries de Creusot, Fives-Lille, etc.

Table with 2 columns: Item Name and Price. Includes Aguas Tenidas, Anzin (coal), Heinez, Spain, Callao, Callao Bis., etc.

Table with 2 columns: Item Name and Price. Includes ASSESSMENTS, COMPANY, No., Dlnq. in office, Day of sale, Amt. or share.

Table with 2 columns: Item Name and Price. Includes Cadmium Iodide, Chalk, Precipitated, China Clay, Domestic, Chlorine Water, etc.

Table with 2 columns: Item Name and Price. Includes Mineral Wool, Ordinary slag, Ordinary rock, Nitre Cake, Ochre, etc.

Table with 2 columns: Item Name and Price. Includes Tin-Crystals, Muriate, Double or strong, Oxymur, Vermillion, Am. quicksilver, etc.

THE RAREER METALS.

Table with 2 columns: Item Name and Price. Includes The prices given below are the prices in Germany, and are per gramme except where otherwise stated: Arsenic, Barium, Bismuth, etc.

RAILROAD MATTERS.

The plans of Bradford L. Gilbert, of New York for the new station at Syracuse, N. Y., for the New York Central & Hudson River Railroad have been adopted by the company. The main building is to occupy the site of the present Leland Hotel at Syracuse, and is to be 94 ft. by 122 ft., with a tower 25 ft. square. The building will have north and south wings, 50 ft. by 104 ft. each, for the baggage and ticket rooms. A new freight-house is also included in the present plans.

The new office building of the Pennsylvania Railroad at Broad street, Philadelphia, will soon be ready for occupancy, and by September it is expected the entire official and clerical forces of the company, now located in the Fourth street offices, will be in the new building. The directors' room is located upon the second office floor fronting on Market street. On the same floor is the suite of offices appointed for President Roberts. On this floor will also be located the offices of Second Vice-President John P. Green and Secretary John C. Sims. First Vice-President Thomson will have his office on the first office floor, directly beneath the office of President Roberts. The offices of Third Vice-President Pugh and the treasurer will also be on this floor. On the fourth floor will be the offices of General Passenger Agent James R. Wood and the advertising department, and on the fifth floor will be the Comptroller's offices.

The officers of the Lehigh Valley Railroad completed on Monday of this week a four-days' inspection of the company's lines and also the terminal stations at Jersey City and Buffalo. The party included President E. P. Wilbur, Vice-President Charles Hartshorne, Second Vice-President Robert H. Sayre, Third Vice-President John B. Garrett, General Superintendent Rollin H. Wilbur, General Counsel H. S. Drinker, Real Estate Agent J. F. Schapperkotter, and General Traffic Manager H. H. Kingston. Vice-President Hartshorne stated that they found the roadway and terminals of the company in excellent physical condition. He further said that he was pleased to see the movement of general merchandise traffic over the Lehigh Valley lines greater than ever before, and he attributes this to the company's having opened its own line from Sayre to Buffalo. While the freight traffic at present is large, however, he added that, owing to the competition for traffic, the rates at present are generally low.

An interesting statement by Auditor Leland in the last report of the Lake Shore & Michigan Southern Company gives what may be called the consumption of equipment on that road for a period of 23 years, 1871-1893 inclusive. From this we take the following figures:

	Locomotives.	Pass. cars.	Frt. carr.
On hand Jan. 1, 1871.....	299	247	6,077
Bought and built.....	416	273	22,799
Total.....	715	520	28,876
On hand Jan. 1, 1894.....	591	428	20,751
Disappeared.....	124	92	8,095
Number each year.....	5.4	4.0	352.0
Proportion each year.....	1.2%	1.2%	2.6%

The Lake Shore company repairs and keeps its equipment usually in excellent order. The proportion of locomotives put out of service in the 23 years is probably smaller than on most roads of the same class, since there has not been, on its level grades, the same motive for replacing the older and lighter engines as on roads of heavier grades and greater variations of service.

Southern Railway & Steamship Association.

The annual convention of this association held a meeting in New York City this week. The report of the Rate Committee was as follows:

Your committee appointed to take up the restoration of rates and the cancellation of contracts begs leave to report: That it has investigated the subject sufficiently to determine that because of existing contracts, made by the receiver of the Central Railroad of Georgia, it is not practicable to advance the tariff rates made effective on the 2d inst. before July 31, though there is nothing to prevent the maintenance of these rates for that period without further reduction.

Your committee considers it essential to the renewal of the association agreement for another year that, before the report of the special committee to which this subject has been referred shall be taken up and considered, each member present shall subscribe to an agreement in form as follows:

We hereby agree, each for the transportation line he represents, that we will not enter into, authorize, or become a party to any agreement, promise, or intimation affecting competitive rates or traffic after August 1st next, into or from or within the territory recognized as association territory.

We hereby declare that we have not entered into any such contracts or agreements affecting rates or traffic after August 1st next, and so pledge ourselves not to enter into any such agreements extending the present or any other rates up to July 31st.

That the commissioner shall obtain as soon as possible the signatures to this agreement of the members not present at this meeting.

The committee further recommends that the commissioner be requested to withdraw the authority given by him to members of the association to enter into contracts extending the present rates to July 31st, 1894.

The resolution to make no further contracts to July 31st at the present low rates was carried unanimously.

Railroad Personals.

It is said that Mr. N. Monsarratt, who recently resigned the position of vice-president and general manager of the Cleveland, Akron & Columbus, is to enter the service of the Baltimore & Ohio.

Mr. E. L. Corthell, chief engineer of the new bridge which is to cross the Mississippi at New Orleans, has established his headquarters in that city and will reside there until the work is completed.

Vice-President C. C. Harvey, of the New Orleans & Northeastern, Vicksburg, Shreveport & Pacific and Alabama & Vicksburg, has been elected president, vice Mr. Charles Schiff, who takes the position of vice-president.

Mr. Charles Neilson, formerly general superintendent of the Cincinnati, Hamilton & Dayton Railroad, and for some time past superintendent of railroad mail service, has been appointed second assistant postmaster-general to succeed Mr. J. Lowrie Bell.

Mr. W. C. Cushing, engineer of maintenance of way of the Indianapolis division of the Pennsylvania lines, has been transferred to the Pittsburgh division, and M. L. Byers, of the Cincinnati & Muskingum Valley, has succeeded Mr. Cushing on the Indianapolis division.

W. M. Bushnell has been appointed general freight agent of the Chicago, Peoria & St. Louis, vice H. E. Pilcher, resigned, with headquarters at St. Louis. James Mann has been appointed general agent of the freight and passenger department of the road, with office at Peoria.

Mr. D. B. Smith has resigned the position of general manager of the Mexico, Cuernavaca & Pacific to take charge of the extension of the Pecos Valley Railroad from Eddy to Roswell, N. M. The office of general manager has been abolished, President Hampson performing the duties.

Mr. T. H. Fennell, whose resignation as general superintendent of the Northern Division of the Lehigh Valley was mentioned last week, has been appointed superintendent of the Western Division of the New York & New England, with headquarters at East Hartford, Conn. Mr. Fennell succeeds Mr. H. J. Quigg, resigned.

The vacancy occasioned by the resignation of J. H. Barrett as general superintendent of the Buffalo, Rochester & Pittsburg has been filled by the appointment of R. G. Mathews as acting general superintendent and A. J. Johnson as acting superintendent of the Buffalo and Rochester divisions. Mr. Mathews has been superintendent of the Buffalo and Rochester divisions and Mr. Johnson has been chief train dispatcher of the Rochester division. Mr. Mathews will have his headquarters in Buffalo, and Mr. Johnson in Rochester.

President J. Rogers Maxwell, of the Jersey Central Railroad, has issued a formal announcement of the appointment of J. Lowrie Bell to be traffic manager of the company. Mr. Bell will assume the duties of his new office July 1st, with office at 143 Liberty street, New York. Mr. Bes-

was general superintendent of the railway mail service under Postmaster-General Wanamaker, and was subsequently promoted to be second assistant postmaster-general, and was for several years general traffic manager of the Philadelphia & Reading Railroad, a position which he left in 1889 to become superintendent of railroad mail service, has resigned his present office of second assistant postmaster-general, which he has held since 1890, to accept the position of general traffic manager of the Central Railroad of New Jersey.

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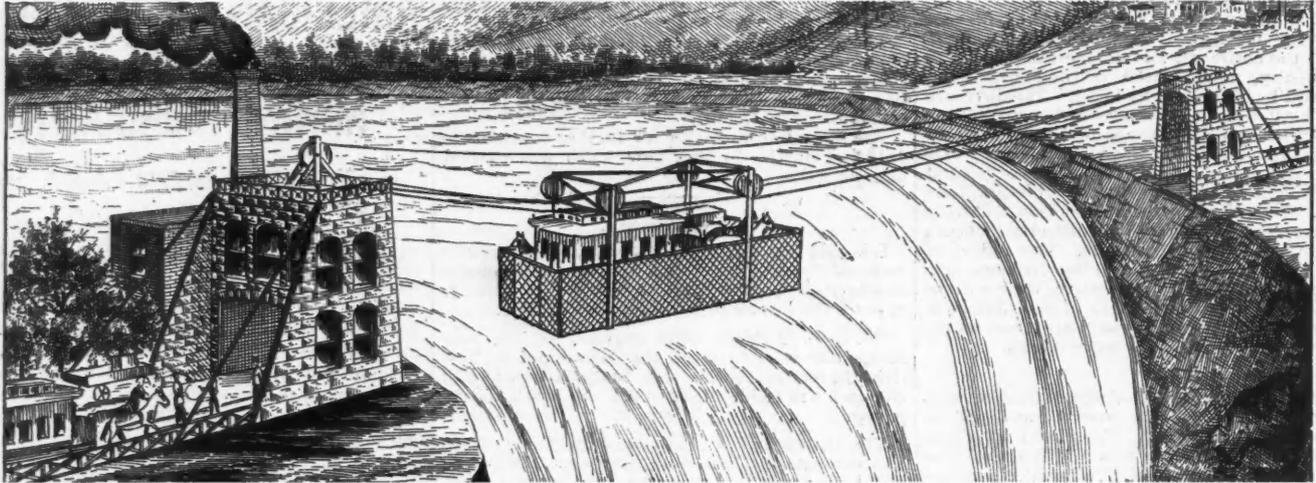
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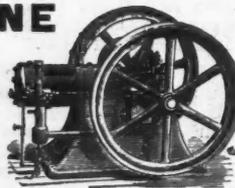


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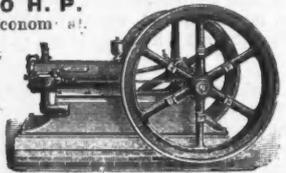
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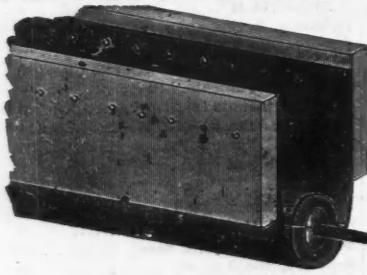
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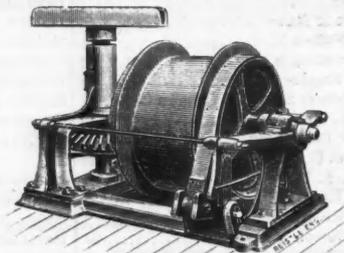
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OPEN FOR ENGAGEMENT. HAVE HAD charge of the mining engineering department of the Michigan Mining School for the past four and one-half years. Practically experienced in all kinds of mine surveying, in railroad and in general engineering work. Well acquainted with mining on Lake Superior. F. W. DENTON, Houghton, Mich. No. 16,602, July 21.

SITUATION AS MINING ENGINEER, AS assistant superintendent, or with manufacturer of mining machinery; technically educated; experienced; familiar with the mining of large bodies of ore; large mining acquaintance; references furnished. Address L. S., ENGINEERING AND MINING JOURNAL. No. 16,605, July 21.

POSITION WANTED AS ASSISTANT TO mine manager or mining engineer, by a recent graduate of the Columbia College School of Mines. Address METAL MINING, ENGINEERING AND MINING JOURNAL. No. 16,500 1/2.

**Contracts Open.**

TREASURY DEPARTMENT, OFFICE SUPERVISING Architect, Washington, D. C., June 9th, 1894.—Sealed proposals will be received at this office until 2 o'clock P. M. on the 23d day of June, 1894, and opened immediately thereafter, for all the labor and materials required to furnish and erect complete one passenger elevator in the United States Court House and Post Office building at Birmingham, Ala., in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Custodian at Birmingham, Ala. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any or all bids, should it be deemed in the interest of the Government to do so. All bids received after the time stated will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked "Proposals for One Passenger Elevator in the United States Court House and Post Office Building at Birmingham, Ala.," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

PIPING.—Victoria, B. C.—Sealed tenders will be received up to July 3d for furnishing approximately 310 tons (of 2,240 lbs.) of cast iron coated plain water pipes and 3/4 tons of special castings for the water-works, in accordance with specifications to be seen at the office of the water commissioner, where also forms of tenders may be obtained. WELLINGTON J. DOWLER, C. M. C.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., June 15th, 1894.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 18th of July, 1894, and opened immediately thereafter, for all the labor and materials required for the superstructure and roof covering, including approaches of the U. S. Post Office and Custom House Building at Fargo, N. Dak., in accordance with the drawings and specification, copies of which may be had at this office, or the office of the Superintendent at Fargo, N. Dak. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any and all bids and to waive any defect or informality in any bid if it be deemed in the interest of the Government to do so. All bids received after the time stated will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked, "Proposal for the Superstructure, Etc., of the U. S. Post Office and Custom House at Fargo, North Dakota," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

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ENGINEERING AND MINING JOURNAL, New York.

CYLINDER AND MACHINE OIL.—Sealed proposals will be received until June 16th, 1894, for supplying cylinder and machine oils during the fiscal year ending June 30th, 1895, to certain United States buildings. Particulars will be furnished upon application to undersigned. Proposals should be addressed to the Secretary of the Treasury and indorsed "Proposals for Oil for United States Buildings." S. WIKE, Acting Secretary, Washington, D. C.

WATER-WORKS.—Key West, Fla.—The Board of City Commissioners will receive bids for the space of 30 days for the furnishing of plans and specifications, and for the furnishing of material necessary and for the construction of a complete system of water-works for the city of Key West, in accordance with set of plans and specifications which may be adopted by the board, and will pay for the accepted set of plans and specifications a sum not to exceed \$2,000; all other plans and specifications which may be furnished and which are not accepted will not be paid for. And the city of Key West reserves the right to pay for plans and specification and all material and labor required in the construction of the work in whole or in part in 6 per cent. semi annual interest bearing water-works bonds of the city of Key West at not less than par value.

WATER-WORKS.—Sealed proposals will be received by the City Council of Jefferson, Ia., until July 6th, 1894, for furnishing the materials and constructing a system of water-works for said city. Bids for furnishing and laying pipe must be per foot. Plans and specifications will be on file in the Mayor's office, Jefferson, Ia., and with the United States Wind Engine & Pump Company, Batavia, Ill., and Bankers Iowa State Bank, Des Moines, Ia. No bids will be received unless accompanied with a certified check on some responsible bank for \$500, payable to the order of the Treasurer of the city of Jefferson, Ia.

TREASURY DEPARTMENT, OFFICE SUPERVISING Architect, Washington, D. C., June 18th, 1894.—Sealed proposals will be received at this office until 2 o'clock p. m. on the 27th day of June, 1894, and opened immediately thereafter, for all the labor and materials and fixing in place complete eight new hot water boilers, etc., in the United States Custom House and Post Office building at St. Louis, Mo., in accordance with the drawing and specification, copies of which may be had on application at this office or the office of the Custodian at St. Louis, Mo. Each bid must be accompanied by a certified check for a sum not less than 2% of the amount of the proposal. The right is reserved to reject any and all bids, or to waive any defect or informality in any bid if it be deemed in the interest of the Government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked, "Proposal for Eight New Hot Water Boilers, Etc., in the United States Custom House and Post Office Building at St. Louis, Mo.," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

TREASURY DEPARTMENT, OFFICE SUPERVISING Architect, Washington, D. C., June 20th, 1894.—Sealed proposals will be received at this office until 2 o'clock P. M. on the 19th day of July, 1894, and opened immediately thereafter, for all the labor and materials required for the brick and terra cotta floor and ceiling arches, concrete filling, terra cotta furring, etc., for the United States Post-office building at Worcester, Mass., in accordance with the drawings and specification, copies of which may be had at this office or the office of the Superintendent at Worcester, Mass. Each bid must be accompanied by a certified check for a sum not less than two per cent. of the amount of the proposal. The right is reserved to reject any or all bids or to waive any defect or informality in any bid should it be deemed in the interest of the government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be inclosed in envelopes, sealed and marked, "Proposal for Floor Arches, Concrete Filling, Etc., for the United States Post-office, Etc., Building at Worcester, Mass.," and addressed to JEREMIAH O'ROURKE, Supervising Architect.

U. S. ENGINEER OFFICE, NEWPORT, R. I.—Sealed proposals, in triplicate, for stonework at Stonington breakwater, Conn., will be received here until July 17th, 1894. Attention of bidders is invited to Act of Congress approved August 1st, 1892, Sections 1 and 2 (Public No 193). Full information furnished on application. W. H. BIXBY, Captain Corps of Engineers, U. S. A.

Continued on page 19.

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A new Bilharz Concentrator, lately exhibited in the section of Chicago Iron Works, Mining Building, World's Fair. Original cost, \$375. Will be sold very cheap. Is now in Butte, Mont. Address

H. W. MARTIN, 901 Columbus Bldg., Chicago. No. 16,591, July 7.

NOTICE OF ASSESSMENT.

Bulwer Consolidated Mining Company.—117 Liberty St., New York.

Notice is hereby given that at a meeting of the Board of Directors held on Thursday, the twenty-fourth (24th) day of May, 1894, an assessment, No. 9, of Ten Cents (10c) per share, was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Farmers' Loan and Trust Company, No. 20 and 22 William St., New York.

Any stock upon which this assessment shall remain unpaid on Friday, the twenty-ninth (29th) day of June 1894, will become delinquent and be advertised for sale at public auction; and unless payment is made before will be sold on Friday, the twenty-seventh (27th) day of July, 1894, to pay the delinquent assessment, together with cost of advertising and expenses of sale. By order of the Board of Directors.

L. OSBORN,
Secretary.

Main Office, Room No. 33 Nevada Block, No. 306 Montgomery Street, San Francisco, California.

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- Atlantic Branch,** 287 Pearl St., New York.
- Boston Branch,** cor. Congress and Purchase Sts., Boston, Mass.
- Buffalo Branch,** cor. Clinton and Oak Sts., Buffalo, N. Y.
- Cleveland Branch,** Canal and Champlain Sts., Cleveland, O.
- Chicago Branch,** Fifteenth and State Sts., Chicago, Ill.
- St. Louis Branch,** Clark Ave. and Tenth St., St. Louis, Mo.
- Cincinnati Branch,** cor. Seventh St. and Freeman Ave., Cincinnati, O.
- Louisville Branch,** Ninth St., between Main and River, Louisville, Ky.
- Baltimore Branch,** 204 Spear's Wharf, Baltimore, Md.
- National Lead & Oil Co.,** German National Bank Building, Pittsburg, Pa.
- John T. Lewis & Bros. Co.,** 231 S. Front St., Philadelphia, Pa.

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WANTED—PARTNER OR PARTNERS TO organize a stock company for manufacturing a patented automatic coal, clay and freight conveyor. In demand; \$3,000 stock already insured for \$1,500, or for the sale of the same. Illustrated catalogue on application.

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Advertisers are in want of large amounts of Carbonate of Lead. Estimates invited for number of tons of Carbonate of Lead Concentrate that can be furnished per annum, and lowest cash price for same, delivered at St. Louis and Kansas City. Parties furnishing must guarantee quantities.

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DIVIDENDS.

HORN SILVER MINING COMPANY OF UTAH.

56 BROADWAY, New York, June 18, 1894.

The regular quarterly dividend of twelve and one-half cents a share has been declared upon the stock of this company, payable on and after June 30th, 1894, to stockholders of record at the close of business June 23d.

The transfer books will close at 3 o'clock P. M. June 22d and reopen at 10 o'clock July 2d, 1894.

A. I. HARRISON, Secretary.

WE BEG TO ANNOUNCE THAT OUR

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

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

Contracts Open

Continued from page 18.

WATER-WORKS.—Farmington, Ill.—Sealed proposals will be received until June 25, for furnishing all material required in constructing a complete system of water-works. Following are the approximate amounts of material, etc.: 4,000 lin. ft. of 8-in. cast iron pipe, 43 lbs. per foot; 1,000 lin. ft. of 6-in. cast iron pipe, 33 lbs. per foot; 6,000 lin. ft. of 4-in. cast iron pipe, 22 lbs. per foot; 10,000 lbs. special castings; 25 double discharge fire hydrants; three 8-in. gate valves; four 6-in. gate valves; ten 4-in. gate valves; 16 valve boxes; one duplex fire pump; one vertical acting pump; one steel standpipe, 10 ft. in diameter by 100 ft. high, erected on foundation furnished by city. Specifications for the above material, stand pipe, machinery, etc., may be obtained on application to the city clerk of this city or to **Chas. F. Sturtevant**, consulting engineer, 300 North Second street, St. Louis, Mo. A certified check of \$200 on some national bank, made payable to the treasurer of said city, must accompany each bid. **W. H. MILLER**, Mayor.

WATER-WORKS AND ELECTRIC LIGHT.—Sealed proposals will be received by the Board of Water-Works and Electric Light Trustees of the village of St. Bernard, O., at the office of the clerk of said Board, until the 7th day of July, 1894, for a system of water-works and the installation of an electric light plant for said village. Copies of specifications will be furnished on application to the clerk of the Board of Trustees or their Consulting Engineer, and the drawings can be seen at the latter's office. **HERMAN J. WITTE**, President; **JOHN A. LARKIN**, **HENRY IMWALLE**, Board of Trustees; **GEO. HORNUNG**, Consulting Engineer, 30 East Fourth street, Cincinnati, O.

THE VILLAGE OF LANCASTER, ERIE County, N. Y., is desirous of obtaining a system of water-works. Proposals for the furnishing of a supply of water will be received by the Trustees of said village until July 1st, 1894. The village at present has a population of about 3,000 inhabitants. **JOHN LEININGER**, Village Clerk.

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